

School of Information Systems

A model of consumer eService adoption within Dubai

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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ABSTRACT

This study will create a model to determine the level of adoption of eServices (consisting of eCommerce and eBanking) within Dubai, an Emirate within the United Arab Emirates (UAE), and how this adoption has been influenced by an individual's exposure to an 'Emerging and Developing Economy' and/or an 'Advanced Economy'. The study investigates the 'enablers' and 'inhibitors' for individuals belonging to the Emerging and Developing Economies, Advanced Economies and a hybrid of the two. Lastly, for those individuals who do partake in eServices the researcher also identifies similar trends and differences in usage patterns between Dubai and Advanced Economy countries and regions such as the United States (US), Canada, United Kingdom (UK) and Western Europe.

This research utilises a positivist methodological approach in the collection and analyses of the primary data vital to achieving the aforementioned aims surrounding the adoption of eServices within Dubai. Two anonymous research instruments, online questionnaires, were distributed to potential respondents, firstly in 2005, and then a more advanced version in 2008. Both research instruments were distributed throughout Dubai via social networking sites, expatriate website groups, multi-national companies' HR departments, Dubai Government organisations and several Emirati only and mixed nationality universities, to both faculty and students. The research instrument posed questions covering demographics, cultural exposure, Internet usage, eServices usage, enablers and inhibitors of eServices usage, eServices companies utilised, goods and services purchased and security considerations.

The primary data was captured in an online database. The following statistical tests and reports were created using SPSS, frequency tables, descriptive analysis, correlation tests, F-tests, T-tests; and, ANOVA tests. Microsoft Excel was used to convert this statistical data into table and graphical form.

Arising from the statistical analyses and observations made during the course of this research, a model has been designed to determine the influence of cultural exposure on the adoption of eServices within a society rapidly moving from the 'agrarian age' to the 'information age' (Reigeluth & Garfinkle, 1994). This model utilised correlations to assess whether there is a significant relationship between cultural exposure and the eCommerce and eBanking variables. Additionally, it has assessed the relationship between each of the four components of cultural exposure, these being: the region of the last educational institute studied at; the region of citizenship at birth; the region of birth; and the current region of citizenship.

The cultural exposure variable was determined separately for both eBanking and eCommerce over the two data collection periods, by computing a weighted average for each component of cultural exposure. This was performed to differentiate the four factors and

provide a continuous range. Additionally, t-tests were utilised to determine whether the answers to specific questions differed between those using eBanking and those not, and F-tests to determine whether those who answered Likert-scale questions had differential answers based on the Likert-scale value for each question.

The individual components of cultural exposure all had strongly significant correlations with each other. With regard to the main hypotheses, every aforementioned cultural exposure variable had a significant relationship with eCommerce, with only current region of citizenship being correlated with eBanking.

The study assessed the hypotheses designed to determine the relationship between cultural exposure and its four culturally related components when tested against the 2008 primary data set and its interrelationship between cultural exposure and its potential influence in the adoption of eBanking and eCommerce. With regard to the main hypotheses, every cultural exposure variable had a significant relationship with eCommerce, except for region of birth.

The findings and analysis made throughout this research provide varying levels of benefits for eService organisations, governments and future researchers.

eServices organisations will now have access to comprehensive statistical analyses, providing them with insight into the enablers and inhibitors of eServices within Dubai and/or an Emerging and Developing Economy that shows the same traits as Dubai. These organisations can also benefit from the analysis conducted surrounding the cultural aspects, in particular the 'innovators', 'early adopters', 'early majority', 'late majority' or 'laggards' (Rogers, 1995) and eServices usage patterns in Dubai. With this information, these eServices organisations can refine their existing business plans and redevelop their marketing strategies to target a particular demographic or product range.

Governments who wish to transcend from either an agrarian, pre-industrial, or industrial society to the information age can use the approach and findings of this research in the evaluation of their community's level of technology adoption. This research will also empower government sponsored academic institutes to change their current education curricula to assist their populace in making the necessary changes to their current mindset and philosophies, so that the transition to the information age is more efficiently managed (Reigeluth & Garfinkle, 1994).

There has been an extensive amount literature produced in relation to technology adoption, such as the Diffusion of Technology (Rogers, 1995), Theory of Reasoned Action (Fishbein & Ajzen, 1975), Technology Acceptance Model (Davis, 1989), Technology adoption lifecycle (Brown & Venkatesh, 2003) and Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis, & Davis, 2003), to name but a few. However, previous literature focused on Emerging and Developing Economies, while informative and insightful, failed to

explore all aspects of eServices and its potential within these environments. This study sought to address that omission. As such, it provides a foundation for future analysis into eServices and technology adoption within Dubai, the Middle East and, potentially, all Emerging and Developing Economies.

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'It is not the strongest of the species that survive, nor the most intelligent, but the most responsive to change' (Darwin, 1835).

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LIST OF ABBREVIATIONS AND TERMS USED WITHIN THIS THESIS

Abbreviation	Description
B2B	Business-to-Business
B2C	Business-to-Consumer
B2G	Business-to-Government
C2C	Consumer-to-Consumer
CRM	Customer Relationship Management
DIC	Dubai Internet City
DMC	Dubai Media City
EU	European Union
FDI	Foreign Direct Investment
G2G	Government-to-Government
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
ICT	Information and Communication Technology
KV	Knowledge Village
SME	Small, Medium Enterprises
UAE	United Arab Emirates
USD	United States Dollars

1 INTRODUCTION

1.1 Background

The era of the Internet has bequeathed considerably more capabilities and challenges to the way that commercial organisations and governments transact business, both between each other and with the end consumer. We now live in an age where practically anyone with a home computer and a product or service to sell has the ability to become a player on the international stage of electronic commerce or 'eCommerce'. In the context of this research, eCommerce is described as the participation of governments, companies and/or individuals in business communication and transactions over the Internet via disparate computers networks.

For the sake of clarity and to prevent any potential confusion, the term eServices will be used when describing eCommerce, 'eBanking', 'eShareTrading', 'eGovernment' or any other trade, financial or service transaction performed using the Internet as the commerce medium.

This study focuses on Dubai, which is part of the United Arab Emirates (the UAE). The UAE was formed on 2nd December 1971 and is a federation of seven Emirates. The seven Emirates are the capital city of Abu Dhabi, Sharjah, Fujairah, Dubai, Ras Al Khaimah, Fujairah and Umm Al Qaiwain. Every Emirate has autonomy and has its own ruler with the support of the federal political system. The seven rulers of the cities form the Federal Supreme Council and select the President of UAE. Currently, His Highness (HH) Sheikh Khalifa bin Zayed Al Nahyan is the President of UAE.

The Dubai Statistics Center (2010) reported that on the 5th January 2010 Dubai's population reached 1,771,584 million, an increase of nearly 43% since January 2005, with an average yearly population growth of 8.75%. The highest growth was reported between 2005 and 2006 as 20.5% and the slowest growth between the years 2008 and 2009 with a growth of only 3.6% (DSC, 2005, 2006, 2007, 2008a, 2009a). It needs to be noted that of Dubai's 1.77 million inhabitants, more than 86.5% are expatriates with the remaining 13.5% being Emiratis (DSC, 2010). Sengupta (2008) estimates that the population of Dubai increases by 24,333 people every month, or approximately 800 people daily. In terms of gender, the UAE Interact Statistics site (2007) states that 75.5% of Dubai's population is male and 24.5% female.

El-Kady (2005) argues that eServices adoption within Dubai may never match the explosive success it has enjoyed in countries such as the United States (US). This statement was reinforced to the researcher when he lectured to MSc mature aged students at a university based in Dubai in 2004. The MSc course major was 'eServices'. After the lecture, the researcher asked how many of the students, who were all full-time workers, had used eServices before. Out of a class of

approximately 30 students, only three had used eServices previously and only one more than twice. This led the researcher to ask the question, 'who are the users of eServices within Dubai?' The researcher believes that eServices and eBanking adoption is strong within Dubai, but as this thesis will show, the trends surrounding eServices usage are quite distinct when compared to the Advanced Economies.

The IMF (2008) has classified the Advanced Economy countries into four regions, these being:

1. Major Advanced Economies;
2. European Union;
3. Other Advanced Economies; and
4. Newly Industrialised Asian Economies.

Emerging and Developing Economies countries have been classified into eight regions by the IMF (2008), these being:

1. Africa;
2. Africa, Sub-Sahara;
3. Central and Eastern Europe;
4. Commonwealth of Independent States and Mongolia;
5. Developing Asia;
6. ASEAN;
7. Middle East; and
8. Western Hemisphere.

1.2 Statement of the research problem

Within the Advanced Economies it has been widely acknowledged that the growth of eServices has been significant and analysts estimate that eServices revenue will reach nearly US\$608 billion in 2010 and increasing by 65.8% to over US\$924 billion by 2014 (ABS, 2009; Evans & Bugnaru, 2009; Lewis, 2008; Lewis & Camus, 2009; Mulpuru, Johnson, McGowan, & Wright, 2008).

Rahimi (2008) identifies that there has been an estimated 20% per year growth rate in Internet users to a level of 33.5 million in the Middle East in 2007. In 2007 eConsumers within the Middle East only spent US\$1.5 billion on eService products and services (Rahimi, 2008). Currently, Middle Eastern eServices adoption trails that of the Advanced Economies, caused in part by the lack of a comprehensive

marketing campaign strategy by the eServices organisations and the immaturity of some of the Middle Eastern ICT infrastructure (Rahimi, 2008). Certain elements of Dubai's population portray a 'souq mentality', as described by Kelaart-Courtney (2004), where it is typically necessary for the consumer to adhere to a philosophy of 'touch before you buy'. These individuals also have a tendency to associate commerce with a need to achieve some level of social stimulation by bargaining down to the best price for the goods or services that one requires. This approach to shopping is possibly one of the inhibitors which is holding back the full potential of eServices (El-Kady, 2005).

This slow adoption of eServices could possibly be attributed to two main impeding factors:

1. The cultural background of the individuals residing within Dubai; and
2. The perception on how secure the Internet is by the residence of Dubai.

When an eServices organisation is looking towards the residents of Dubai to enhance their market penetration, it is important for their business strategy to take into account that communications and thought processes differ from region to region, country to country, and culture to culture. A prime example of this fact within an Advanced Economy is when considerable negotiation takes place leading into the 'settlement', when the negotiating party shake hands this deal has been deemed agreed upon and finalised (Hofstede, 1991). However, within the Middle East the shaking of hands does not actually signify the end of negotiations but, in reality, identifies that the negotiations have just become more serious in nature and the real negotiation has just been set in motion. Hofstede (1994) further summarises a number of recognisable cultural traits that could quite easily be applied to the current societal attitudes in Dubai. These include:

- 'Collectivist culture' - which can be described as a tight social framework where relatives, clan and the organisations are owed loyalty. This can be seen in the decision-making processes; organisational structure and business conduct that is built on a perceived trust basis;
- 'Power distance' - where power distribution within organisations and institutions has unequal distribution and this fact is accepted by the society;
- 'Uncertainty avoidance' - which is when the society expects and demonstrates strong characteristics such as aggressive behaviour and the showing of emotions is permissible; a strong belief is placed in the knowledge of recognised experts; and ordinary citizens are perceived as incompetent compared with the authorities.

Many researchers have also discussed the important influences of cultural shifts from one society age to another. These theories also resonate in Dubai. Reigeluth and Garfinkle (1994), for example, classified societal development into three ages - the agrarian age, industrial age, and the information age. *Table 1 – Major paradigm shifts in society* provides a simple outline of the differentiation between these three ages.

Table 1 – Major paradigm shifts in society

Society	Agrarian	Industrial	Information
Transportation	Horse	Train	Aeroplane and car
Family	Extended family	Nuclear family	Single parent family
Business	Family	Bureaucracy	Team
Education	One room schoolhouse	Current system	Combination of next generation technologies

Source: (Reigeluth, 1997)

The business environment in the Middle East is heavily influenced by 'Sharia' or Islamic law. Read (2004) stated that Sharia is the building block of the lives, both private and public, of people who live within an Islamic community, and that Sharia is an important influence on many aspects of economics, politics, laws related to contracts and business, and the social and everyday life of people. However, despite being an Islamic country, the culture of Dubai reflects an apparently more liberal lifestyle than other Middle Eastern countries. From an outsider's point of view, Dubai seems to be considerably westernised. Nonetheless, there is still a tendency for Emiratis to portray traits similar to those found in a fatalistic and masculine dominated society, described by Kluckhohn and Strodtbeck (1961) as a 'subjugation culture'. This creates a society whose attitudes are typically accepting and where life is seen primarily as pre-ordained.

Today's Middle Eastern business temperament and landscape has been shaped and defined by several catalytic events. Oil exploration within the region has obviously been the primary catalyst for fast-tracking society from an agricultural society, agrarian age, to an industrially focused society, the industrial age. The discovery of the Dubai oil reserves in 1965 prompted the frantic rush, by Dubai and the UAE, towards rapid modernisation and countrywide infrastructure development programs. These programs were prominent between the mid-1960s and early 1970s, stalling in the late 1970s until the mid-1980s. This was mainly due to the collapsing of the commodity and oil prices.

The first Gulf War in 1991 caused oil prices to increase substantially, just as Dubai realised that they had only thirty-five to forty years of oil reserves remaining. The Prime Minister of the UAE, His Highness Sheikh Mohammed bin Rashid Al-Maktoum, who is also the ruler of Dubai and the UAE Vice-President, is determined to take up rapid modernisation programs in Dubai (Al-Maktoum, 2008). HH Sheikh Mohammed bin Rashid Al-Maktoum is also determined to establish and build other successful pillars of industry such as tourism, technology, logistics and financial services. Based upon Reigeluth's model, shown in *Table 1 – Major paradigm shifts in society*, it appears that several countries within the Middle East are also moving from the agrarian age, fast tracking through the industrial age, directly to the information age and, like Dubai, strive to become knowledge and information based economies. This fact has been highlighted again recently when Sheikh Ahmed Bin Saeed Al-Maktoum, Emirates Airline Chief Executive and the uncle of the current Ruler of Dubai Sheikh Mohammed bin Rashid Al Maktoum, stated:

'education will be at the centre of the UAE's efforts to emerge from the global economic crisis and that education will have the pivotal role within the UAE as the government makes education a core component of its development plans and strategies' (Sambidge, 2010).

Sambidge (2010) goes on to add that the UAE, and indirectly Dubai, seeks an active and influential role in becoming a knowledge based economy to combat the effects of the 2008 global economic crisis.

Although important, the cultural aspects surrounding the acceptance of eServices within the Middle East and, in particular Dubai, is not the only factor that has the potential to adversely affect the consumer adoption of eServices. Another important factor is the user's perception of the level of security surrounding eServices and, more pointedly, the security of personal information. Internet security is an important enabler for the consumer adoption of eServices. However, bank fraud is growing at an enormous rate. In the context of the US, as reported recently:

'Nearly 2 million Americans have had their checking accounts raided by criminals in the past 12 months, according to a soon-to-be released questionnaire by market research group Gartner. Consumers reported an average loss per incident of US\$1,200, pushing total losses higher than US\$2 billion for the year' (Sullivan, 2004, p1).

One of the most recent security phenomena to increase the propensity of eBanking fraud is 'phishing'. Phishing is described as a fraudulent act in which the potential hacker sends an eMail to a consumer with the representation that the eMail originated from a legitimate establishment, such as a bank. The objective of the hacker, however, is to gather personal information from the consumer with the intention of using it for fraudulent purposes. A phishing attack can only succeed if

the user clicks on the supplied URL and updates their personal and banking details as instructed. One of the reasons why phishing has been so successful is that the user will see that the site they have been redirected to 'looks and feels' like their normal eBanking site, but in reality this site is a facsimile. This is achieved by the hacker interchanging letters from a different character set for the legitimate character in the site name.

Although phishing is seemingly a recent occurrence in eBanking, it has already reached disquieting proportions. Litan (2005) stated that by June 2004 phishing and identity theft losses had already exceeded an estimated US\$2 billion, with the finance industry becoming anxious that this could be just the tip of the iceberg. This has been supported by new statistics recently published by McCall (2007), stating that phishing attacks in North America have escalated exponentially in 2007 being estimated as high as US\$3.2 billion. McCall (2007) also found that in approximately 12 months leading to August 2007, about 3.6 million people from North America were victims of phishing frauds. During 2006 for the same period, about 2.3 million people fell victim to phishing. The M86 Security Labs (2010), who monitor phishing on the Internet, stated that between 9th August 2009 and 3rd January 2010, nearly 1.11% of all spam eMail sent over the Internet was phishing related.

'Dubai is not immune to cyber crime', as reported by Kaul (2003). In the UAE, there was an increase of 300% in hacking incidents from July to December 2002. Also reported by Kaul (2003), an ATM hacking exploit caused a loss of US\$3 billion. Although the percentage of actual hacking attacks have been considerably lower than the rest of the world, the profile, complexity and sheer fiscal loss within Dubai has been severe. This has given Dubai and the Middle East a reputation for lacking the necessary regulatory controls within their financial services industry to abate such crime, particularly when compared to the financial controls and legislation implemented within the past five years throughout Europe and North America. This is evident when trying to use a credit card issued from a 'non-approved' country, such as Dubai. The credit card often fails to qualify under the latest stringent standards imposed from online financial institutes such as PayPal.

Sambidge (2008) reports that within the first 10 months of 2008, 222 'Internet based' crimes were under investigation by the newly formed 'e-police' division of the Dubai police force. Of these, 87 were classified as fraud and financial crimes, 38 as hacking, and the final 92 were investigations in regards to defamation and extortion based crimes.

Very little is known about the actual amount of computer crime that has been perpetrated to date. Thibodeau states that,

'Government officials in North America estimate that only 20% of computer crime incidents are being reported because the agencies either don't have

the technical sophistication to discover the crimes or they want to keep bad news quiet' (2001, p1).

Thibodeau (2001, p1) also infers that this attitude is destined to change in the near future, especially with the Federal Deposit Insurance Corporation (FDIC), the Board of Governors of the Federal Reserve System, the Office of the Controller of the Currency, and the Office of Thrift Supervision's recent interpretation of the Graham-Leach-Bliley Act.

Governments and regulatory boards will start to pressure the banking and finance industry to be more forthright about its cyber and personal data infractions.

TechWeb News (2005) reported that the aforementioned US government agencies informed the banks that it was mandatory to implement a response program. This program would need to warn eConsumers of potential issues when data and information had been obtained using inappropriate methods and how this could harm the customer and cause inconvenience in a substantial manner. The consequences of this landmark interpretation are bound to have a substantial impact on the way the banking and finance sector looks at both its internal and external data policies and IT security.

The ISC (2008) Internet Crime Report from 2008 highlights that within the US alone there were no fewer than 275,000 Internet based complaints of which 90,008 were referred to law enforcement. The ISC (2008) also estimates that the yearly USD loss incurred by the claimants is approximately US\$265million an increase of 33% on 2007. It should also be noted that these are only the figures for those complaints forwarded to the ISC and not all cyber crimes within the US.

Sambidge (2009) reports that the UAE federal court system, which governs Dubai's legal framework, has just set up a special court to hear IT-related crimes. It is argued that these crimes need to have swift verdicts as the UAE is rapidly moving into an information based society and the industries affected, such as the economic and financial sectors, are underpinned by ICT and therefore prone to such crimes. Sambidge (2009) adds that these courts will be presided over by UAE judges who have PhDs in cyber crime and legislation.

From an individual perspective, not everyone who uses the Internet is security conscious. Although the vast majority of Internet users have a firewall implemented within their home or work IT environment, there is a tendency not to manage this environment appropriately (Dourish, Grinter, Flor, & Joseph, 2004; Rose, Khoo, & Straub, 1999). It is therefore understandable why security could be a major hurdle for potential Dubai eConsumers to engage in eServices.

1.3 The purpose of this study

The aim of this study is to investigate the influencing factors affecting the consumer adoption of eServices within Dubai; and to develop a new theoretical model incorporating enabling and inhibiting factors. This will be based upon the findings from the investigation and data analysis undertaken within this research.

To enable the development of this model, various government organisations, business and tertiary educational establishments were targeted in the investigative phase of this study. These organisations were chosen due to their predisposition for allowing researchers to approach their employees, students or membership, through authorised channels for the purpose of research.

Although there have been various studies that describe and explore technology adoption trends within the Emerging and Developing Economies (Chong, 2003; Davis, 1989; Nguyen & Johanson, 2008; Smith, Madon, Anifalaje, Lazarro-Malecela, & Michael, 2008; Venkatesh et al., 2003), there have been limited studies completed relating to rapidly progressing societies such as Dubai.

1.4 The structure of this report

This report is structured into seven distinct components. These being:

1. Introduction - providing the reader with an overview of this study, identifying the aims and objectives as well as providing a brief insight into Dubai and its culture;
2. Literature review – a comprehensive chapter that identifies the ‘golden threads’ between those elements which have an impact on the adoption of technology within Dubai, these include: Dubai – History, Demographics and State Profile; Dubai Cultural Traits; Technology Adoption Theories and Methodologies; Global eServices; and Dubai eServices;
3. Research methodology – explains the actual methods used in the collection and analysis of the primary data in relation to this study;
4. eServices analysis within Dubai – provides analyses, in both written and graphical form, of the raw data collected under the guidelines outlined within the research methodology chapter;
5. Theoretical model – forms the basis of this study providing the framework in which the analysis of the primary data can be base-lined. The theoretical model identifies the several factors that inhibit or enable the adoption of eServices within Dubai and how they interrelate with each other;

6. eServices comparison between Dubai and Advanced Economies – this section highlights the enablers, inhibitors and usage trends between Dubai and Advanced Economies; and
7. Conclusions and observations – this chapter provides insight into the overall data analysis focusing on the following areas:
 - Main conclusions and observations;
 - How does the eCommerce trends and usage align with other world regions;
 - Government and business policy implications and recommendations;
 - Comparison and contrast of findings with previous studies;
 - Limitations of this study;
 - Areas of future research.

2 LITERATURE REVIEW

The information age economy incorporates both traditional bricks and mortar firms and 'e' firms built on Information and Communication Technology (ICT). ICT also serves as the bridge or gateway that enables the traditional and the 'e' economies to interoperate effectively. Within this new economy, there is a diffusion of norms, cultures and the manner in which business is conducted in the information age. While in some cultures a handshake between business associates still seals a deal, it now needs to be augmented by a massive exchange of information. This can only be enabled by an effective ICT strategy. However, ICT cannot exist on its own; it must serve and be accepted by people and business. The business community of Dubai seems to have realised the enormous potential that ICT offers as a means to build strategic networks across Africa, Asia, the Arab world and India.

An ICT infrastructure cannot grow overnight and transplanted and forced into a culture that is unwilling or unable to accept it. In today's modern society, we speak of a clash of concepts rather than a clash of cultures. The ever-widening 'digital divide' continues to separate the 'haves' from the 'have nots' of the world. What is required for ICT to grow and flourish, within both developed and developing countries, is awareness. If a nation is to rise up the 'needs hierarchy', as identified by Maslow (1970), it must have sufficient support by the government and most importantly, a population that is ready to embrace technology. eServices are a manifestation of ICT along with Business to Business (B2B) and Internet Banking, and so forth. It touches homemakers, students, professionals as well as businesses and it gets personal with people's lives, affecting them in many ways. As an example, while B2B would allow a company such as Wal-Mart to source its products from South America through the supply chain and distribute it in Dubai, it would be eServices that would help a person sitting at home to browse thousands of products, select the required item, order it and pay for it online. One of the most important advantages of eServices is the ability to level the playing field between multi-national companies and the local corner store. eServices provides the opportunity for unprecedented access to markets, possibly providing the first avenue into true globalisation of markets. The eServices incorporated into this research are highlighted in *Table 2 - Types of eServices*.

Table 2 - Types of eServices

Service	Note
B2B	Business to Business: where transactions are carried out between two or more business partners. Typical examples are organisations that have a buyer and vendor relation and the transaction details are restricted to only these two entities.
B2C	Business to Consumer: where transactions are conducted between an organisation and consumers. Online shopping is a good example. An organisation may also step into this channel and buy from the business. Transaction details may be made public and much of the information, such as price and delivery, is in the public domain.
C2B	Consumer to Business: where an individual may sell directly to a business. The individual may be a small-scale industry or one with a home office.
C2C	Consumer to Consumer: where consumers sell directly to another consumer, either directly or by using an intermediary channel for support, advertisement and payment processing.
G2C	Government to Citizen: where government provides non-commercial and free information, where applicable, to citizens. Information provided can be forms, details of public utilities, infrastructure development plans, taxation rules, passport information, tourism, information about healthcare programs, and much more. Information provided is usually free of charge.
G2B	Government to Business: Where government gives information to business about business promotion policies, various taxation and incentive schemes, export promotion schemes, rules and regulations for starting ventures, various fees, procedures and clearances required, information about special economic zones and so on. Business can obtain this information usually free of cost.
G2G	Government to Government: Where different departments and government organisations are linked through a central system that integrates all the sub-systems. There is also connectivity at the backend to allow information and data to be exchanged between government departments. Such practices of integration allow easy transfer of data and quick navigation, besides reducing operating costs.
G2E	Government to Employee: Where government employees can communicate directly with departments such as wages, promotions, transfers and so on. The websites could serve to reduce the endless delays in getting queries resolved.

For eServices to develop, take root and have a large penetration base of adopters, a stable and viable economy is required, plus the right cultural traits and norms to allow new and emerging technology to be adopted. This chapter outlines a review of these areas and also discusses the perspective of global eServices and the existing eServices in Dubai. The main goals of the chapter are to describe the economy and culture of Dubai; understand different models of technology adoption in developing countries; and the extent of eServices available in Dubai.

2.1 Dubai – History, demographics and state profile

Dubai is one of the seven Emirates that form the UAE. It is the largest Emirate of the seven.

Ancient Stone Age nomadic people settled in the mangrove swamps along the coastline where modern day Dubai is situated. The remains of their settlements have been dated to 7000 BC. Civilisations of Byzantine and Sassanian empires controlled the Gulf areas and the people worshipped the god Bajir. After the Prophet Mohammed extended the teachings of Islam from Mecca, the people in the surrounding regions embraced Islam and the Caliph of Umayyad drove out the Sassanians and assumed control of it. Around 1050 AD, Dubai was known for its pearl industry and this fact is mentioned by Abu Abdullah al-Bakri, the Arabic geographer of the 10th century. For many centuries, the city served as a port and centre of trade for the Arabic region because of its strategic location, sufficient backbays and calm waters. This allowed ships to be outfitted while they berthed. The state came under British control in 1892 and gradually developed to acquire importance in the region (UNISA, 2005).

With the discovery of oil in 1967, the state underwent astronomical changes in its economy and with the influx of 'petro dollars', the region became the centre of 'geo-oil' politics. All the Western nations developed a keen interest in helping the region to flourish and exploit the oil resources. Unlike other petroleum economies, such as Nigeria or Venezuela where oil revenues have been squandered and a majority of the people live in poverty, Dubai and other Arab oil producing countries have a remarkable leadership with the great foresight to use oil revenues to develop their nations and invest in the future. The leaders of these regions have now begun to plan for a different future, recognising that at some stage oil resources will be depleted. Plans have thus been implemented to generate revenues and employment through trade and financial investments (eGov, 2008).

While the UAE has based its Gross Domestic Product (GDP) predominately on petroleum economies, Dubai has transformed itself into the commercial hub of the Middle Eastern region. It has moved out of the petroleum driven growth, into a

business and investment centre. For the year ending 2008, Dubai had a GDP of US\$257 billion and there are plans to achieve a year-on-year exponential growth of 11% to increase their GDP to US\$275 billion by 2015 (Dubai Statistics Center, 2008b). The main revenue earners are from new pillars of industry. These include tourism, real estate, construction, financial services and re-export; while petroleum and natural gas will have contributed an estimate of less than 6% to the GDP (Reuters, 2007).

2.1.1 Demographics

The Dubai Statistics Center (2010) reported that Dubai's population had reached 1.77 million, a increase of 7.1% on from 2008. The gender demographic consists of 1.37 million males and 407,000 females. Dubai's population is estimated to increase to 1.89 million by 2011 (Dubai Statistics Center, 2010). The current population mix is outlined in the table below,

Table 3 – Dubai's population demographics - 2010

Nationality	Population Percent
Emirati	13.5%
Indian	36.5%
Arab Expat	12.7%
Pakistani	12.7%
Bangladesh	9.1%
Filipino	4.3%
Other Asian	2.3%
Europe and Australia	2.1%
Sri Lanka	1.6%
Iran	1.5%
Nepal	1.4%
Other African	1.1%
North American	0.6%
China	0.5%
South American	0.1%

As one can see in *Table 3 – Dubai's population demographics - 2010*, the UAE Nationals who live in Dubai only make up 13.5% of the population. The majority (86.5%) are expatriates.

The estimated breakdown of Dubai residents coming from Emerging and Developing Economies is 97.3%, or 1.72 million people, and those from Advanced Economies is 2.7% or 48,000. The Dubai Statistic Centre (2009b) also identifies that approximately 685,000 Dubai inhabitants are blue collar workers from the construction and service industries. In relation to remuneration of Dubai residents, grouped by region, the Dubai Statistics Center (2009c) reported that the average annual income of the Advanced Economy households was US\$49,000, followed by Emirati households with US\$30,000, other Arabs with US\$18,500, Asians with US\$16,300 and lastly, construction labour camp workers were remunerated approximately US\$5,700 annually.

2.1.2 Building the ICT sector in Dubai

As inferred by Sampler and Eigner (2003), the ICT sector has greatly improved in Dubai and the government has invested heavily in the infrastructure to allow IT and Internet Technology Enabled Services (ITeS) companies to evolve. While IT companies develop and market software products, ITeS companies provide help desk and support services using the Internet and software applications. Some of the areas exclusively developed for promoting ICT include Dubai Internet City (DIC), Dubai Media City (DMC), Knowledge Village (KV) and Ras Al Khaimah IT Park. These are special free trade zones that are 100% tax free and allow 100% foreign ownership. ICT has a number of IT Multi National Companies, such as IBM, Microsoft, Oracle, Cisco, and Siemens, with combined employee strength of 5,500 and the plan to provide software development services and back office support to clients from Africa, India and the Arab nations. The infrastructure is very impressive but the city relies on foreign workers rather than Emirate citizens to run the operations. DMC encourages media organisations to set up a base and offers facilities for different TV companies, Internet media services, online magazines and other forms of media (DIC, 2007).

Pohjola (2003) has pointed out that ICT is perceived as one of the important drivers of economic growth in developed and developing countries. Access or denial to ICT is often one of the main reasons for differences in revenues between countries. The author speaks of the digital divide or the information poverty that exists between countries and points out that early adopters often have a sustainable advantage over other countries.

When one considers that developing countries such as India have invested in IT at a very early stage and many Indian IT companies are regarded as some of the best IT companies in the world, Dubai would wish to develop similar competence in the IT related field. The state has built the required infrastructure and many IT companies have set up offices in Dubai. As a result, ICT is gaining mass use.

Table 4 - Technology adoption in UAE provides statistics on increase in use of different technologies in the UAE.

Table 4 - Technology adoption in UAE

Technology	2003	2004	2005	2006
Main telephone lines in operation (thousands)	1,136	1,188	1,237	1,732
Mobile subscribers (total prepaid & post-paid) (thousands)	2,972	3,683	4,534	7,010
Mobile subscribers - prepaid (thousands)	2,495	3,186	4,007	6,278
Total Internet subscribers (thousands)	347	418	527	861
Dial-up Internet subscribers (thousands)	317	364	399	576
Broadband Internet subscribers (thousands)	30	56	128	285

Source: (Etisalat, 2008)

As seen in *Table 4 - Technology adoption in UAE*, the number of subscribers for Internet, dial-up Internet and Broadband Internet has risen by almost 80% in 2006 when compared with 2005.

According to Pohjola (2003), developing countries typically spend about 7.1% of the GDP on ICT infrastructure. The breakup is IT hardware 1.1%; office equipment 0.1%; software 0.5%, IT services 0.9%; internal spending 0.9%; total IT 3.6%; telecommunication 3.7% and total ICT is 7.3% of the GDP. The figures do not speak of the expenses in construction, land costs, power and other cost overheads. According to reports from the World of Information Technology and Services Alliance (WITSA) (2008), Dubai spent about 3.58% of the GDP on ICT in 2006. It is evident that there is potential for ICT growth in Dubai and consequently for eServices. ICT applications represent a huge market in Dubai. This investment in ICT may be one of the catalysts for multi-national IT companies focusing their investments in Dubai.

A more detailed review of ICT spending trends in Dubai is provided in Section 2.4 - Global eServices.

2.1.3 Foreign investment

Foreign Direct Investment (FDI) in 2006 has shown an increase of 13.4% over 2005; in 2005 it was 37.4 billion Dirhams, in 2006 it was 42 billion Dirhams. FDI has been made in various sectors, such as mining and manufacturing.

Table 5 - Dubai FDI inflows in million AED provides statistics about sectors in which FDI has increased or decreased.

Table 5 - Dubai FDI inflows in million AED

Main Sector	2005	2006	% Change
Agriculture	18	16	-20.0%
Mining	1,098	1,302	18.6%
Manufacturing	737	1,061	43.90%
Electricity and Water	39	46	19.90%
Construction	13,239	14,652	10.70%
Wholesale and Retail Trade	7,939	8,696	9.50%
Hotels and Restaurant	3	38	1054.70%
Transport and Communication	603	851	41.01%
Financial Intermediation and Insurance	12,931	15,025	16.20%
Others	830	780	-6.10%
Total	37,435	42,463	13.40%

Source: (FDI, 2007)

As seen in *Table 5 - Dubai FDI inflows in million AED*, the largest percentage rise in FDI was in the Hotels and Restaurant sector, with a FDI of 38 million Dirhams in 2006. However, the Financial Intermediation and Insurance sector had the largest value of 15,025 million Dirhams, while the construction sector had a FDI of 14,652 million Dirhams. The Manufacturing sector has shown an increase of 43.9%, with a FDI of 1,061 million Dirhams.

Table 5 - Dubai FDI inflows in million AED also indicates that foreign investors have gained sufficient confidence to increase investment in Dubai.

Table 6 - Origin of FDI in million AED

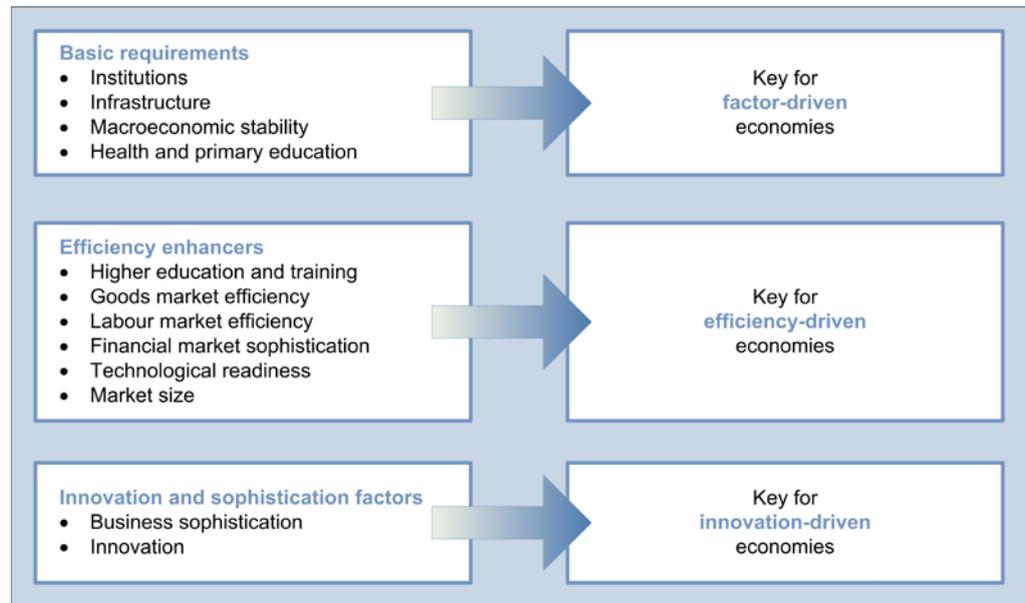
Origin of Investment	2005	2006	% Change
GCC Countries	979	1,208	23.40%
Other Arab Countries	516	565	9.60%
Non-Arab Asia Countries	16,169	17,569	8.70%
Europe	14,798	19,047	28.70%
North And South America	4,274	3,034	-29.00%
Oceania	592	911	53.90%
Others	107	129	21.30%
Total	37,435	42,463	13.40%

Source: (FDI, 2007)

Table 6 - Origin of FDI in million AED shows that countries from Europe have provided the largest FDI of 19,047 million Dirhams, with non-Arab Asia Countries investing 17,569 million Dirhams. North and South America invested 3,034 million Dirhams, representing a decrease of 29% over the 2005 values. Arab countries have invested 565 million Dirhams, Gulf Cooperation Council (GCC) countries 1,208 and Oceania 911 million Dirhams.

The Global Competitiveness Index is based on a measurement of each countries development of the 12 pillars of competitiveness, which include infrastructure, institutions, education, and technological readiness, as shown in *Figure 1- The 12 pillars of competitiveness*.

Figure 1- The 12 pillars of competitiveness



Source: (Porter et al. 2008, p8)

Porter et al. (2008, p8) have determined that there are three stages of economic development faced by a country and that to qualify as a 'Stage 3' country requires that country to be 'Innovation Driven' and their GDP to exceed US\$17,000 per capita. Porter and colleagues go on to state that the UAE, and therefore Dubai, has been the only Middle Eastern country to be grouped in the Stage 3 of country/economic development, along with countries such as the US, UK, Australia and Switzerland.

Porter believes that the UAE confirms its position as one of the most competitive economies, moving up by six positions to 31st place out of 134 countries, ahead of other Stage 3 countries such as Cyprus, the Czech Republic, Italy, Greece, Portugal, Puerto Rico, and Slovenia. The reason why Dubai is having one of the fastest growth rates within the world is that they are pursuing economic reforms and liberalisation policies and have actively supported economic diversification since the 1980s (Porter et al. 2007). One of the main fiscal reforms attributing to Dubai's development is the 'free economic zones' Policy, which Dubai pioneered in the 1980s. This policy is now widely duplicated and followed by other Arab Nations (Porter et al. 2007, p33).

2.1.4 Broadening the economic base

The government of Dubai is planning for the future by expanding the economic base and entering into other areas of trade and commerce. It is prepared for the fact that hydrocarbon reserves will be depleted, potentially, in less than two decades. UAE and Dubai governments have entered into eight bilateral trade agreements with the

GCC and the European Union (EU) to expand trade in products other than hydrocarbons. There are also plans to remove trade barriers. While in the earlier era trade agreements covered goods and products, the current agreements would also include investment and services and investment by GCC. There are efforts to increase the economic base by expanding into areas such as trading, investment, financial services, telecommunication and tourism. Although Dubai and UAE have industries such as aluminium smelting, they are manned mainly by high wage foreign workers and it remains to be seen to what extent Dubai can be cost competitive with low wage countries such as China. One of the main advantages that Dubai can obtain is that it can invest in other countries and this is one way to ensure that the oil revenues appreciate (Franco, 2007).

Dubai actually represents a huge market for items such as fresh and processed food, seafood, automobiles and automobile parts, cement, apparel, and toys. The Hong Kong Trade Development Council (HKTDC) (2007), reported that the state had imported about US\$89 billion of goods in 2006 while exporting non-oil goods worth US\$137 billion. While these figures may appear very attractive, most of the exports are termed 'Re-Exports' where Dubai imports products and then re-exports them to other countries, mostly other markets within the Middle East and Africa. The profit margin is much less in these types of commercial transactions. It is likely that in the future, other Arab and African states may decide to import items directly from the countries of origins, at lesser costs, and this would place Dubai in a huge trade deficit (HKTDC, 2007). The very nature of trade is under immense scrutiny to determine how long it can be sustained.

By proxy, being part of the UAE, Dubai has immense oil revenues. However, as of March 2008, the foreign exchange reserves were about US\$296.20 billion and in terms of Forex reserves, UAE is ranked 40 in the world. China, ranked 1st in the world, has US\$7.52 billion and India has US\$3.13 billion and is ranked 4th (SWF, 2008). Given this, the government of Dubai is not well placed to squander Forex reserves.

Perhaps, with foresight, money managers in the government have decided to invite foreign participation by providing lavish world class infrastructure and facilities in the form of construction, housing, public infrastructure and ICT. Dubai has also developed infrastructure such as the Dubai Industrial City (DIC) where foreign companies can set up regional Headquarters, such as IBM, HP, Cisco and Siemens. In relation to the Jabel Ali free zone, the government has been extremely proactive in encouraging companies to use these facilities for either manufacturing their products or importing them as complete knock down kits (CKD) and assembling them for domestic consumption and re-export.

Dubai uses a model in which the government spends huge sums of money to develop infrastructure, charges a nominal rent for lease of these properties or places rent control acts to prevent rents from rising, then extends 100% tax rebate to investing companies besides providing them with subsidised power and other utilities. However, despite the Dubai government placing a maximum rent increase on properties, unscrupulous landlords find loop-holes in which they could, at times, charge an increase of up to 100% for rent, especially during the boom years of 2005-2008. This lack of prudence by these landlords nearly priced living in Dubai out of the reach for normal working class individuals. Typically, companies in Dubai will hire foreign, low cost workers and then manufacture goods for export that are again free of customs duty. While it is expected that foreign companies would be investing in these free economic zones, the government needs to rethink its strategy of offering 100% tax exemption as the present economic model would become unviable in the future. The IMF had suggested that the UAE, and in essence Dubai, implement a 'value added tax' as an avenue to pay off its burgeoning debt. This was scheduled for implementation in late 2009 but has now been postponed indefinitely (Harnischfeger, 2009; Quinn, Walters, & Whiteoak, 2003). There are real concerns that if Dubai does introduce any new taxes it would destabilise their already fragile economy by creating a mass exodus of multi-national companies looking for other tax free havens in which to setup. Qatar, for example, is closely snapping at Dubai's heels and without the same level of debt that Dubai has amassed (Bruce, 2009; Harnischfeger, 2009; Quinn et al., 2003).

2.1.5 Dubai trade

Dubai as a trading hub takes up import, export and re-export of a wide variety of products. In 2006, Dubai imported products worth US\$59,910,428, exports were valued at US\$4,975,057 and re-exports were valued at US\$21,337,583. Please refer to *Table 7 – Non-oil Dubai external trade statistics 2006 in US\$'000* for values in USD of import, export and re-export of different product categories for 2006.

Table 7 – Non-oil Dubai external trade statistics 2006 in US\$'000

Product Categories	Import USD	Exports USD	Re-exports USD
Live animals	749,206	56,260	102,174
Vegetable products	1,872,401	53,508	635,004
Animal or vegetable fats & oils & their cleavage products	132,344	84,875	40,375

Prepared foodstuffs	1,630,193	676,069	434,192
Mineral products	627,905	266,380	51,943
Products of the chemical or allied industries	3,338,408	230,196	584,181
Plastics and articles thereof	2,022,793	203,027	720,170
Raw hides & skins, leather, fur skins & articles thereof	310,420	6,327	109,932
Wood & articles of wood	597,298	6,073	112,221
Pulp of wood or of other fibrous cellulose material	586,344	119,470	78,491
Textiles & textile articles	3,758,710	252,920	1,871,247
Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks	481,517	8,563	214,240
Articles of stone, plaster, cement, asbestos, mica or similar materials, ceramic products	1,033,840	283,537	496,489
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metals & articles thereof imitation jewellery; coin	12,807,819	1385480	6,552,553
Base metals & articles of base metal	6,224,785	1124200	857,086
Machinery & mechanical appliances	13,686,107	75,026	5,292,234
Vehicles, aircraft, vessels & associated transport equipment	7,367,459	38,149	2,278,445
Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments &	1,256,661	3,795	381,244

apparatus			
Arms & ammunition	6,141	647	882
Miscellaneous manufactured articles	1,406,728	99,793	520,326
Works of art, collectors' pieces & antiques	13,351	762	4,154
Total	59,910,428	4975057	21,337,583

Source: (DDTCM, 2008)

As seen in *Table 7 – Non-oil Dubai external trade statistics 2006 in US\$'000* items such as maximum value of imports were machinery and mechanical appliances and natural or cultured pearls, along with precious and semi-precious metals and stones. There is a trade deficit between imports, exports and re-exports of the value of US\$33,597,788 thousand. *Table 8 - Dubai top twenty import origins 2006* provides details regarding the top twenty import country origins for 2006. These are the countries from which Dubai imports the most goods.

Table 8 - Dubai top twenty import origins 2006

Country	Import US '000
China	7,683,077
India	6,337,966
US	4,917,574
Japan	4,071,269
Germany	4,071,160
United Kingdom	3,298,129
Italy	2,302,821
Switzerland	1,981,217
South Korea	1,792,358
Turkey	1,733,464
Malaysia	1,546,016

France	1,507,867
Belgium	1,359,168
Australia	1,239,410
Saudi Arabia	937,293
Brazil	850,352
Thailand	831,767
Singapore	817,544
Indonesia	725,793
Netherlands	710,175

Source: (DDTCM, 2008)

As seen in Table 8 - Dubai top twenty import origins 2006, above, Dubai imported the most items from China, India and US in 2006.

Table 9 - Dubai top twenty export destinations 2006 provides details of countries to which Dubai exported the most non-oil goods.

Table 9 - Dubai top twenty export destinations 2006

Country	Export US '000
India	1,507,983
Pakistan	330,103
Iran	227,551
US	180,628
Kuwait	179,378
China	134,451
Taiwan	122,924
Indonesia	119,902
Yemen	117,535

Saudi Arabia	112,755
Iraq	96,425
Switzerland	87,560
United Kingdom	85,850
Sudan	76,216
Bahrain	75,765
Egypt	67,997
Netherlands	67,888
Thailand	64,052
Morocco	63,410
Japan	62,319

Source: (DDTCM, 2008)

2.1.6 Dubai and Emiratisation

Hvidt (2009) infers that even though the government of Dubai has ceased in supplying free housing and free education abroad, UAE Nationals living in Dubai do enjoy a wide range of 'allowances' added to their salaries, such as free accommodation, health, transport, cost of living, furniture, support for children and an international travel stipend. Baxter (2009) also reports that UAE Nationals, who work for the federal government, have just received a 70% pay rise in 2009, on top of the 70% pay increase they received in 2007. While UAE Nationals make up 54% per cent of employees in federal and local government ministries, they account for less than 1% of all private sector employees (Gerson & Shaheen, 2009).

Godwin (2006) defines 'Emiratisation' as:

'An affirmative action quota driven employment policy that ensures UAE nationals are given employment opportunities in the private sector.'

Emiratisation is in essence a UAE Government decree that imposes stringent employment quotas on various business sectors with financial penalties and employment visa restrictions for non-compliance. Such job roles as Human Resource Managers and Banking and Finance Compliance officers are but a few such job roles which have been mandated as Emirati only positions (Godwin, 2006; Jones, 2009). Jones (2009) also states that in the Emiratisation of the Compliance

Officers within the Banking and Finance Industries has already been enacted into UAE law, which states:

'Article 9(1) of the Resolution requires each entity to which the directives apply to appoint a Compliance Officer who is a national of the United Arab Emirates. The Compliance Officer will be responsible for maintaining records, reporting suspicious cases to the Central Bank and the Authority and training employees.'

Godwin (2006) points out that the UAE Government has generated considerable negative publicity concerning the placement of inexperienced and unprepared Emiratis into employment, especially for roles where considerable experience is required so as to function adequately, causing concern from both local and Multi-national companies alike.

Private sector employers have negative perceptions of the ability of UAE Nationals to fulfil specifically mandated roles or to be as productive as expatriate workers. They are therefore reluctant to adhere to an Emiratisation quota dictated by the UAE Government, potentially creating a situation where expatriate workers are hired to make up for the shortfall of their Emirati colleagues (Randeree, 2009). Hafez (2009) and Salama (2009) have reported that this situation has now been exasperated by the fact that the UAE Government has introduced laws making it illegal for a private sector company to retrench Emirati workers without following very stringent guidelines.

The end result of public service employment and Emiratisation has created a situation where, in a majority of cases, Emiratis have less demanding employment roles, shorter working hours and a majority of their living expenses paid by the government. This, coupled with UAE legislation that mandates that all companies outside of the free zone must have 51% UAE National ownership, in the form of sponsorship, has in effect created a UAE National affluent class with considerable free time and a high disposable income (Hafez, 2009; Husain, 2007; Randeree, 2009; Salama, 2009).

2.1.7 Dubai SWOT Analysis

A top view analysis of the strengths, weaknesses, opportunities and threats (SWOT) to Dubai in relation to the economy and business potential is given below. The objective of using the SWOT tool is to assess the competitive advantage of Dubai and to assist in understanding the potential for eServices. The observations are derived from the 'Dubai in World Competitiveness 2005' repository and chapters used include 'competitiveness policy framework for Dubai' and 'Dubai in world competitiveness' (Garelli, 1997).

The main points that have emerged from the SWOT analysis are that Dubai has excellent infrastructure for trade and investment and the GDP is expected to grow at 12%. However, there is a high import level that consumes earnings and there is a danger that, with a very high level of foreign workers who send their money home, the economy could slide deeper into the negative.

More detail relating to the SWOT analysis is provided below.

Strengths

- Dubai has moved away from dependence on oil. Contributions to the GDP from other sectors are: services sector 65%, industry 34% and agriculture 1%. The services sector includes areas such as trading, transport, financial and non-financial services, real estate and business services, government services, construction, restaurants and hotels. The non-financial sector contributes 83.1%, financial 9.7%, the government and households' sector 7.2% and construction 13%.
- There is a consistent GDP growth of 12% over the previous five years and GDP per capita is US\$28,125. This indicates a stable and growing economy.
- FDIs are increasing and, with US\$2 billion or 7.7% of the GDP, this indicates that foreign countries find Dubai attractive. Investor-friendly policies and lower corporate taxes have encouraged multi-nationals to set up offices.
- Tourism has increased and contributed US\$4.8 billion in 2004. A number of free trade zones and ports are available.
- Dubai has a low unemployment rate of less than 1.7%.

Weaknesses

- Current Account Balance as a percentage of GDP has a deficit of US\$9.9 billion and the current account deficit is about 33% of the GDP. This is mainly because of the huge influx of foreign workers who send money back to their native countries.
- Balance of Trade deficit is US\$6.3 billion and this is 114% of the GDP. This is a very unhealthy situation as the country relies very heavily on imports and is subjected to global inflation with rising prices in local markets.
- Dubai still subscribes to Islamic laws and in some areas, alcohol consumption is prohibited and women face restrictions in how they dress. This deters Western tourists.

- The government sector has a high number of local employees and is considered as inefficient. Steps to privatise these enterprises have been discussed.
- Native Arabs have not earned a reputation for efficiency and innovation. The state depends mainly on foreign workers to manage business.
- There are no companies that manufacture cars or textile industries and only trading is done. There are no steel, cement and other infrastructure plants.
- Dubai is investing very heavily for the future. The large scale of construction and the Dubai World projects will cause a massive drain on the GDP. Its present growth model is based on future expectancies that may not be realised. If the future economy moves to another zone, such as China or even Africa, then Dubai would have thousands of square meters of deserted cities.

Opportunities

- Dubai is making use of its strategic location to serve as a hub for the Arab world. It can act as a gateway to the Arab world when the supply of oil is exhausted.
- The local population can be educated and trained to assume technical skills.

Threats

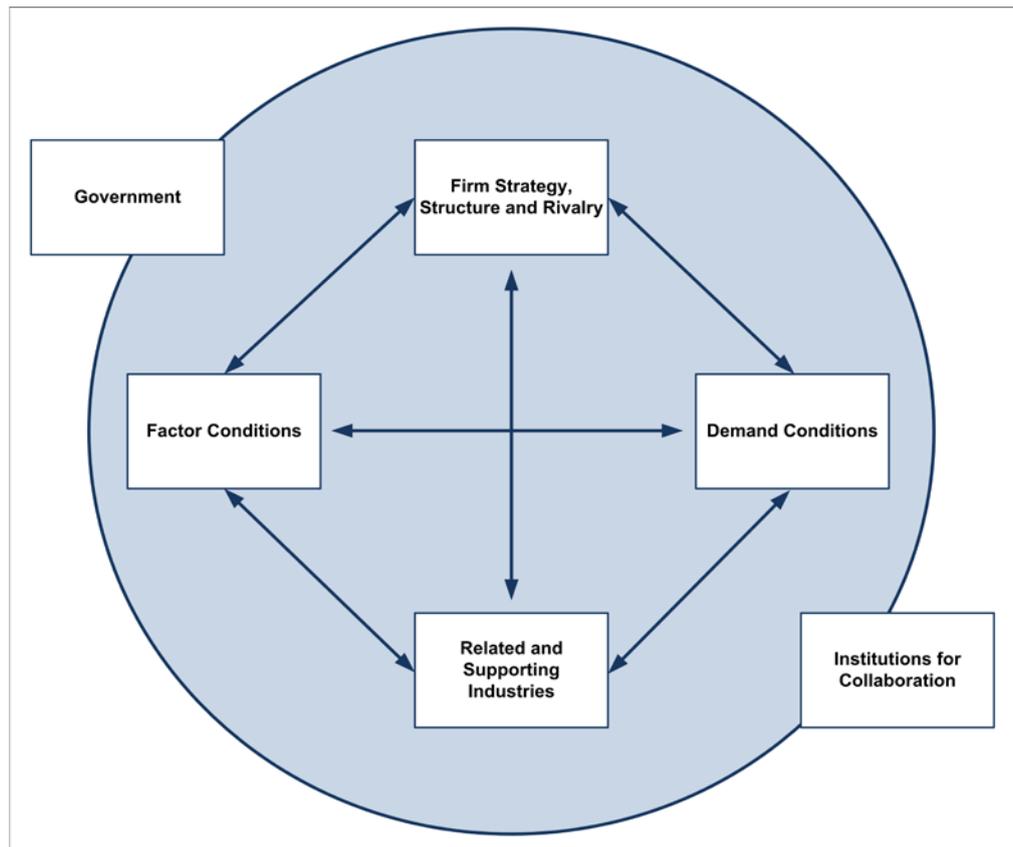
- Dubai faces competition from other states such as Kuwait, Abu Dhabi and Sharjah.
- Other cities such as Tripoli are developing very quickly and their countries have oil resources that are controlled by Western countries.
- The construction activity is funded by debt and trade and re-exports of goods manufactured in other regions. Once these other regions and countries start exporting, re-export would hit barriers.
- With a high level of imports, the GDP would be increasingly used to feed the population, and with earnings being sent outside by foreign workers, the cash reserves would one day go into the negative.

2.1.8 Porter's Diamond Framework

The Diamond Framework attempts to analyse the competitive advantage of nations based on four factors, shown below, and to seek to project the extent of competition that a nation can withstand when it enters the international market as a seller and producer of goods.

Figure 2 - Porter's Diamond Model for the competitive advantage of nations shown below illustrates the framework. According to Porter, understanding these factors would help Dubai know where it stands in the world, who their competitors are and the strategy that can be used to leverage its assets (Porter, 1990). The four factors are: factor conditions; firm structure and rivalry; demand conditions; and related and supporting industries.

Figure 2 - Porter's Diamond Model for the competitive advantage of nations



Source: (Porter et al., 2008, p8)

The framework is built on four main components and these are in turn driven by government policies. The four components are analysed below.

Government: The Dubai government has adopted strong pro-development policies with reference to promoting growth in the non-oil sector. Dubai has constructed numerous free economic zones and introduced many schemes that reduce the tax burden and fixed costs for industries by providing them with incentives and tax concessions. The score is positive in this factor.

Factor Conditions: Porter has pointed out that there are two factors, these being home-grown resources and highly specialised resources. Home-grown resources are items such as natural resources, raw materials and semi-skilled resources and these can be acquired with the right amount of effort. Natural resources are globally

acquired from developing or underdeveloped countries and some examples are minerals, crude oil, and timber. Availability of these resources in regions does not lead to competitive advantage as this factor can be replicated. As an example, Japan is at the forefront of technology, yet it imports almost all its raw materials. The factor of highly specialised resources is important and this refers to the skilled labour, capital and infrastructure, and intellectual property. While Dubai has ample capital, it lacks home grown or native talent. The skilled labour and intellectual property can be acquired by allowing an influx of foreign workers who would be willing to make Dubai their second home, provided the right kind of inducements are given. UAE has a long history of using foreign workers to run its infrastructure and industries but, unfortunately, much of those workers' earnings do not remain in Dubai. This is an issue that Dubai has to accept in the short term. The score is positive in this factor.

Related and Supporting industries: This factor refers to the setting up of clusters of supporting industries that act as feeder mechanisms for a mother industry. For example, an automobile manufacturing company such as Ford would require the support of hundreds of vendors and ancillaries. With globalisation, this factor becomes diluted since components manufactured in one continent are assembled in a car plant in another country. With the development of free economic zones and structuring them according to the needs of the core industries, this factor can be accommodated. The score is again positive in this factor.

Firm Strategy, Structure and Rivalry: This is a very important factor in analysing Dubai. While the other factors analyse the strength of a nation with the market demands, this factor analyses the strength of the business rivals. Considering Dubai as a firm, its main rivals are China, Taiwan, Korea, India and other countries that use low cost labour to mass produce products, such as textiles, apparel, small and big electronic items and other low cost-high volume products. If Dubai were allowed to be successful, their market share would essentially be cannibalised from other manufacturing countries such as China and India. Given this, China and India would have to essentially remain stagnant and allow Dubai to erode their market share. This does not seem likely. Moreover, with imported and expensive labour, and an absence of natural resources, the cost factor would eventually become high for operators in the free economic zones. Dubai presents a big market, so the score is negative in this factor.

However, considering the Dubai Government has set a mission to become the trading hub for the Middle East, the state has to leverage its key assets and prepare for the time when it would run out of oil revenues. The key assets of Dubai are its strategic geographic location allowing it access to the vast Middle East and African markets; its experience in using skilled and unskilled foreign workers; its capacity to

invest massive funds; the backing of the powerful Arab community and the goodwill and positive image it has nurtured through the years.

The next section analyses technology adoption theories and methodologies that explain the patterns of adoption in the developing world and the use of eServices across the globe. Finally, it analyses how eServices can be used in Dubai.

First, however, it provides a review of cultural traits in Dubai and the UAE, and examines how culture accepts change, new technology and the inhibitors and accelerators that exist for accepting change agents. The concept of systemic change along with a discussion on the movement and behaviour of social groups, from the agrarian age to the industrial age and then to the information age, is also presented. Some case studies of how developing countries have fared with ICT adoption are discussed and the lessons learned from each case are presented. Finally, a mapping of the lessons learned against Dubai's development strategy is presented in order to assess Dubai's readiness for the adoption of ICT.

Dubai's free economic zones

The free economic zones that have become a vital part of Dubai's strategic plans seem to be based on the cluster theory, as suggested by Porter (1998). He defined clusters as 'groups of interconnected firms, suppliers, related industries and specialised institutions in particular fields that are present in particular locations'. According to Porter, competitive advantage for a company is produced by the value that a firm is able to create for its buyer and this can be diagnosed through the supply value chain. He has further argued that innovation, improvement and change are critical in forming a competitive advantage by applying better methods to compete in an industry. Firms that operate in a cluster will manage to gain advantage over their national and international competitors if they can find new and better methods of production, building an economical supply chain and design, by linking elements of the value chain and permit knowledge spill over. For industries in a cluster to thrive, they need to manage and administer the whole supply value chain made of vendors, buyers, suppliers, distribution and sales channels and the employees.

Kuah (2002), while prescribing to the cluster theory, points out that this theory is not new. Since biblical times, certain regions have carved a name for themselves. Citing examples from the ship building industry of Glasgow, the IT sector of Silicon Valley in the US, the steel instruments from Sheffield in the UK and the Indian IT industry, Kuah argues that certain regions became famous clusters because of the availability of natural resources or because the climate favoured growth of items such as tea, precious metals, crops and so on. The fact remains, however, that clusters enjoy a tremendous advantage in the form of a pool of skilled personnel, higher influx of

technology, scale of economies and when managed properly, clusters do help a particular industry, community or group of people grow.

The key factors for a cluster to be successful are: enhanced supply chain, disbursing benefits to members in the community, a willingness to adopt new technology and ideas and a firm belief in innovation. The most important element for a cluster to be successful is a sustainable supply chain. Free zones such as the Jebel Ali are promoting clusters and have a rising concentration of industries such as textiles and apparel manufacturing, engineering goods, electronic items and other such products. By developing the free economic zones, Dubai is developing the strategic cluster theory and it is expected that, in due course, sufficient mass would be developed to enable specialised sets of services and product offerings to emerge.

2.2 Dubai Cultural Traits

Hofstede (1991, p5) refers to culture as 'the collective programming of the mind which distinguishes the members of one human group from others'. The psychologist argues that culture cannot be termed as the personal baggage of an individual but belongs to groups. In many countries, cultural boundaries are often the same as the geographical boundaries and people from a nation are stereotyped by their culture. Walsham (2002) speaks of culture as a dynamic entity that is all inclusive. Ho Chi Minh, the father of Vietnam philosophy on culture is that:

'for survival and for the purpose of life, mankind created and invented languages, script, ethics, laws, science, religion, literature, art, daily tools for clothing, dwelling and made use of them. All of those creations and inventions constitute culture' (Pham, Galla, Logan, & Stasis, 2003, p32).

It is culture that plays a very significant role in determining how a nation or a social group behaves. A forward-looking culture means one that is ready to accept new challenges and opportunities along with the risk factors. A traditional culture means one that is more risk averse and not ready to accept changes.

Hofstede (1991, 1994) and Kluckhohn (1962) have published considerable works on culture and how traditional commerce has been instigated and engaged by culture. While their research could be considered outdated, it has been reaffirmed by Trompenaars and Hampton-Turner (2001). Kluckhohn (1962) points out that there are three typical ages: Agrarian, Industrial and Knowledge. It could be argued that HH Sheik Mohammed wishes to take his country straight through to the information age in a far shorter timeframe than was entertained by Europe or the US.

2.2.1 Hofstede's Cultural Dimensions of UAE

Hofstede (2003) has created a framework to assess different natural cultures. This framework can be used to understand and predict the behaviour of cultures over a time period. The cultural framework has been used by industries and organisations

around the world to understand how people from different cultures are expected to behave. Hofstede conducted research among a large number of IBM employees and the study covered about 70 countries. He identified five primary dimensions: Power Distance (PDI); Masculinity (MAS); Individualism (IDV); Uncertainty Avoidance (UAI) and Long-Term Orientation (LTO) and each dimension was given an index value on a 1 to 100 scale. The indices can be used to assess and predict the national culture and behaviour, but not to assess an individual (Hofstede, 2003).

2.2.1.1 Power Distance Index - PDI

This index gives importance to the degree of inequality or equality among different strata of a nation. The index for UAE is 80 and the high value indicates that there is a high prevalence of inequality of wealth and power in the Emirates. The US has a score of 40 (Hofstede, 2003). When the index is high then it means that there are various groupings in the country based on the caste system and wealth and power is distributed among a few elite. Upward mobility of the lower classes is hindered and strict laws, rules and a strict authority that specifies what is allowed and what is not, govern the society. Such societies have a leader who is prone to be isolated and distant. He would not be mixing with people, fearing that his image would be diluted. Dubai has a monarch that is the supreme leader of the state and his word is law. Consequently, the population obeys any declarations and edicts issued explicitly (Hofstede, 1994, 2003).

2.2.1.2 Individualism Index - IDV

This index gives importance to the relationship that is reinforced by society collectively or by individuals. The UAE has a low score of 38 while the US has an index of 92. The UAE can be regarded as a collective society (Hofstede, 2003). In a collective society, the culture creates strong bonds among different classes of society and for people with IDV at 38, it means the words 'us', 'we' 'our' acquire more importance than 'I' and 'mine'. Such cultures typically have joint and extended families that live together and unquestioning loyalty to the group is expected and given. The groups formed are very cohesive with strong bonds. There would be senior members in the household, such as grandparents, who would be regarded as honoured members and command a lot of discipline and obedience from the younger generation.

Collectivism was the accepted way of life in all societies from the ancient civilisations to the pre-modern world. Given the uncertainties of life in ancient times, people felt more comfortable with people of their own group who they could trust and with whom they could hunt, trade and live peacefully. This also gave rise to clans. Elderly members of a family with the knowledge gained from their long life were always around to offer worldly advice to their children and grandchildren (Hofstede, 1991).

It should be noted that, with the industrial revolution, the societal norms were changed. In Britain and other countries the young and the fit that could work in factories left their villages and settled in the industrial towns. There was a life of hardship with meagre food and unhealthy living conditions. The old and the infirm were left in the villages and the settlements in cities were filled with nuclear families with single or two parents and their children (O'Brien & Quinault, 1993). This is an important consideration when analysing the culture of Dubai, as the UAE Nationals did not have to go to other cities and countries in search of work. In effect, the nuclear family concept cannot be applied to Dubai as most citizens have lived their entire life in one of the Emirates with their parents and grandparents. As such, these people have very strong and traditional values and cultures and bindings to their social group, hence the low score of 38 for IDV (Hofstede, 1994).

2.2.1.3 Masculinity Index – MAS

This index focuses on the role and power of women in a society and how they are treated. UAE has a score of 52 while the average scores for all countries covered in the Hofstede ratings are 50 and the US has a score of 72 (Hofstede, 2003). This score could be interpreted as indicating that women in UAE share equal power with men. As such, the culture of Dubai is neither feminine (caring), or masculine (harsh) as, traditionally, women have been regarded as more compassionate and caring than men. The analysis refers to the perception of women in society and while women may not be represented in positions of power in the government, the score indicates that there is not much gender differentiation. The conventional image, as depicted in the media, is that the Arab nations and the UAE dominate and subjugate women. The score of 52 indicates otherwise. As a corollary, the score indicates that women are not aggressive or eager to emulate men. The US, where discrimination on grounds of gender, race or religion is not permitted, surprisingly had a score of 72. This indicates that gender differentiators are very strong and women increasingly aspire to positions of power in that society (Hofstede, 1991).

2.2.1.4 Uncertainty Avoidance Index – UAI

This index gives importance to the amount of tolerance that a society shows for ambiguity and uncertainty. The UAE had a score of 68 while the US had a score of 46 (Hofstede, 2003). The index indicates that UAE residents dislike uncertainty and ambiguity. People from such cultures would feel more comfortable if they are subjected to rules, regulations and laws that specify what is acceptable and what is not. The score also shows that the culture and society has strong governance that ensures that the people have a steady and stable life. Such societies are not willing to change; they avoid risks and present inherent barriers to any new concepts of life and technology. Changes are regarded with trepidation. The low score of 46 for the

US indicates that their society is ready to accept changes and would undertake risks (Hofstede, 1994).

However, there is a positive side when UAI is compared with PDI. The combination indicates that while UAE people are risk averse and not ready to accept changes and new technology, they are ready to accept rules and changes in technology if the government and the monarchy shows its support (Porter et al., 2007; Sampler & Eigner, 2003).

2.2.1.5 Joint analysis of the indices

When all the indices are considered together, it can be seen that UAE and Dubai have a collectivist culture that is separated by discrete social classes, is risk averse, avoids change and new technology; the people like to obey authority and rules and accept what the government says. There is a great dependence on the isolated monarchy, creating a controlled society. Barriers to adopting changes and technology exist but they would disappear if the government endorsed these changes.

2.2.2 Understanding systemic Change

As identified by previous research, (Chong, 2003; Porter et al., 2007; Sampler & Eigner, 2003; Shalhoub & Al-Qasimi, 2006), Dubai has been rapidly developing from an agrarian based society to an information based society. Understanding and dealing with systematic change should not be taken lightly. Dubai will need to develop and introduce moderated thinking patterns to its populace to successfully achieve their goals of becoming an information age society (Al-Maktoum, 2005; Sambidge, 2010). Hart (1993) noted that it is widely held that individual belief patterns do not contain dynamic cycles. Cognitive maps of belief structures are typically linear in nature and very rarely contain feedback loops. Hart (1993) indicated that he determined that an exception to this trend occurred where people are specifically trained to think in dynamic circles.

Senge (1990) identified approximately fifteen patterns of 'dynamic cycles' found in commercial enterprises. These patterns cannot be readily articulated by diagrams. With the motive to assist corporate managers and their teams in the understanding dynamic relationships, Senge developed role playing and computer generated scenarios with a view to helping these individuals and their companies adapt. Typically, these scenarios would be incorporated into an enterprise's growth, change strategies and training.

Bronowoski (1976), in the BBC series and book, 'The ascent of man', has very strikingly depicted the evolution of man from being a nomad hunter to the farmer, the city builder and technology creator. He speaks of change as the driving force in which man, animals and plants had to adapt and accept or face extinction. In many

instances, change was forced on living things in the form of ice ages or climate change. Human civilisations changed due to the activities of raiders or depletion of resources. One point that Bronowoski reinforces is that 'change is inevitable, one has to adapt to changes or perish and it is a survival of the fittest'. Toffler (1970) spoke of how western society has changed and is undergoing a great level of structural change, evolving from being an industrial society to a super industrial society. Toffler forecast that the changes to come will overwhelm cultures and people and those who cannot accept them would be subjected to future shock. In short, the storm of change would not be short-lived but continuous and there is no place to hide and weather the storm.

These authors wrote their works in the early 1960s and 1970s when the concept of change and development was limited to agricultural and industrialisation ages. With the Internet, a new paradigm has evolved to create the information age.

Reigeluth and Garfinkle (1994) classify change into piecemeal change and systemic change. Piecemeal change is tinkering with a technology to modify it and it is essentially the same technology with some parts modified for extra functionality. Systemic change on the other hand involves system-wide changes in which a technology is totally changed or a new one is developed. This is an example of a paradigm shift that Kuhn (1970) spoke of more than three decades earlier. Systemic change creates its own market space, often uprooting existing technology. It offers products that never existed before. For example, the invention of the Internet and the proliferation of eCommerce has changed the face of IT (Earl & Bushra, 2001); the internal combustion engine that powered automobiles; the airplane that allowed us to fly; and the space ships that allowed us to enter deep space created immense systemic change.

2.2.2.1 Movement from agrarian to industrial society

Society's journey from the agrarian age through the industrial age to the information age has not always been without trauma and people have undergone great learning. While it took other countries thousands of years to move from one age to another, Dubai is attempting this leap in a couple of decades and this could be best achieved by understanding how people are coping with change.

When one compares Dubai with other societies who have undertaken the journey from one age to another over a vast period of time, such as England, Dubai is not without considerable success. They have modernised their country's infrastructure in a relatively short period of time (Porter et al., 2007, p33). Consequently, Al-Maktoum (2005) and Sambidge (2010) argued, it is appropriate that Dubai should be compared with other 'level 3' countries, such as the UK and US, in order to easier understand what enablers and inhibitors would assist the rulers and people of Dubai to assimilate to the information age. This focus on education will be at the centre of

Dubai's efforts to emerge from the global economic crisis that started in 2008. Ashton (1998) has written about the paradigm shifts in England, where the industrial revolution uprooted culture and norms. While changes in society have occurred since ancient times, the changes were gradual and took centuries to affect the farmer in a rural area. Ashton (1998) goes on to say that the industrial revolution had a great urgency and allowed no time for people to adapt to the changed circumstance. For many families this was very traumatic. Overnight, farmhands left their homes, leaving the old and the sick, abandoning the fields to move to the great city slums to work in unhealthy factories where the only certainty was death, either by overwork, by accident, by starvation or by disease. Yet people came in ever larger numbers because the decades before the industrial revolution had been very severe and people wanted to escape the grinding poverty and moved to the cities. The British government, in their greed or short-sightedness, only collaborated with the factory owners and no succour was extended to the factory worker. This is the paradigm shift from agriculture to the industrial society. However, this happened more than two centuries ago and it would be expected that new paradigm shifts would be better managed in the modern world. Is this really the case?

It is expected that China as a communist country would be a workers' paradise and collective bargaining with extreme powers given to labour unions would be the norm. However, the problem with China's labour force is that there is a twin parallel economy - the organised sector and the unorganised sector. The organised sector is what the west sees and the workers here are better paid than others, have acceptable working conditions and all other such facilities that western countries and companies demand. When western countries source their products, they place demands about the condition of the factory, wanting a safe working environment and processes that have less pollution and emissions. To meet this need, factory owners set up what are called 'front offices'. However, if the Chinese factory were to obey these conditions then their profit margins would drop, as the increased costs would mean less profits. In order to get over this problem, these factory owners operate what are termed 'shadow factories'. Liu and Liu (2004) infer that these are units that often operate illegally in squalid and unhygienic conditions and where workers are treated worse than animals. These sweat shops provide the maximum output for the factory owner who then claims that the production was actually from the approved workplaces. Such practices are never accounted for and estimates of workers employed in these shadow factories is many times more than the neatly uniformed workers who work in the front offices. Those working with hazardous chemicals often work without protective shoes and gloves and often stand or wade through toxic chemicals that eat away the skin and cause ulcers and sores. Workers who toil in the thousands of apparel factories are made to sit in tight and airless factories and suffer from constant respiratory problems. The level of skills required here are often

minimal and the workers are often immigrants who have left their farms in search of work in the cities. Since they are often illiterate and do not know their way around or are even aware of workers' rights, they make the perfect and willing victims of the growing Chinese economy. These workers often work for more than 18 hours per day, even on weekends and it is only disease or accidents that would make them stop working (Liu & Liu, 2004).

In terms of Dubai's societal development, Husain (2007) reported that the number of cash rich millionaires within the UAE had reached 68,100 - an increase of 8.3% on 2006. Consequently, it could be argued that vast independent wealth allows Dubai's residents to either purchase the expertise, or educate their populace to gain the expertise, to be able to technically manage their journey from the agrarian age to the 'knowledge age'.

The previous paragraphs have attempted to highlight the differences, paradigm shifts and systemic changes from the agrarian society to the industrial society. In both the cases discussed, existing social norms were broken down and people adopted a new culture. The next section will discuss the movement into the information age.

2.2.2.2 Movement to information age – The paradigm shift

The information age brought a new paradigm shift in the way that people worked, interacted and lived. Terms such as networking, knowledge society, digital divide and others came into common use. Friedman (2005), speaks of ten events or forces in the post-modern era of the 1980s that have triggered widespread changes in the way companies and economies operated and prospered. These forces served to flatten the world by removing barriers to technology and knowledge and connecting the whole world, effectively bridging the chasm that divided countries and people. The connected world that exists now was unthinkable a few years back.

The ten forces that brought these changes, Friedman (2005) argues, were:

1. Fall of the Berlin Wall;
2. Netscape goes public;
3. Workflow software that allowed collaborative sharing of online documents;
4. Open-sourcing where free open source code applications were available;
5. Outsourcing where an organisations business functions and processes were outsourced;
6. Off-shoring where companies from one country set up development cells in another country to better serve the customers;

7. Supply chaining, where efficient and lean supply chains moved goods produced in one continent to another;
8. Insourcing, where external agencies worked inside an organisation to look after its work processes;
9. In-forming, where people loaded vast content and information on the Internet; and
10. The steroids, where applications such as Internet Telephony, VoIP, IRC Chat and Messenger applications have reduced the cost and speed of one to one communication and have served to flatten the world further.

The term 'information society' was first coined by Machlup (1962) who identified five sectors of knowledge: research and development; information services; education; information technologies; and mass media. Machlup (1962) outlined these traditional kernels of knowledge and argued that a paradigm shift occurs when information is made available to all those who seek it, not just the elite few. When Machlup wrote his work, print media was the main mode of disseminating knowledge. Now the Internet has become the main source of information.

The Internet is a technology that removes the barriers to information flow between individuals, the state, financial information, entertainment, and commerce at the personal and organisation level (Castells, 2004). Organisations, cultures and entities that do not include themselves in this flow 'miss the boat' and are left out of the mainstream.

Fuchs (2008) looks at the phenomenon of information and knowledge as 'information capitalism' and knowledge and information as tradable commodities. Creation, transfer and application of knowledge occurs around certain information network nodes and the pace at which these nodes are created, stagnate or disappear is increasing rapidly.

This has given rise to a new sector of companies that deal only with helping organisations to build their information networks. These are called ICT companies. These companies can be set up very fast, can order the required computers and computer applications almost instantly, set up the networks by just plugging into the broadband network and, what is most important, begin to function within hours and relocate at the same rate. If today, Ford or Toyota were to set up a plant in a new location, the activity would take months, if not years. However, if Microsoft were to set up an office and development centre in the same new location, it can do so in hours.

Kazi and Wolf (2006) have written about the IT industry in India and the manner in which Indian IT companies manage their knowledge. They point out that with a vast global workforce that operates around the clock servicing clients in different countries, the understanding, managing and dissemination of knowledge within the organisation becomes a challenge. The Indian IT companies have set up knowledge management practices that function to gather the collective knowledge of employees who work in different projects. This represents the vital intellectual capital of the company. The collective knowledge includes source codes, case studies, troubleshooting tips, business proposals and many other artefacts. When this knowledge is documented and hosted on the knowledge management website, it can be made available to other employees. The result is a considerable shortening of the learning curve and new employees are able to learn from others, very quickly. This is the paradigm shift that ICT has achieved: portability; speed; and re-application of knowledge.

Womack, Jones and Roos (1990) trace the unique practices that Toyota initiated after the Second World War to increase productivity. These practices represent the first instances of knowledge management in Japanese companies. The Toyota pattern has been repeated in a number of Japanese companies. What has made Japanese companies so successful in a wide variety of industries ranging from automotive to electronics? What is the secret to the competitive advantage that these companies have? Drucker (1981, 2001) tried to provide answers to these questions first by discarding the concepts of oriental philosophy and Zen that were supposed to explain the Japanese resilience. Drucker (2001) also suggested that the main secret lay in sharing best practices in the form of implicit and tacit knowledge and information among the employees and diffusing it to the people who need it. A rigorous mindset, good knowledge of mechanical and electrical engineering that existed from the pre-war days, and the insight to apply it effectively, helped the country to go forward. By extensively reading the works of Drucker, it is obvious that he is explaining a culture where knowledge is continuously being recycled and redistributed.

As seen in *Table 1 – Major paradigm shifts in society*, presented at the beginning of this chapter, the shifts from the agrarian age, industrial age and information age are shown for indicators of transportation, family, business and education. The purpose of this table is to give the reader an insight into how these simple functional elements differ from age to age and how these elements would be considered and/or understood by society. The previous discussion in paradigm shifts in society has also highlighted some changes between the industrial age and information age. These are provided in *Table 10 - Changes in the industrial and information age*.

Table 10 - Changes in the industrial and information age

Industrial Age	Information Age
Mass production	Customised production
Adversarial relationships	Cooperative relationships
Bureaucratic organisation	Team organisation
Autocratic leadership	Shared leadership
Centralised control	Autonomy with accountability
Uniformity	Diversity
Autocracy	Democracy
Representative democracy	Participative democracy
Compliance	Initiative
One-way communications	Networking
Top down pyramid	Flat, networked

Source: (Reigeluth, 1997, p134)

As seen in *Table 10 - Changes in the industrial and information age*, the industrial age comprised bureaucratic and autocratic leadership and used a top down pyramid structure. It was focussed on one-way communication that used centralised control and autocracy with representative democracy and expected compliance while producing mass-produced goods. The information age on the other hand is flat and networked, and offers autonomy with accountability. It focuses on team play, and practices diversity with shared leadership and building cooperative relationships while offering customised products. A point to note is that information age practices are not only used by ICT companies but also by bricks and mortar companies such as Toyota, Lufthansa, and British Petroleum.

2.2.2.3 Implications for Dubai

The previous section has discussed the concept of paradigm shift and examined the important features of societal change from the agrarian age through to the industrial age to the information age. There are certain major implications for Dubai here.

The Dubai government has planned massive infrastructure projects and there are plans for overall development of industries, and particularly the financial and ICT sectors. The people of Dubai have been put on a high-speed bus on the ICT

expressway, with no stops. People have to either get on the bus or be left out. The government is planning a change strategy in a manner that is inclusive and one that would be less traumatic by putting a high emphasis on education and development of both the working and student national populations within Dubai (Al-Maktoum, 2005). The younger generation of Emirate citizens need to embrace the strategy, use the acquired knowledge of the Internet to shorten the learning curve, and prepare themselves to become part of a vast information society.

2.2.3 Adaptation and adoption of technology in developing countries

While ICT is an accepted way of life in developed countries, it acquires a different meaning in the developing countries within Asia, Africa and South America. It is important to note that although Dubai and the UAE are classified as developing, they are not 'poor developing' countries like Bangladesh or Botswana. Dubai has an average annual GDP growth of 12% since 2003 and GDP per capita is US\$28,125. However, in spite of the high GDP, Dubai is not regarded as developed or advanced mainly because their revenues depend on crude oil export and the distribution of wealth is disproportionate. As per the IMF country groupings, UAE and Dubai are regarded as other Emerging Market and Developing Countries (IMF, 2007).

The next sections will discuss the role of ICT and economic growth, and examine case studies on ICT and its impact in developing countries.

2.2.3.1 ICT and economic growth

Unsworth (2003) equates poverty and backwardness with lack of access to information and posits that the poor remain poor not because they have chosen to be like this but because they lack education and information that would help them to learn new skills or make use of their existing skills.

ICT is regarded as a driver for growth with potential to combat poverty and encourage sustainable development. Small, Medium Enterprises (SMEs) in many developing countries have stagnated because of lack of growth opportunities. This is essentially because they have very poor access to knowledge and information, reducing the capacity of these firms to compete with international players. With poor information, SMEs have no way to understand the market potential and needs beyond their immediate society. Year after year, the poor farmer would be forced to buy at exorbitant interest rates and prices from the same seller and sell at cheap rates to the same buyer, who is often the same entity. In addition, in developing countries, the SME is forced to use the services of a middleman who gets his own percentage from every deal and regulates all information flow and opportunities. Such incidents lead to an information 'black hole' from which the poor are not able to crawl out. Globalisation often has a minimal impact at the regional level in developing countries. These societies do not have the ability or capability to harness

the opportunities and processes that arise, as they are not in the mainstream of development. As a result, weaker and less economically developed countries, particularly with no natural resources such as minerals or crude oil, are often not able to enter into negotiations with international parties. When information flow is poor and outdated, there is no advanced knowledge of the services, rights and opportunities and all too often, the aid that trickles down is further diluted by corruption and misappropriation of funds. When the poor marginal farmer who lives on micro land holdings does not have information about new crop varieties, new techniques of farming, new markets, new pesticides and livestock farming methods, then the farmer would be doing what his ancestors did and he would never get out of the debt trap (McNamara, 2003).

Tambo (2003) speaks of the importance of using ICT as a strategic tool to combat poverty and backwardness. However, he cautions against the mindset that ICT is a magic wand that can remove poverty from a nation. It has the potential to address the problems of poor communication and gives the opportunity to breach the barriers created by inefficient government machinery. Even if people are not immediately able to make use of the available information, its availability is an initial trigger point and their awareness rises accordingly.

The impact of ICT and the long-term effects it has on developing countries has received much debate. There have been failures as well as successes in the anticipated results of ICT. There are also questions about the ICT beneficiaries; whether new economies have increased the divide and provided cover to only the social elite while the socially and economically backward remain where they are. The next sections provide some case studies of ICT applications in developing countries.

2.2.3.2 ICT Development in Vietnam

Nguyen and Johanson (2008) recently presented a case study on ICT development in Vietnam. Their study gives special reference to the cultural barriers of accepting a new technology and the desire of the government to transform the country into a knowledge society. Nguyen and Johanson's empirical study involved interviews conducted with 132 official interviewees and the subsequent development of a model for a knowledge society.

Nguyen and Johanson (2008) argued that for a society to be termed a knowledge society, it needs to have two main characteristics: critical body knowledge and body mass with adequate knowledge repositories; and an ICT structure that can leverage the assets. A knowledge society is more than an information society; it is a society built on shared knowledge. The whole nation has to benefit from the advantages that a knowledge society can give.

On the surface Vietnamese culture appears to be homogenous, yet there is a vast ethnic, geographic and religious diversity. The country has a very strong agricultural base, providing employment to 75% of the people and, since prehistoric times, the society has been agrarian. Vietnamese culture places a lot of importance on ancestors and the elderly and, in this context, is similar to Dubai and the UAE where elders are held in great respect. After a series of wars almost polarised the country, Vietnam has embraced globalisation with the Doi Moi process. There are now a number of changes observed in government policies and strategies for development, and improved agricultural methods. The economy has changed for the better with agriculture showing a 5.5% annual growth (Nguyen & Johanson, 2008).

However, the interviews conducted by Nguyen and Johanson (2008) suggest that there is a clash of cultural values with modern development. They state there is a 'maelstrom of uncertainty and conflicting behaviours in Vietnam where tradition often confronts risk and change'. These authors point out that the clash and uncertainty has been mainly due to rapid urbanisation; variances in the external markets that created and destroyed wealth; increasing numbers of rural poor who are kept out of the development projects; adoption of new values that threaten the old cultural values; outdated education methods; and avoidance of law.

A few incidents are presented by Nguyen to illustrate the distrust surrounding ICT and globalisation in Vietnam. The following example referencing Vietnam is important when the factor of technology adoption is concerned.

In 2002, Vietnam exported large amounts of shrimp and catfish to the US and these products were preferred by US consumers over local US products. This created a large backlash as US producers protested that Vietnam farmers were lowering their prices because of the subsidies given to them by their governments. US producers lobbied to impose an import tariff of 64% on products from Vietnam. This resulted in a huge drop in demand for products from Vietnam and threatened the livelihood of more than 100,000 catfish farmers, many of whom had borrowed heavily to finance their produce. The Vietnamese government believed that their farmers would have been able to expand and grow their crop yields through exposing them to better training and the implementation of a more robust ICT infrastructure. However, the anticipated result did not eventuate and the farmers were unable to take advantage of potential opportunities and markets. A further consideration is that Asian countries often use excessive pesticides and fertilisers to make the plants yield more. In many cases, the toxic substances find their way into aquaculture, fruits or flowers that are to be sold. The US and European markets enforce very strict levels for the amount of toxic substances allowed in food products. There is a very good chance that if after repeated detection of toxic contents beyond the permissible level, imports would be banned. The introduction of ICT and urbanisation has created a huge

requirement for land and the only land available is frequently fertile land traditionally used for farming. Farmers habitually give up their traditional farmland, with some compensation, before going to live in urban dwellings. While their living standard has undergone a huge change, they do not have the education or training that would enable them to make a living. This phenomenon has created a huge problem with millions of farmers rendered without a living and the government has not made any plans to rehabilitate them. The knowledge economy has created a sharp and steep divide between the knowledge workers who have a lot of new-found wealth and flaunt it; and the poor in the mountain regions where about 90% of the people live on less than a dollar a day. To make ends meet, the poor have taken up anti-social activities such as smuggling, drug running, pornography, prostitution and other such ill-effects. Along with corruption, these developments threaten the moral and cultural fabric of Vietnam (Nguyen & Johanson, 2008).

2.2.3.3 ICT Development in Thailand

Sanzogni, Whungsuriya, and Gray (2008) presented a case study on ICT implementation problems faced by the Bangkok Investment Corporation (BIC) while implementing ICT in Thailand. The case highlights the grass-root problems that organisations and countries face when they attempt to bring in new technologies and concepts without adequate training of the workforce. According to Sanzogni, Whungsuriya, and Gray (2008) there were five issues that impacted on the implementation of ICT, in this case, Customer Relationship Management (CRM) applications. These are:

1. Unreliable telecommunication infrastructure and technology;
2. Unreliable services and technical support;
3. Inadequate technical knowledge and lesser level of skills among the workforce;
4. Communication barriers between the local contractors and employees and the foreign managers; and
5. The national culture that tends to adversely influence these factors.

The education system in Thailand, according to Sanzogni, Whungsuriya, and Gray (2008) does not impart any critical thinking skills. In addition, the ICT sector depends mainly on foreign workers who may not reveal all they know to the local workers. This creates a spiral of perpetual dependence. A vast majority of BIC staff members are from western countries and the customer services staff are also foreigners (Sanzogni et al., 2008). Almost the same conditions exist in Dubai (DSC, 2009b).

The BIC business model required very heavy use of the Internet and over the years as the number of staff and business grew, the company expanded to multi-location units. Connectivity between the units, as well as with the external network, became a primary business need. The business faced specific problems due to six main causes:

1. Inadequate telephone line maintenance and administration that lead to frequent downtime of the Internet;
2. Local ISP providers had no inclination to honour the service level agreements they made with their customers and they often resorted to false and misleading advertisements;
3. Lack of education, skill sets and knowledge among the local employees who did not understand the importance of the organisation's business model and goals;
4. Lack of a sufficient pool of skilled local talent that could be absorbed into the company;
5. Lack of English skills that made it difficult for the local workers to understand the guides, books and documentation provided by the company; and
6. Different communication styles between the locals and the foreign workers (Sanzogni et al., 2008).

As a result, the company had to scale back its expansion operations. Consequently, they suffered loss of business and opportunities and potential customers were attracted to competing organisations based in other countries.

Sanzogni, Whungsuriya, and Gray (2008) documented the following lessons which emerged from the case:

- There should be adequate support for ICT in the form of infrastructure, Internet connectivity, and the availability of bandwidth assured on a 24x7 basis.
- If locals are to be hired, they should be sufficiently trained with both on-the-job training and theoretical training. The extent and depth of orientation would depend on the nature of the work expected from the employees.
- If ICT implementation and development is taken as a national strategy of growth, there should be training and education at the grass-roots level. This should be the responsibility of the government.

- Contractors and vendors should acknowledge the importance of adhering to contracts and service level agreements. They should be made aware that non-compliance or misguiding customers is an offence punishable by law.
- English remains the most common language for businesses, and government should undertake programs to ensure that children are taught sufficient English language skills.
- Foreign companies desiring to set up offices in developing countries should give sufficient attention to local cultures, customs and 'backwardness' of the local people who may not be as advanced as expected.

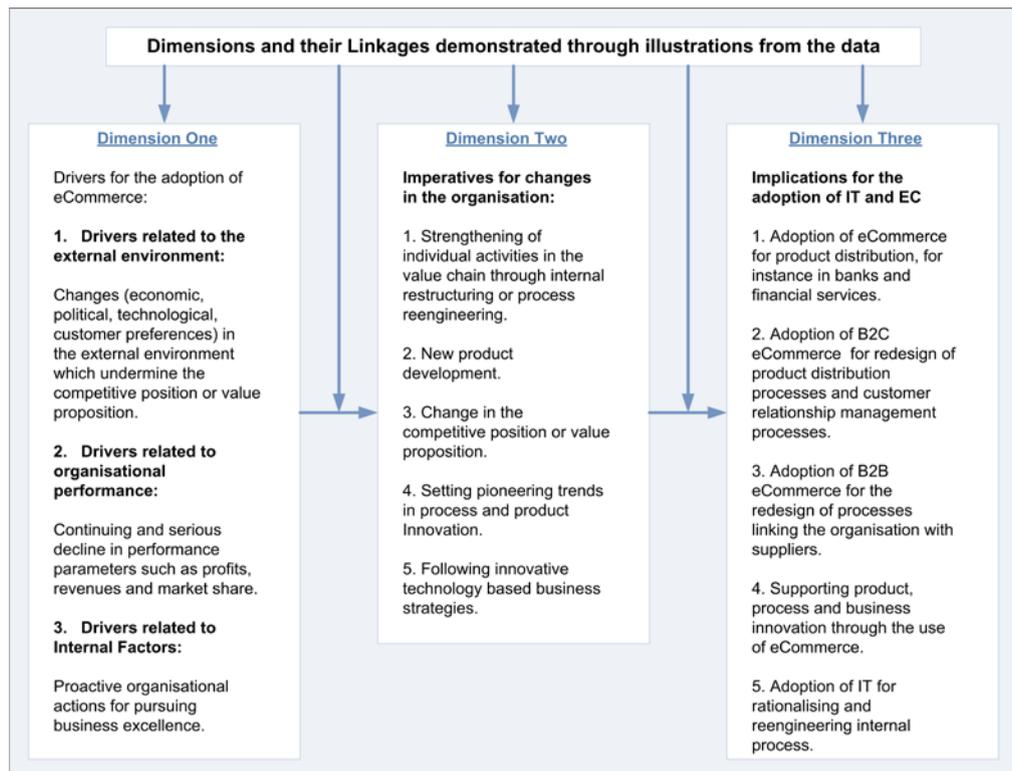
2.2.3.4 ICT and eCommerce in India

Tarafdar and Vaidya (2004) have written about ICT and eServices adoption in India and the great success that Indian IT companies have achieved. The study analysed eighteen Indian companies from eleven industries that adopted eServices. It examined different factors related to the environmental and strategic imperatives. About 100 employees in these companies were interviewed to determine their perceptions and views about computer adoption. Tarafdar and Vaidya stated that the eServices activity in the country had grown to about US\$275 million by 2002 and estimated that by 2010, the Indian IT industry would be worth about US\$100 billion.

The study points out three important dimensions that can accelerate adoption of eServices. These are: external environment; organisational performance; and compulsions that the internal management faced. Compulsions refer to the internal pressure exerted by the top management to introduce computers. The authors report that economic liberalisation started in the 1990s when many foreign companies were permitted to open their units and a number of foreign-owned assembly and manufacturing plants were established. These companies brought in the best practices and the latest business models built using current IT systems. Indian companies became aware of the advantages that adoption of IT systems would give them.

Although India has achieved the status of having some of the best IT companies, the country is still developing. Approximately 70% of India's poor live in rural areas and the disorganised agricultural sector gives employment to about 67% of the people. Tarafdar's study highlighted the three dimensions mentioned earlier that lead to the huge growth of ICT and these are illustrated in *Figure 3 - ICT dimensions adoption and their linkages*.

Figure 3 - ICT dimensions adoption and their linkages



Source: (Tarafdar & Vaidya, 2004, p10)

Dimension 1, shown above in *Figure 3 - ICT dimensions adoption and their linkages*, is made up of a number of drivers that have lead to the adoption of ICT. Dimension 2 explains the change imperatives in the firms that were created by the drivers of Dimension 1, while Dimension 3 identifies the implications when ICT and eServices are adopted. Note that an organisation can be a company that has taken up business activities. It can also be a country or region that is involved in business activities for profit or for social growth of its people. The dimensions are briefly explained below.

Dimension 1: According to Tarafdar and Vaidya (2004), there are three drivers that encourage an organisation to take up ICT and eServices. Driver 1 relates to changes in the external environment, including political, economic, customer preferences, and technological. These would invariably undermine the competitive advantage and position of the organisation. Driver 2 is related to the organisational performance, including severe changes in the market share, profits, revenues and other business imperatives. Driver 3 is related to the internal factors, such as the proactive organisation initiatives that are designed to make the business successful.

In essence, Dimension 1 refers to the changes that the company must face to survive. If the company does not accept these drivers, then there is a possibility that the business may become non-viable and be forced to shut down. While many public sector organisations that function under the protection of the government may

choose to ignore these drivers at their own peril, private organisations do not have this luxury.

Dimension 2: As pointed out by Tarafdar and Vaidya (2004), the drivers from Dimension 1 force a number of change imperatives in the organisation and these are shown in Dimension 2. The impact of the drivers could lead to enhancing activities of individuals by either re-engineering the internal process or through restructuring the organisation. Some organisations may even take up development of new products to face the changes brought by the competitive position. The new product is designed to enhance the value proposition. The change imperative may also include product innovation or setting up new trends in process development, adopting best practices and innovative technologies to meet the goals of business strategies. To a certain extent, these change imperatives are voluntary and a company can either take up the new recommendations or ignore them. By taking up a strategic change management program, the firm is able to enter the flow of the new economy. By ignoring the changes, it would remain stranded in its place and ultimately collapse. These imperatives are in line with prior discussions on how changes forced man to evolve.

Indian IT companies have mastered the skill of managing change. Wipro is regarded as one of the leading IT companies in India and the world. Initially selling cooking and edible oil, it later made Dot Matrix printers and computer hardware. Recognising the changes taking place in the world, the company ventured into developing IT solutions and is now one of the leading global IT services providers. Incidentally, sister units of Wipro still sell cooking oil, and some units still sell Dot Matrix printers.

Dimension 3: Tarafdar and Vaidya (2004) have described a number of instances of ICT and eServices adoption and different types of functional areas and processes. These adoption incidents would essentially happen after the company has accepted the drivers from Dimension 1 and adopted some of the change imperatives given in Dimension 2. ICT can be adopted for the distribution of products, financial services, engineering and consumer goods, services and other areas. It can also be used for redesign of the customer relationship management process and the product distribution process, as well as linking the products to the organisation and the suppliers to create the supply chain management. It can also lead to giving support for the business innovation strategy that the company may bring in with ICT and eServices.

To a large extent, the three dimensions, the change imperatives and the implications for adopting ICT and eServices are relevant to an organisation, a country, and the individual. Individuals make up an organisation and the social culture and organisations create the nation. If any group misses out on these concepts, then they would be left out of the mainstream development flow and languish where they

are. Barriers of culture and tradition in the adoption of technology and a failure to recognise change agents can only be detrimental to economic growth.

The case study presented by Tarafdar and Vaidya (2004) is very pertinent to this thesis, as the lessons learned have wide implications for Dubai. In summary:

- Organisations, cultures, countries and individuals, collectively called entities, are faced with a number of drivers over which they have no control. The drivers are related to the external environment, organisational performance and internal factors. These forces tend to exert and act as change agents and entities have to recognise them, take corrective action or perish.
- Depending on the change drivers, certain change imperatives are forced on the entities and the entities have to recognise these change imperatives and take the required action. Some of the change imperatives are: strengthening of the individual activities through internal restructuring; developing or modifying new products; changing the value proposition of the products and services offered; and adopting innovative business strategies.
- Implications for adoption of ICT and eServices practices refer to areas or departments in the organisation that could use ICT and eServices. These are in areas of product design, distribution and supply chain management, customer relation management, redesign of the processes, support of product process and business innovation, and in the engineering and internal processes.
- The study of Indian companies shows that their value proposition increased along with their competitive position after they adopted ICT and eServices. Value proposition refers to the increase in value of an organisation after some changes have been implemented and this may refer to additional capacity, specialised services, reduced throughput time, reduction in rejection, and so on.

2.2.3.5 Measuring the impact of IT implementation benefits in Namibia

Lubbe (2000) has presented an interesting case of measuring the impact of IT implementation in Namibia. The country is regarded as poor and developing and while IT has been implemented in a few areas and industries, there are other priorities for the nation. The question of evaluating benefits of IT is often asked and the following case has been considered because it has addressed this issue. The author quoted a number of sources to indicate that all IT investment decisions are problematic as the IT community is reluctant to submit itself to evaluation of the investments. This unwillingness may be because of the lack of tools and models used for evaluation. Conventional tools used for asset valuation cannot be used

here as the costs and benefits associated with computer systems are difficult to quantify. Growth areas are focused on hardware, software, applications, diffusion of IT, increase in end-user development and users as well as increase in Information Systems (IS) managerial practices. Lubbe (2000) infers that there are a number of factors that encourage the growth of IT and these include relative advantage, competitive pressure, consultant support, managerial time, economic factors and technical factors. The main motivating factor for IT development often comes from the owner who wishes to acquire computers to run and manage the business.

Since the benefits of IT implementation are traditionally measured against the costs, the most common appraisal methods include cost-benefit analysis, return on investment, payback, internal rate of return and net present value (Lubbe, 2000). But while these give a measure of the accounting indicators, there are less chances of measuring the intangible benefits. Lubbe highlights why measuring the impact of IT is so difficult. These include elements such as the definition and tracking of IT related costs, which is too narrow and limiting as it relates to the software and hardware costs only. Lubbe has observed that, typically, managers are reluctant to include costs such as consumables, power, use of floor space and others and want these costs to be passed on to the end-user department. The tracking of IT expenses is done as per the budgets sanctioned, there are no return on investment (ROI) calculations and there is a tendency to include hardware as an asset expense. This reduces the cost impact of the variable cost. There is also a tendency for departments and managers to acquire computers more as a status symbol rather than as a productive tool. Lubbe argues that when the cost of IT implementation and the tracking systems used for cost benefit analysis is flawed, the cost assessment of impact of IT will be in error.

The above case has highlighted a few important factors to be used to assess the impact of ICT. These are:

- There should be a system that properly tracks the costs of IT implementation. Without reliable cost estimates, it is difficult to judge the cost to benefit analysis results.
- ROI calculations for IT investments may be difficult since it is not always possible to estimate the income obtained from IT investment. There are certain intangible benefits such as the ability to retrieve information as and when needed, share information between different departments and organisations, track the productivity and reduce the time of delivery.
- The IT system has to converge and align with the organisation objectives.

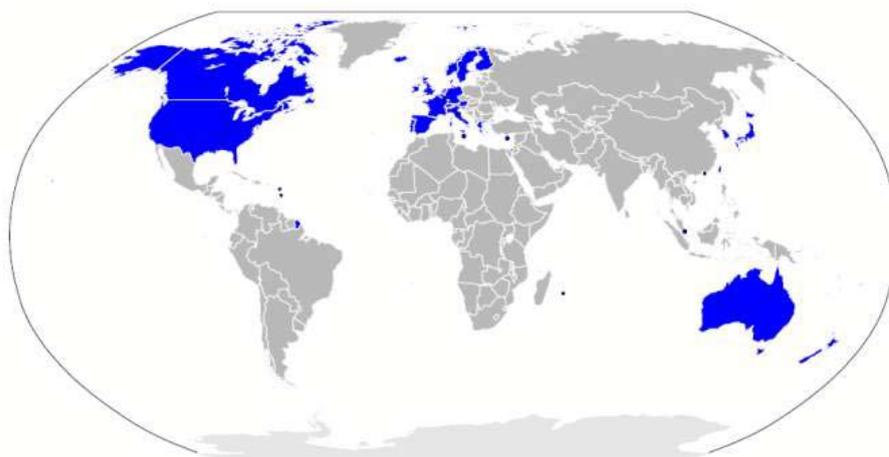
2.2.4 Mapping the lessons learned with the Dubai Development Plan

The aforementioned case studies have identified several key lessons learnt that need to be understood and mitigated for Dubai to continue to be successful. *Section 7 - Conclusions* will analyse Dubai's capabilities to continue with rapid expansions of their ICT landscape and thus provide an infrastructure that will enable eServices organisations to flourish.

2.2.4.1 Advanced Economies and Emerging and Developing Economies

The IMF's two-part classification - Advanced Economies and Emerging and Developing Economies - was developed over time to facilitate analysis through a reasonably meaningful organisation of data. Typically, those countries that are classified as Emerging and Developing Economies are either newly industrialised with buoyant economies, or are entering the industrial age. Those countries and regions classified as Advanced Economies, however, are heavily industrialised with a very mature and established economic market.

Figure 4 - Advanced Economies and Emerging and Developing Economies



Source: (IMF, 2008, p2)

Figure 4 - Advanced Economies and Emerging and Developing Economies shows the Advanced Economies in blue and the Emerging and Developing Economies in grey.

Table 11 - Advanced Economies and Table 12 - Emerging and Developing Economies identify the countries that make up the two cultural exposure groups (Emerging and Developing Economies and the Advanced Economies). This allows for classification (into two distinct subject grounds) of the analysed primary data collected in relation to this research.

Table 11 - Advanced Economies

Advanced Economies		
Australia	Iceland	Portugal
Austria	Ireland	Singapore
Belgium	Israel	Slovenia
Canada	Italy	Spain
Cyprus	Japan	Sweden
Denmark	Korea	Switzerland
Finland	Luxembourg	Taiwan Province of
France	Malta	China
Germany	Netherlands	United Kingdom
Greece	New Zealand	United States
Hong Kong SAR	Norway	

Source: (IMF, 2008, p2)

The IMF (2008) has classified the Advanced Economies countries into four regions, these being:

1. Major Advanced Economies;
2. European Union;
3. Other Advanced Economies; and
4. Newly Industrialised Asian Economies.

Table 12 - Emerging and Developing Economies

Emerging and Developing Economies		
Afghanistan	Gambia	Papua New Guinea
Albania	Georgia	Paraguay
Algeria	Ghana	Peru
Angola	Grenada	Philippines

Antigua and Barbuda	Guatemala	Poland
Argentina	Guinea	Qatar
Armenia	Guinea-Bissau	Romania
Azerbaijan	Guyana	Russia
Bahamas	Haiti	Rwanda
Bahrain	Honduras	Samoa
Bangladesh	Hungary	São Tomé and Príncipe
Barbados	India	Saudi Arabia
Belarus	Indonesia	Senegal
Belize	Iran	Serbia
Benin	Iraq	Seychelles
Bhutan	Jamaica	Sierra Leone
Bolivia	Jordan	Slovak Republic
Botswana	Kazakhstan	Solomon Islands
Bosnia and Herzegovina	Kenya	Somalia
Brazil	Kiribati	South Africa
Brunei Darussalam	Kuwait	Sri Lanka
Bulgaria	Kyrgyz Republic	St. Kitts and Nevis
Burkina Faso	Lao PDR	St. Lucia
Burundi	Latvia	St. Vincent and the
Cambodia	Lebanon	Grenadines
Cameroon	Lesotho	Sudan
Cape Verde	Liberia	Suriname
Central African	Libya	Swaziland

Chad	Lithuania	Syrian Arab Republic
Chile	Macedonia	Tajikistan
China	Madagascar	Tanzania
Colombia	Malawi	Thailand
Comoros	Malaysia	Timor-Leste
Democratic Republic of Congo	Maldives	Republic of Togo
Republic of Congo	Mali	Tonga
Costa Rica	Mauritania	Trinidad and Tobago
Côte d'Ivoire	Mauritius	Tunisia
Croatia	Mexico	Turkey
Czech Republic	Moldova	Turkmenistan
Djibouti	Mongolia	Uganda
Dominica	Montenegro	Ukraine
Dominican Republic	Morocco	United Arab Emirates
Ecuador	Mozambique	Uruguay
Egypt	Myanmar	Uzbekistan
El Salvador	Namibia	Vanuatu
Equatorial Guinea	Nepal	Venezuela
Estonia	Nicaragua	Bolivia
Eritrea	Niger	Vietnam
Ethiopia	Nigeria	Yemen
Fiji	Oman	Zambia
Gabon	Pakistan	Zimbabwe
	Panama	

The IMF (2008) has classified the Emerging and Developing Economies countries into eight regions, these being:

1. Africa;
2. Africa, Sub-Saharan;
3. Central and Eastern Europe;
4. Commonwealth of Independent States and Mongolia;
5. Developing Asia;
6. ASEAN;
7. Middle East; and
8. Western Hemisphere.

These classifications will be used in determining the cultural influence of the research respondents within the proposed technology adoption model identified within *Section 5 - Theoretical Model*.

2.3 Technology adoption and methodologies

Technology adoption is the concept of individuals harnessing and accepting technology in their everyday life. One of the earliest innovative products, other than the Stone Age axe, was the wheel. According to Daniken (1968), the wheel existed during the time of the ancient Incas in South America, but they had not yet grasped the concept of the fixed axle that makes the wheel useful to roll loads. Instead, the Incas used the wheel as a toy. This is the earliest case of technology being available but not put to constructive use. Daniken also noted that people from ancient Mesopotamia, as far back as 5,000 BC, used the potter's wheel and that graves dating back to 3,700 BC contained remains of wheeled wagons.

Throughout history, there has often been resistance to new technology developed to help change life for the better. Bennett (1997) speaks of how the early steamboats were received by the mariners of the early 17th Century. People wondered where they could get coal or wood to burn and power the ship in the middle of the ocean, and the powerful sailing ship manufacturers lobby treated the invention with disdain. A ship that did not need wind was a strange concept to seafarers and was, as such, initially unacceptable. It took years before the steamboat gained common acceptance. However, the steamship eventually did gain popularity and proved its worth when it could sail against the tide and was not reliant on the trade winds.

Similarly, states Sachner (1989), when the first escalator was installed at Coney Island in 1896, it ran empty for quite some time. People were afraid of this new device. The management of Coney Island hired an amputee with a crutch to ride continuously on the escalator. This was designed to illustrate that the device was very easy to use, even for the disabled. Unfortunately, urban myth states that this approach backfired when stories arose that the amputee lost his leg on the escalator. Urban myth or not, this still highlights the inhibitors that affect the adoption of technology.

As seen in the preceding paragraphs, many viable technologies have been regarded with apprehension. People have refused to adopt them, largely through fear, and developed a resistance. This is an important concept to understand. One must empathise with the fears of people if technology adoption is to be deemed successful, inclusive and available for mass use. Of course, technology adoption is based largely on personal choice - people can either choose to adopt a new technology or persist with the old. In certain cases, people are forced to upgrade and this is an involuntary adoption of technology (Fishbein & Ajzen, 1975).

2.3.1 Digital divide

Williams (2001) speaks of how the term digital divide was introduced by President Bill Clinton and Vice President Al Gore in a speech in early 1995 in Knoxville, Tennessee. While the term initially referred to the gap between people who had access to computers and those that did not, the term gradually acquired a new context with the arrival of the Internet. This term then came to refer to people who had access to the Internet and those that did not. Now that the Internet has become quite commonplace, the term is used to signify social, economic, geographical and ethnic technological inequality. It also refers to the gap between people who are able to use ICT effectively and those that cannot.

The term digital divide thus denotes more than having a computer and Internet connection; it also includes being able to capitalise on the opportunities that are provided. A job seeker with the right skills would be able to browse the positions vacant for hundreds of organisations, read the work requirements and post his resume, all without getting up from his chair. On the other hand, if a person with the same skill sets had to physically visit organisations, find any job openings and submit a resume to each, they would probably manage just a couple of visits. So knowing how to use the Internet technology as a tool for increasing personal gain is a good way to begin adopting technology.

With the development of the Internet and ICT, the term 'knowledge worker' has acquired a new meaning, even though the term was first coined by Drucker in 1959, a considerable time before the Internet explosion of the 1980s and 90s (Drucker, 1983). Drucker considered a knowledge worker to be 'one who works primarily with

information or one who develops and uses knowledge in the workplace'. At this time, the Internet did not even exist as a concept and solid-state electronics had not yet emerged. Huge vacuum tube diodes were being used to make rudimentary transistors. It could be argued that the knowledge worker would have an edge in a tough job market but, as inferred by Datta, Sony, and Bino (2007), this would be dependent on what skills were on offer and what is the root cause of the market depression effecting the employment downturn. Bhidé (2000, p6) provides an excellent example of this phenomenon, with reference to the boom and bust within biotechnology:

'In the early 1990s financial markets seemed to take the view that genetic engineering would help cure every disease that afflicts mankind. Companies whose name included some part of the words biology, technology or genetics could issue stock without any obvious route to profitability. To replenish the IPO pipeline, VCs courted PhDs and MDs with implausible business plans. Then the bottom fell out. According to primary data, the total external financing raised by U.S. bio technology firms fell by more than half in just two years – from over US\$5 billion in 1992 to under US\$2 billion in 1994.'

Conversely, in a recent Gartner (2008, p1) press release it was stated that:

'Enterprises worldwide are operating under circumstances in which a significant portion of the people who understand their mission-critical systems are eligible to retire during the next five years. Organizations should not be surprised to find that 25% to 30% of their employees with legacy skills will be eligible to retire in the next three years.'

Gartner (2008) also inferred that by 2010, more than one-third of all technology projects will be driven by the need to deal with skills obsolescence thus again showing the reliance on knowledge workers and that the enterprise will need to take the necessary risk mitigation to ensure that this trend does not adversely affect their business and competitive edge.

Mehra, Merkel, and Bishop (2004) noted that there are wide-spread discrepancies in the use of the Internet among different geographic groups of the world, different ethnic groups in a country and region, and between urban and rural areas. These gaps continue to widen as the pace of technology increases. Mehra and colleagues argue that the divide is more a social gap and represents a division of the new knowledge capitalists and the deprived bourgeois who do not have the means to access what is available on the other side. Naisbitt (1982) states that in 1920 the ratio of blue-collar workers to white-collar workers was 2:1 whereas in 1980, this trend had reversed.

2.3.2 Diffusion of Technology

Rogers (1995), in his book 'Diffusion of Innovations', argues that innovations are diffused into a society and its social groups through different communication channels. This method is very important when it comes to forming models of consumption, and to a certain extent, has given rise to the trend of 'keeping-up with the Joneses'. Rogers (1995) explains the mechanics of the why and how and the rate that innovations, new products and technologies are spread through different social groups and cultures. The findings hold true for technologies, consumer goods, food items and so on. Rogers (1995) began the study in diffusion of innovations to find the effectiveness of advertisements used in broadcasts. In 1950, many new products were introduced into the market and these could be termed innovative products but they were not new inventions and very few people had a chance to use such products. The study revealed that, contrary to expectations, print media or TV advertisements were not the main reason why people bought products. Rogers argued that people bought goods according to their 'classification' in terms of new product adoption - either as early adopters or innovators, secondary adopters, tertiary adopters, quaternary adopters or laggards.

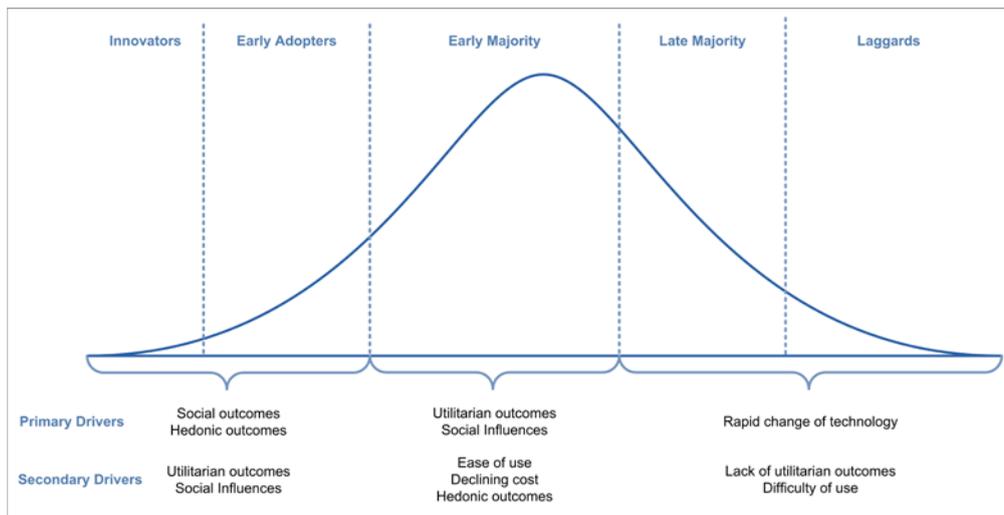
Rogers (1995) asserted that it would be innovators who would first try out a product or adopt a new technology. This group was often well educated, came from well-to-do families and had a high net worth. This group also commanded respect in their society. Next in line were the secondary adopters who would wait and watch to see what the innovators had to say about a product. This group would buy a product only if the innovators endorsed it. The tertiary adopters would wait and watch even longer to see how the innovators and the secondary adopters felt about a product to ascertain that the quality and price was right. If everything was acceptable, they too would adopt the product. The quaternary adopters were the next in line and would require further reassurance that the product was indeed suited for their needs before making a decision. The laggards were the last in line. They were frequently the oldest among the group and the last ones to buy or adopt a technology.

Rogers (1995) argued that, in a closed society, it would be much more effective for manufacturers to first target the innovator group and encourage them to buy a product or adopt a new technology, and then endorse it. This method of advertisement is still being utilised widely by sports goods manufacturers, fashion producers and others. Celebrities, such as sport stars or film stars, are seen to be using a product and consequently sales pick up. However, overuse of this method or multiple endorsements by a star could lead to overexposure and loss of efficiency of the medium.

2.3.3 Technology adoption lifecycle

Brown and Venkatesh (2003) based their article on the lower than expected sales of PCs in the US domestic market in 2003. Leading manufacturers such as Gateway, Dell, Apple, AMD and others had assumed that sales would increase once the cost of PCs was lower than US\$1,000. These predictions had been made by a number of leading marketing agencies who assumed that people interested in technology would buy more products once the technology became affordable. Brown and Venkatesh (2003) reported that the market researchers did not consider whether price was the only barrier for those interested in buying a PC. Brown and Venkatesh (2003) call this the 'non-adoption phenomenon' and it is very important when the question of mass consumption of a technology or removing the digital divide needs to be considered. The model proposed by Rogers (1995) was slightly modified by Brown and Venkatesh (2003) and is illustrated in *Figure 5 - Technology adoption life cycle*.

Figure 5 - Technology adoption life cycle



Source: (Brown & Venkatesh, 2003, p 77)

In Brown's and Venkatesh's (2003) model there are five categories of technology adopters: innovators, early adapters, early majority, late majority and laggards. According to Brown and Venkatesh, for any innovation, 16% of the adopters are innovators and early adopters, while 34% are early majority, 34% the late majority and the remaining 16% are laggards. Non-adopters are not included in this model since it is assumed that everyone would ultimately adopt the technology. As shown in *Figure 5 - Technology adoption life cycle* there are a number of primary and secondary drivers for each category.

Table 13 - Example factor definitions

Factor	Definition	Detailed Factor
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Hedonic Outcomes	The pleasure derived from PC use	Applications for fun (e.g. games)
Utilitarian Outcomes	The extent to which using a PC enhances the effectiveness of household activities	Applications for personal use (e.g. Quicken) Utility for children (e.g. Encyclopaedia) Utility for work-related use (e.g. Spreadsheet) Reduced utility due to obsolescence of current PC
Social Outcomes	The change in status that coincides with a purchase decision	Status gains from possessing current technology (e.g. people look to you for advice) Status losses due to obsolete technology at home (e.g. people do not look to you for advice)
Social Influences	The extent to which members of a social network influence one another's behaviour	Influences from friends and family Influence of information from secondary sources (e.g. news on TV, newspapers, etc.)
Barriers	Factors inhibiting adoption	Rapid change in technology, and/or fear of obsolescence Declining costs mean that people would presume that costs would keep reducing and wait till they felt that prices had reached the lowest level. High cost Ease/difficulty of use Requisite knowledge for PC use

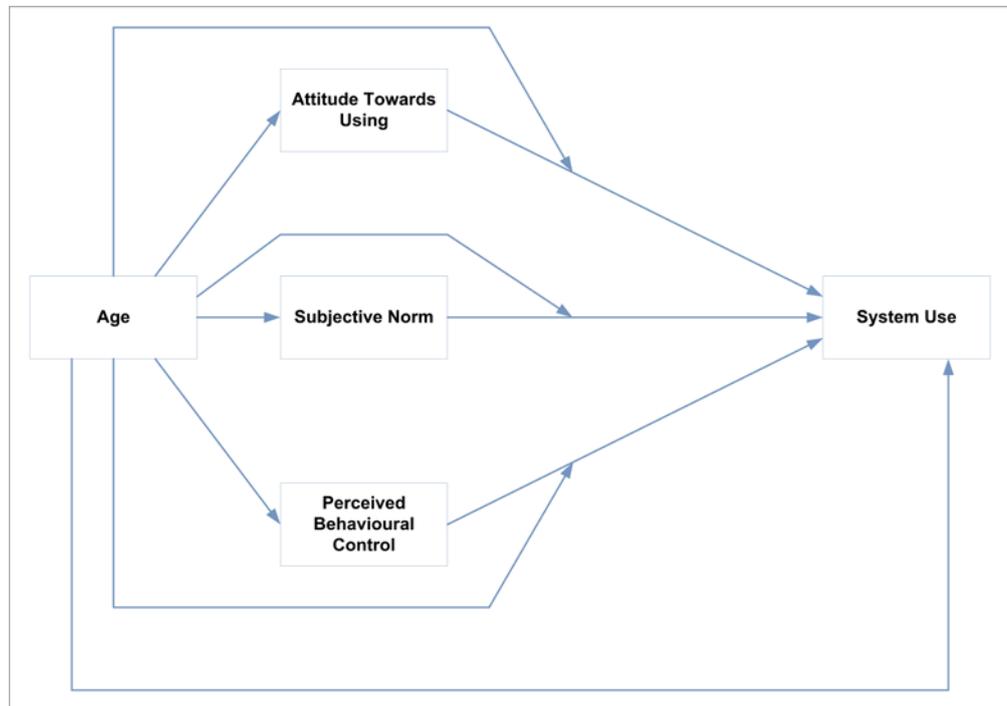
Source: (Brown & Venkatesh, 2003,p 78)

2.3.4 Implications of age and technology adoption

Morris and Venkatesh (2000) reported details of a study involving 118 workers that investigated the age differences in individual adoption and sustained use of technology in an organisation. The theory of planned behaviour, shown in *Figure 6 -*

Effects of age on technology adoption, was applied to the research. Morris and Venkatesh reported that workers of younger age groups had a more tolerant attitude while using new technology and were more willing to use it, while senior age group workers had some hesitation while using new technology.

Figure 6 - Effects of age on technology adoption



Source: (Morris & Venkatesh, 2000, p379)

Morris and Venkatesh (2000) reason that with the increasing spread of technology in the marketplace, age plays an important role on how technology is adopted in an organisation. Arguing further, Morris and Venkatesh point out that age differences in people can affect the way that information is processed. This therefore has an impact on older workers' performance of computer-based tasks, such as data entry and inventory management. Only by understanding the underlying drivers of individual technology acceptance and usage decisions can organisations effectively deliver appropriate support mechanisms designed to help the user to perform the tasks.

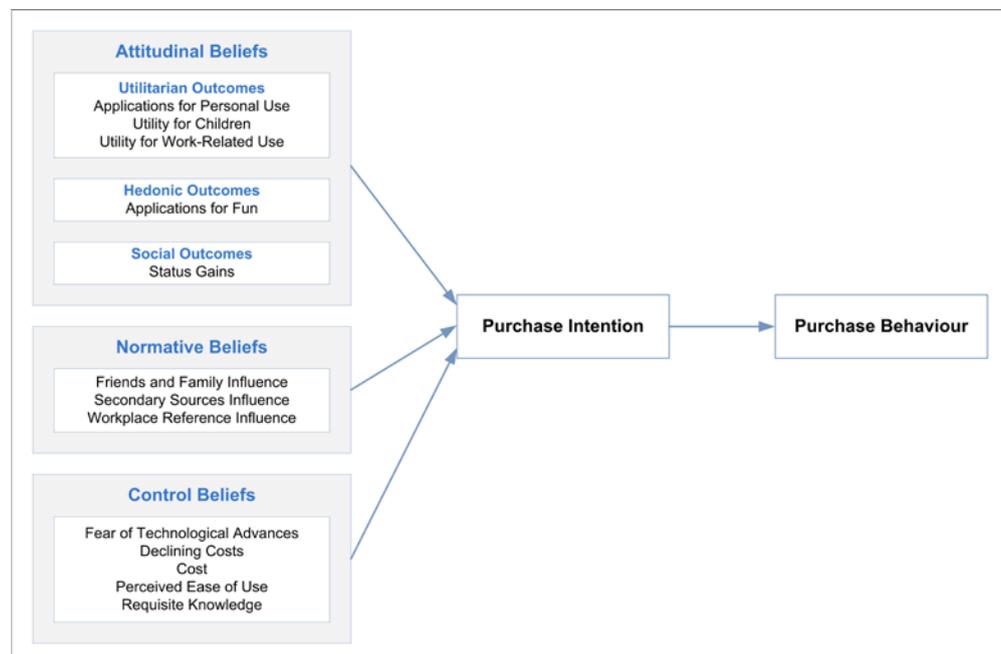
2.3.5 Challenges for technology adoption in homes

Venkatesh and Brown (2001) wrote of the challenges for technology adoption in homes. According to their research conducted in American households, PC adoption is influenced by factors such as hedonic and utilitarian outcomes and by social outcomes, such as status in the society. Venkatesh and colleagues also reported that issues related to the quick changes in technology and the fear that the products bought may become obsolete, influenced non-adopters. Technology implementers

have to consider the influence of social and hedonic influences, as well as the cost factor.

Studies within the Venkatesh and Brown (2001) research showed that when users had to buy lower end computers, cost consideration was important. However, while buying higher end computers, other factors such as performance, RAM, processor and other features were considered more important than just the cost. Fear of the product along with the cost act as main barriers for non-adopters as they tend to be influenced by the frequent advertisements of new features. While the study was related to the PC market, the arguments could hold true for any new constantly evolving technology and market.

Figure 7 - Model of household PC adoption



Source: (Venkatesh & Brown, 2001, p73)

Figure 7 - Model of household PC adoption provides the reader with a graphical representation to illustrate that purchase intention and purchase behaviour is reinforced by a number of factors: attitudinal belief, hedonic outcomes, social outcomes, normative beliefs and control beliefs. All these lead to the technology adoption behaviour and this is equated with the purchase behaviour as adoption and purchases are regarded as commitment. Attitudinal belief is made up of factors such as utilitarian outcomes that include applications for personal use, utilities for children and for work-related purposes. These are the core beliefs that would make a person adopt technology and they form the topmost tier of the factors. The next group are the hedonic outcomes. Certain technologies are adopted only for the hedonic pleasure they give. Social outcomes include factors such as the status gains - technology is adopted just because it would give the adopter some kind of a social

status. For some people, this outcome is more dominant than other factors. People who adopt a technology because of this factor would be labelled innovators in Rogers' (1995) model of technology diffusion. Normative beliefs are formed by external influences - friends, family, secondary sources and by interactions with the workplace. People in this group would tend to fall in the secondary and tertiary groups of Rogers' model. Venkatesh and Brown (2001) suggest that this approach is very prevalent in close social groups, in organisations and where people belong to a network of friends. Typically, people from this group would wait until someone they know has tried out a product. The decision to adopt the technology or abandon it would depend on the feedback they receive. In today's connected world, with communities such as Orkut and Facebook, people from across different geographic regions ask for feedback about a particular product or technology and/or offer advice, opinions, and experience of a particular technology or product. Workplace influences also play a very strong role, as people tend to trust the people they work with everyday. Control beliefs represent the barriers to adoption of a technology. One such factor is the fear of technological advances seen to threaten or overwhelm a person who would not be able to cope with the changes. Another factor is cost. It has been observed that as time passes, technology becomes cheaper and people often prefer to wait hoping that the price would reduce further. Venkatesh also suggests that this influence does not last for a long time. Ultimately, the person would adopt the technology at its current performance features and cost.

2.3.6 Theory of Reasoned Action - TRA

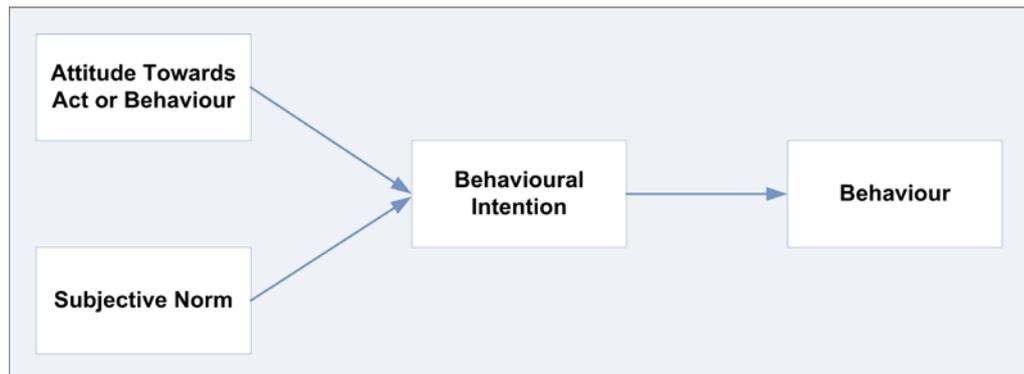
Originally developed by Fishbein and Ajzen (1975), the Theory of Reasoned Action (TRA) is based on social psychology concepts. Fishbein and Ajzen (1975) argued that people's voluntary behaviour can be predicted by their attitude to that behaviour and how they think other people would view them if they carried out that behaviour. Behaviour is formed by people's attitude when it is combined with factors of subjective norms. There are three types of constructs for TRA: behavioural intention (BI); attitude (A); and subjective norm (SN). The relationship between these entities is: $BI = SN + A$.

If a person has an inclination for a particular type of behaviour then he would display it; their intentions are typically influenced and directed by the norms and their attitude towards behaviour. Behaviour intention is used to measure people's relative strength of intention to carry out certain behaviour. Attitude is comprised of certain viewpoints that a person has about the results when behaviour is performed and this would again be based on an understanding of how they value the results. The construct of subjective norms is regarded as a mix of the foreseen expectations that would result from individuals and groups, and the intentions that they would show to comply with the prospects. People give importance to suggestions made by other

people who are important to them and this decides the behaviour they display. Fishbein and Ajzen point out that even if norms and attitudes do not have equal weight in predicting behaviour, these factors would have different effects based on the situation and the individual.

The main points of the theory are illustrated in Figure 8 - Model of Theory of Reasoned Action.

Figure 8 - Model of Theory of Reasoned Action



Source: (Fishbein & Ajzen, 1975, p16)

Attitude toward the behaviour is defined as the individual's positive or negative feelings about performing behaviour. It is determined through an assessment of one's beliefs regarding the consequences arising from behaviour and an evaluation of the desirability of these consequences. Formally, overall attitude can be assessed as the sum of the individual consequence 'x' desirability assessments for all expected consequences of the behaviour (Fishbein & Ajzen, 1975).

Subjective norm is defined as an individual's perception of whether people important to the individual think the behaviour should be performed. The contribution of the opinion of any given referent is weighted by the motivation that an individual has to comply with the wishes of that referent. Hence, overall subjective norm can be expressed as the sum of the individual perception 'x' motivation assessments for all relevant referents (Fishbein & Ajzen, 1975).

Algebraically, TRA can be represented as: $B \approx BI = w_1AB + w_2SN$ where B is behaviour, BI is behavioural intention, AB is attitude toward behaviour, SN is subjective norm, and w1 and w2 are weights representing the importance of each term (Fishbein & Ajzen, 1975).

The model has some limitations, including a significant risk of confounding between attitudes and norms since attitudes can often be reframed as norms and vice versa. A second limitation is the assumption that when someone forms an intention to act, they will be free to act without limitation. In practice, constraints such as limited

ability, time, environmental or organisational limits, and unconscious habits will limit the freedom to act. The theory of planned behaviour (TpB) attempts to resolve this limitation (Fishbein & Ajzen, 1975).

Ajzen and Fisher (1980) have made some interesting comments about the TRA model. In practice, they argue, there are three conditions that define how a person would behave. The three conditions are: goals versus behaviour; availability of choices; and the intention against estimates. The first condition of goals against behaviours gives the difference between the goal and behavioural intention. As an example, a person may decide to lose weight and may have set a goal of losing 10 kilograms in 6 months and this is the specific goal intention. The behavioural intention may be to use some type of diet medication that would make the person feel less hungry so that he eats less food and thus achieves his goal of reducing the weight by the desired amount.

The second condition is the availability of choices. Taking the previous example, the person has a few choices available, such as exercising to reduce weight, going on a crash diet, exercising and adopting a diet, or taking only diet medication. Among all these choices, the first, second and third choices would be most logical and have a higher degree of success. However, they are also the most difficult, while the last choice of taking only medicines has the least possibility of producing sustained results. Ajzen and Fisher (1980) imply that, in many instances, subjective norms and attitudes strongly influence people's behaviour and change their attitude. People may take the path of least resistance and effort to achieve their goals. One good example is the goal to become rich and earn a million dollars. Many people would work hard their whole lives in legal and socially acceptable jobs and may never achieve their goal; whereas other people might resort to illegal means, such as theft, to earn the money. In such cases, social norms may dominate and change the attitude of people and how they decide to behave.

The third condition is the intention against the estimates and this occurs when a person has one set of intentions but may choose to act in a totally different manner. As an example, consider a person who has read statistics and reports about smoking and cancer and he intends to quit shortly. However, the intention of quitting is never translated into action and he or she continues to smoke.

2.3.7 Theory of Planned Behaviour

The Theory of Planned Behaviour proposed by Ajzen and Fisher (1980) attempts to create a link between behaviour and attitudes. Ajzen and Fisher built upon the TRA model by adding another component - the perceived behavioural control. This was designed to provide for certain volitional norms of behaviour that could predict the difference between actual and intended behaviour. This theory has a more practical application and is used for studies in marketing, social development, public relations,

brand building and so on. Ajzen and Fisher recognised that there is a close relationship between the actual behaviour and behavioural intention. It was argued that merely having certain behavioural intent does not mean that a person would actually follow the intended behaviour. There could be variance between the intention and the demonstrated behaviour. This deviance may, in some cases, be due to circumstances and certain unavoidable conditions. For example, when one decides to go for a drive, there is a tacit understanding of the inner self that one would not break any traffic rules, but it could be possible that on an open stretch and when there is very light traffic and no policemen, one would tend to speed. This is a clear deviance from the intended and actual behaviour. The act of speeding cannot be regarded as an overtly criminal and dangerous act but it does violate the law, endanger lives and can lead to many other consequences.

Ajzen's and Fisher's (1980) model uses the perceived behavioural control concept that is based on the Self-Efficacy Theory (SET). The SET model implies that certain reactions and behavioural patterns depend on certain frustrations and failures. These influence the motivation of a person. Hence, there are two contexts here: outcome expectancy and self-efficacy. The behaviour of people is strongly influenced by any personal experience or experiences related to an event and these would in turn determine the confidence of the person. Self-efficacy is related to the confidence level and in some cases, too much self-confidence leads to over self-efficacy and a person may think he may be able to achieve many more things than possible. The perceived behavioural control aspect plays an important role in building the confidence level of the person and the confidence level in turn is motivated by behavioural beliefs and attitude plus normative beliefs and subjective norm. These concepts are best understood with examples.

A smoker who smokes a number of cigarettes per day and is in fact addicted to tobacco may be subjected to social influences from his friends or family, who would prevail upon him to give up smoking. Now this person has high self-efficacy and his perceived behavioural control would suggest to his inner-self that he is actually not an addict and has a strong self-control; furthermore, that he could give up the habit as, and when, he wanted. This may not be true and the perceived behavioural control is actually misguiding him into continuing his addiction while his attitude would ask him to prolong the act of smoking. So, one sees that while the person may intend to give up smoking, his attitude proves contrary.

Ajzen and Fisher (1980) postulates that the manner in which people evaluate their attitude and behaviour is based on what they feel about a certain belief. Each outcome of behaviour would be evaluated with reference to the societal norms and accepted way of thinking.

2.3.8 Transtheoretical Model - TTM

The Transtheoretical Model (TTM) is used to predict if a person would achieve success or failure in taking up a certain change in behaviour. The theory is used widely in the field of psychology to understand why a change was made or what inhibited the change from taking place. Initially, the model was used in the healthcare sector for de-addiction, where people seek to remove their addictive habits - drugs, tobacco or alcohol (Prochaska, Redding, Harlow, Rossi, & Velicer, 1994). The model is also used in areas of marketing research and in ascertaining the extent to which people would be ready to accept a change. After intensive research on addiction and other diseases, Prochaska and colleagues found that individuals moved through different stages when a new lifestyle was to be adopted or when an old one had to be given up. The 'five stages' are: pre-contemplation; contemplation; preparation; action; and maintenance. This behaviour is intentional and it has a temporal dimension where the performance and cognitive parts of the thinking process are used.

In the pre-contemplation stage, a person would not intend to change the attitude or behaviour in the coming six months. The person may not be motivated to change and may show reluctance when information is given about the issue. They may also avoid discussion; avoid reading or listening and even thinking about the habits. In the contemplation stage, the person may show some kind of change and may subtly or overtly indicate that they are ready to change their habits in the coming six months. This is also the procrastination stage and the 'next six months' would never come as the person asks about the costs of undertaking the change. The next stage is the preparation stage when a person decides to change for the better and initiates the change process. People may reach this transition stage in a month or so. The action stage is where a person has made evident changes to their lifestyle and has modified habits to keep pace with the goals. This would continue for at least six months. The maintenance stage is the last stage in which a person would resist strong urges to relapse and restart the addiction or the original status. When people have sustained this stage for a few months and have resisted the urge to backslide, then they have been 'cured' (Prochaska et al., 1994).

It has been observed by other researchers that these behaviour patterns do not usually follow a linear pattern, but rather a spiral pattern in which people move back from the forward stage to the lower stage and then move ahead by using will power (Bishop, 1995; Kelso, 1995; Ripley, 1996; Ripley & DeVeaux., 1997). This type of behaviour would continue until a person is able to 'cure' himself completely and there is no danger of relapse. Additionally, there may be sustained periods of maintenance before the person suddenly relapses back into addiction (Prochaska et al., 1994).

2.3.9 Bass Diffusion Model

Bass (1969) introduced his mathematical process and diffusion model to show how new technology and products are adopted when users of the product interact with novices or potential users. The theory is built upon the Rogers' (1995) diffusion of innovation model. The Bass model is used by researchers and marketing organisations when they want to introduce a new type of product in the market. While Rogers' model relied on fieldwork and practical observations of the agricultural industry of the US in the 1950s, the Bass model is based on the Riccati equation, which is an ordinary differential equation.

The model has three coefficient variables: ' m ' is the total number of people in a market that would ultimately use the product or the market potential; ' p ' is the possibility of people who are not using the product beginning to use it due to the external influence of early adopters and the publicity from the media (this he called the coefficient of innovation); and ' q ' that is the possibility of people who are not using the product starting to use it because of internal influence or word of mouth publicity from early adopters or people who are in close contact (this is called the coefficient of imitation).

The formula used to predict the number of adopters (N_t) in a given time is: $N_t = N_{t-1} + p(m - N_{t-1}) + q(N_{t-1}/m)(m - N_{t-1})$

As per the empirical research of Mahajan, Muller, and Bass (1995), the value of p is between 0.02 and 0.01 and q has a value of 0.38. These values can be used in the equation along with probabilistic values for other coefficients to find the number of adopters in a society. When applied with comprehensive and academically sound fieldwork, the model is found to produce very accurate results and allows forecasting to a high level of accuracy. Product manufacturers and technology innovators have often used this model to forecast sales and revenue generation among the target group. Certain modifications have been carried out over the course of time to increase the accuracy level of the model and to suit different market and product levels. The model is found to work with predictive and stable goods and technology. It is difficult to use with 'fad' products such as beauty products or fashion accessories, toys and other goods that may have a short shelf-life of a few weeks, if not days. The model has been used extensively in forecasting marketing potential and sales of new innovative products such as mobile phones, high definition TVs and many other products.

There are a number of software applications available that allow for calculation of the forecasts for adopters of a technology. There are also databases available that give the values of p , q and m for different products, based on extensive market research (Lilien, Rangaswamy, & VandenBulte, 1999).

Table 14 - Samples of coefficients for p, q and m gives samples of values for different products.

Table 14 - Samples of coefficients for p, q and m

Product/Technology	Period of Analysis	p	q	m
Agricultural				
Tractors (thousands of units)	1921-	.000	.134	5201.0
Hybrid corn	1927-	.000	.797	100.0
Artificial insemination	1943-	.028	.307	73.2
Bale hay	1943-	.013	.455	92.2
Medical Equipment				
Ultrasound imaging	1965-	.000	.534	85.8
Mammography	1965-	.000	.729	57.1
CT scanners (50-99 beds)	1980-	.044	.350	57.9
CT scanners (>100 beds)	1974-	.036	.268	95.0
Production Technology				
Oxvaen steel furnace (US)	1955-	.002	.435	60.5
Oxygen steel furnace (France)	1961-	.008	.279	88.4
Oxygen steel furnace (Japan)	1959-	.049	.333	81.3
Steam (vs. sail) merchant ships	1815-	.006	.259	86.7
Plastic milk containers (1 gallon)	1964-	.020	.255	100.0
Plastic milk containers (half gallon)	1964-	.000	.234	28.8
Stores with retail scanners (FRG,	1980-	.001	.605	16702.0
Stores with retail scanners	1986-	.076	.540	2061.0
Electrical Appliances				
Room air conditioner	1950-	.006	.185	60.5
Bed cover	1949-	.008	.130	72.2
Blender	1949-	.000	.260	54.5
Can opener	1961-	.050	.126	68.0
Electric coffee maker	1955-	.042	.103	100.0
Clothes dryer	1950-	.009	.143	70.1
Clothes washer	1923-	.016	.049	100.0
Coffee maker ADC	1974-	.077	1.106	32.2
Curling iron	1974-	.101	.762	29.9
Dishwasher	1949-	.000	.213	47.7
Disposer	1950-	.000	.179	50.4
Fondue	1972-	.166	.440	4.6
Freezer	1949-	.019	.000	94.2
Frypan	1957-	.142	.000	65.6
Hair dryer	1972-	.055	.399	51.6
Hot plates	1932-	.056	.000	26.3
Microwave oven	1972-	.002	.357	91.6
Mixer	1949-	.000	.134	97.7
Power leaf blower (gas or electric)	1986-	.013	.315	26.0
Range	1925-	.004	.065	63.6
Range, built-in	1957-	.048	.086	21.7
Refrigerator	1926-	.025	.126	99.7
Slow cooker	1974-	.000	1.152	34.4
Steam iron	1950-	.031	.128	100.0
Toaster	1923-	.038	.000	100.0
Consumer Electronics				
Cable television	1981-	.100	.060	68.0
Calculators	1973-	.143	.520	100.0
Camcorder	1986-	.044	.304	30.5
CD player	1986-	.055	.378	29.6
Cellular telephone	1986-	.008	.421	45.1
Cordless telephone	1984-	.004	.338	67.6
Electric toothbrush	1991-	.110	.548	14.8
Home PC (millions of units)	1982-	.121	.281	25.8
Radio	1922-	.027	.435	100.0
Telephone answering device	1984-	.025	.406	69.6
Television, black and white	1949-	.108	.231	96.9

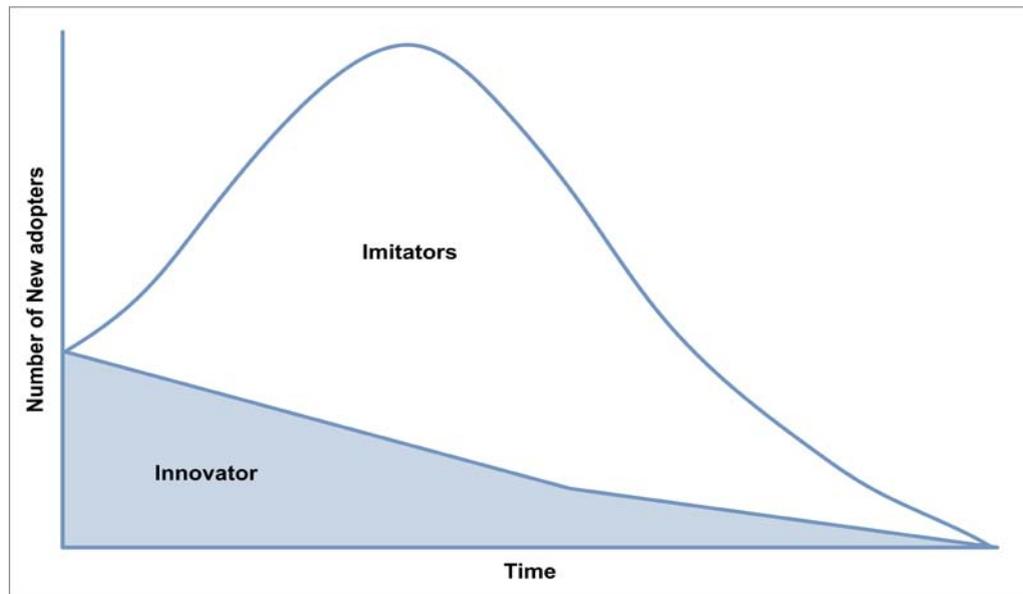
Television, colour	1965-	.059	.146	100.0
VCR	1981-	.025	.603	76.3
Average		.037	.327	
25th percentile, median, 75th percentile		.004, .025, .054	.134, .280, .435	

Source: (Lilien et al., 1999, p6)

The market consists of two groups of people - adopters or innovators, and imitators or potential adopters. In an open system that allows the two groups to interact, there would be an exchange of ideas and concepts between the two groups. While the innovators or adopters would be quite comfortable with the new technology, the other group would be collectively comprised of late majority and laggards. In an open system where there is no restriction on the flow of information between the two groups, the intensity of the flow measures the rate of infection of ideas. If the second group of potential adopters are waiting to see the beneficial results, then the rate of infection would be very fast and adoption of technology may become a fad, symbolic of social status and adopted for purely hedonic feelings. However, if the people in the potential group consist of diehard cynics bent on stopping the adoption of technology for political reasons, then this would indeed create a problem and the group may very well succeed in thwarting the new technology from being adopted. If such forces are not evident in the social system, the rate of infection would increase as a function of utility of the product, the target age of the adopters and the cost. If all these are acceptable, then the rate of adoption would be very fast.

Figure 9 - Graphical representation of the Bass model provides an illustration of the mechanics of information flow between the two groups of innovators and imitators. The innovators would be fewer in number initially and with the passage of time, the number would start reducing; not because the product has lost appeal but because the imitators are fast catching up. The imitators would start from a lower value and then the number would rise steeply and assume a bell shape curve with a sharp peak. The time required to reach this peak would depend on the utility of the technology and its cost.

Figure 9 - Graphical representation of the Bass model



Source: (Mahajan et al., 1995, pG81)

As seen in *Figure 9 - Graphical representation of the Bass model* the curve for imitators would rise sharply and then fall at the same rate and would prolong for some time beyond the innovator curve. After a certain point in time, the technology would have become either widespread or obsolete, or new and better products and technology may have evolved.

2.3.10 The 'S Curve' and technology adoption

The 'S Curve' or the 'Sigmoid Curve', also called the learning curve, is used to depict the model of technology adoption or product use by businesses when they need to project the growth potential. When the growth of a product or the level of adoption of a technology is plotted as a function of time, the curve follows the shape of the letter S. The S Curve is used to model the growth and performance in a number of industries and sectors. For example, it can be used to predict new start-up growth in neural networks, or in ecology to estimate and model growth of demographics. The S Curve can also be used to represent absorption of new technologies – from latent inertia, through to adoption and finally to saturation.

2.3.11 Social Cognitive Theory

The Social Cognitive Theory was originally propounded by Miller and Dollard (1979). Bandura (1977) modified the basic concepts of Miller's theory to form the Social Cognitive Theory. Bandura's theory argues that a person learns and acquires knowledge by imitating and observing the behaviour of other people through social exchange and interactions and from experiences. With wide application in

developing learning outcomes in various social systems, the theory has some main principles. Some of them are:

- People learn by observing others;
- Learning is an integral and basic process but it does not imply that behaviour will change;
- To attain certain goals, people may put on different kinds of behaviour;
- Behaviour of people is directed by the self; and
- Penalties, punishment, reprimands produce indirect effects on the process of learning and behaviour that cannot often be predicted (Bandura, 1977).

People tend to create role models from the instant they are born. Babies try to imitate their mothers, paying attention to what she says. This continues as the child grows and develops an affinity for a teacher, doctor or other person of social authority. As the child becomes a teenager, he or she develops other role models. These could be film stars, or music stars. The child tries to dress and behave like them and, in some cases, may start smoking, drinking, or taking drugs. The Social Cognitive Theory extends into adulthood when people attach to role models or leaders in the workplace.

The theory suggests that the process of observing and learning occurs in two ways - the positive punishment or inhibitory effect and the positive reinforcement action or the dis-inhibitory effect. In the positive punishment action, a learner would see another person suffering or being punished for some deed and this may serve as a warning to the learner to abstain from such actions. The positive reinforcement action occurs when a learner sees someone being praised and rewarded because of some good work and the learner attempts to imitate the positive actions so that he would also be rewarded. Therefore, the factor of outcome experiences plays a major role in the learning process. It must again be emphasised that self-efficacy plays a crucial role in the learning process and positive identification of the role models to be used is important. Media and publicity plays a positive role in enhancing the learning process and helps in disseminating information. It can also promote positive reinforcement actions to create the image of rewards for learners and adopters.

2.3.12 Meme

Dawkins (1989) first coined the term 'Meme' to indicate behaviour, ideas, thoughts, practices, theories, dances, gestures and other cognitive processes that can be imitated by others. Memes are known to be self-driven and spread very fast in a society, with a 'contagion' similar to that of a bacteria or a virus. There are positive and negative aspects to this behaviour. Memes have in fact formed the cultural

backbone of living beings, right from the Stone Age man to the ancient civilisations and even in the current age. The theory borrows heavily from the theory of natural selection by Charles Darwin and the theory of evolution (Darwin, 1860). However, it is different from hereditary, where skills and traits are carried in genes and passed on involuntarily to the progeny.

Memes can be found in the areas of technology adoption, music, literature and business. The extreme form is plagiarism where the 'replicator' would attempt to imitate another person's work and pass it off as his own. When adopted in a positive manner, it would help societies and nations to pick up role models of development so that they could adopt the principles, localise it to suit their culture and needs, and help improve their society.

Japan has been a role model for the innovative total quality management practices it has adopted. Countries such as the US and many European nations have tried to imitate and transplant these same practices. India, with its excellent and highly innovative IT industry, has served as the model for countries such as China and Dubai in terms of developing its ICT infrastructure.

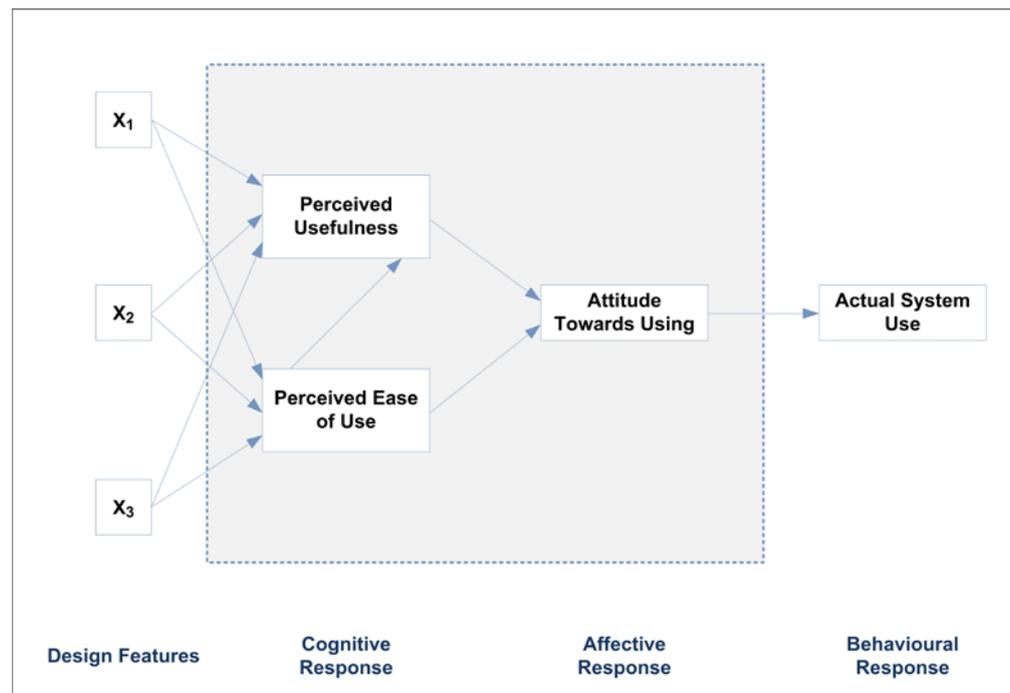
2.3.13 Technology Acceptance Model - TAM

The Technology Acceptance Model (TAM) was developed by Davis (1989) and Davis, Bagozzi and Warshaw (1992) and deals with how different users would be willing to accept an Information Systems application and use it. When users are confronted with a new technology, they are faced with two main factors that can act as dilemmas or drivers and influence the acceptance and use. The two factors are perceived usefulness (PU) and the perceived ease of use (PEOU). Perceived usefulness is the extent to which a user perceives that the information system application would help in his job or for a particular task. The perceived ease of use refers to the extent to which the user feels that the system would reduce effort. TAM has given rise to a wide branch of technology and psychology, such as usability engineering, usability metrics and others. With the current increase in the number of applications in Information Systems, TAM has acquired a new meaning. For ICT to be successful, it has to be acceptable to people, it must help people to fulfil a need and it must be easy to use. TAM helps developers to create a better understanding of the applications they produce. TAM was based on the theory of reasoned action and while TRA was based on the measure of attitude, TAM is built on the principles of usefulness and ease of use.

There are two types of users - voluntary users and forced users. Voluntary users are members of the public who can decide if they want to use a particular technology and/or alternative technologies. Forced users are employees who must use certain computer applications. They do not have a choice since the work profile demands it. Researchers have realised that to make technology useful, forced users must also

voluntarily accept a technology or else productivity falls. Computer applications are introduced to ease the burden on employees, increase productivity, reduce throughput times and create quicker turnaround. However, if the technology is cumbersome, not user-friendly and employees spend considerable time in figuring out how it works, then the main intent of using the technology is not achieved. This is a very important principle when it pertains to implementing ICT. *Figure 10 - Original TAM Model* gives an illustration of the TAM model.

Figure 10 - Original TAM Model

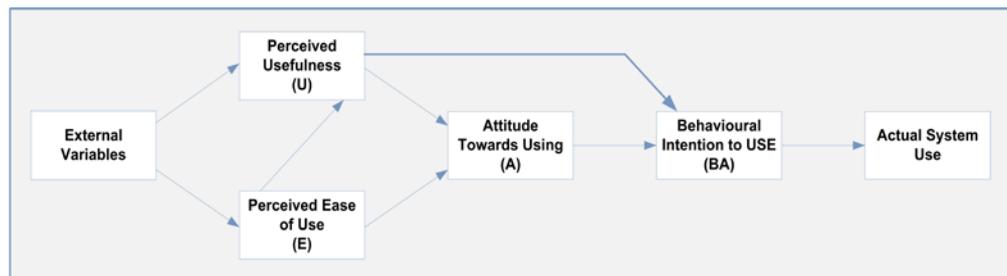


Source: (Davis, 1986, p24)

TAM can be effectively used to assess and predict user acceptance of ICT applications and widespread use in the industry. IT applications may cost thousands of dollars and while the system may function very well from the developer's perspective, the common user might think otherwise. Training on using an IT application would help users to understand various features and how they can complete certain tasks. TAM is used to understand how external variables influence users into accepting the technology. External variables would create certain stimulus and these would influence how people perceive the usefulness of an application. The manner in which people perceive the usefulness would determine how they would accept technology. Davis and Venkatesh (1995) suggest that external variables include system design, training users to understand the software, self-efficacy in using IT systems, involvement of users in design of the system and the manner in which ICT is introduced. These variables play an important role in increasing user acceptance. The model would assume that users are literate or have

some knowledge of computers and are aware of basic functionalities in IT systems. Davis points out that in work organisations, people would use the application even if they did not find it particularly useful. Nevertheless, the intention to use is very important and this is formed by the attitude that the user has towards the system. The attitude is affected by the perceived usefulness and the extent to which the user feels that the system would reduce the efforts in completing the tasks. Keeping this in mind, Davies framed another model for TAM and this is illustrated in *Figure 11 - Revised TAM Model*.

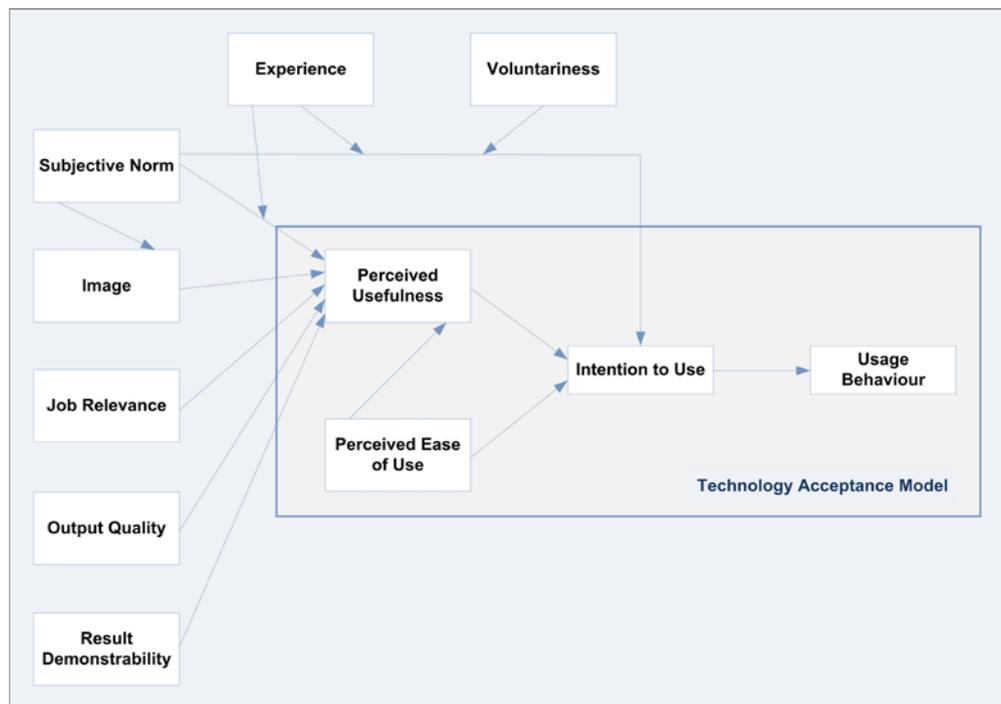
Figure 11 - Revised TAM Model



Source: (Davis, Bagozz, & Warshaw, 1989, p985)

As seen in *Figure 11 - Revised TAM Model*, there is a new construct called 'Attitude towards using (A)'. This is framed by the two factors of perceived usefulness and perceived ease of use. The factor of 'A' would in turn lead to the behavioural intention to use (BI). It may very well happen that users may directly move from U to BI and then to actual system use. Venkatesh and Davis (2000) criticised the model shown in *Figure 10 - Original TAM Model* above, as there were doubts raised about the heuristic correctness of the TAM model. Venkatesh (2000) proposed an alternate model - the TAM2 model (see *Figure 12 - TAM2—Extension of the Technology Acceptance Model*).

Figure 12 - TAM2—Extension of the Technology Acceptance Model



Source: (Venkatesh & Davis, 2000, p188)

TAM2 adds certain social influences to the perceived usefulness of the TAM model to increase the predictability of the model. Influences added include the experience, voluntariness, subjective norm, image, job relevance, output quality and the result demonstrability. These social forces help to act on potential users of a system and give the choice of rejecting or adopting the system. As suggested by Fishbein and Ajzen (1975), subjective norm is the user's perception of important people who would influence his or her decision to use the system. Users may decide to carry out behaviour even though they may not like the behaviour or like the consequences. They do it if people who are important to them motivate their actions. This is often called peer pressure. Fishbein and Ajzen (1975) hypothesised that only when it is mandatory would the subjective norm have a positive influence on the intent to use. This hypothesis is relevant in work environments where people have to use a system, whether they like it or not.

Voluntariness is the extent to which potential technology users and adopters view the decision of adoption as non-mandatory. This factor would come into force when users feel that the socially influencing person has the capacity to give rewards in the case of compliance, or punishment in case of non-compliance. Fishbein and Ajzen (1975) suggest that 'voluntariness will moderate the effect of subjective norm on intention to use'. Venkatesh and Davis (2000) argue that users are susceptible to normative social influences and attempt to maintain a favourable image in their social group. Image could be depicted as the extent to which a person's status in a

social circle is enhanced by using a particular technology. If others in a social group regard a technology with esteem, then the user would feel that by using and adopting the technology, his standing would rise. Venkatesh and Davis (2000) had also hypothesised that the subjective norm would have a positive effect on the image and in turn, the image factor would have a positive effect on the perceived usefulness.

2.3.14 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al. (2003) speak of the Unified Theory of Acceptance and Use of Technology model (UTAUT) as a representation of the eight models of technology adoption. The model is used to explain the intentions of the user towards an ICT system and the usage behaviour that would result. The model is based on four constructs:

1. Effort expectancy;
2. Performance expectancy;
3. Facilitating conditions; and
4. The social influence to which a user is subjected.

Using TAM and seven other models as a foundation, UTAUT adds factors such as the age and gender of the user, along with voluntariness and experience. Field research and statistical analysis are considered more accurate by using the UTAUT model, as stated below:

'UTAUT was able to account for 70% of the variance (adjusted R²) in usage intention—a substantial improvement over any of the original eight models and their extensions. Further, UTAUT was successful in integrating key elements from among the initial set of 32 main effects and four moderators as determinants of intention and behaviour collectively posited by eight alternate models into a model that incorporated four main effects and four moderators' (Venkatesh et al., 2003, p 467).

The eight models on which the theory is based are briefly detailed in Table 15 - Models and Theories of Technology Adoption.

Table 15 - Models and Theories of Technology Adoption

Model	Core Constructs	Definitions
<p>Theory of Reasoned Action – TRA</p> <p>This is based on social psychology and is the fundamental theory that is used to describe human behaviour. It is used for prediction of a number of social contexts of human behaviour. The theory is used for individual acceptance of technology and it was found that the variance that was observed was in line with other studies that were done with TRA for other social behaviours.</p>	<p>Attitude Toward Behaviour</p> <p>Subjective Norm</p>	<p>A person’s negative or positive feelings that have an evaluative effect on performing the required behaviour.</p> <p>A person’s perception of what people who matter to him should feel if he should or should not carry out certain behaviour.</p>
<p>Technology Acceptance Model – TAM</p> <p>This model is made for ICT applications and Information Systems technology and is used to predict the acceptance of information technology and its use in organisations. The model does not include the construct of attitude. To include the attitude factor, TAM2 model was developed and this was an extension of TAM. In TAM2, an</p>	<p>Perceived usefulness</p> <p>Perceived ease of use</p>	<p>The extent to which a user would believe that by using a certain Information Systems application, his job and task performance would increase.</p> <p>The extent to which a user would feel that by using a certain Information Systems application, his efforts would be reduced.</p>

extra predictor in the form of subjective norm was used to explain behaviour in areas where Information Systems use was mandatory. Both TAM and TAM2 have been used widely in many Information Systems technology areas.

	Subjective norm	Subjective norm is the user's perception of important people who would influence his decision on using the system.
<p>Motivational Model - MM</p> <p>Uses the general motivational theory to explain behaviour of people. Studies of general motivation of user's perception for needs achievement are used to explain technology adoption.</p>	Extrinsic Motivation	<p>Relates to the view that users would have a desire to carry out certain activities because they are viewed as important in obtaining key results that may be different from the original activity. Some examples are promotion, improved job performance and rise in pay.</p>
	Intrinsic Motivation	<p>The view that users would want to carry out certain tasks for no other reason other than performing the task.</p>
<p>Theory of Planned Behaviour - TPB</p> <p>This is an extension of TRA and with an additional factor of perceived behavioural control. This factor is regarded as an extra factor that determines the intention and behaviour. Researchers such as Ajzen have shown many studies where TPB has been used to forecast behaviour and intention in</p>	Attitude toward behaviour	<p>A person's negative or positive feelings that have an evaluative effect on performing the required behaviour.</p>
	Subjective Norm	<p>A person's perception of what people who matter to him should feel if he should or should not carry out certain behaviour.</p>

different social settings. It has also been used to enhance the understanding of individual use and acceptance for different technologies. One of the offsets formed is called the Decomposed Theory of Planned Behaviour (DTPB). In this model, factors such as subjective norms, attitude and perceived behavioural control are decomposed to the main structure of beliefs and used for technology adoption models.

	Perceived behavioural control	The perceived difficulty or ease that would be felt in carrying out behaviour. In Information Systems applications context, it is the view of constraints on behaviour that may be external or internal.
<p>Combined TAM and TPB - C-TAM-TPB</p> <p>This model combines the TAM perceived usefulness with TPB predictors to create a hybrid model.</p>	Attitude toward behaviour	A person's negative or positive feelings that have an evaluative effect on performing the required behaviour.
	Subjective Norm	A person's perception of what people who matter to him should feel if he should or should not carry out certain behaviour.
	Perceived behavioural control	The perceived difficulty or ease that would be felt in carrying out behaviour. In Information Systems applications context, it is the view of constraints on

		behaviour that may be external or internal.
	Perceived Usefulness	The extent to which a user would believe that by using a certain Information Systems application, his job and task performance would increase.
Model of PC Utilisation - MPCU	Job-fit	The amount to which a user believes that using a technology would increase job performance.
The model is obtained from Triandis' theory of human behaviour. It provides a perspective that competes with the concepts of TPB and TRA. Thompson refined this model and used it for ICT context to forecast the utilisation of computers. The model is designed to predict the acceptance of individuals and for different Information Systems technologies. It can be used for the prediction of usage behaviour and not to predict intentions.	Complexity	The amount by which a technology is regarded as relatively difficult to use or be understood.
	Long term consequences	These refer to outcomes that would give results at a future date.
	Affect towards use	A person would display this emotion for a particular act. Feelings could range from anger, joy, pleasure, disgust, elation, hate and other emotions.
	Social Factors	Refers to the social group in which the user exists and the social factors that are present in the group, the social culture and any interpersonal understanding that the user may have made with others in the group.
	Facilitating conditions	Relates to certain objective factors that others would suggest are easy to complete. For Information Systems users,

		providing support and troubleshooting with help desks for attending calls is a type of facilitation. Another is when one makes an online purchase and goods can be returned without any fee paid, then use would increase.
Innovation Diffusion Theory – IDT	Relative Advantage	Refers to the amount by which an innovation is regarded as being better than its earlier version.
The theory was proposed by Rogers and is used to understand how innovation is spread through societies. With reference to ICT, some characteristics are used to understand how technology is accepted in society. There are different groups such as innovators or early adopters and majority adopters, laggards and other groups and each would show an affinity to adopt technology.	Ease of use	Refers to the amount by which an innovation is regarded as being difficult for adoption and use.
	Image	Refers to the extent to which a user would feel that by using a certain technology, his image in society would be enhanced.
	Compatibility	Refers to the degree to which a technology is regarded as being in line with the current needs, values and previous experiences of potential adopters of the technology.
	Results Demonstrability	Refers to the tangibility that would be obtained if the technology is used and would cover the communication, repeatability and how observable the results are.
	Voluntariness of Use	Refers to the amount by which the use of the technology is regarded as being self-driven and of free will.

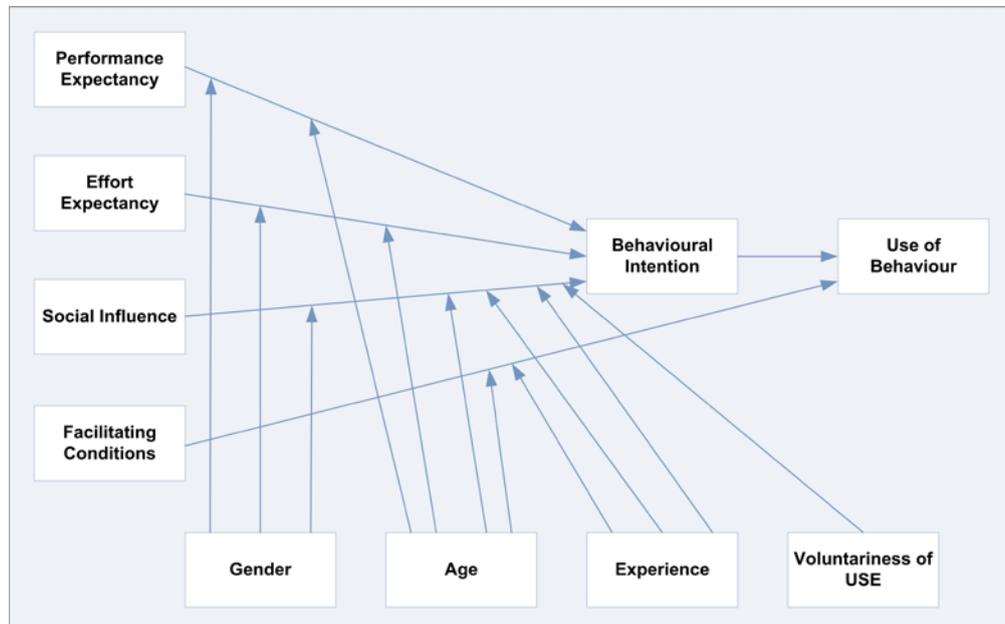
	Visibility	Refers to the extent to which a user can see others using the system in a workplace.
Social Cognitive Theory - SCT	Outcome	Performance that is produced because of the behaviour and the performance expectations that are related to the workplace and job.
This theory argues that a person would learn and acquire knowledge by imitating and observing the behaviour of other people through social exchange and interactions and from experiences. With wide application in developing learning outcomes in various social systems, the theory has some main principles. Some of them are: 'people learn by observing others'; 'learning is an integral and basic process but it does not imply that behaviour will change'; 'to attain certain goals, people may put on different kinds of behaviour'; 'behaviour of people is directed by the self' and 'penalties, punishment, reprimands produce indirect effects on the process of learning and behaviour that cannot often be predicted'	Expectations and Performance	
	Outcome Expectations Personal	The personal result is caused by certain behaviour. Personal expectations relate to the self-pride and esteem and give a feeling of accomplishment when certain goals are achieved.
	Self-Efficacy	It is the judgement or self-realisation of one's ability to adopt and use a technology and carry out certain tasks or jobs.
	Affect	It is a person's affinity or inclination for a certain type of behaviour.
	Anxiety	It is emotions, such as worry or anxiety, when certain behaviour is to be performed.

Source: (Venkatesh et al., 2003, p428-432)

As suggested by Venkatesh (2003), seven of the main theories used in framing the UTAUT model have a major impact and can be regarded as direct determinants of usage or intention in the models. From these, Venkatesh et al. (2003) selected four as very important direct determinants. These are: effort expectancy; facilitating conditions; social influence; and performance expectancy. Venkatesh et al. (2003) regarded constructs such as self-efficacy, attitude for using technology and anxiety as not direct determinants of the usage or intention. There are, in addition, some important moderators, such as age, gender, experience and voluntariness. These

would be acting on the core constructs. Based on these inputs, an illustration of the UTAUT model is presented in *Figure 13 - UTAUT Model*.

Figure 13 - UTAUT Model



Source: (Venkatesh et al., 2003, p447)

2.4 Global eServices

As seen in the previous section, acceptance of technology is very important in understanding how well a product would sell in the market or how many people would actually use a product or services. As stated previously, the term Electronic Service (eServices) is the exchange, selling and procurement of goods, services and information using electronic systems, such as the Internet or dedicated computer networks that may be connected through the Internet. An understanding of eServices is provided in this section.

The term eServices was coined in the late 1970s with extensive use of the telegraph machine and line type printers. These tools allowed banks and financial institutions to exchange banking information through mechanisms such as Electronic Data Transfer (EDI), Electronic Fund Transfer (EFT), and exchange of inventory records and purchase orders. The method of exchange was from 'one to one', in which information was relayed in a one-way communication from one central office to dedicated terminals. In those days, data was not so voluminous and it required someone to physically type the information from the sending point to be received at the other end and transcribed. With the introduction of Netscape in 1994, the Internet became a tool through which information could be exchanged in a two-way communication. In 1992, the World Bank came online; and in 1994, Pizza Hut

became one of the first companies to allow its products to be ordered online (Nissanoff, 2006).

While initially businesses were sceptical about using the Internet to conduct business, after SSL Encryption was introduced in 1994 to increase security of online transactions, the Internet became an accepted medium to conduct business. IDC (2007) reported that by 2008, worldwide eServices would generate US\$7.612 trillion of revenue for eTailers and there was an expectation that by 2009 worldwide eServices sales would increase by 13.1% to US\$8.758 trillion. However, eService is not only about online shopping, it includes many other areas and applications. Some of these are: eMail, IRC Chat and messaging, content management systems, accounting and finance systems, orders and shipment information, enterprise and client information reporting, domestic and international payment systems, newsgroups, entertainment, conferencing, social networking, payment of bills and other financial transactions (Nissanoff, 2006).

This section provides a discussion of global services and examines the inhibitors, enablers, 'derailment factors' and motivators that are of significance in eServices adoption.

2.5 Inhibitors and enablers that affect the adoption of eServices

Although, potentially, the list of inhibitors, enablers, derailment factors and motivators to technology adoption is never-ending, it can be broken down into several groups. These are:

- Demographical;
- Environmental;
- Technological;
- Trust;
- Quality;
- Loyalty;
- Advantage;
- Complexity; and
- Trialability.

What needs to be understood is not necessarily the actual inhibitors, enablers, derailment factors and/or motivators, but how these factors are perceived by different cultures. For example, what is considered an inhibitor or a derailment factor

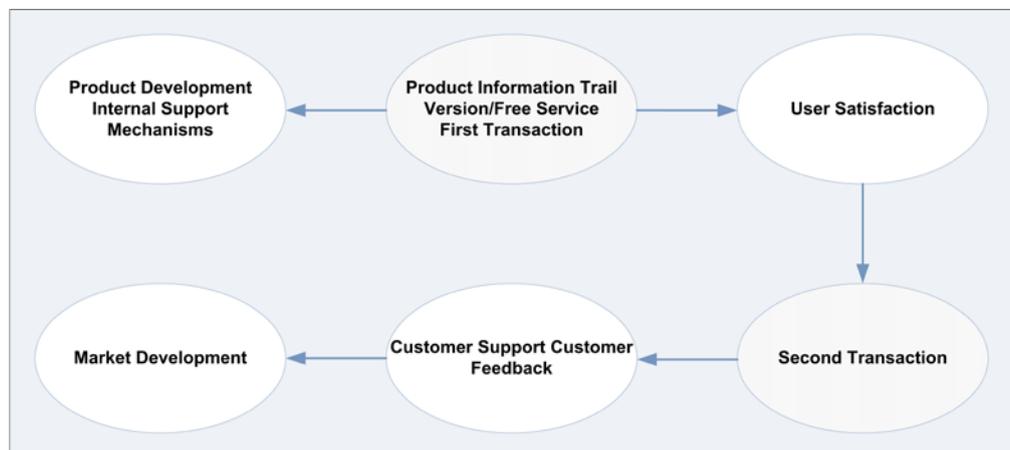
in an Emerging and Developing Economy, may actually be an enabler, or motivator in an Advanced Economy. These attributes would be determined by the technology prescribed and the level of cultural exposure experienced by the society in question.

2.5.1 Models of eServices

Hirschheim and Klein (1994) referred to a model as the most fundamental set of assumptions adopted by a professional community that allows them to share similar perceptions and engage in commonly shared practices. In the context of ICT and eServices, models can be used to understand the relationship between technology and the influence it has on society and interpersonal relations.

Georgiou and Stefaneas (2002) defined a basic model for eServices applications, as illustrated in *Figure 14 - Basic eServices Model*.

Figure 14 - Basic eServices Model



Source: (Georgiou & Stefaneas, 2002, p147)

As seen in Georgiou's model, the internal support team carries out the product development or the web application and this is tested to verify the first transaction. The application is then given to the user to test their level of satisfaction. After this second transaction is completed, customer feedback is sought and after this stage is approved, the model is taken up for market development.

Stahl (2005) has provided more information about the types of eService paradigms, he also suggests that eServices are made up of different pillars that support different models. These pillars are: people, public policy, marketing and advertising, support service and business partnerships. These pillars are, in turn, supported by a number of infrastructure support members.

Weckert (2000) wrote about certain business models and these form the paradigms around which modern eServices have evolved. These are:

- Viral marketing: word of mouth, web-based marketing where people promote certain products or services;

- Group purchasing: where groups of people use demand aggregation to avail themselves of quantity discount and purchase products in volume;
- Online auctions: where products and services are open for bidding;
- Electronic exchanges and market places: websites where sellers advertise their products and services and buyers buy the goods or barter them for other products;
- Online direct marketing: also called eTailing, where manufacturers directly sell their products to the consumer;
- Electronic tenders: also called reverse auctions, where buyers offer projects to service providers who bid for the project;
- Name your price deals: where a buyer offers a certain price and the seller can either accept or reject it; and
- Affiliate marketing: agents and marketing partners may refer customers to an organisation and get commission.

In addition, Weckert (2000) mentioned different structures for the business models. These are:

- Direct marketing: Seller directly contacts the buyer and offers products and services;
- Intermediary marketing: Seller uses intermediaries such as online shopping sites, dealers and agents, who sell products and services on commission basis;
- Content provider: Provides content for the products and services for portal environments such as ringtones, music and mobile games;
- Full service provider: Provides all the services so buyers would not have to go elsewhere for additional services;
- Shared infrastructure: Some buyers would pool their resources and share the infrastructure so that their costs are shared between several parties; and
- Virtual community: These are online forums where people with similar interests can post and receive messages.

2.5.2 eService benefits versus economic value

Zeinab (2007) states that eService is a means to a business end and the objectives are to improve costs, relationships, channels, processes and economic growth.

Technology acts as the enabler. According to Zeinab (2007), the value of eServices is difficult to quantify and challenging to explain since it is not a single tool or technology, such as a milling machine where the machine hour rate can be computed. Instead, eService represents a combination of multiple technologies, processes, and applications and may involve different business strategies. eServices cannot be run or operated by a single entity but must be built on business relationships with multiple stakeholders.

Ratnasingam (2002) reported on a study of the impact of perceived versus realised benefits in eServices adoption in three organisations. He concluded that benefits are accrued in three areas: use of technology; relationships with trading partners; and business operations. Ratnasingam also inferred that technology use was enhanced and upgraded since the employees had access to outside information; relationships with trading partners improved because of increased clarity of two-way communication; and business operations were transformed to keep pace with the increased sales. Overall, the companies had better profits, increased revenue and a much wider reach in the market than before the introduction of eServices.

2.5.3 Economic development and growth

eServices, or any other technology for that matter, can only act as facilitating tools to help increase the reach of the manufacturer, farmer or trader. But simply installing a network of computers does not guarantee a growth in economy. What eServices do is increase the availability of information, for both government organisations and private enterprise. Private enterprise has historically shown more business initiative than government organisations, for obvious reasons. However, for the economy to grow, the business objectives of both have to converge - private enterprises have to increase revenues so that more taxes are collected by the government. In many cases, the sole revenue of the government is from taxes paid by private enterprises and individuals. So how do eServices relate to economic development?

Many countries in the world have moved to the information age and one in three jobs is now created in the knowledge industry. This does not mean that agriculture, mining, construction, manufacturing and other industries have declined. Indeed, with the use of eServices these industries are able to market their products much more effectively.

2.5.4 Economic development and the digital divide

As explained in 2.3.1, the term digital divide or 'eDivide' refers to the gap between people and regions that have access to ICT and those that do not. Rao (2001) identified that the G7 countries and the emerging economies, such as China, India, and Korea, have introduced eServices to a much higher level than under-developed countries, such as Nigeria, Sri Lanka, Pakistan and Bangladesh. Rao also stated

that while there is a great dependence on human capital and availability of natural resources, along with pragmatic government policies that lead to economic development, the introduction of eServices has afforded countries such as India and China much greater international opportunities.

With an increase in opportunities, more businesses are set up and thus more jobs created. When more jobs are created, there is pressure on the educational system to produce people with the required skill sets. According to the ILO World Employment Report cited by Rao (2001), 90% of Internet users are people from industrialised countries. Rao suggests that countries such as Senegal and Costa Rica, which do not have software development expertise, have still managed a niche growth in the areas of Internet Technology Enabled Services (ITeS), such as call centres, tele-support centres, data processing and data entry. In the case of India with its IT sectors, and Senegal and Costa Rica with its call centres, eServices have brought in a paradigm shift in these mainly agrarian and industrial societies by helping to move them to the information age. eServices and ICT have helped to build a bridge across the digital divide (Rao, 2001).

2.5.5 eServices diffusion and impediments

The concept of diffusion of technology has been addressed at a broad level in *Section 2.3.2 – Diffusion of Technology*. Diffusion is explained as the method used by to communicate about an innovation by using certain channels among different groups in a social system. Kagami, Tsuji, and Giovannetti (2004) speak of four aspects that impact on diffusion in a developing country: social, government policy, technical, and business. These can act as an impediment when they are anti-growth or as enablers when they are pro-growth.

Table 16 - eServices impediments illustrates the four aspects and presents the change that they demand.

Table 16 - eServices impediments

Aspect	Change
Social aspects	Change in social perception
	Geopolitical characteristics
	Cultural characteristics
Government policy aspects	Policy change in service charge
	Internet promotion policies
	Change in educational policies

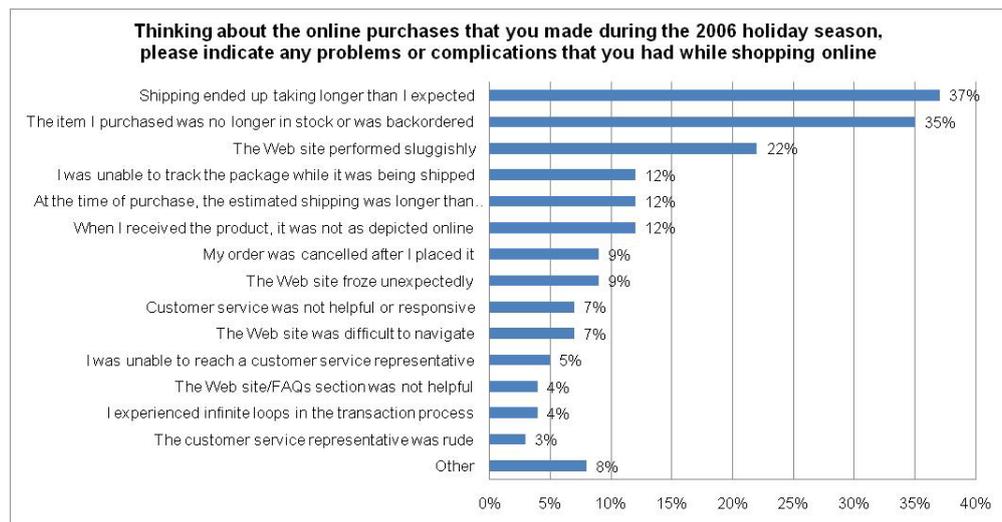
	Nationwide promotion
	Start-up company support
	Openness of Internet policies
Technical aspects	Enhanced Internet infrastructure
	High speed national information infrastructure
	Intensive technical support to IT industry
Business aspects	Investment on Internet infrastructure
	Change in perception of the IT industry
	Increased in IT businesses

Source: (Kagami et al., 2004, p27)

The above impediments, in *Table 16 - eServices impediments*, go hand-in-hand. Simply removing one impediment would not necessarily mean greater diffusion of eServices - all of these aspects have to be addressed at the same time.

With reference to online shopping, Mulpura (2007) lists some of the impediments that customers face, as presented in *Figure 15 - Online shopping impediments*.

Figure 15 - Online shopping impediments



Source: (Mulpuru, 2007, p2)

The above figure shows the main problems faced by online shoppers and the percentage of people who face the problems.

2.5.6 eBanking

Karajaluoto (2002) and Floh and Treiblmaier (2006) have described eBanking or online banking as using Internet technology to provide banking services, such as making payments, withdrawing and transferring money, accessing account information and other such services. Some online banks also offer additional services such as bill payment, investment services, and fixed deposit services. Most of the online banks are also bricks and mortar banks with buildings that house the servers, help-desk support staff and other employees. These banks have added eBanking as an extra offering to their customers and the banks still offer traditional, personal banking. Floh and Treiblmaier (2006) present a number of variables that influence eBanking and these are provided in *Table 17 - eBanking variables*.

Table 17 - eBanking variables

Endogenous Variables	Exogenous Variables
Intention to Use Internet Banking Service	Attitudes
	Subjective Norms
	Perceived Behavioural Control
Attitude towards Internet Banking	Prior Computer Experience
Internet Banking Usage	Prior Technological Experience
	Personal Banking Experience
	Reference Group Influence
Commitment	Shared Value
Trust	Communication
	Opportunistic Behaviour
Internet Banking Adoption	Web Benefits (Information quality, information accessibility, information sharing, transaction benefit)
	Web Barriers (Organisational barrier, trust, legal support)
eBanking Use	Perceived Usefulness

	Perceived Ease of Use
	Perceived Enjoyment
	Information on online Banking
	Quality of Internet Connection
eBanking Adoption	Consumer Innovativeness
	Personal Characteristics

Source: (Floh & Treiblmaier, 2006, p32)

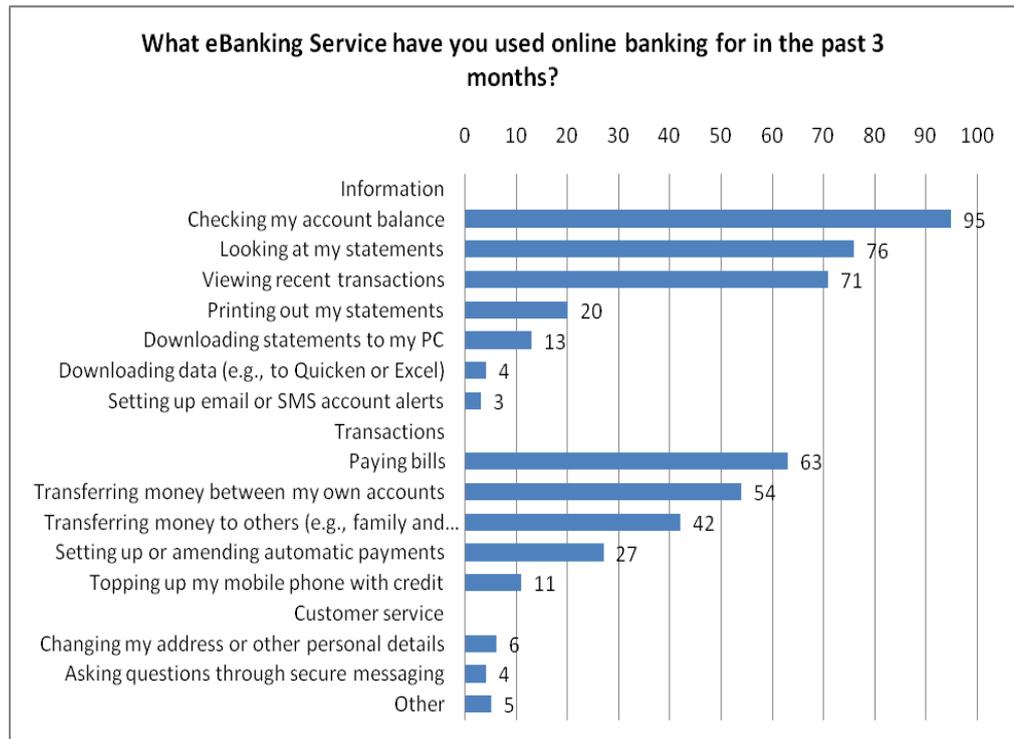
As seen in *Table 17 - eBanking variables*, there are sets of endogenous and exogenous variables that influence the user's decision to use eBanking. These are in line with the technology adoption principles discussed in *2.3 Technology Adoption Theories and Methodologies*.

2.5.6.1 Perceived enablers of eBanking

Enablers are factors that encourage customers and banks to adopt eBanking. Some of the enablers of eBanking are:

- Cultural changes: According to Ensor (2007), cultural changes in the form of new work profiles have promoted the use of eBanking services. A younger generation of workers and those who typically work from 9.00am to 6.00pm do not have time to visit banks. These people are using eBanking in greater numbers. The practice has now diffused to senior members of society who, in turn, have adopted eBanking to meet most of their needs. *Figure 16 - eBanking utilisation by percent* identifies the main reasons why people prefer to use eBanking.

Figure 16 - eBanking utilisation by percent



Source: (Ensor, Giordanelli et al., 2007, p2),

eBanking offers ease and convenience to users since they can complete all their transactions from their computers. Simpson (2002) and Ensor et al. (2007) identify further benefits of eBanking as:

- Increased security: eBanking has become much more secure and it is more difficult for hackers to break into a one-to-one connection between a bank server and a user's computer when a transaction is underway.
- Bandwidth availability: with increased bandwidth and Internet speeds available in more areas, users are able to use eBanking facilities and complete their transactions more effectively.
- Increased usability of interface: a great enabler of eBanking is to make the application interface user-friendly.
- Advanced Application Programming Interfaces (API) availability: developers can make use of easily available APIs to build eBanking applications and integrate them with the bank website.
- Increased productivity: the automation helps banks to reduce labour costs and it increases productivity of the employees.

Details of perceived enablers and inhibitors of eBanking are illustrated in Table 18 - eBanking enablers and inhibitors.

Table 18 - eBanking enablers and inhibitors

	Enablers	Inhibitors
Perceived Relative Advantage	Convenience of service (convenience of available service and convenience of location) - Innovation of ideas (rapid development of innovative ideas) - Management of services (easy to follow up requests/complaints)	None
Perceived Organisational Performance	Productivity of employees (business efficiency)	Profitability (high technology investment cost and the need for economies of scale for Internet technology use)
Perceived Customer/Organisational Relationship	Customers' satisfaction (reduce conflict)	Customer trust (Internet security) Customer commitment (customer loyalty)
Perceived Ease of Use	Easy to learn (increased automation of process)	Ease of navigation (lack of awareness/ knowledge about Internet technology and accessibility of service)

Source:(Al-Hajri & Tatnall, 2007, p41),

2.5.6.2 Perceived inhibitors of eBanking

Some inhibitors to the successful adoption of eBanking are outlined as follows (Al-Hajri & Tatnall, 2007):

- Security: media reports have gone overboard in repeating statistics about the number of incidents involving eBanking frauds and how people have had their banking information and their life savings stolen. Such reports act as a severe inhibitor for eBanking. While the media has its duty to report such frauds so that people can protect themselves, there is a tendency to sensationalise the issues. Proper education should be provided to users so they know how data theft occurs and what they should, and should not, do (Floh & Treiblmaier, 2006);

- Bandwidth availability: eBanking needs sufficient bandwidth to allow customers to complete their transactions easily. If the Internet connection has frequent breaks and works intermittently, then users tend to give up in frustration;
- Conflict resolution: when customers have a problem with their account, they would have to send an eMail or call customer help-desk and report their problems. The quality of service is often lacking in this area and customers may not be able to get their queries resolved to their satisfaction. In some cases, the support desk staff are not privy to all details of the account and they would have to pass the query to their superiors to get the query solved. This would result in further delays and acts as an inhibitor for eBanking;
- User interface problems: an improperly designed user interface with low usability is a big inhibitor for users. If people cannot find the information, if the menus are not easily available, or have labels that are not clear, then non-technical users would give up in frustration. While information may be available in the help section, the FAQ may not be clear in answering their questions;
- Availability of computers and Internet: eBanking would work in areas with sufficient penetration of computers and Internet connections. People who do not have computers at home would not be willing to use cyber cafes since such places are not considered safe. This is a problem in developing and underdeveloped countries where basic technological needs are not met. Expecting people to use eBanking in these circumstances would be impractical;
- Economies of scale: banking services have to justify the high set-up costs of implementing eBanking. Customers are not charged extra if they use such services. Banks therefore justify the expense of the service by claiming increased online traffic and a reduction in staff costs. Essentially, eBanking needs to have sufficient threshold traffic so that the bank management can reduce their staff or redeploy them. Such practices lead to dissatisfaction among the staff, who may resort to strikes. For these reasons, smaller banks refrain from offering fully-fledged eBanking services and focus more on ATM services (Al-Hajri & Tatnall, 2007).

2.5.7 eGovernment from a global perspective

eGovernment or Electronic Government is governance through Internet technologies, or wide area networks to disseminate or gather information and provide services. While eGovernment is a part of eServices, this is a distinct area

since even people who do not use IT extensively are included in eGovernment policies. Participants in eGovernment include different government bodies and legislature, judiciary and policing, and the general public. The main reasons for using Internet technologies is to increase internal efficiency and reduce bureaucracy; disburse updated information quickly; deliver public services; offer a means for remote locations to access information; reduce operating costs by avoiding printing and distribution of excessive literature; and to make government functionaries more accountable. There are a number different models of eGovernments, as listed below (Cordella, 2007):

- G2C - Government to Citizen;
- G2B - Government to Business;
- G2G - Government to Government; and
- G2E - Government to Employee.

Pascual (2003) has written extensively about the role of eGovernments, particularly in developing countries. In a report for ASEAN countries, Pascual pointed out that eGovernments have a vital role to play in globalisation and ICT framework development. These agencies help in the smooth transitioning of agrarian and industrial economies to knowledge economies. eGovernments act as the mouthpieces of governments in globalisation efforts and deal with foreign governments and businesses. By providing information about opportunities in the global market, eGovernments provide the best means to bridge the digital divide. Providing Internet connectivity in remote areas of developing countries creates a number of problems and while it is not necessary to have connectivity, there have to be suitable intermediaries to serve as information disbursers. The information disbursers would help to spread awareness about opportunities in the global market place to the 'have nots' so that the economically backward can avail themselves of training opportunities to grow. For eGovernments to be successful, they have to deliver results in the form of increased participation from the masses in government plans and policies. Such plans and policies include health plans and plans for development of infrastructure and agriculture. They need to show that the government has a number of schemes and plans and that these can be accessed if the eGovernment approach is to be used. Non Government Organisations (NGOs) can serve as intermediaries in areas such as healthcare, economic development, labour and employment, redressing grievances and problems of the common citizen and also interact with foreign agencies. They can also increase the ease with which citizens and business can approach different government agencies.

2.5.7.1 Advantages of eGovernment

Pascual (2003) has pointed out a number of advantages that eGovernments provide. These advantages are summarised below:

- Wider access to information: interactive government websites offer a plethora of information and status reports on policies, rules, plans and schemes. Businesses, communities and individuals located in remote areas often have access to the same information as those in state capitals;
- Globalisation efforts: eGovernment websites frequently announce schemes and plans to encourage investment opportunities along with information on availability of land, power, rail and road connectivity, employment regulations, tax incentives and so on. Interested parties, both domestic and international, can make use of the information to develop an overview of the economic scenario. The websites also provide contact details and businesses can contact the appropriate agencies and authorities directly without using the services of middlemen;
- Increased accountability and transparency: with the introduction of eGovernments, departments have to provide status reports that are often hosted on websites and this information may be available to citizens and other government agencies. Such publishing reduces fraudulent representations, as the reports are subjected to media and public scrutiny;
- Training and education: ICT in eGovernments provides training and education opportunities to redress the digital divide;
- Digitising records: availability of land and revenue records is a common problem in remote areas of developing countries. By digitising these records, poor and illiterate farmers can easily access information about their land holdings and prove ownership;
- Promotion of rural and cottage industries: many artisans and folk artists suffer from lack of recognition and avenues to market their products since few people beyond their village know about their skills. eGovernments can use their websites to promote such craft and help women and economically backward people to earn more money and gain recognition;
- Increase in clarity of communication: eGovernment allows the use of eMails that can be tracked, forwarded to other users and archived for later reference. This feature enforces discipline and clarity in communication, as people cannot deny what has been committed and said;

- Parity in implementation: with clear-cut policies that define specifics, it is possible to ensure that policies are not open to interpretation, unless required; and
- Sharing of best practices: best practices are processes used in successful implementation of projects that can be showcased. These projects could range from agriculture, aqua culture, forestry, sanitation, civil construction, promotion of trade and industry, traffic management and many other areas. When details of successful projects are posted on eGovernment websites, they serve as a source of knowledge for other agencies, besides giving recognition to the original implementers.

2.5.7.2 Disadvantages of eGovernment

Deep distrust and scepticism often mark the announcement of government schemes. This is a common perception about government in developing countries, and similar perceptions can be attached, therefore, to eGovernment. Scott (1996) and Evans and Yen (2005) highlighted a number of disadvantages to the adoption of eGovernment services:

- Garbage in – garbage out: eGovernments can be seen as simply an extension of the bricks and mortar government. All that eGovernment would do is disburse information that the government has created. Expecting ICT to act as a change agent and remove the perceptions of inefficiency and lethargy places a heavy burden on eGovernment. If basic policies of government are impractical, skewed and misguided, it is doubtful whether eGovernment can remove all these problems (Scott, 1996);
- Public use of services: by its very nature, eGovernment requires a working knowledge of computers. In developing countries, with high levels of poverty and illiteracy, expecting poor people to access computers and obtain information is not always practical. People may be forced to use the help of intermediaries who, despite the best intentions, may not be very well-qualified in interpreting national level economic policies. As a result, the actual implementation may be contrary to the intended use and application;
- Updated information: as in any government department, information and news updates would have to be routed through countless committees and panels that may deliberate at great length before information is approved for release. Time is wasted in this process and information available to the public would remain outdated. Government agencies tend to become more reticent when hosting information on websites, as it becomes available to more people. To avoid conflicts, employees may upload the most

inconsequential information along with a note asking interested parties to get in touch with the administrator for more information. So practically, nothing new has been achieved and people still have to use the old channels;

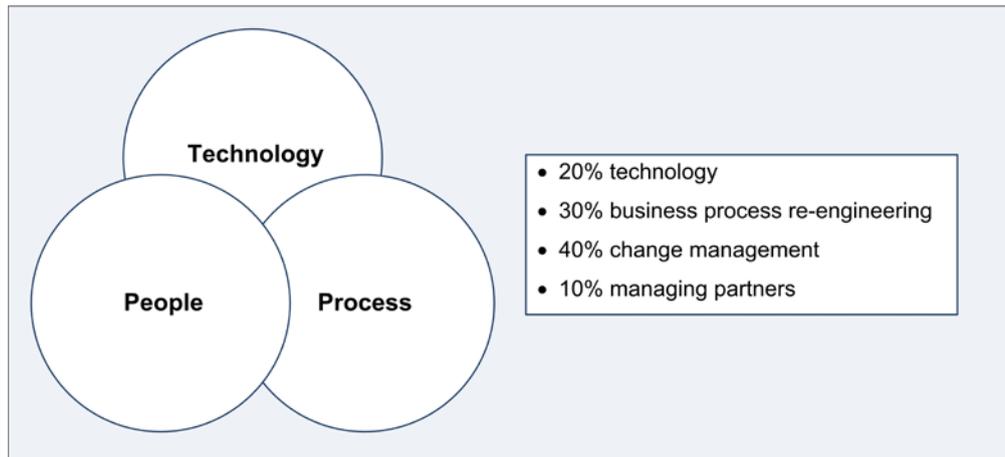
- Information processing and internal conflicts: eGovernment is essentially anonymous and uploading relevant information is the collective responsibility of departments. This is where the problem arises. When all have to be responsible, no one is held accountable;
- Tools of corruption and inefficiency: as suggested by Scott (1996), some government employees are very innovative when it comes to developing new methodologies and avenues of corruption. Every new venture is regarded as one with opportunity for more corruption. Expecting eGovernment to be free from such approaches would be unrealistic. A report from the Science Encyclopaedia has shown how government employees are subverting technology to indulge in more corruption. An excerpt is given below:

'...developments in communication technology have revolutionised the international financial system and enhanced the ability of traders to engage in corruption. The emergence of electronic networks for the transfer of funds has made it quite difficult for countries to deal effectively with corruption. Many anticorruption organisations have argued that the ease with which funds can be transferred to Europe or the Caribbean from different parts of the world implies that corrupt civil servants can effectively hide their extra-legal income from the public, making it virtually impossible for such funds to be recovered in the event of conviction' (ScienceEncyclopedia, 2009, p1).

2.5.7.3 Perceived enablers of eGovernment

Bhatnagar (1984) has pointed out that the main enablers for eGovernment are technology, business process re-engineering, change management and managing partners. These factors and their level of contribution in eGovernment growth are illustrated in *Figure 17 - Enablers for eGovernment*.

Figure 17 - Enablers for eGovernment



Source: (Bhatnagar, 1984, p91),

These enablers are further described as:

- **Technology:** availability of high levels of technology for information capture and sharing increase the pace of implementation and the resulting benefits. Technology refers to the use of hardware, software and availability of adequate Internet bandwidth for communication. Technology has two implications - availability of the required infrastructure; and suitable labour to use the available technology effectively. Both need to work hand-in-hand for eGovernment to succeed. As part of the training and demonstration of best practices, information in the form of visual aids, such as online videos and tutorials, could be useful. While compact discs (CDs) can be used for information disbursement, these media are static and may become outdated when new information is created. While government websites need not be very high technology, they need to have a high usability factor so that non-computer experts in remote areas are able to locate the required information and use it effectively. In addition, technology has high acquisition and maintenance costs and governments need to balance budgets and allowances so that the technology would not end up becoming more expensive than the perceived and expected benefits;
- **Business process re-engineering:** this refers to redefining how government operations and processes can be modified so that they can be disbursed more effectively. While existing processes can be used, they must be fine-tuned to remove factors of bureaucracy and red tape that often delay project implementations. Fear of obsolescence is very relevant and since ICT is a fast evolving area with new technologies emerging periodically, business processes from policy planning to implementation have to be carried out quickly;

- Change management: this is an area that is related to business process re-engineering and changing existing practices to remove inefficiency and increase productivity. eGovernment has a much better success rate than other forms of eServices;
- Managing partners: partners include business enterprises, individuals, vendors, and subject experts, all of whom are expected to participate and contribute to the eGovernment effort. These entities have specialised knowledge and experience that general government employees would not have. These entities would have a much wider experience in a competitive world while government employees would be exposed to only some aspects of what their government takes up. Managing, motivating and ensuring productive participation between these partners is a very important enabler for eGovernment.

2.5.7.4 Perceived inhibitors of eGovernment

eGovernment adoption has a number of barriers, both internal and external, that can act as impediments to growth. Corbitt and Al-Qirim (2004, p3) identify several prevalent inhibitors to the adoption of the eServices, these are:

- Connection and/or usage charges are too high;
- Target customers are not connected to the Internet;
- Lack of expertise and/or trained personnel;
- Technical limitations in infrastructure;
- Adoption benefits are not always evident;
- No guarantee of message delivery;
- Limited ability to enforce contracts;
- Concerns about security; and
- Difficulty in finding information.

Evangelidis et al. (2002) have provided a critical appraisal of the eGovernment strategies and these can be regarded as inhibitors of the practice. Some of the points Evangelidis raised are:

- Lack of applicability: some of the initiatives and policies that are announced by eGovernments are mere theoretical constructs and have little practicality.

- Human Resources: eGovernment requires people with adequate levels of skills, both in planning strategies and in creating software applications and implementing them. Considering that growth opportunities and salary are considerably less in government services, some people may prefer to work in private enterprises. Evangelidis et al. (2002) point out that this is not always the case and experienced people can be found in the government, but to a lesser degree than in the corporate world, particularly in developing countries.
- Technology: eGovernments operate under restricted budgets and adequate funds are not allotted to such initiatives. Consequently, IT managers are forced to cut down on recruitment and development costs, reduce spending on hardware and software and have to do with what is available. The end result is often improper implementation.
- Political structure: governments consist of elected members who come to power every five years or so and while this may seem a long time for the IT industry, change in power and political structure disrupts IT initiatives. Priorities are changed every now and then and projects tend to get abandoned midway. eGovernments that attempt to follow such mishaps often flounder; and
- Political inertia and inefficiency: attempts to introduce change management are often met with resistance by bureaucrats who do not want to see their power diluted. Such people are difficult to uproot and they indulge in turf wars that do not help anyone. Any changes that are made generally flow from the top. Ministers are frequently busy attending to political needs and as a result, eGovernment initiatives stagnate.

2.5.8 Social networking from a global perspective

Borgatti and Foster (2003, p992), define a social network as:

'A set of actors connected by a set of ties. The actors (often called nodes) can be persons, teams, organizations, concepts.'

Podolny and Page (1998, p59) define a social network as:

'a network form of organization as any collection of actors ($N \geq 2$) that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange.'

Operating at the individual level, networking allows individuals and organisations to develop contact with each other. These networks bring in many opportunities and

avenues in the form of skills, joint ventures and collaborations, work related services and even personal opportunities, such as dates and auctions (Nohria & Ecclea, 1992). Members of social networks may come from different social backgrounds but they have certain shared interests that bring them together. There would be certain types of interdependencies among members related to visions, values, interests, ideas, friendship, financial exchange, kinship, conflict and others. People visit social networking sites so that they meet people with whom they can relate.

Social networks have existed since ancient times when cults were formed along with freemason societies, musician and artists' guilds, tradesmen guilds, even guilds of assassins and mercenaries. These guilds allowed members to meet and discuss their problems, explore opportunities, help each other and, collectively, form a body with some bargaining power. Members met openly or in secret. They often had elaborate rituals, symbols of greetings and very rigid rules for accepting new members and, throughout history, groups were formed for a variety of reasons (Moody & White, 2003).

With the advent of the Internet, social networks assumed a new dimension and millions of people joined social network organisations such as MySpace, Facebook, Hi5, Orkut and others. Millions of people log in almost every day and being a member of a social group is 'an activity that is being woven into the very fabric of the global Internet' (Lipsman & Ivins, 2007, p1). *Table 19 - Social networking statistics* gives details of daily visitor statistics for the leading social networking organisations.

Table 19 - Social networking statistics

Worldwide daily visitation of selected social networking sites June 2007 vs. June 2006 total worldwide home/work locations among Internet users age 15+

Social networking site	Average daily visitors (000)		
	Jun-06	Jun-07	% Change
MySpace	16,764	28,786	72
Facebook	3,742	14,917	299
Hi5	2,873	4,727	65
Friendster	3,037	5,966	96
Orkut	5,488	9,628	75
Bebo	1,188	4,833	307

Tagged	202	983	386
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Source: (Lipsman & Ivins, 2007, p1),

Other sites have also witnessed huge growth in the number of visitors. According to Lipsman and Ivins (2007), cultural relevance plays a key role in deciding which site people from different countries visit. They state:

'A fundamental aspect of the success of social networking sites is cultural relevance. Those doing well in certain regions are likely doing an effective job of communicating appropriately with those regions' specific populations. As social networking continues to evolve, it will be exciting to see if networks are able to cross cultural barriers and bring people from different corners of the globe together in fulfilling the truest ideals of social networking' (Lipsman & Ivins, 2007, p1).

Table 20 - Details of regional visits to different social networking sites

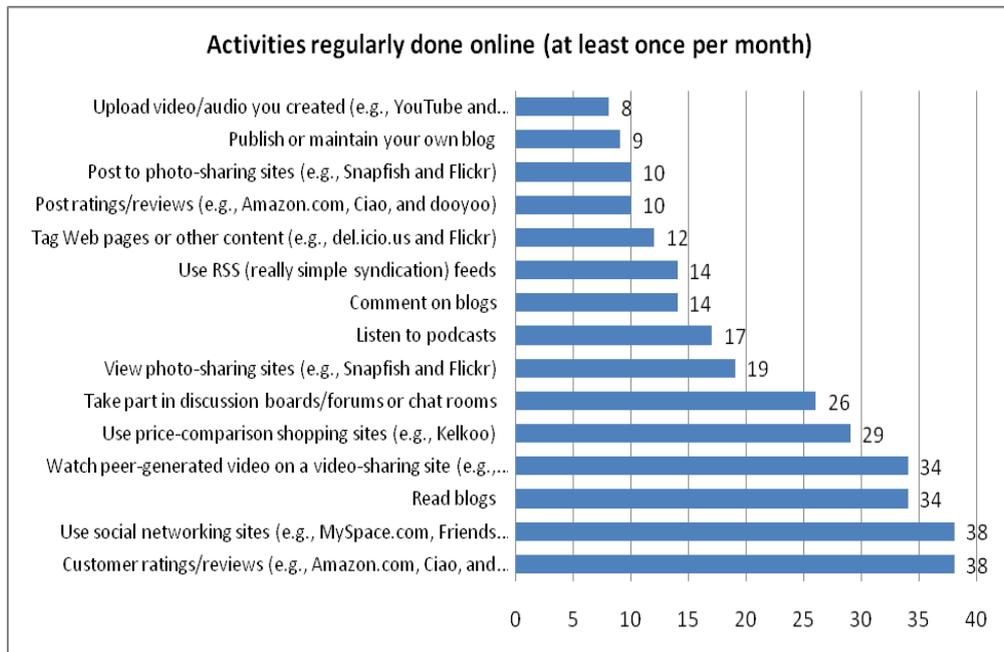
Visitation to selected social networking sites by worldwide region June 2007 total worldwide home/work locations among Internet users age 15+						
Social networking site	Share (%) of unique visitors					
	Worldwide	North America	Latin America	Europe	Middle East-Africa	Asia Pacific
MySpace	100%	62.10%	3.80%	24.70%	1.30%	8.10%
Facebook	100%	68.40%	2.00%	16.80%	5.70%	7.10%
Hi5	100%	15.30%	24.10%	31.00%	8.70%	20.80%
Friendster	100%	7.70%	0.40%	2.50%	0.80%	88.70%
Orkut	100%	2.90%	48.90%	4.60%	0.60%	43.00%
Bebo	100%	21.80%	0.50%	62.50%	1.30%	13.90%
Tagged	100%	22.70%	14.60%	23.40%	10.00%	29.20%

Source: (Lipsman & Ivins, 2007, p1)

As can be seen in *Table 20 - Details of regional visits to different social networking sites*, MySpace and Facebook had maximum visitors from North America, while Friendster and Orkut had maximum visitors from Asia Pacific. There appears to be a

cultural divide, with people from specific regions showing a marked preference for certain sites. *Figure 18 - Activities done when online* shows the main reasons that people give for being online, with 38% indicating that they visit social networking sites.

Figure 18 - Activities done when online



Source: (Jennings & Favier, 2007, p2)

2.5.8.1 Advantages of social networking

Watts and Dodds (2002) wrote of the compelling search for one's identity that drives people to social networking sites. Some of the advantages that this brings include:

- Anonymity and fantasy roles: social networking sites do not require you to provide details of your true identity. This allows people to indulge in fantasies and role-playing. Some people get an emotional high with this kind of behaviour;
- Increasing contacts: social networks allow you to increase contacts far beyond your regular work or school acquaintances. Likeminded people from across continents can meet online to discuss their favourite pastimes. Increased contacts can also lead to finding jobs or new business contacts, relocating to another region, and even getting married;
- Creating special groups: while membership is free to the sites, one can form special groups within the social network. Moderators or people who own these groups can decide who to admit, and who to reject. Some rules of

etiquette and behaviour are expected from members of these groups. The ability to create special groups means that a filter is created;

- Increasing publicity: by creating an appropriate profile, personal publicity increases in the virtual world and names are identified in search engines. Such virtual recognition can prove a great stimulation for some people; and
- Obtaining news and information: by being members of such sites, people are able to obtain news and information on their special interest topics, become aware of events in far away areas and increase their knowledge.

2.5.8.2 Disadvantages of social networking

Ashmore, Deaux, and McLaughlin-Volpe (2004) speak of certain inherent disadvantages of social networking and infer that a compulsive will exists to change one's personality and assume a different identity to gain acceptance and recognition in a social group. Given the anonymity of the web, people can assume an identity that is contrary to what they actually are and a sort of 'Dr. Jekyll and Mr. Hyde' behaviour is formed. Some people get so addicted to social networking that they may abandon all other work and keep on compulsively surfing the net and contacting other group members. Other disadvantages of social networking are:

- Anonymity and identity: social networking sites allow people to assume any identity and all one needs is an eMail ID to register. This convenience allows anti-social elements to infest such sites in order to obtain information about other members with an intention to commit crime;
- Malevolent groups: restricted membership allows for the development of specific groups that focus on such things as child pornography, or terrorist activities; and
- Time wasters: people tend to spend an inordinate amount of time on such sites and this can affect personal relationships and/or productivity.

2.5.8.3 Perceived enablers of social networking

Ensor (2006) highlighted a number of factors that act as enablers for social computing. Among the top reasons is the availability of technology and good content that encourages people to participate in social network sites. *Table 21 - Technology enablers for social networking* details some examples of technology enablers that encourage the growth of social networks.

Table 21 - Technology enablers for social networking

Social Technology	What it is	Financial services examples	Impact
Search Engines	Sites that help Net users find relevant content	Google; Yahoo!; MSN; AOL; Technorati	40% of UK Net users say search engines are the first place they go when researching a purchase online
Comparison shopping sites	Sites that help Net users compare products and services	Morningstar; Kelkoo; Bankrate (US); Moneysupermarket (UK); Finance Scout 24 (DE)	7% of all Europeans used a price comparison site to research their most recent financial purchase
User review sites	Sites that let users read and write reviews of products and services	Ciao; DooYoo; GeldWaardeRing (NL)	20% of European Net users and 15% of North American Net users look at other consumers' reviews online
Bulletin boards/forums	Sites that let users share opinions on a given topic	The Motley Fool (US, UK); Money Saving Expert (UK)	9% of European Net users have used forums, bulletin boards or newsgroups on finance topics
Blogs	Online journals or diaries that allow readers to post comments	Consumerist.com (US); Times Online Money Weblog (UK)	10% of North American Net users read blogs regularly
Podcasting	Audio or video files that can be downloaded to a device like an iPod	SEC (US); Fidelity (US); PIMCO (US).	1% of North American Net users listen to podcasts

RSS	XML content feeds that can be read in a browser for personal Web pages	LCL (LE CRÉDIT LYONNAIS) (FR); American Express (US)	6% of North American Net users use RSS weekly
C2C eCommerce	Online marketplaces that enable buying and selling between consumers	Zopa (UK); Prosper (US)	Tiny to date; Zopa has attracted 72,000 members in the UK

Source: (Ensor, 2006, p3)

Other reasons that enable social networking include (Ensor, 2006):

- Revenue models: It takes money and resources to develop social network sites. Employees have to be paid, server space has to be hired and promotion and other costs have to be realised. In other words, promoters of such sites should be able to make money. Most of the websites offer free registration. Thus, the only way that promoters can make money is through online advertisements. Promoters offer advertisers a number of options, such as banner advertisements, or pay per click advertisements;
- Like interests groups: people should find interesting topics and posts that would make them visit the site. Posting of interesting content has to be done by members but this acts as a great enabler; and
- Unique selling point: a social network site should be built around a unique selling point. Facebook, Reunion and others have their own unique selling proposition and other sites that attempt to copy the proposition may not succeed.

2.5.8.4 Perceived inhibitors of social networking

Some identified barriers to social networking include (Ashmore et al., 2004):

- Low quality of technology: when members visit sites, they expect a high level of technology where mail threads are available in archives and the site loads at an appropriate speed. If the site has poor technology with missing links, truncated mail threads, poor quality of graphics and other such problems, then people are unlikely to re-visit the site;
- Too many advertisements: while members can appreciate the need to have advertisements, too many of them crowding the page, harsh and distracting

animations, or loud and offensive images, can act as detractors for members;

- Offensive content/spam: members may not like repeated posts on controversial topics, or being spammed. Groups need to be moderated and focussed, with offending members being barred from making posts;
- Government regulations: governments in some countries have placed certain groups and sites under watch because of the activities of some members. Such sites would see a reduced membership; and
- Fraud and intimidation: sites that allow members to carry out fraud on other members or that are known to sell confidential information would soon see a reduction in membership.

2.5.9 eServices in emerging markets

Emerging markets include China, India, the Middle East, South East Asia, and some countries of Latin America. All of these regions offer great potential for eService activities.

Governments in many emerging economies see ICT development as one of the contributors to growth and have initiated a number of development projects. While education and wealth make a difference in how technology diffuses into the market, many emerging countries have good education facilities, with English as the main language of learning. It would therefore be much easier for these governments to localise and transplant the proved methods and processes from developed countries to their own. *Table 22 - Information and communication infrastructure in the 1990s (per 1,000 people)* provides details of ICT infrastructure in developing and other countries.

Table 22 - Information and communication infrastructure in the 1990s (per 1,000 people)

Country Groups	Personal computers		Internet users		Telephone mainlines		Mobile phones	
	1995	2001	1995	2001	1995	2001	1995	2001
Income breakdown								
High-income OECD	188	363	34	360	455	574	89	690
Developing countries	14	34	2	37	52	104	4	94

Least developed		4		3	3	7	0	8
Region breakdown								
Northern America	273	623	68	467	555	660	108	382
Western Europe	174	325	30	345	445	572	84	747
East Asia and Pacific	82	158	14	177	148	222	36	278
Eastern Europe								
Central Asia	26	81	5	65	130	232	4	199
Middle East and North Africa	28	62	1	61	89	147	16	163
Latin America and the Caribbean	17	49	1	63	66	145	9	142
Sub-Saharan Africa		12		9	9	19	1	30
South Asia	0	4	0	4	5	20	1	9

Source: (Pohjola, 2003, p6)

As seen in Table 22 - Information and communication infrastructure in the 1990s (per 1,000 people), while North America and Western Europe have high levels of ICT investment, other areas such as East Asia, the Middle East and Latin America have shown an increase in technological investments. eServices need good investment in ICT infrastructure to allow diffusion through the economy. By investing in these areas, governments are acting to reduce the digital divide. With an increase in infrastructure and by making the infrastructure robust, these countries create an investment-friendly environment and encourage the growth of industries and employment prospects. Many countries have started eGovernment initiatives to encourage the growth of the Internet as a tool for learning.

2.5.9.1 Enablers for eServices in emerging markets

Rouibah, Khalil, and Hassanien (2007) have written about the great interest shown by software and hardware manufacturers in emerging economies such as India, Latin America and the Middle East. Hassanien reports that PC manufacturers such as Dell, HP, AMD and others have seen growth of 50% in these areas. To make their technology affordable, the companies offer products that are lower cost items with processors made by AMD, and possibly with open source software such as Linux and Open Office.

There are a number of enablers for implementing eServices in emerging countries (Rouibah et al., 2007). These include:

- Knowledgeable and trained workforce;
- Technology Adoption Culture;
- Increase FDI;
- ICT as a thrust area; and
- Rising incomes.

2.5.9.2 Inhibitors for eServices in Emerging and Developing Economies

Al-Alawi & Kuzic (2007) highlighted five major inhibitors currently faced by eServices companies operating in Emerging and Developing Economies, which the primary data and analysis conducted in this current study could help mitigate. These inhibitors are:

- Lack of a sound eServices business and/or marketing strategy;
- Resistance to eServices by the residence of Dubai;
- Lack of focus on ensuring customer satisfaction;
- Lack of repeat business with eService users; and
- Inability to compete against bricks and mortar commercial businesses through a sound marketing strategy.

There are a number of barriers to implementing eServices in emerging markets (Rouibah et al., 2007). These include:

- Poverty and rural population: countries such as India, China, Vietnam, and many Latin American and African nations have almost 90% of their populations living in villages and rural areas. Many are classified as rural poor and earn less than a dollar a day. There is a sharp divide between the rich and poor in these countries. eService initiatives need to be directed by product manufacturers and by the government to increase the availability of information through education;
- Low infrastructure: developing and emerging countries have other priorities such as agriculture, fisheries development, developing industries and healthcare. ICT development is a low priority in terms of fund allocation. Increased levels of corruption in procurement of hardware and software further reduce the allotted budget.

Table 23 - Near-term PC market candidates by region briefly outlines the market potential in developing regions of the world.

Table 23 - Near-term PC market candidates by region

	Near-term Market Candidates (in millions)	Market Opportunity (millions of US\$)	% of Worldwide Total
East Asia & Pacific	178	53,317	32%
Eastern Europe	100	29,948	18%
L. America & the Caribbean	86	25,911	16%
South Asia	52	15,617	9%
Sub-Saharan Africa	39	11,746	7%
Middle East & N. Africa	30	9,023	5%
Developing Country Total	485	145,562	87%

Source: (Coppock, 2007, p18)

As seen in *Table 23 - Near-term PC market candidates by region*, developing countries have a potential for 87% of worldwide sales. The PC market in developed countries has saturated and these countries have a very high PC-penetration rate. It is presumed that PC sales have a direct relationship to increase in eService activities and if the estimated potential was realised, then eService activities would have a huge growth.

The next sections provide brief discussion on the state of eServices and ICT development in some emerging and developing regions.

2.5.9.3 Africa

Africa is a vast continent with wide economic disparities across different countries. While countries such as South Africa, Libya, Algeria and other oil producing nations have sufficient oil revenues, other countries such as Botswana are desperately poor, ravaged by famine. However, some countries have shown signs of increased adoption of eServices as a strategy to achieve growth. According to the Internet World Stats (2009), the number of Internet connections in Africa has increased by 1,031% since 2000 and the capitals of all African countries have Internet connectivity. There are more than 450 Internet Service Providers and it is estimated that there are about 1.5 million Internet dial-up connections. This figure represents a

very low value of 1 connection or Internet user per 250 people. Some countries such as Senegal, Ethiopia, Tunisia, Morocco, Mali, Zimbabwe, Egypt, Algeria, Uganda, Cote d'Ivoire and others have developed rudimentary ICT frameworks and policies that are designed to increase the use of Internet. South Africa, however, is an exception and is technologically advanced, although there are wide disparities between the poor and the rich.

The classic definition of the digital divide can be seen in Africa. Countries that have adopted ICT have managed to develop their economy to some extent and increase job opportunities. Other countries that have not yet taken up ICT lag behind. Internet and eServices are used for online payment, education, increasing healthcare and communication in remote areas, and to help disburse funds. However, grinding poverty combined with corrupt governments still seems to force many parts of Africa deeper into the dark ages (Mensah, 2007).

Countries such as Cameroon, Tanzania, Ghana, Mali, Gambia, Comoros and Burundi have initiated eService development policies. What these countries need is training and funds to help them get started. While some countries have sufficient oil revenues, often the money is misused by corrupt officials or used for import of essential items, such as food and medicines. While online shopping would come much later, ICT can help people to avail themselves of training and education to prepare them for employment. Part of the problem in many developing nations is that there is very little FDI flow into the region and little indigenous industry. Emerging and Developing Economies need to introduce ICT frameworks into the national culture and ensure that these technologies are used to help the economy to grow by creating job opportunities (Mensah, 2007).

In a paper outlining the risks and challenges faced by ICT organisations in Tanzania, Casmir and Yngström (2003b) stated that the:

'Internet is an educative, informative, and entertaining facility. However, at times it can turn into a destructive facility if adequate security precautions are not taken timely. Internet security risks are not to be taken lightly especially in this part of the world where people are so enthusiastic with this new and fantastic facility.'

Although this statement is equally true in both an Emerging and Developing Economy as well as a Advanced Economy, one will find that within the Advanced Economy there is a lot more focus on quelling security threats through applications, appliances and through media communications.

Casmir and Yngström (2003b) highlight that people and companies have a tendency to adopt technology from the Advanced Economies often sight unseen and without any well thought out evaluation procedure. Yet, only with a structured approach by

both regional governments and organisations will risks be appropriately mitigated, and the only way to do this properly is to provide the right regulation and training so that the people within the Emerging and Advanced Economies have the appropriate knowledge.

To be able to keep ICT technologies safe from the malicious threats of hackers and phishers ICT organisations need to be proactive and provide preventative remedies. This includes implementing a security governance structure and providing continuous skill enhancement for their staff and the community at a whole (Casmir & Yngström, 2003a, 2003b).

2.5.9.4 Middle East

The Middle East includes the UAE and other Arab nations, Israel, Iran, and Iraq. Countries such as the UAE are oil economies and have one of the highest GDPs per capita. Wealth is not an issue in the majority of Arab countries and the UAE and Dubai city have invested very heavily in ICT and Internet technologies. According to the Internet World Stats (2010), the UAE has Internet penetration of 49.8%, while Kuwait has 34.7% and Qatar has 37.8%. Bahrain has 38.4% with Saudi Arabia having 22% Internet penetration. The region has a very high percentage of multi-national companies in the oil sector and non-oil areas such as construction, transport, retail, stock markets and other avenues. These companies have large numbers of skilled foreign workers who form the majority of the workforce. To cater to the business needs of these populations, elaborate and robust ICT frameworks have been set up with infrastructure developed to offer eServices. Some of the activities that are supported through eServices include eBanking and payments, transactions through Internet, development of efficient web and WAN based networks for supply chain management, transport and port facilities management, connectivity for airports and stock exchanges, and many other areas.

Governments of these countries have especially planned for a future that can no longer rely on oil, by developing infrastructure for manufacturing, trading, assembly and other forms of business activities. Residents of these countries are provided with adequate support in the form of funds for learning, to start businesses, and the Internet is increasingly used for eGovernment activities. Many native citizens of these countries have still to accept eServices for online shopping and this is an area with excellent growth potential. Sales of computers and laptops have been increasing each year and the region is regarded as a high growth area for computer hardware and software. Companies such as Dell, Microsoft and many others have opened offices to provide support for their customers.

2.5.9.5 Asia Pacific

The Asia Pacific region is one of the powerhouses of the world with countries such as China, India, Japan, Korea, Taiwan and other developed and emerging countries. Burger (2008) states that the Asia Pacific region has shown an annual growth of 23.3% and it is expected that by 2011, the region would have eService businesses worth US\$178.7 billion. Whilst Japan already represents one of the G7 countries, China and India stand as nations with huge potential for continued growth. China's economy is growing increasingly in areas such as manufacturing, apparel, chemicals, and consumer goods, electrical and electronic items. India has built a reputation as one of the leading IT service countries. Burger (2008) states that more than 90% of citizens in developing countries reside in villages and rural areas and the digital divide is very steep. In countries such as India where the IT industry has grown very rapidly, the actual growth is restricted to metros such as Mumbai, Bengluru, Pune, Noida and other smaller cities. The percentage of people directly employed in IT industries is very small in comparison to overall employment. But the Indian government has used the momentum generated by the IT industry to set up eGovernments and established a number of special economic zones where other industries such as textiles, automotive parts, agriculture based industries and others have evolved. Again, the development is restricted to areas around metros and bigger cities, leaving a very large population on the other side of the digital divide.

China has also suffered from the same lop-sided growth and provinces along the South West coastal regions, such as the Guangdong, have seen very high economic growth and substantial increase in eService activities, while the inner regions are still displaying traits from the nineteenth century. The situation is the same in countries such as Indonesia, Malaysia and the Philippines. Countries such as India and China are huge and ICT development has followed the path of industrialisation with Internet diffusion being deeper in areas that were already industrialised and had a higher level of literacy (Burger, 2008).

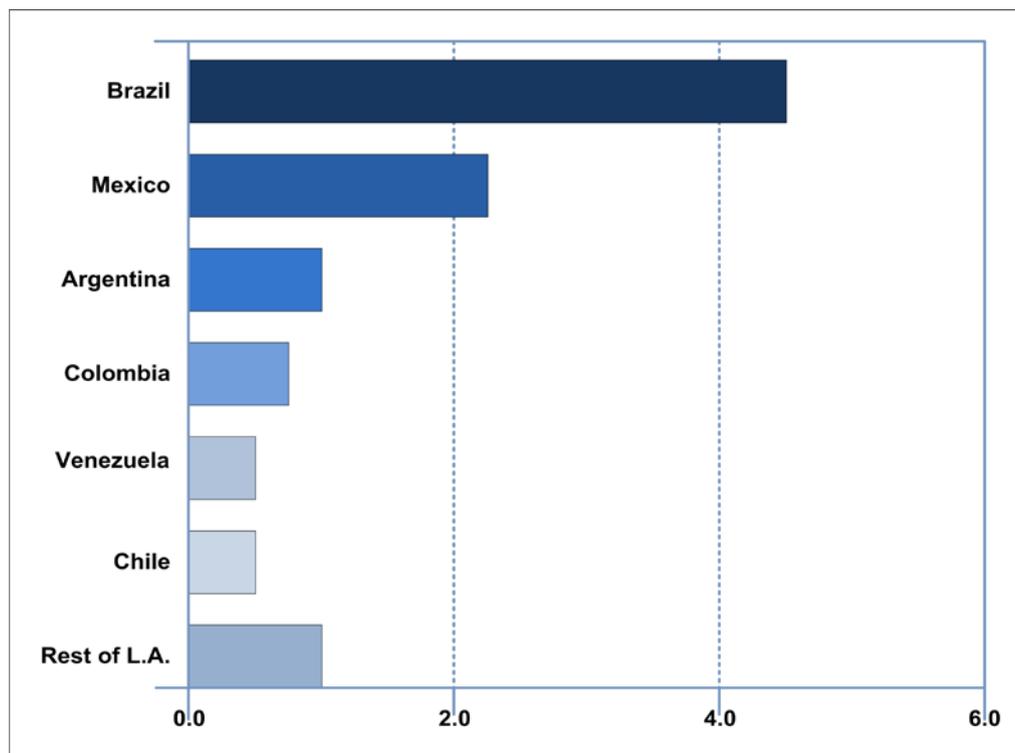
In the coming years, developing countries will receive more opportunities for outsourcing and growth will be in high technology areas such as online banking, supply chain management, logistics, eGovernment, and financial markets. Consequently, diffusion and adoption of eServices will rise (McCarthy & Young, 2005).

2.5.9.6 Latin America

Latin America includes a number of countries such as Brazil, Venezuela, Argentina, Peru, Mexico and Chile. In all these countries, Internet access is limited to very few people living in larger towns and cities while the poor remain on the other side of the digital divide. InfoAmericas (2007) states that in 2003, the Latin American eServices market potential was worth US\$7 billion and the trend is expected to grow sharply.

These countries have wide disparities in wealth distribution, land holding, education and access to jobs. Native South Americans are relatively poor while those with European lineage are much better off. Subsistence agriculture using obsolete technology and manual work gives very low productivity. Although these countries have immense land and plenty of water, agricultural produce has declined steadily over the years, mainly because of skewed government policies and lack of information among the poor farmers. PC penetration and access to the Internet is limited and far fewer people actually own computers at home. *Figure 19 - Internet connections in millions for Latin America 2007* illustrates the number of Internet connections in millions for 2007.

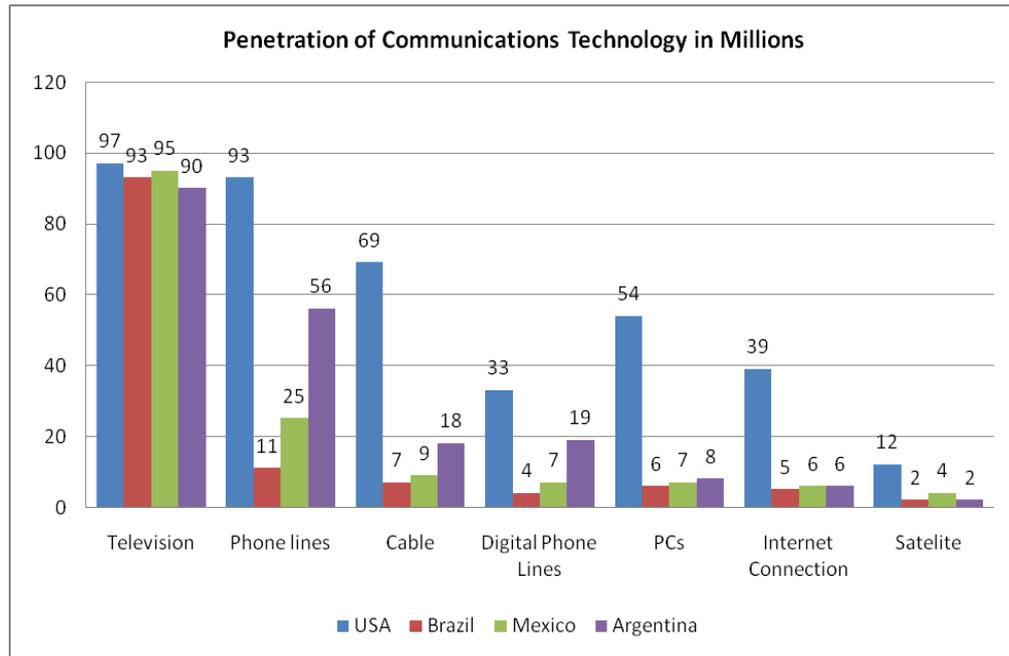
Figure 19 - Internet connections in millions for Latin America 2007



Source: (InfoAmericas, 2007, p2)

There is also less penetration of other ICT technologies, such as phones, cable television, digital phone lines, PCs, and Satellite TVs. *Figure 20 - ICT in Latin America 2007* presents a graph illustrating the penetration of different communication technologies.

Figure 20 - ICT in Latin America 2007



Source: (InfoAmericas, 2007, p4)

2.6 Conclusion

There have been wide-ranging studies that have investigated the fundamental aspects of technology adoption and innovation. These works have identified numerous variables, yet these variables typically have no relation to each other. Only a select few studies have identified interrelated variables (Rogers, 1995; Tornatzky & Klein, 1982).

The available published literature concentrates mainly on the adoption of eServices in countries within the Advanced Economies. When the literature does focus on the Emerging and Developing Economies, it provides an in-depth analysis of infrastructure but with little reference to the plight of companies establishing their business in the midst of an 'alien' or technological resistant culture. The literature that does focus on the cultural aspects of technology adoption within the Emerging and Developing Economies also relates largely to 'physical' technology such as telecommunications equipment and personal computers as opposed to eServices activities. Chong (2003), Casmir and Yngström (2003a, 2003b), Dada (2006), Karanasios and Burgess (2006), Schneeberger (2007) and Tarafdar and Vaidya (2004) have all conducted research within Emerging and Developing Economies. However, these academics focused on security and systematic change from the organisations point of view.

There are several insightful publications that focus solely on eCommerce technology adoption and its perceived enablers and inhibitors, This includes the research

conducted by Al-Abed and Hellyer (2001), Al-Alawi and Kuzic (2007), Akhter (2007) and Godwin (2006), which focus on the cultural aspects effecting business interactions, eService provider inhibitors to eServices or on banking institutions and their forays into eBanking. However, there is little or no literature available that relates specifically to Middle Eastern eCommerce users, particularly using cultural exposure as a measure to gauge the success of technology adoption.

In relation to the current technology models, UTAUT, developed by Venkatesh et al (2003) is more suitable to be used within an Emerging and Developing Economy as it expands on the effect that the attributes 'gender', 'age', 'experience' and 'voluntariness of use', have on the adoption of technology. Although for this model to be successful within a culturally heterogeneous environment, such as Dubai, one also needs to look at an individual's cultural exposure between the Emerging and Developing Economies and Advanced Economies. In today's global economy, international borders are becoming more transparent. Consequently, a model solely for an Emerging and Developing Economy and another designed for an Advanced Economy would not be applicable.

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the approach taken to conduct the research and develop the proposed model used to evaluate how cultural exposure influences eServices adoption within an Emerging and Developing Economy. Discussion areas will include the research questions, selected methodology, the research process and a description of the research instruments used and data collection procedures. This is followed by consideration of issues of reliability and validity associated with the measurement of data.

3.2 Research aim and objectives

The objectives of the current study were to identify and report on the influencing factors that affect the consumer adoption of eServices within Dubai; and to develop a new theoretical model incorporating enabling and inhibiting factors based upon the findings from the investigation and data analysis undertaken within this research.

In undertaking the research, it was important to understand the cultural context of Dubai - the additional or alternative belief factors within a community that is rapidly moving from one level of cultural consciousness to another (the agrarian age to an information based society).

Equally important was to understand how cultural exposure between an Emerging and Developing Economy and an Advanced Economy affect our current understanding of (Rogers, 1995) the 'Innovation Decision Process Model five stages of technology adoption'.

3.2.1 Operational objectives

The four operational objectives for this study are explained below:

1. To investigate the relevance of established models for adoption and implementation for eServices;
2. To explore the adoption and implementation factors that influence the success of eServices, establish their relative importance and formulate them into a cohesive model;
3. To test the specific relevance of this model in the eServices environment within Dubai; and
4. To establish whether the model for eServices adoption developed can be generalised to an emerging market context, using Dubai as the initial test case.

3.2.2 Type of investigation

The research model developed in *Section 5 - Theoretical Model* is based on correlational hypothesis testing and not on the definitive cause and effect relation determination.

The research model concerns measurement of the factors influencing the Dubai based consumers decision to adopt eServices. The required resultant model testing was accomplished by finding the adoption variables that are related to the decision of consumers, who have different cultural backgrounds, to partake in the adoption of eServices as a preferred or alternative medium of commerce.

3.2.3 Time dimension of the research

Cross-sectional studies were used to collect the primary research data; the respondents' answers were evaluated taking measurements at two points in time - September 2005, and September in 2008. These cross-sectional study measurements are certainly important for the successful evaluation of the primary data in relation to adoption and diffusion studies. This approach is not always feasible as technology adoption can progress through a learning cycle that may span great lengths of time. However, cross-sectional research takes a 'slice' of its target group and bases its overall finding on the views or behaviours of those targeted, assuming them to be typical of the whole group (Gratton & Jones, 2004). It was determined that this approach would be beneficial to this research as Dubai was experiencing rapid growth and the collection of two sets of primary data would provide both a benchmark and checkpoint for the analysis (Butler, Bassiouni, Adly, & Widjaja, 2007).

3.3 Research paradigm and method

Typically, the research design, methodology and approach are driven by the research question being scrutinised. Corbin and Strauss (2008) state that, depending on the field of research, there may be several research approaches and methods that are considered appropriate. This is a view which is also shared by Creswell (2003).

The research paradigm influences the selection of an appropriate research method, for example, whether to choose a qualitative or quantitative approach. In some cases, as stated by Creswell (2003), mixed method procedures that incorporate both elements of qualitative and quantitative research can obtain a level of validity within academia, which is a view also shared by Tashakkori and Teddlie (2003). In this section, several options for conducting primary research are discussed.

3.3.1 Research paradigms

As indicated, the paradigm adopted in any research has important implications for methodology decisions. Corbin and Strauss (2008) state that there are three paradigms evident in Information Systems research. These are the:

1. Positivist paradigm;
2. Interpretivist paradigm; and
3. Critical theory paradigm.

3.3.1.1 The Positivist paradigm

Pearson, Vaughan, and FitzGerald state that the:

'Positivist Paradigm Positivism', sometimes known as the logical Positivism or the empirico-analytical paradigm attempts to view the world objectively in order to manipulate and control it' (2005, p16).

Vaughan and Robinson state that Positivism's:

'Basic premise is concerned with identifying cause and effect and in so doing, being able to identify generally acceptable theories which can hold good in a multitude of circumstances' (1992, p19).

The objective mentioned above can be achieved by verifying for causal relationships and regularities between the fundamental elements. Roth and Mehta (2002) state that there are two major approaches in research - scientific and Interpretivist. The scientific approach is based on empirical study, which corresponds with the intransient nature of Positivism.

Positivism has been the dominant paradigm of Information Systems research. Orlikowski and Baroudi (1991) stated that 97% of academic research conducted within the US corresponded to the Positivism paradigm. More recently, Interpretivism has gained wider acceptance (Klein & Myers, 1999; Lee, 1999) and critical theory has been discussed and used (Myers, 1994; Ngwenyama & Lee, 1997; Orlikowski & Baroudi, 1991). While paradigms have imprecise boundaries and include numerous variations, common themes for each paradigm can be identified.

Firstly, Positivist research is based mainly on a deductive style of reasoning, as used in natural science (Williamson, 2002). In other words, it is hinged on the understanding that the world phenomena description is reducible to observable facts and mathematical relationships. The Positivist paradigm focuses on numerically measurable events and scientific study (Dube & Pare, 2003). Such research is often concerned with hypothesis testing and is applied to find natural laws that can be

used to forecast and control certain events. Fact and evidence are two words primarily associated with the Positivist paradigm (Neuman, 2006).

The Positivist paradigm utilises quantitative data, often using large samples where data is collected through experiments, questionnaires, content analysis and existing statistics. While the accuracy and high reliability of a Positivist approach is clear, criticism relates to the depth of understanding gained (Fichman, 2004). Arguments against Positivism and in support of the Interpretivist paradigm are based on quantitative methods producing artificial and sterile results. These results, it is argued, are incapable of representing the complexity of social realities. People are reduced to numbers and abstract laws and formulas are arguably not relevant to the actual lives of real people and have low validity (Neuman, 2006).

3.3.1.2 The Interpretivist paradigm

Corbin and Strauss (2008) state that Interpretivism is the systematic analysis of socially meaningful action through the direct detailed observation of people in natural settings. This is carried out to arrive at understandings and interpretations of how people create and maintain their social worlds. Interpretivism is related to the theory of hermeneutics (Neuman, 2006), which emphasises detailed examination and assessment of text, or the written word. This paradigm is more established in Information Systems research in Europe compared to the US.

In contrast to Positivism, the Interpretivist paradigm is particularly concerned with qualitative data. This data is rich and can be examined for social meaning. The qualitative supporters take the stance that information about the world's phenomena lose most of the important information and meaning when reduced to numerical form (Serafeimidis & Smithson, 2000). In other words, Interpretivism does not try to generalise from a carefully selected sample to a specified population, but rather to develop deep understanding that may then inform understanding in other contexts (Glaser & Strauss, 1967; Orlikowski & Baroudi, 1991; Walsham, 1995).

Methodologically, research within the Interpretivist paradigm uses small samples, open-ended questions, unstructured interviews, individual case studies, diary methods, participant observation and the like. Research using these techniques has high construct validity and realism. As with the Positivist paradigm, the Interpretivist approach possesses weaknesses. It is difficult to replicate Interpretivistic work because the data and findings are socially constructed between the respondents and researchers. Positivist criteria of validity and reliability cannot be easily applied. Rather, truth and trustworthiness are used as criteria and are observed through different means (Carroll & Swatman, 2000).

3.3.1.3 The critical theory paradigm

Critical theory is derived from the works of Marx, Freud, Marcuse and Habermas (Goldstein, 2006; Kivisto, 2007; Marcuse & Kellner, 2001). Critical theorists disagree with what is viewed as the anti-humanist and conservative values of Positivism and the passive subjectivism of Interpretivism (Doolin & Lowe, 2002). Critical theorists go beyond seeking understanding of an existing reality and critically evaluate the social reality being studied in order to implement improvements. Neuman (2006) argues that it is the aim of critical theorists to achieve change. Research may result in strategies to reveal contradictions, empower subjects and initiate action. Critical theory is receiving increased attention from Information Systems researchers (Doolin & Lowe, 2002).

3.3.2 Selected research paradigm

This study embraces the Positivist paradigm. Despite its shortcomings, this approach is well matched to the objectives of this study. Firstly, the study is based on hypotheses testing and conceptual model development using substantial amounts of data collected via questionnaires.

Secondly, testing diffusion and adoption theories in the context of the adoption of eServices within Dubai means that data collection encompasses a broad demographical scope, which again supports the need for structured questionnaires collecting precise data.

The data when obtained was expected to be precise with high reliability, so that when measures were repeated, the findings had comparable results (Briand, Langley, & Wiczorek, 2000; Rossiter, 2002).

The techniques utilised to gather evidence can influence the manner in which the analysis of the evidence is conducted. Some of the following approaches are predominantly Positivist, while some may be used with either of the phenomenological approaches.

3.3.3 Research methods of the Positivist paradigm

Gilner and Morgan (2000) provide a list of methods or tactics suitable for all types of business and management researchers. Researchers have to know these approaches as their characteristics will influence the forecasting research techniques utilised for evidence collection and also influence the way in which analysis of the evidence would be done.

3.3.3.1 Forecasting research

Forecasting research tends to be associated with mathematical and statistical techniques of regression and time series analysis (Armstrong, 2001). This type of research may also fall under the heading of mathematical simulation. These

techniques use historic evidence to make projections. This approach is highly quantitative, with mathematical models being fitted to empirical data or evidence points (Hendry & Clements, 2003). This method was not chosen for this study as it attempts to establish a relationship between different sets of historical evidence and to understand why these relationships exist.

3.3.3.2 Futures research

Although not as mathematical or technical, futures research provides a way of considering and developing predictions with a similar intent to forecasting research (Drimbetas, Sariannidis, & Porfiris, 2007). However, unlike forecasting, futures research has a forward orientation and thus looks ahead, rather than backwards, using Delphi studies, scenario projections and other techniques (Goodman, 1987; Haefele, Anderer, McDonald, & Nakicenovic, 1981; Powell, 2003). Yoon and Park (2005) argue that futures research is used in technology forecasting, business trend analysis and other specialised areas. However, similar to forecasting research, this method is not suitable for the purpose of this study.

3.3.3.3 Simulation and stochastic modelling

Simulation and stochastic modelling may be defined as a domain of study in which the input variables and the manner in which they interact is generally known to an uncertain level of accuracy (Nelson, 1995). In other words, stochastic modelling is employed in areas that cannot be analysed by deterministic or analytical treatment.

Simulation is used in areas where formal mathematical relations have to be evaluated with a number of assumptions (Freedman, 1992).

3.3.3.4 Case study

Yin (2009) regards a case study in much the same way that the natural scientist regards a laboratory experiment – as an instrument that is required to be robust. According to Miles and Huberman (2002), the case study approach is an umbrella term for a family of research methods that have in common the decision to focus on an enquiry around a specific instance or event. More formally, a case study can be defined as ‘an empirical enquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidences are used’ (Yin, 2009).

In a case study, the researcher examines features of many people or units at a specific time or across time periods. These studies use analytical logic instead of numerical statistical testing (Miles & Huberman, 2002).

Case studies give a multi-dimensional view of different events and factors, such as corporate political issues, relationships, and influencing patterns in specific contexts.

The researcher can build this context by using combined sources of information and data, such as interviews, archives, observation and research instruments. However, based on this research strategy, a researcher is an observer and a large number of variables are involved over which he has little or no control.

Outcomes deriving from a case study can be either qualitative, quantitative or both (Eisenhardt, 2002; Galliers, 1991).

3.3.3.5 Experimental based research - laboratory and field

Experimental research uses the logic and principles found in natural science research (Eiben & Jelasity, 2002; Eisenhardt, 1989, 2002). Experiments can be conducted in a laboratory under controlled conditions, typically in a specifically designed setting or a purposely-equipped laboratory. Conversely, the research could be conducted as a field experiment within its natural setting. Experiments usually involve a relatively small number of people and address a well-focused question. Experiments are most effective for explanatory research. Compared to other social research techniques, experimental research is the strongest for testing causal relationships because the three conditions for causality (temporal order, association, no alternative explanations) are clearly met in experimental design (Sekaran, 2005). In general, experiments are widely used because of their logical rigour and simplicity, consistency with Positivist assumptions, and relatively low cost. However, despite its advantages, the experiment method is inappropriate for the purpose of this study.

3.3.3.6 Survey

Questionnaires produce quantitative information about the social world and describe features of people or the social world (Neuman, 2006). They are also used to explain or explore people's beliefs, opinions, characteristics, and past or present behaviour. The survey is the most widely used data gathering technique in sociology, and it is used in many other fields as well, such as communication, education, economics, political science, and social psychology.

Anderson (2001), and Sills and Song (2002) all state that the survey approach is correlational, meaning that it is used to identify relationships between variables. There are three possible results of a correlational study:

- A positive correlation;
- A negative correlation; and
- No correlation.

Survey researchers sample many respondents who are given the same questions. Different variables are measured and different hypotheses are tested. An

understanding of the temporal order from the survey is obtained about previous behaviour, characteristics and user experiences. The relation between these variables is later measured with statistical techniques. Survey techniques are often used in descriptive or explanatory research (Sills & Song, 2002).

3.3.4 Selected research method

3.3.4.1 Selection criteria

In selecting the appropriate research methods for this study, several processes were involved. Firstly, the literature was reviewed and studied in-depth to identify the existing research gaps. Secondly, it was discovered that there are opportunities in research topics that pertain to commerce; specifically Internet based eServices for emerging markets and rapidly developing societies. Thirdly, subjects were needed to represent opinions regarding the adoption of eServices. These were chosen through various organisations. Fourthly, the decision was made to develop the model based upon data gathered within Dubai, a country known for its expedient growth. This model involves relationships between a set of factors facilitating or inhibiting the adoption of eServices and adoption decision processes. After considering all these elements, the research method that was most appropriate for this study is the survey approach.

3.3.4.2 Why the survey method is significant

The advantages of survey methods, such as the economy of the design, the rapid turnaround in data collection, and the ability to identify attributes of a population from a small group of individuals, are clearly presented in Creswell (2003) and Fowler (2004), Sauer and Link (2002), and Sills and Song (2002). The research instrument allows for collection of numeric and quantitative percentages of the population or sample (Sills & Song, 2002). Conclusions can also be made about the attitude, characteristics and behaviour of the sample (Sills & Song, 2002).

3.3.4.3 Survey method issues and limitations

Survey research can be complex and expensive and it can involve coordinating a considerable amount of people and copious steps. One of the issues involved with questionnaires is non-cooperation (Pinsonneault & Kraemer, 1993). Due to an increasing number of academic courses requiring students to conduct formal research, many individuals and organisations are tiring of being continually surveyed. This leads to low response rates or, worse still, inappropriately answered questionnaires that eventually impact negatively on the generalisability of the results. The generalisability or the external validity of questionnaires may also be affected by the sampling technique employed. As proposed by Williamson (2002), the more focused the target group, the higher the response rates; and, conversely, the more generalised the target group, the lower the response rate.

3.3.5 Types of survey methods

Survey data can be gathered in a number of ways and from different sources and settings. Interviewing, administering questionnaires, and observing people and phenomena are the main methods of data collection in survey research. The choice of data collection methods depends on the facilities available from the organisation, the extent of accuracy required, the expertise of the researcher, the time span of the study, and other costs and resources associated with and available for data gathering (Brown & Lloyd, 2001).

3.3.5.1 Telephone interviews

The main advantage of telephone interviewing, from the researcher's point of view, is that a larger number of people can be contacted - across the country or internationally - in a short duration. From the respondents' standpoint, it eliminates any discomfort that some respondents might feel in facing the interviewer, especially in disclosing personal information (Corkrey & Parkinson, 2002). However, the disadvantage is that respondents could terminate the interview without warning or explanation by hanging up the phone. Other disadvantages include relatively high cost, limited interview length, and the researcher not being able to see the respondent to read the non-verbal communication. In a multi-cultural society such as Dubai it can also be difficult to perform telephone interviews with individuals where English is their second, third and possibly fourth language. One must also consider the effect such an interview could have on the household if an individual unknown to the head of the family makes a, supposed, personal call to a female family member. Dubai, regardless of what it may look like to an outsider, is a society where the modesty of women is very important. For example, it is common for car windows to have 100% tinting, to protect such modesty. This fact is described by Al-Theeb (2007) in an interview with Bushra:

'I used to have 30% tinting and many times I was chased by men who followed me from my house until my workplace. Thirty percent tinting was not enough at all, I therefore applied 100%.'

3.3.5.2 Face-to-face interviews

Face-to-face interviews have the highest response rates and enable the use of a longer more complex research instrument (Neuman, 2006). The researcher can adapt and modify the questions as required, clear any doubts and questions and make sure that the questions are clearly understood by either rephrasing or repeating them. Non-verbal signs and cues can also be collected and this would not be possible in a telephone interview or mail questionnaire. The main disadvantage, however, is the constraints associated with conducting interviews over a large geographical area.

The costs of training interviewers to minimise interviewer biases are also high and, finally, respondents may feel uncomfortable since the replies are not anonymous and they would be face-to-face with the researcher.

3.3.5.3 Mail and self-administered and anonymous questionnaires

The most common form of self-administered and anonymous questionnaire in academic research is the mail survey. The main advantage of a mail questionnaire is that a wide geographical area can be covered in the survey and the respondents can complete the questionnaires at their own convenience (Knapp & Kirk, 2003). This offers anonymity and avoids interviewer bias. It is also by far the cheapest type of survey method that a single researcher can conduct. However, the mail survey method possesses some major weaknesses, such as low response rate and longer turnaround time (Burns et al., 2008). Burns also argues that due to its low rate of return, it is difficult to represent the population that the survey was intended to represent. Furthermore, any doubts or questions that the respondent may have cannot be easily clarified.

This approach was not considered as an appropriate data collection methodology, because Dubai does not have a door-to-door mail service and it relies very heavily on company or personal mail boxes. Although there are no statistics available, there have been instances where local mail has taken over four weeks to move from one area of Dubai to another. It is also uncommon for international mail never to arrive.

3.3.5.4 Electronic survey

Questionnaires can be conducted by different methods such as eMail, the web and electronic newsgroups. Questionnaires transmitted in electronic form provide much more flexibility and greatly facilitate the process of data collection, data capturing and data analysis, compared with print-based forms (Williamson, 2002). The electronic method allows researchers to collect data from a larger and more geographically diverse population (Knapp & Kirk, 2003). Electronic survey responses can be collected more quickly, with lower copying and postage costs, and a reduced amount of time is spent in data entry (Gackenbach, 2007). Gackenbach also refers to a study that compared the cost of the web-based survey method to other survey methods, which confirmed that as the sample size increased, costs of eMail and web-based questionnaires reduced. The process of developing web-based surveys usually involves developing the questionnaire, designing an online survey form, creating a database for the electronic capturing of data, and informing the population of interest of the existence of the survey (Gackenbach, 2007).

eMail survey

Little academic research has been conducted on eMail questionnaires. However, it has been argued that many respondents feel they can be much more candid on

eMail (Sheehan, 2001). Anderson and Aydin (2005) - researchers at the Socratic Technologies and American Research - comment that people are more likely to participate in electronic research than in identical investigations using written materials. Electronic formats are also cheaper than other modes of survey distribution, with faster transmission, and quicker data gathering (Swoboda, Muehlberger, Weitkumat, and Schneeweiss, 1997; Tse, 1998; Yun and Trumbo, 2000). eMail questionnaires are still novel and they reach respondents who are more likely to answer; people opening their eMail are prepared to interact (Sheehan, 2001).

Many of these interactive questionnaires can utilise colour, sound and animation, which helps to increase participant cooperation and willingness to spend more time answering the questionnaires. However, despite its advantages, the response rates for eMail questionnaires are often less than physically administered questionnaires. Sheehan (2001) also adds that eMails can be deleted by the recipients and since they are not physically available and noticeable, they would have a lower priority. eMail responses are also not anonymous.

Web-based survey

Before the introduction of the World Wide Web (WWW), web-based questionnaires were collected mainly through eMail (Sills & Song, 2002). However, as WWW access has become a standard part of network connectivity, web-based questionnaires are becoming increasingly common. Web-based questionnaires offer a level of flexibility that eMail questionnaires do not. Features such as adding images, including help options, and enforcing data validation rules on responses that in turn require specific responses (Schonlau, Fricker, & Elliott, 2002), can assist in the creation of a model of the collection or primary data. Respondents can also use the function of automatic question filtering. By making the survey experience easier for the respondent, there are less missing data when the survey is configured to be sent to a database or spreadsheet, and no data entry is needed. Regardless of the advantages, for the same sample size, the cost of mail surveys is less than that of web-based surveys. While making web-based surveys, developers and programmers need to spend time in building the web page and the database. Calculating labour costs for administration, maintenance of hardware and the network is often difficult (Gay & Bennington, 1999; Watt, 1999).

Although eMail and web-based questionnaires are relatively easy to design, incur low cost and achieve faster response time than traditional paper surveys (Schonlau et al., 2002), it can be very difficult to procure eMail lists of a particular population, other than one's own company records. In addition, considerable effort needs to be devoted to promoting and establishing links containing invitations to visit the survey website.

In summary, a review of various types of survey methods has indicated that although telephone interviews are the fastest way to obtain data, due to cultural differences, telephone or personal interviews were not considered feasible for this study. The only viable option was to instigate an anonymous data collection methodology by using a web-based survey.

3.4 Choice of data collection methods

Given that the sampling units for the study crossed multiple cultural elements of Dubai society, the most appropriate data collection methodology was seen to be electronic surveys with potential organisations and institute gatekeepers, if they approved, distributing the relevant instructions and questionnaire URL to respondents. The researcher, by following this approach, ensured that there was very little possibility of offending any individual's modesty or cultural beliefs. Since the research instrument was anonymous, the respondent could be as open as they wished without any fear of recourse when answering the survey.

3.4.1 Justification of the selected research methods

Once the questionnaire was ready, a single mode of survey method was used to collect data and an anonymous and self-administered questionnaire was distributed by the organisations and institute gatekeepers. This was frequently the Human Resources representative, Office Manager or Institution's own ethics and research committee. It is also uncommon for large multi-national companies (MNC) and Universities to have their own ethics committee whose role it is to ensure that they protect the modesty and well being of their staff, faculty and students.

As the questionnaire has potentially a large sample size, data collected by web-based questionnaires provides considerable cost and time savings. Personal interviews are the most expensive medium of communication per completed questionnaire, while telephone interviews are usually more expensive than mail-outs (Schonlau et al., 2002). Self-administered and anonymous questionnaires are flexible in their application, keep the costs associated with data collection to a minimum, enable large amounts of data to be collected in a short timeframe and allow a large sample (Sheehan, 2001). This is ideal considering a sample size of 357 was surveyed in 2005 and 321 in 2008 for this research.

Furthermore, the questionnaire used in this study was structured with simple instructions and a maximum of eleven pages in length, making the web-based questionnaire a more viable option than the aforementioned approaches. Self-administered and anonymous questionnaires usually allow a wide geographical area to be targeted and respondents can complete them at their own convenience and at their own pace (Barak & English, 2002; Fowler, 2002, 2004; Mann & Stewart, 2000). Since the objectives of this research are based on residents throughout the Emirate

of Dubai, the geographical distance is a consideration. This again supports the applicability of a self-administered and anonymous web-based survey as the most appropriate contact medium for the study.

The use of web-based questionnaires provides reasonably fast data retrieval, with quality data, and the ability to automatically integrate that data into statistical and graphical solutions. Furthermore, among research instruments designed to collect sensitive information, self-administered and anonymous questionnaires are the most representative of respondents and have the highest level of quality (Schonlau et al., 2002). The current research topic assesses a respondent's experience in the adoption of Internet based eServices and required information about demographics, employment, education, wage and gender, all of which could be deemed as information that is personal in nature. Again, the use of a self-administered and anonymous web-based questionnaire was considered the most appropriate data collection method for this study.

Survey response rates are important along with random samples to establish the survey result validity. Mixed and multi-mode techniques for surveys provide larger sample coverage without influencing other results (Schonlau, Fricker, and Elliott (2002). This is also supported by others (Rankin et al., 2008; Steele, 2008; Su, Shao, & Fang, 2008). When researchers use multi-mode surveys, it is possible to generate replies from more subjects and increase the response rates. One has to consider that within a society such as Dubai, using a multi-mode approach would not have the same success as one would expect in a more western society due to the absence of a door-to-door mail service.

Having provided details of the method used, the next section will explore the target population and sample.

3.5 Population, sample and subjects

3.5.1 Population

The population under study are all residents of Dubai who have access to and use the Internet to some degree. The individuals studied come from a wide cross-section of industries, including Information Technology, Academia, Oil and Gas, Aviation, Tourism, Construction and Service Providers.

Two samples frames, one for each collection year (2005 and 2008) were used. Triangulation, as advocated by Barnes and Vidgen (2006), is used to look at something from different angles or viewpoints, allowing for more realistic representation. Triangulation can refer to both data collection and types of measures. Measurement triangulation increases the diversity of indicators, and increases confidence in measurement (McKay & Marshall, 2001). In this instance, triangulation refers to the use of more than one sample frame.

3.5.2 Unit of analysis

Since the research involves the study of an individual's adoption of eServices, the unit of analysis for the study was therefore the individual. For the current study, respondents were selected from a potential data collection pool that represents the demographics of Dubai.

A resident of Dubai is defined as an individual who is currently residing within the borders of the Emirate.

3.5.3 Subjects

To ensure that the widest range of demographic was represented, the potential respondents were sourced from a multitude of cultural backgrounds and upbringing, varying professions, different age demographics and so on. To achieve this result, the researcher approached a wide range of organisations known for their professional and cultural diversities. This included, but was not limited to:

- Multi-national companies (MNCs);
- Local and international academic institutes;
- Government departments, industry;
- Professional and national social clubs;
- Social networking groups and forums; and
- Sports associations.

The respondents who supported this research had the ability to remain anonymous. Their name and contact details were only provided if the respondent wished to avail themselves to a face-to-face interview. An eMail that stated the purpose of the study was sent to every potential candidate. This explained the confidential aspects of the data collected, its use and access, and how the data would be protected.

3.5.4 Sampling method

With many associations, MNC and academic institutes within the Middle East, the only way to gain access to the employees for the purpose of research or communications is through the Human Resources or Administration departments. Once the communications were approved by the gate keepers within the respondent organisations, the survey welcome packs were forwarded to the potential respondents. The aforementioned welcome pack included explanation about the research aims and objectives and a copy of the research instrument in English, with instructions and explanations.

3.5.5 Pilot study

A preliminary version of the research instrument was developed to pre-test the appropriateness and value of the potential data collected. This approach was adopted to improve the reliability of the instrument using the final questionnaire for hypothesis testing. The early versions of the questions were tested by interviewing target respondents and checking to see whether the question was clear and concise. The principle of using pilot tests extends to replicating the measures of previous researchers.

3.5.5.1 Evaluation and pilot testing

A structured, designed and valid research instrument was developed and presented to a panel of academics experienced in research instrument design and structure. These academics were members of the researcher's thesis committee who thoroughly evaluated the instrument and tested its validity for this study. Several well conceived changes were made to reflect their assessment, guidelines and recommendations. The modified questionnaire was then piloted with twenty respondents who manually read through and answered the questionnaire. The pilot study did not identify any major issues with the research instrument.

3.5.5.2 Pre-testing for the web-based survey

The pre-test was conducted using the Internet based method to test the feasibility of administering the research instrument on the web, and to clarify any data items that may still present problems to the respondents. A total of thirty-two respondents were randomly selected from MNCs, academia and other institutions. Based upon both the published literature on web-based questionnaires and the researcher's experience, the following measures were taken to implement the survey appropriately:

- To ensure appropriate functionality and design, the researcher chose to use the survey website, [surveymonkey.com](https://www.surveymonkey.com). SurveyMonkey is an online survey tool that enables a researcher to develop a sophisticated research instrument and data collection tool that integrates easily into the majority of statistical and analytical solutions;
- The web-based survey provided directions to target respondents as well as advising the users of the correct way to fill out the survey;
- The web-based survey was tested to ensure that it was fully functional and viewable from all major web browsers. These tests included Mozilla Firefox, Internet Explorer, Safari, Netscape, Opera, Konqueror, and Lynx;

- The web-based survey was tested for usability and designed to be user-friendly with seamless navigation from one page to another;
- Since SurveyMonkey was used for development and hosting of the research instrument, the average access time to the web-based survey was very quick, with the average refresh time being less than one second from a 1mbps (mega bits per second).

3.5.6 Questionnaire design and format

The initial survey design was undertaken during the pilot study. The final research instrument comprised 64 questions in nine sections, as shown in Appendix Y and Appendix Z found on the multimedia storage device forming part of this thesis.

The types of question used with the research instrument were:

- Multiple choice – single answer;
- Multiple choice – multiple answers;
- Matrix of choice – single answer;
- Matrix of choice - multiple answers;
- Matrix of drop down screens;
- Likert-scales; and
- Free text boxes.

It should be noted that depending on the eServices usage profile of the respondent, they would only answer the following maximum questions:

- eCommerce but not eBanking – 49;
- eBanking but not eCommerce - 43;
- Both eBanking and eCommerce - 56; and
- Not participating in either eBanking or eCommerce - 36.

When using the Likert-scale, the respondents had to indicate if they agreed or disagreed on a seven-point scale. This scale was chosen because of its adaptability to the type of perceptual questions being used in the survey (Sekaran, 2005).

The final section of the instrument contained the qualifying characteristics of the respondent and the responding firm. These questions included position, years working in the company, the educational background of the respondent, or the

owner of the responding firm. A covering letter explaining the objectives of the survey and the intent of this research was attached. Special instructions were provided regarding how to complete the questionnaire and emphasised that respondents should answer questions with reference to their experience in the adoption of Internet-based eServices.

The research instrument was made up of eleven sections covering:

1. Demographics (cultural exposure);
2. Internet usage;
3. Social networking;
4. eCommerce usage;
5. Not using eCommerce;
6. Future eCommerce usage;
7. eBanking usage;
8. Not using eBanking;
9. Future eBanking usage;
10. Security and miscellaneous; and
11. Volunteer for a face-to-face meeting.

The web-based version of the survey is available at:

http://www.surveymonkey.com/s.aspx?sm=kbziQo5nMbx444Ucfnr4_2bA_3d_3d

The average time taken for participating in the web-based survey was estimated to be 15 to 20 minutes.

3.6 Data collection

The data collection was executed through the web-based survey, which was the exclusive method used for several reasons:

1. The respondents targeted were required to have access to the Internet, either from work or home;
2. Ease of use;
3. Speed of response;

4. Ability to distribute the research instrument to a wide range of people quickly; and
5. Integrate the data collected easily with an analytical tool, such as Statistical Package for the Social Sciences (SPSS).

Between June and September 2005, and June and September 2008 the researcher conducted the survey in Dubai. Although the survey was distributed within the boundaries of Dubai, the selected method of delivery was a combination of eMail, social networking sites and a web-based survey. Approximately 3,000 survey questionnaires were disseminated. An explanatory document stating the objective of the study and the URL, or web address, of the online survey was included.

Data from the survey formed the primary data, which identifies the enablers and inhibitors for eServices adoption by the inhabitants of Dubai. In order to improve the response rate, reminders were sent to the organisation's gate-keepers every month. Subsequently, a second-wave of the survey eMails was also conducted.

3.6.1 Electronic questionnaires

When selecting the Internet as the collection medium for the primary data required for this research, a number of tools and resources were considered to maximise the response rate. According to Sheehan (2001), eMail and the WWW were shown to be the major source for operating questionnaires on the Internet. Therefore, these two methods, as well as social networking sites were adopted jointly to distribute information pertaining to the access of the research instrument.

3.6.1.1 Informing target respondents of the existence of the survey

One of the reasons why eMail was chosen as a distribution mechanism was that since the late 1990s it has become almost pseudo-compulsory for institutions and their staff to have eMail accounts. Many people have more than one eMail address, one for work and the other for personal use.

Phase One

Identification of target respondents who possess eMail addresses was conducted and these sources were compiled into a separate database. The Microsoft Office mail merge function ensured that the eMail requests remained personalised. In addition, no web-based questionnaires mandated the capture of personal details, so that the respondent could remain anonymous. Respondents were given a 12-week period to complete the survey.

Phase Two

Upon receiving the request to participate in the study, interested respondents clicked into the URL provided within the body of the eMail. Clicking on the URL address of the survey automatically linked to the web-based survey form. To finalise the

questionnaire, the respondents pressed the 'submit' button at the end of the survey. Subsequently, the results were then collated within the SurveyMonkey website ready to be downloaded to an analytical solution, such as SPSS.

Phase Three

Follow-up eMails were sent to all MNCs, academic institutes and associations encouraging their staff, students, and members to respond. This follow-up process happened every four weeks after the first round of eMails. The objective of the follow-up eMails was to remind the potential respondents of the purpose and importance of this study and to extract a higher response rate.

3.6.2 Response rate

The response rates of questionnaires for both 2005 and 2008 are discussed in more detail in succeeding sections.

In total, the entire survey of this research resulted in a 20.1% response rate, with 321 usable questionnaires. This was considered to be sufficient for data analysis in this study.

In 2005 the number of usable web-based questionnaires was 357, whereas the number of usable web-based questionnaires in 2008 was 321.

3.6.3 Non-response bias assessment

A total non-response error results in a failure to obtain a representative sample from the population (Keeter, Miller, Kohut, Groves, & Presser, 2002). If sampling units that respond differ substantially from those who do not, the results cannot be generalised to the population (Biemer & Lyberg, 2003). Thus, the most commonly recommended protection against non-response error is the reduction of non-response itself (Armstrong, 2001). This was attempted through the application of incentives and follow-ups.

As stated in the previous section, the delivery of the questionnaires went through more than two phases to remind and encourage participation. In order to increase rate of response, when the information was available, each of the eMails accompanying the questionnaire was addressed to the organisation, institute, or to the individual who was the target of the eMail.

Another technique used in this study to obtain the non-response error estimate, was to compare data from the two eMail sessions. Data from the first round and the next rounds were compared and if there was nothing statistically different, then one could assume the absence of non-response error (Keeter et al., 2002).

3.7 Measurement of variables

At the beginning of the measurement process, each variable was conceptualised and operationalised. Conceptualisation is the process of taking a construct or

concept and refining it by giving it a conceptual or theoretical definition (Bound, 2001). The process involved thinking carefully and learning from what previous scholars have said, and finally coming up with possible definitions that fit the purpose of this study. The variables were then ready for operationalisation (Neuman, 2006). The measure of the construct or indicator can be developed from scratch, or it can be borrowed from previous research. In this study, both processes were used to develop the operational definitions for the variables.

Since the link between indicators and constructs is a central issue for quantitative measurement, three levels of measurement process were considered for this study. Firstly, the variables were conceptualised, giving them clear conceptual definitions. Next, the variables were operationalised by developing an operational definition or set of indicators for each variable.

After choosing the right indicator for each variable, conceptual definitions were further refined by developing specific survey questions for each variable. Finally, the indicators were used to test empirical hypotheses, which were then logically linked back to the conceptual hypothesis and causal relations established in the beginning of the study. In this case, survey questionnaires were employed to collect the data from target respondents in Dubai.

3.7.1 Measurement of adoption and implementation success

Within a research instrument, there are several scale forms that can supply nominal, ordinal, interval, or ratio data. The two most common scales used in business research are rating scales and attitudinal scales. Both these scales are usually treated as interval scale data to take advantage of the wide range of descriptive (e.g. means, standard deviations) and analytical statistical techniques (e.g. tests of means, ANOVA). Ordinal data, which is normally distributed, can be converted to interval scales so there is a statistical as well as a traditional basis. In terms of rating scales, graphic scales and itemised scales are the most common.

Attitudinal scales are mostly Likert-scales and Semantic differential scales (DeVellis, 2005). In this study, the interaction of the innovation - eServices - with its recipients - the consumers - has been analysed by measuring the 'State of Adoption', 'Usage Level' and 'Overall Satisfaction' by focusing on questions based on the Likert-scale.

3.7.2 Development scales

The measures used in this study were developed through an extensive literature review followed by iterative reviews by both practitioners and experienced academics in Information Systems and eServices fields. As a result of pre-testing, the research instrument was pre-coded and comprised itemised rating scales to provide interval data.

Ordinal, ratio and categorical data were also collected. However, itemised rating scales comprised the majority of questions. Whereas the nominal and ordinal scales help to group and to qualitatively find the group differences, ratio scales and intervals are used to understand the quantitative differences in the required variables (DeVellis, 2005).

All itemised rating scales had measurement based on a seven-point scale. Itemised rating scales allow computation of means, standard deviations and the measurement of differences between categories. Furthermore, rating scales can determine the order, the differences and differences in variable and the magnitude of equality (Chester, 2001).

Likert-scales were also incorporated into the questionnaire to ascertain interval data, and are considered beneficial due to their ease of use. When the decision was made to use an interval scale that would indicate the magnitude of the differences, the researcher had to decide how many points in the scale should be used - five, seven or nine - and what kind of respective anchors would be provided for the respondents, such as Very Unimportant to Very Important; Strongly Disagree to Strongly Agree. Research indicates that a seven-point Likert-scale is sufficient and that increasing the rating scale to nine does not enhance the reliability ratings (DeVellis, 2005). This is related to human abilities to discriminate.

All variables covered in the model were measured as perceptual items on seven-point Likert-scales. In order to secure the respondents' assistance in completing the survey questionnaire, perceptual rather than objective measures were used. According to McCall (2007), subjective measures can be appropriate surrogates for organisational performance. Furthermore, some of the measures had been used in prior studies and were found to demonstrate adequate reliability and validity. The questionnaires containing the measures were also pilot tested before the main survey. Moreover, in the measurement of performance, particularly with the impact of the adoption of eServices, it is impossible to separate the change in performance due to eServices adoption from the change of performance due to other factors by any objective means of measurement. Thus, subjective measures were used to assess constructs, such as Adoption Success, within this study.

The research instrument was also created on scales for multiple items and many item results were used for an accurate indicator (Chester, 2001). Multiple item scales are typical of dependent variables. Typically, the measurement of the dependent variable in a study comprises a multi-item scale with several items. These items are used to capture the essence of the adoption and usage dimensions more precisely than an individual rating scale. To ensure the reliability of dependent measures, single ratings were also incorporated so a comparative analysis of results could be done.

3.7.3 Indicators of variables

Where indicators were used, these were cited and, for others, new indicators were incorporated into the existing ones. This practice helped to improve the quality of the measures, as long as the same definitions were used (Behling & Law, 2006).

Using the suggestions given for coming up with a new measure in Neumann (2006), the underlying principles were achieved by matching the measure to the specific conceptual definition of the construct and the units of analysis that were used in the study.

Below is a full variable list used in the research and the variables are shown with their related indicators. Also included is the type of scale that was used and an indication of whether these were defined by the researcher or taken from external sources. Almost all these variables are discussed at length in *Sections 4 and 5*, however, some of the researcher-defined variables may benefit from further clarification in terms of their methods of measurement. This is addressed below.

Table 24 – Hypothesis to research instrument mapping

	Hypothesis Description	2008 Data Set	
H0 ¹	cultural exposure does not affect the adoption of eCommerce by adults living in Dubai.	5,6,7,8, 23	
H1 ¹	cultural exposure does affect the adoption of eCommerce by adults living in Dubai.	5,6,7,8, 23	
	H0 ^{1a}	Region of last education studied at has no bearing on an individual's use of eCommerce within Dubai.	5, 23
	H1 ^{1a}	Region of last education studied at has a bearing on an individual's use of eCommerce within Dubai.	5, 23
	H0 ^{1b}	Region of citizenship at birth has no bearing on an individual's use of eCommerce within Dubai.	6, 23
	H1 ^{1b}	Region of citizenship at birth has a bearing on an individual's use of eCommerce within Dubai.	6, 23
	H0 ^{1c}	Region at birth has no bearing on an individual's use of eCommerce within Dubai.	7, 23
	H1 ^{1c}	Region at birth has a bearing on an individual's use of eCommerce within Dubai.	7, 23

	H0 ^{1d}	Region of current citizenship has no bearing on an individual's use of eCommerce within Dubai.	8, 23
	H1 ^{1d}	Region of current citizenship has a bearing on an individual's use of eCommerce within Dubai.	8, 23
H0 ²		cultural exposure does not affect the adoption of eBanking by adults living in Dubai.	5,6,7,8, 44
H1 ²		cultural exposure does affect the adoption of eBanking by adults living in Dubai.	5,6,7,8, 44
	H0 ^{2a}	Region of last education studied at has no bearing on an individual's use of eBanking within Dubai.	5, 44
	H1 ^{2a}	Region of last education studied at has a bearing on an individual's use of eBanking within Dubai.	5, 44
	H0 ^{2b}	Region of citizenship at birth has no bearing on an individual's use of eBanking within Dubai.	6, 44
	H1 ^{2b}	Region of citizenship at birth has a bearing on an individual's use of eBanking within Dubai.	6, 44
	H0 ^{2c}	Region at birth has no bearing on an individual's use of eBanking within Dubai.	7, 44
	H1 ^{2c}	Region at birth has a bearing on an individual's use of eBanking within Dubai.	7, 44
	H0 ^{2d}	Region of current citizenship has no bearing on an individual's use of eBanking within Dubai.	8, 44
	H1 ^{2d}	Region of current citizenship has a bearing on an individual's use of eBanking within Dubai.	8, 44

Table 24 – Hypothesis to research instrument mapping shows a mapping of the questionnaire items from the actual research instrument to the hypotheses. The dimensions and variables are discussed in more detail below.

3.7.4 Dependent variables

The origin and rationale behind all three of the dependent variables, namely, 'State of Adoption', 'Level of Usage' and 'Overall Satisfaction' are discussed in detail in

Sections 4 and 5. The explanation below is therefore confined to the technical details of how these variables were measured.

3.7.4.1 State of adoption

It is stated in the previous chapter that the 'State of Adoption' measured the cumulative adoption decisions in hindsight. Thus, the 'State of Adoption' is measured by the sum of all eServices adopted by the consumers; each eService is weighted by the length of time or period of adoption.

3.7.4.2 Level of use

Defined as a separate construct from the 'State of Adoption' - the 'Level of Usage', which is also another indicator of 'Implementation Success' in this study, incorporates the intensity of usage for specified purposes. This variable is measured by the composite of usage for different specified purposes of Internet based eServices.

3.7.4.3 Overall satisfaction

For 'Overall Satisfaction', respondents were asked to indicate their perception of the overall satisfaction with eServices from the perspective of the organisation. The seven-point Likert-scale ranged from the lowest to the highest variable.

3.7.5 Independent variables

The internal and external environment factors of eServices adoption, which comprised demographical, academic, occupation, industry, and technology adoption variables, were measured on seven-point itemised rating scales. The adaptation of these scales, from the sources discussed in previous chapters, combined with several new scales created in this research, increases the explanative power of the research model. The use of itemised scales forces the respondents to focus on the specific items of investigation and to select the closest alternative to their situation.

The independent variables for this study comprise various types of scales ranging from single-item, multiple-item, to ratio scales. To avoid undue repetition, only the researcher-defined, multiple-item scales are discussed below.

3.7.6 Reliability

According to Nunnally (1978), the reliability of a measure is related to the ability of measures to be repeated and stabilised over a range of circumstances. In marketing practice, reliability is broadly defined as the extent to which measures are free from error and yield consistent results (Peter, 1979). The Cronbach's (1951) coefficient alpha has been used in the present research to examine the internal consistency of the scales relating to all the independent variables of this study. This reliability measure of two or more construct indicators produces values between 0 and 1. Higher values indicate greater reliability among the indicators (Cronbach, 2004).

The amount of scale reliability could have been improved by repeating or requesting essentially the same question in a disguised or re-oriented form in another part of the questionnaire. However, this would have substantially lengthened the questionnaire and very likely, decreased the response rate.

Following are the practical considerations and principles (Eiben & Jelasity, 2002) taken to ensure reliability of the study or adapted constructs in this study:

1. Clarity of most constructs was carefully examined, most of which had already been established in previous literature;
2. Pre-tests and pilot studies were used;
3. The most precise level of measurement was used in each question within the constraints of meaningful discernibility of values. A seven-point scale is used in the questionnaire; and
4. Multiple indicators were used where there was any possibility of ambiguity on the part of the respondents.

Chong (2003) argues that methods of testing stability of a measurement become obsolete when a construct has defined essential components. Here, the items are not expected to be homogenous, nor are they selected at random (Chong, 2003).

3.7.7 Validity

The validity of a measure is generally considered to be the degree to which the scale measures what it purports to measure (Agarwal & Prasad, 1998) and the suitability of the research instrument to address the research question (Nunnally, 1978). However, it is not possible to achieve absolute validity, as constructs are abstract ideas while indicators are concrete observations. Temperton (2004) argues that without accumulating primary data over a period of time via a dynamic process, it will quickly lose its validity and meaning.

3.7.7.1 Face validity

Face validity is the most basic and easiest type of validity to achieve. It is a judgement by the scientific community that the indicator really measures the construct (Neuman, 2006). The core concepts of the study have been published in other research and there is no indication that they have been seriously brought into question. Therefore, the question of face validity in this case is regarded as established.

3.7.7.2 Content validity

According to Rubio et al. (2003), content validity relates to the domain characteristic adequacy that is being measured. Kerlinger and Pedhazur (1973) suggested that

expert judgement is used to ascertain content validity and to make sure that every item in the scale relates to the dimension to be studied. The amount to which the scale would cover all aspects of the measured dimension is verified. Content validity is obtained during the stages of planning and construction of the scale itself and not later.

Important issues to be covered for content validity are:

- If all the item sets to be measured will take care of all variables relevant to the study; and
- If specific item sets envelope the required range of components for a variable.

Different factors such as organisational readiness, support of management, factors of innovation and communication have undergone testing as these have components that are used from published literature. Important dependent variables such as the State of Adoption have not previously been used in studies of this kind, it was appropriate therefore, that its content validity be given some consideration. Guided by the procedures suggested by Davies (2005), the following steps were taken for the variables mentioned above:

1. A literature search to examine all possible items to be included;
2. The utilisation of multiple judges to assess the appropriateness of the items included;
3. Pre-testing the scale on a small sample of target respondents so as to identify potential flaws with the contents and for wording; and
4. The modification of the scales based on suggestions developed from steps (2) and (3).

The necessity and appropriateness of the focal variables has been established by previous research as discussed in the literature review (see *Section 2 – Literature Review*), or as argued in the presentation of the theoretical model that forms the basis of this study (see *Section 4 – eServices analysis within Dubai*). The items measuring them or their components were borrowed from previous research, pre-tested in the pilot study, or discussed with a range of experts and practitioners in eServices.

3.7.7.3 Criterion-related validity

Criterion-related validity uses some standard or criterion that is known to indicate a construct accurately (Neuman, 2006). In other words, the validity of an indicator is

verified by comparing it with another measure of the same construct in which a researcher has confidence.

The key issues of criterion-related validity include questions such as:

- Is it correlated with and sensitive to the variable we want to measure?
- Is it free from bias?
- Does it have a low unaccountable variation? and
- Can its value be found in a timely and economical manner?

When latent variables are present, criterion-related validity becomes important and this study does not have any variable that can be seen as truly latent. While many variables have subjective perceptions for the respondents, the latent reality is not the focal variable but the actual perception.

3.7.7.4 Construct validity

Construct validity is an important consideration only when abstract or latent concepts are measured using multiple indicators, whether these concepts are adopted from existing literature or invented by the researcher (Colquitt, 2001). It addresses the question of where different concept indicators are consistent. The key issues of construct validity include:

- Whether the items measure what is intended; and
- Whether the items have the same meaning to all the subjects in the research.

Construct validity issues tend to arise where serious ambiguity of meaning may exist in abstract concepts. Only one variable fell into that category and this was the 'Innovation Factors'. This was studied extensively. In the pilot study, construct validity was examined and certain ambiguous items were modified, so the measure was clear and consistent.

3.8 Analysis of adoption factors

3.8.1 Preliminary analysis

SPSS version 13.0 was used for data analysis. All variables were scrutinised for possible coding errors. Descriptive statistics were computed to indicate how respondents reacted to the various items in the questionnaire and to understand the profiles and behaviour of the key variables. The contribution that descriptive statistics made to the aim of this research is that it led to the refinement of the measurement of the derived variables and it added more insight to the variables of

this study. Results of the descriptive analyses are contained within Appendix A through to Appendix X found on the multimedia storage device.

3.8.2 Multiple regression analysis

Multiple regressions are a method of analysis that can be applied to a research problem with a single variable that is metric dependent and that would be related to other multiple metric dependent variables (Cohen, Cohen, West, & Aiken, 2003). The selection of dependent and independent variables for inclusion within multiple regressions needs to be guided by the theoretical framework within which the study is taking place (Mohsini & Davidson, 1992).

3.8.2.1 Testing of the assumptions

The suitability of using the multiple regressions was further examined:

- The variables were tested for outliers and for normality of the residuals and revealed no problems;
- The correlation matrices and tolerance values were studied for evidence of multi co-linearity; and
- The ratio of cases to variables exceeded the minimum requirement of 5:1 to conduct multiple regression analysis.

Theoretically, multiple regressions assume that all measurements are taken on interval or ratio scales. The Likert-type scales have been used extensively in multivariate techniques, including multiple regressions, with acceptable results.

The assumptions of linearity, normality and independence of residuals are more relevant when multiple regressions are used for constructing a predictive model rather than for detecting or confirming the existence of some relationship. In any case, multiple regressions are relatively robust to deviations from these assumptions. Regardless of the above reasons, testing of these assumptions was carried out and a brief discussion of the testing will be covered in the next chapter.

3.9 Ethical considerations

Beyond the importance of the methodology providing accurate and reliable representation of a population, the ethical considerations associated with the methodology must be considered. This research has been based on the ethical guidelines provided by Curtin University of Technology and in conjunction with Curtin Business School. Throughout the research process, the Ethics Committee, Questionnaire Committee and Quality Committee have approved materials and provided guidelines. The cover letter and questionnaire were both presented to all three committees for approval prior to circulation. This research could not have proceeded until all materials were approved.

3.9.1 Confidentiality

No individual who was involved with this research had their identity divulged; the confidentiality of all participants was assured. No individual, under any circumstances, was asked to cooperate in any research that may result in a sense of self-denigration, a violation of moral standards, or embarrassment. An informed willingness on the part of the respondent was obtained to participate voluntarily in the research activity. The respondents reserved the right not to answer any questions that are confidential to organisations. The respondents had the choice to stay anonymous by not supplying any personal details. The research also fulfilled the commitments made to those who took part in this research. Furthermore, this research has been conducted with the full disclosure of the aims and purposes of the research.

Provisions will be made within the School of Information Systems to retain all data, including documents and questionnaires. After the collection of data, it will be stored in a secure facility for at least five years. Should access be sought to this information by another party, it will be released only after obtaining the written approval of the Head of School of Information Systems.

The transparency of the study was maintained post-response with respondents given the opportunity to access data via a summary of results or by contacting the researcher. Ethical issues of mental and physical stress or discomfort however, are not applicable to this research, as the questionnaire was only eleven pages in length, taking approximately thirty minutes to complete.

Each participant had the right to be a non-participant, and was given an estimation of the expected timeframe for completing the questionnaire in hard copy or online. Respondents were in their natural environment and there was no researcher interference. Kimmel (2007) and Leary (2008) are both strong advocates for the management and adherence to the ethical procedures undertaken during the pre- and post-research stages of a study.

3.10 Limitations of the research design

Since this is the first time that research in eServices adoption and implementation appears to have been conducted in Dubai, no empirical precedent pertaining to 'State of Adoption' within Dubai was available to guide the research design of this study. The measurement procedures and the Internet-based survey strategies employed were first attempts and hence subject to possible design limitations that future studies could attempt to overcome. Finance and time permitting, a larger and more representative sample could be taken across the population.

On the issue of subjectivity, the implementation success measures were perceptual measures and therefore subject to variations based on respondents' perceptions.

For example, the mood of a participant when completing the questionnaire may be one source of variation; differences of interpretation of questions amongst participants are another.

Since the nature of this study is exploratory, the researcher has made extensive effort to include as many of the relevant items as possible, especially for some of the new or rarely studied variables. However, due to time and resource constraints, it is not possible to include each and every item in the variable. Thus, to minimise the problem, an open-ended form of approach was adopted at the end of some of these questions, to encourage respondents to include items that were not included in the questionnaire.

3.11 Conclusion

Both quantitative and qualitative methods were employed within this research, through the deployment of the research instrument.

As indicated previously, Anderson (2001), and Sills and Song (2002) both indicate that the research instrument, in this case a questionnaire, is known as correlational and used to identify relationships between variables. A web-based questionnaire was placed online and an eMail request was sent to the potential respondents. The use of an electronic questionnaire provides much more flexibility and greatly facilitates the process of data collection (Williamson, 2002). The research instrument was designed using SurveyMonkey, which has a powerful design engine enabling navigation, sectioning and 'go to' capabilities. The questionnaire was also hosted on the SurveyMonkey website, which provides high-speed access for the respondents ensuring that their online experience is enhanced. Another benefit of using SurveyMonkey is that they provide the data in a Microsoft Excel format that is easily integrated into SPSS.

The electronic questionnaire responses were collected instantaneously, with lower copying and postage costs, and a reduced amount of time is spent in data entry (Gackebach, 2007). This is extremely important as Dubai does not have a door-to-door postal service and their 'post office box' delivery has a reputation of being slow.

The SPSS statistical analytical toolset was used to produce the following statistics and reports, frequency tables, cross tabulation, descriptive analysis, correlation tests, F-tests, T-tests; and ANOVA tests.

Microsoft Excel was used to provide both the tables and charts used in displaying the results produced from the statistical analysis.

Arising from the statistical analysis and observations made during the course of this research a model has been designed to predict the influence of cultural exposure on the adoption of eServices within a society rapidly moving from the agrarian age to the information age (Reigeluth & Garfunkle, 1994).

4 ESERVICES ANALYSIS WITHIN DUBAI

4.1 Introduction

Manibo (2007) reported that the Arab Advisors group had conducted research, via an online survey, in which they had received replies from 1,108 respondents. Based on the analysis of this data:

'The Arab Advisors Group estimates eCommerce users in the UAE to exceed 1.16 million consumers who have spent over US\$1.15 billion over the past 12 months.' (Manibo, 2007)

This is an interesting statement since the Internet World Stats Group (2010) estimates that there are 2.9 million internet users within the UAE and approximately 768,000 of these users are based in Dubai. Yet there are only 63,000 people in the region who make use of broadband Internet connections. Also, as reported by the Dubai Statistics Center (2009c) the total of all expenditure by users within Dubai was estimated to be US\$12.6 billion of which, Manibo (2007) infers, at least 2.4% was driven through eCommerce purchases. This could only be achieved if every Internet user within Dubai spent US\$394 each per year! This would be a difficult feat as typically, within an Advanced Economy, only 38% of eShoppers are frequent shoppers and approximately 50% are one time shoppers, with an average of US\$224 of purchases annually as opposed to the Arab Advisors Groups estimate of US\$991 per eServices user (Johnson & Hult, 2007; Mulpuru et al., 2008). This research identified that approximately 75% of all respondents purchase goods online and had spent a minimum of US\$317 each on goods and services through eCommerce. This represents a collective estimated total for Dubai of US\$182,610,911, and a maximum of US\$419 each – a difference of 42% from the Arab Advisors Group estimations.

This chapter will provide meticulously collected primary data and by using a sound academic approach, coupled with several statistical methods and techniques, will demonstrate that observations made in the past (such as those above) have no or little bearing on the reality of eServices adoption in Dubai.

Manibo (2007) article, Al-Alawi and Kuzic (2007) identified thirty eight challenges that inhibit technology adoption, of which the following five are the most relevant to this research:

- Lack of a sound eServices business and/or marketing strategy;
- Resistance to eServices by the residence of Dubai;
- A lack of focus on ensuring customer satisfaction;
- Achieving repeat business with eService users; and

- Inability to compete against bricks and mortar commercial businesses through a sound marketing strategy.

Al-Alawi and Kuzic (2007) state that:

'Among the most encountered challenges of eServices in the development industry are: convincing decision makers, lack of eServices strategies, organisational culture, ensuring customer satisfaction, and international recognition. Additionally, the research has established that there are no significant differences regarding the challenges encountered in the development industry and those in the entire sample of surveyed companies.'

One of the more interesting observations made by Al-Alawi and Kuzic (2007) is that all of the eService providers within Dubai have gravitated to the same level with no organisation becoming innovative or aggressive enough to define themselves as a local eServices leader within Dubai. This has allowed internationally-based eServices companies to penetrate the market more easily.

In order to determine whether there is a significant relationship between cultural exposure and the adoption or non-adoption of technology, it was necessary to run a variety of statistical tests. Tables of descriptive statistics were utilised to summarise the sample and allow for simple comparisons of 2005 and 2008 data. T-tests were used to analyse all binary questions. In order to determine whether there is a difference between those who answer 'yes' and those who answer 'no' on a particular question - in this case the adoption or non-adoption of technology - it was necessary to divide the sample into two groups (yes and no), to determine whether adopters and non-adopters differ in their behaviour with regard to certain questions. For those variables consisting of Likert-scale data, an ANOVA test was preferred because it allowed for detection of significant differences for variables with more than two groups. For the primary analysis, determining whether there is a relationship between cultural exposure and adoption or non-adoption, simple correlations sufficed as they measured the simple linear association between two variables.

The main variable, cultural exposure, was calculated by determining weights for each question answered against Emerging and Developing Economies, which were fractional quantities i.e. less than one, and weights for those in Advanced Economies, which always equalled one. Cultural exposure was defined by the sum of these weights for both eCommerce and eBanking, which had different weights for those in Emerging and Developing Economies.

Weights were determined for eCommerce and eBanking for both 2005 and 2008 to calculate a proxy for cultural exposure based on the perceived influence of the

cultural questions. These weights reflected the percentage score that would be given for those individuals in the sample who lived in Emerging and Developing Countries, relative to a standard score of 1 for those living in Advanced Economies. The differential weights were used to allow the researcher to determine which question and/or questions had the biggest influence on a respondent's choice not to use eCommerce or eBanking. The four questions regarding location were:

1. 'What country was the last educational institute you studied at situated in?'
2. 'What was your country of citizenship at birth?'
3. 'What country were you born in?' and
4. 'What is your current country of citizenship?'

The answers to these cultural exposure questions were then categorised as either an Emerging and Developing Economy or an Advanced Economy as specified in Table 11 - Advanced Economies and Table 12 - Emerging and Developing Economies.

Each had a different weight for the four samples, these being:

1. eCommerce 2005;
2. eBanking 2005;
3. eCommerce 2008; and
4. eBanking 2008.

These weights are displayed in Table 25 - Cultural weighting below.

Table 25 - Cultural weighting

Weighting eCommerce - 2005	Weighting eBanking - 2005	Weighting eCommerce - 2008	Weighting eBanking - 2008
0.49	0.52	0.20	0.49
0.33	0.45	0.11	0.40
0.33	0.45	0.21	0.37
0.36	0.46	0.17	0.47

4.2 Comparable analysis

4.2.1 eCommerce and eBanking usage comparisons for 2005 and 2008

Figure 21 - eCommerce and eBanking usage comparisons for 2005 and 2008

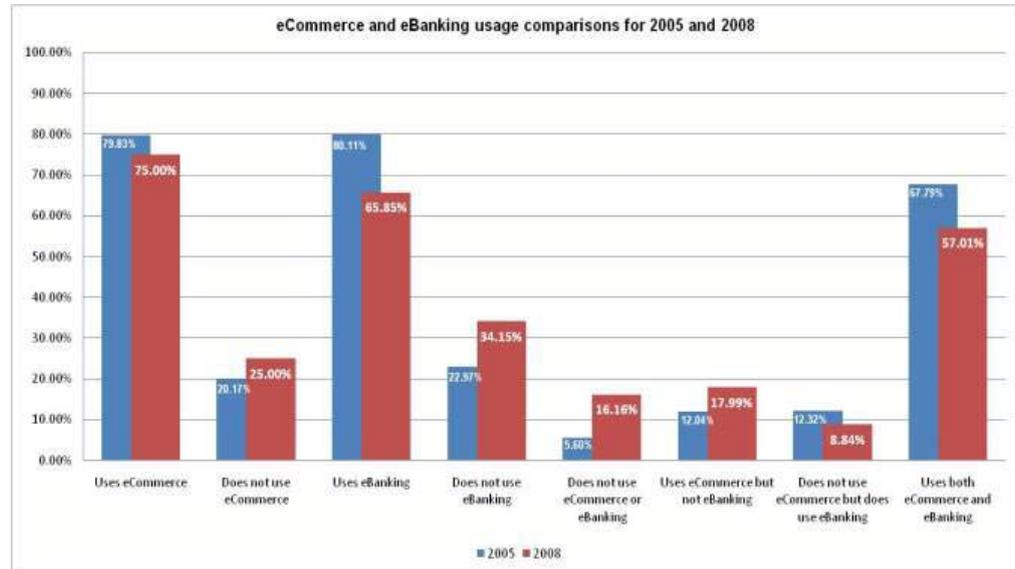


Figure 21 - eCommerce and eBanking usage comparisons for 2005 and 2008 above, identifies that in both data sets a vast majority of those individuals surveyed participated in eServices, with 79.83%, in 2005, and 75% in 2008 utilising eCommerce. Those individuals utilising eBanking had similar results, with 80.11% using eBanking in 2005 and 65.85% using the same eService in 2008. It is noted that in 2005 there were only 5.60% of respondents who did not use either eCommerce or eBanking, as opposed to 2008 where a considerably higher percentage of respondents (16.16%) did not partake in these eServices.

One of the most prolific trends to be gleaned from the primary data, is that just because an individual may use eCommerce it does not mean that they would also use eBanking, and vice versa. As illustrated above, in 2005 only 67.79% of the respondents used both eCommerce and eBanking, although conversely in 2008 the adoption divide between eCommerce and eBanking was considerably more pronounced with only 57.01% of these individuals partaking in both of these eServices. However, this phenomenon was caused by the low uptake of eBanking in the 2008 sample. Interestingly a relatively small percentage of respondents of 5.6% in 2005 and 16.16% in 2008 stated that they used neither eCommerce nor eBanking.

4.2.2 Comparison between the full 2005 and 2008 samples

Appendix A, from the multimedia storage device, displays frequencies for the key demographic variables for the overall 2005 sample, which consisted of 357 respondents. The sample was mostly male (55.7%), with most individuals being between age 35 and 59 (88.8%), holding a post-graduate diploma (33.1%) or

Master's degree (49.9%), with the majority of people born, living, and educated in Advanced Economies (63.9%). The majority of the respondents, (73.1%), had been a resident of Dubai for seven years or less, although a large percentage (16.8%) of all individuals actually had been residents of Dubai for 16 to 20 years. A large number of the Dubai residents surveyed (80.7%) would spend between one and seven hours online per week for personal use, although nearly the entire sample (88.5%) were willing to shop online in the future with 83.5% willing to utilise eBanking facilities offered by both the local and international banking institutions.

As highlighted by Appendix B, from the multimedia storage device, the frequencies for the key demographic variables for the overall 2008 sample consisted of 328 respondents. The sample consisted of 55.8% males, with most individuals between age 25 and 44 (66.5%), holding a Bachelor's degree (35.1%) or Master's degree (36.3%), with most people born and living in Emerging and Emerging and Developing Economies, but studying in Advanced Economies (70%). Most people (62.8%) had been a resident of Dubai for seven years or less. Most people (58.6%) spent between three and fifteen hours online per week, but nearly the entire sample (85.3%) were willing to shop online and 82.3% were willing to participate in eBanking.

Table 26 – Comparison between the full 2005 and 2008 samples

Demographics	Profile for the 2005 overall Dubai respondent	Percent	Profile for the 2008 overall Dubai respondent	Percent
Gender	Male	55.7	Male	55.8
Age	45-54	40.1	35-44	30.5
Education	Master's degree	49.9	Master's degree	36.3
Region of last educational institute	Advanced Economies	71.7	Advanced Economies	57.6
Region of citizenship at birth	Advanced Economies	58.5	Emerging and Developing Economies	58.5
Region of birth	Advanced Economies	58.5	Emerging and Developing Economies	59.8

Current region of citizenship	Advanced Economies	66.9	Emerging and Developing Economies	51.8
Length of time as resident of Dubai	1 – 2	22.1	3 - 4	19.5
Hours per week online	1 – 2	38.1	8 - 10	16.8
Would you shop online in the future?	Yes	88.5	Yes	85.3
Would you bank online in the future?	Yes	83.5	Yes	82.3

In *Table 26 – Comparison between the full 2005 and 2008 samples* there are several points that are worth noting. These are that on average the respondents in 2008 were younger than their counterparts in 2005 by approximately 1-10 years. The 2008 respondents had slightly lower levels of post-graduate education, although both sets of respondents had been educated within an Advanced Economy. One of the most salient points when comparing the 2005 and 2008 datasets is that in 2005 the majority of the respondents (63.9%) originated from an Advanced Economy whereas within the 2008 dataset, the greater part of the respondents surveyed (56.7%) originated from an Emerging and Developing Economy, especially in relation to the following questions:

- Region of citizenship at birth, 58.5%;
- Region of birth, 59.8%; and
- Current region of citizenship, 51.8%.

Typically, in 2008, the respondents had actually been residents of Dubai for a longer period time, namely three to four years as opposed to one to two years as identified within the 2005 dataset. Finally, the 2008 respondent typically used the Internet more prolifically, being on-line between eight to ten hours per week, approximately a 400% increase when compared with the 2005 respondents. In that year, the majority of respondents (38.1%) used the Internet between one to two hours for personal use per week.

4.2.3 Comparison between the 2005 and 2008 eCommerce users

As highlighted by Appendix A, from the multimedia storage device, the frequencies for the key demographic variables for the 2005 sample identified that 78.8% of those surveyed utilised eCommerce services within Dubai. This sample comprised mostly

males who made up 59.6%, aged between 35 and 54 years old (69.8%), typically these individuals held a post-graduate diploma or certificate (29.9%) or a Master's degree (56.8%), with most people born, living, and studying in Advanced Economies. A majority of the respondents (76.8%), had spent seven years or less as a resident of Dubai, of which over 65.9% spent between one and fifteen hours online per week for personal use. Conversely, nearly the entire sample (96.5%) was willing to shop online with 88.8% willing to participate in eBanking.

Appendix B, from the multimedia storage device, displays frequencies for the key demographic variables for the 2008 sample, which is slightly lower than the percentage of respondents who utilised eCommerce in 2005. 75.0% of those surveyed were currently using eCommerce services within Dubai. The sample was made up of 56.1% males, with 72.3% of the individuals aged between 25 and 44, holding a Bachelor's degree (33.7%) or Master's degree (40.2%), with most people born in Emerging and Developing Economies, but studying and living in Advanced Economies (70.3%). Most people (67.1%) had spent seven years or less as a resident of Dubai. Most people (62.6%) spent between three and fifteen hours online per week, but nearly the entire sample (98%) were willing to shop online in the future and 86.2% were willing to participate in eBanking. eCommerce displays frequencies for the key demographic variables for the 2008 sample for those who are not using eCommerce. The sample was mostly male (54.9%), with most individuals between age 20 and 44 (71.9%), holding a Bachelor's degree (39.0%) or Master's degree (24.4%), with most people born, studying, and living in Emerging and Developing Economies. Half (50%) of the Dubai respondents had spent seven years or less as a resident of Dubai. Most people (56.1%) spent between one and fifteen hours online per week. Nearly half (47.6%) were willing to shop online in the future, while 70.7% were willing to bank online.

Table 27 – Comparison between the 2005 and 2008 eCommerce users

Demographic	Profile for the 2005 eCommerce user	Percent	Profile for the 2008 eCommerce user	Percent
Gender	Male	59.6	Male	56.1
Age	45-54	41.1	25-34	39.4
Education	Master's degree	56.8	Master's degree	40.2
Region of last educational institute	Advanced Economies	79.3	Advanced Economies	70.3

Region of citizenship at birth	Advanced Economies	64.9	Advanced Economies	51.6
Region of birth	Advanced Economies	64.9	Emerging and Developing Economies	53.3
Current region of citizenship	Advanced Economies	74.7	Advanced Economies	58.5
Length of time as resident of Dubai	1 - 2	23.2	3 - 4	20.7
Hours per week online	1 - 4	66	5 - 7	19.5
Would you shop online in the future?	Yes	96.5	Yes	98
Would you bank online in the future?	Yes	88.8	Yes	86.2

As Table 27 – *Comparison between the 2005 and 2008 eCommerce* shows, overall the profiles are quite similar in nature with the exception of four main demographics, these being:

1. Age;
2. Region of birth;
3. Length of time as resident of Dubai; and
4. Hours per week online.

In the 2008 dataset the typical age of the respondents was less than those in 2005. In 2008, 39.4% of respondents were aged between 25 and 34 years old, this lower average age can possibly explain why the percentage of respondents who have Master's degrees decreased by 16.6% from the 2005 data set. In 2005, 70.95% of the respondents who used eCommerce were identified as originating from an Advanced Economy, after answering the following cultural questions:

1. 'What country was the last educational institute you studied at situated in?'
2. 'What was your country of citizenship at birth?'
3. 'What country were you born in?' and
4. 'What is your current country of citizenship?'

The results of these questions were categorised by classifying the respondents as belonging to either an Emerging and Developing Economy or an Advanced Economy.

A high percentage of respondents from 2005 were identified as having some level of cultural exposure to an Advanced Economy. Conversely, in the 2008 data set, a lower percentage of respondents were identified as coming from an Advanced Economy, where only an average 58.43%, and in one occasion, 'region of birth', actually scored 53.3% of all respondents were identified as originating from an Emerging and Developing Economy. Typically, the 2008 eCommerce user within Dubai has been a resident twice as long as an individual who participated in the 2005 questionnaire, with the 2008 eCommerce user spending considerable more time online than his 2005 compatriot. Another important fact that comes to light within the both the 2005 and 2008 eCommerce users demographic profile is that a very large percentage of the individuals who participated within this study received their highest educational level from an Advanced Economy, with 79.3% in 2005 and 70.3% in 2008. This is an indication that one of the major demographic factors that influences eCommerce usage is likely to be when an individual has received their highest academic level in an Advanced Economy.

4.2.4 Comparison between the 2005 and 2008 non-eCommerce users

Appendix A, from the multimedia storage device, highlights the frequencies for the key demographic variables for the 2005 sample for those individuals who were not using eCommerce within Dubai. The sample was mostly female (59.7%), with most individuals between age 25 and 54 (90.2%), holding a post-graduate diploma or certificate (45.8%) or Master's degree (22.2%), with most people born, citizens of, and studying in Emerging and Developing Economies. A majority of the respondents (58.3%) spent less than seven years as a resident of Dubai. One of the most interesting facts is that although these individuals refrained from using eCommerce, a very high percentage of the respondents (88.9%) actually stated that they spend between three and fifteen hours online per week for personal use. This suggests that the user did not see the Internet as an inhibitor to their adoption of eCommerce. Although slightly more than half of the respondents (56.9%) indicated that they may indulge in eCommerce in the future, there was still a considerable amount of individuals who stated that they would either definitely not be using eCommerce, (8.3%), or unsure whether they would adopt eCommerce as a commercial medium. Of those individuals surveyed, 34.7% confirmed that they were still uncertain if they would partake in eCommerce, indicating that security (87.3%) and a lack of desire to use eCommerce were the major factors influencing their decision.

Appendix B, from the multimedia storage device, also displays frequencies for the key demographic variables for the 2008 sample for those respondents who are not

using eCommerce. The sample was only slightly slanted toward males with 54.9%, with the average age of these individuals being between age 20 and 44 (82%). One surprising aspect of this sample is that there was a high percentage of individuals who were degree holders (39%). The reason why this fact is surprising is that expatriates who wish to live and work in Dubai need to have a higher level of education and work experience to compete in the job market. Strict regulations outline minimal educational requirements based on job role and these are mandated and regulated by the Dubai Ministry of Employment (Godwin, 2006; Kherfi, 2008). The 2008 non-eCommerce user dataset also identifies that a majority of the respondents (82.9%) were individuals who were born, citizens of, and studying within an Emerging and Developing Economy. This fact provides a level of validation that most non-users of eCommerce within Dubai have limited exposure to an Advanced Economy. Another interesting fact is that although 50.1% of the respondents who did not use eCommerce had only been a resident of Dubai less than seven years, there was a high percentage of the individuals (32.9%) who had lived in Dubai for more than eleven years, the majority of whom (74.3%) were expatriates. Similar to the 2005 results, a majority of Dubai residents who participated in this study (88.9%) spent up to fifteen hours per week online, although only 56.9% were willing to partake in eCommerce with slightly more respondents (62.5%) willing to participate in eBanking.

Table 28 – Comparison between the 2005 and 2008 non-eCommerce users

Demographic	Profile for the 2005 Non-eCommerce user	Percent	Profile for the 2008 Non-eCommerce user	Percent
Gender	Female	59.7	Male	54.9
Age	45-54	36.1	25-34	25.6
Education	Post-graduate diploma or certificate	45.8	Bachelor degree	39
Region of last educational institute	Emerging and Developing Economies	58.3	Emerging and Developing Economies	80.5
Region of citizenship at birth	Emerging and Developing Economies	66.7	Emerging and Developing Economies	89
Region of birth	Emerging and	66.7	Emerging and	79.3

	Developing Economies		Developing Economies	
Current region of citizenship	Emerging and Developing Economies	63.9	Emerging and Developing Economies	82.9
Length of time as resident of Dubai	16-20	37.5	Less than 1 - 7	50.1
Hours per week online	1 - 2	58.3	5 – 15	39.0
Would you shop online in the future?	Yes	56.9	Yes	47.6
Would you bank online in the future?	Yes	62.5	Yes	70.7

Table 28 – Comparison between the 2005 and 2008 non-eCommerce users highlights several interesting facts, especially when compared to the eCommerce usage outside of Dubai. For instance, in 2005 it was identified that females (59.1%) were most likely not to use eCommerce. In studies conducted within Advanced Economies, such as Europe, the UK and the US, it was typically males who were the eCommerce adoption laggards (Favier, 2007; Favier & Bouquet, 2007; Johnson & Hult, 2007; Lewis, 2008; Mulpuru et al., 2008). Favier (2007), supported by Mulpuru et al. (2008) stated that within Advanced Economies the average age range of the eCommerce non-user is 38 to 48 years, which is several years lower than the average age of the 2005 eCommerce non-user in Dubai. Conversely, the 2008 results suggest that the eCommerce non-user in Dubai is getting younger with the age ranging between 25 and 34 years, with these users stating that they are most concerned about the security and potential fraud associated with eCommerce. What is interesting about the data collected in both the 2005 and 2008 samples is that even though these particular individuals do not utilise eCommerce services in Dubai, they do surf the Internet for personal reasons with 58.3% of the 2005 respondents using the Internet on average 1-2hrs per week. In the 2008 survey results, over 39% of these respondents used the Internet at least 5 hours per week up to 15 hours per week. This indicates that there is a desire to use Internet technology but not to partake in eCommerce.

4.2.5 Comparison between the 2005 and 2008 eBanking users

Appendix A, from the multimedia storage device, outlines the frequencies for the key demographic variables for the 2005 sample for those who are using eBanking. The sample was mostly male (59.4%), with most individuals between age 35 and 54

(74.9%), holding a post-graduate diploma or certificate (32.2%) or Master's degree (54.5%), with most people born, citizens of, and studying in Advanced Economies. A majority of the respondents who participated within this survey (80.5%) had spent seven years or less as a resident of Dubai. Although these individuals professed not to utilise eBanking services within Dubai, over 83.5%, indicated that they spent between one and seven hours online per week for personal use. What is interesting is that 13.4% of current non-eBanking users were previously users of eBanking. Conversely, nearly the entire sample (92.0%) were willing to shop online with even more admitting that they would like to use eBanking in the future (96.2%).

As highlighted in Appendix D, from the multimedia storage device, the frequencies for the key demographic variables for the overall 2008 sample. The sample was mostly male (56.9%), with most individuals between age 25 and 44 (72.7%), holding a Bachelor's degree (38.0%) or Master's degree (39.4%), with most people born and living in Emerging and Developing Economies, but studying in Advanced Economies. Most people (66.2%) had spent seven years or less as a resident of Dubai. Most people (50.5%) spent between three and fifteen hours online per week, but nearly the entire sample (92.1%) were willing to shop online. Every single person in the 2008 sample participating in eBanking stated that they were interested in continuing to use eBanking in the future.

Table 29 – Comparison between the 2005 and 2008 eBanking users

Demographic	Profile for the 2005 eBanking user	Percent	Profile for the 2008 eBanking user	Percent
Gender	Male	59.4	Male	56.9
Age	45-54	44.8	25-34	38.4
Education	Master's degree	54.5	Master's degree	39.4
Region of last educational institute	Advanced Economies	76.6	Advanced Economies	62
Region of citizenship at birth	Advanced Economies	61.9	Emerging and Developing Economies	57.9
Region of birth	Advanced Economies	61.9	Emerging and Developing Economies	57.9

Current region of citizenship	Advanced Economies	72	Emerging and Developing Economies	51.4
Length of time as resident of Dubai	3 - 4	18.9	1 – 2	19.4
Hours per week online	1 - 2	36.7	5 – 7	19
Would you shop online in the future?	Yes	92	Yes	92.1
Would you bank online in the future?	Yes	96.2	Yes	100

Table 29 – Comparison between the 2005 and 2008 eBanking users indicates that there has been a level of maturity within the adoption of eBanking obtained when the two datasets that have been analysed. Firstly, the respondents who participated in the study in 2008 were considerably younger. The 2005 data identified that 64.3% of the respondents were older than 45 years, as opposed to the 2008 data, where 83.8% of the respondents were younger than 44 years. Another interesting departure from the 2005 primary data indicators was in the ‘region of last educational institute’, ‘region of citizenship at birth’, ‘region of birth’ and ‘current region of citizenship’. In 2005, over 61.9% of the respondents reported that they originated from a country deemed to be one of the Advanced Economies, whereas, in 2008, only ‘region of last educational institute’ had a high representation of respondents from countries identified as belonging to the Advanced Economies. ‘region of citizenship at birth’ (57.9%) ‘region of birth’ (57.9%) and ‘current region of citizenship’ (51.4%) were identified as originating or belonging to a country that falls under the classification of an Emerging and Developing Economies entity. This result could imply that when an individual has completed their highest level of education within a country belonging to an Advanced Economy they have a higher propensity to adopt eServices.

The primary data collected in 2005 and 2008 both identify that Dubai is quite a transient society. In 2005, 52.3%, and 2008, 43.7% of those individuals surveyed had been a resident of Dubai for less than five years. In 2005, 16.2% and 2008, 27.7%, of the respondents had actually been a resident of Dubai for more than fifteen (15) years, although this could be attributed to the population balance between Dubai based UAE Nationals, at approximately 17% and expatriates (83%) (Al-Maktoum, 2008).

4.2.6 Comparison between the 2005 and 2008 non-eBanking users

As highlighted in Appendix A, from the multimedia storage device, for the key demographic variables in the 2005 sample, those who did not use eBanking were mostly male (59.2%) between age 25 and 54 (64.8%), holding a post-graduate diploma or certificate (36.6%) or Master's degree (31.0%), with most born and living in Emerging and Developing Economies but studying in Advanced Economies. Most people (57.8%) had spent between 1 to 15 years as a resident of Dubai. A majority of the respondents (88.7%) spent less than ten hours online per week, but nearly the entire sample (74.6%) were willing to shop online. Many fewer (32.4%) were definitely willing to participate in eBanking.

Appendix B, from the multimedia storage device, outlines the frequencies for the key demographic variables for the overall 2008 sample. The sample was mostly male (53.6%), with most individuals between age 25 and 44 (54.5%), holding a Bachelor's degree (29.5%) or Master's degree (30.4%), with most people born, living, and educated in Emerging and Developing Economies. Most people (56.3%) had spent seven years or less as a resident of Dubai. Most people (50.0%) spent between three and fifteen hours online per week, but most people (72.1%) were willing to shop online and nearly half (48.2%) were willing to participate in eBanking.

Table 30 – Comparison between the 2005 and 2008 non-eBanking users

Demographic	Profile for the 2005 Non-eBanking user	Percent	Profile for the 2008 Non-eBanking user	Percent
Gender	Female	59.2	Male	53.6
Age	55-59	33.8	25-34	31.3
Education	Post-graduate diploma or certificate	36.6	Master's degree	30.4
Region of last educational institute	Advanced Economies	52.1	Emerging and Developing Economies	50.9
Region of citizenship at birth	Emerging and Developing Economies	54.9	Emerging and Developing Economies	59.8
Region of birth	Emerging and Developing Economies	54.9	Emerging and Developing Economies	63.4

Current region of citizenship	Emerging and Developing Economies	53.5	Emerging and Developing Economies	52.7
Length of time as resident of Dubai	16 – 20	39.4	3 - 4	20.5
Hours per week online	1 – 2	43.7	Less than 1	22.3
Would you shop online in the future?	Yes	74.6	Yes	72.1
Would you bank online in the future?	Maybe	46.5	Yes	48.2

Table 30 – Comparison between the 2005 and 2008 non-eBanking users shows that those individuals who do not partake in eBanking are typically older than those who do. In 2005, 81.7% were over 34 years old although in 2008 this was lower, with only 43.8% older than 34 years old. Although gender is not a specific factor in eServices usage, it was surprising that the data collected in 2005 showed an irregular proportion of females (59.2%) of all eBanking non-users were female as opposed to the 2008 data, which showed that 53.6% of eBanking non-users were male. It is noted that this same phenomenon occurred between the 2005 and 2008 eCommerce non-users. In 2005, 59.7% of the eCommerce non-users were female as compared to the 2008 data set where 54.9% of the eCommerce non-users were male. This result cannot be explained by a disproportionate ratio between female and male respondents between the two datasets because in 2005 there were 55.7% male and 44% female respondents, and in 2008 there were 55.8% male and 44.2% female respondents. For all intents and purposes, there are practically the same gender demographics between the two datasets. The primary data collected in 2008 revealed that the female respondents who did use eServices stated that the most relevant enablers for them to utilise eServices were:

- Ability to get answers by eMail, Instant Messaging, or forum;
- Allows for better use of time;
- Better information about products;
- Better prices;
- Convenience;
- Goods unable to be purchased locally; and

- Easier to order.

With the least important enablers being:

- Ability to return merchandise easily;
- Better presentation of products
- Better security; and
- Faster delivery.

4.2.7 Descriptive statistics for high cultural exposure to advanced economies who are eCommerce users

Appendix E identifies the descriptive statistics for Dubai-based eCommerce users who have had a high level of cultural exposure to Advanced Economies. A majority of these individuals spent between three and ten hours on the Internet for personal use (50.4%) and social networking sites (87.0%), such as Facebook (35.7%), MSN (11.3%), Microsoft Instant Messaging (9.6%), Google Instant Messaging (7.0%), and YouTube (6.1%). These users, 69.5%, spent between one to ten hours frequenting the aforementioned social networking sites. Google and Yahoo were clearly the two search engines that were deemed best for use in eCommerce transactions. Airline tickets were the generally preferred first choice for eCommerce purchases, however most of the products desired were similar in popularity. The majority of the respondents stated they felt that their online transactions were secure (62.6%), and most respondents had implemented security devices and solutions such as firewalls (79.1%), anti-viral software (92.2%), and anti-spyware software (61.7%).

4.2.8 Descriptive statistics for low cultural exposure to advanced economies who are eCommerce users

Appendix F displays the descriptive statistics for those eCommerce users with low levels of cultural exposure to Advanced Economies. Most of these people spent between three and fifteen hours on the Internet for personal use (54.1%) and use some social networking sites (71.2%). Facebook (26.3%), MSN (10.5%), and Yahoo Instant Messaging (5.3%) were the most popular sites used. Most of these users spent one to ten hours on social networking sites (69.5%). Google and Yahoo were the search engines that were deemed best for use in eCommerce transactions. Most people felt that their online transactions were secure (62.6%), even though a large number of the respondents had not implemented any real security precautions such as using firewalls (47.4%), anti-viral software (60.5%), and anti-spyware software (34.2%). These findings could be explained by an observation made by Kluckhohn and Strodtbeck (1961) who describe non-Advanced Economies, such as an agrarian

based society, as showing fatalistic and masculine traits, where there was a tendency to discount such precautions.

4.2.9 Descriptive statistics for high cultural exposure to advanced economies who are non-eCommerce users

Appendix G displays the descriptive statistics for non-eCommerce users with high levels of cultural exposure to Advanced Economies. A majority of these people spend between three and ten hours on the Internet for personal use (55.3%) and use some social networking sites (75.6%). Facebook (29.8%), Amazon (5.3%), and Microsoft Instant Messaging (5.3%) were the most popular sites used based on the number of first place placements. Most of these users spent less than four hours per week on social networking sites (71.4%). Most of these respondents had active firewalls (64.9%), anti-viral software (70.2%), and anti-spyware software (53.4%) within their IT environment. The majority of these respondents identified that the two main inhibitors to their adoption of eCommerce were: 'I am concerned about potential fraud', 65.58%, and 'I am concerned about security' 70.78%.

4.2.10 Descriptive statistics for low cultural exposure to advanced economies who are non-eCommerce users

Appendix H displays the descriptive statistics for eCommerce users with high levels of cultural exposure to Advanced Economies. Most of these people spent between five and seven hours on the Internet for personal use (50.0%), although a majority of these respondents did not use social networking sites (66.7%) with Facebook and MSN being the two most utilised social networking sites preferred. Although these respondents were non-ecommerce users, a large percentage of these respondents specified that 'I am concerned about potential fraud', 81.85%, and 'I am concerned about security' with 74.16%. These were the two foremost inhibitors that influenced their decision not to adopt eCommerce. Ironically, contrary to the observations made by Kluckhohn and Strodtbeck (1961), described earlier, these respondents had implemented firewalls (83.3%), anti-viral software (66.7%), and anti-spyware software (66.7%).

4.2.11 Descriptive statistics for high cultural exposure to advanced economies who are eBanking users

Appendix I displays the descriptive statistics for eBanking users with high levels of cultural exposure to Advanced Economies. Most of these people spent between one and ten hours on the Internet for personal use (54.6%) and used some social networking sites (78.2%). Facebook (32.1%), Microsoft Instant Messaging (9.6%), MSN (7.7%), Google Instant Messaging (5.8%), and Xing (3.2%) were the most popular sites used based on the number of first place placements. 79.5% preferred using local banks, while 18.6% prefer using foreign banks. Most (55.8%) spend less

than seven hours utilising eBanking services. HSBC (44.9%) and Emirates Bank (26.9%) were the two most popular banks used. A majority of the respondents believed that their online transactions were secure (74.5%), and most of these users went to great lengths to ensure that their eBanking sessions were kept secure by implementing security systems such as firewalls (85.9%), anti-viral software (98.1%), and anti-spyware software (67.9%).

4.2.12 Descriptive statistics for low cultural exposure to advanced economies who are eBanking users

Appendix J outlines the descriptive statistics for eBanking users who have low levels of cultural exposure to Advanced Economies. Most of these people spent between less than ten hours on the Internet for personal use (74.5%) and used some social networking sites (74.5%). Facebook (38.3%), Amazon.com (6.4%), Expatriate websites (6.4%), and Windows Live (4.3%), were the most popular sites used by these individuals. A majority of these respondents preferred to use local banks, 55.3%, while 44.7% preferred using foreign banks. Most (51.1%) spent less than four hours performing eBanking tasks. HSBC (55.3%), CitiBank (17.0%), Emirates Bank (12.8%), and Lloyds TSB (10.6%) were the most popular banks used, with 74.5% of these users believing that their eBanking was secure. Typically these users took appropriate precautions by implementing firewalls (85.1%), anti-viral software (93.6%), and anti-spyware software (68.1%).

4.2.13 Descriptive statistics for high cultural exposure to advanced economies who are non-eBanking users

Appendix K displays the descriptive statistics for non-eBanking users with high levels of cultural exposure to Advanced Economies. Most of these people spent less than ten hours on the Internet for personal use (53.5%) and use some social networking sites (80.9%). Facebook (25.3%), MSN (12.6%), Yahoo Instant Messaging (5.7%), and YouTube (5.3%) were the most popular sites used based on the number of first place placements. 79.5% preferred using local banks, while 18.6% prefer using foreign banks. It is interesting to note that relatively a small percentage of the respondents had actually implemented firewalls (36.8%), anti-viral software (41.4%), and anti-spyware software (28.7%) especially when 73.22% of these respondents stated that 'I am concerned about potential fraud' and 68.85% identified 'I am concerned about security' as the two main inhibitors in adopting eBanking.

4.2.14 Descriptive statistics for low cultural exposure to advanced economies who are non-eBanking users

Appendix L displays the descriptive statistics for eBanking users with low levels of cultural exposure to Advanced Economies. Most of these people spent less than

seven hours on the Internet for personal use (66.7%) and used some social networking sites (57.1%). Facebook (22.7%), was the most popular site used based on the number of first place placements, but no other site had more than one person who ranked it in first position. 55.3% preferred using local banks, while 44.7% preferred using foreign banks. The percentage of users that used firewalls, anti-viral software, and anti-spyware software was small, but it needs to be noted that the sample size was too small to have a clear understanding if this trend was normal or not.

4.2.15 Descriptive statistics for social networking

Appendix M displays t-tests used to determine whether there was a difference between the main variables depending on whether one had a high or low combined weighting for eCommerce. T-tests were utilised because they are the optimal method to determine whether there is a significant difference between two and only two groups. Only a few variables were significant. Those who visited expatriate websites tended to have higher eCommerce weights ($t = 3.876$, $p < .001$), as did MySpace ($t = 3.575$, $p = .001$) and Picasa ($t = 2.687$, $p = .011$) visitors. What this primarily reflects is that those respondents who used eCommerce were more often likely to use social networking sites in general. This is understandable as different types of Internet usage are likely to correlate with each other when an individual already utilised eServices and other Internet based mediums.

4.2.16 T-tests for differences between high and low eBanking weights

Appendix N displays t-tests used to determine whether there was a difference between the main variables depending on whether one has a high or low combined weighting for eBanking. Only a few variables were significant, including hours spent using the Internet for personal use ($t = 2.529$, $p = .013$) as did those who used expatriate websites ($t = 3.166$, $p = .003$), Facebook ($t = 2.342$, $p = .022$), MySpace ($t = 3.634$, $p = .001$), and how often people visited social networking sites ($t = 2.501$, $p = .015$). Once again, this indicates that those individuals who used eBanking were often more likely to use social networking sites in general. However, there are so few significant relationships, as illustrated in both Appendices M and N, that they may be less significant in terms of the entire model than other relationships.

4.2.17 Correlations for 2005 overall sample

Appendix O assesses the hypotheses to determine if there is a relationship, or bearing, between cultural exposure and the four culturally related questions for the 2005 sample and whether one uses eCommerce and/or eBanking. These four cultural exposure questions are:

1. 'What region was the last educational institute you studied at situated in?'

2. 'What was your region of citizenship at birth?'
3. 'What region were you born in?' and
4. 'What is your current region of citizenship?'

Such a relationship would have a p-value less than .05. The primary data collected identifies that all the cultural exposure variables are highly correlated. In a normal situation, those individuals who are born within an Emerging and Developing Economy are more likely to be living in that country and being a citizen of that country. The same applies for those in Advanced Economies. Dubai however is not a normal situation, with its Advanced Economy-like demeanour and tax-free status, Dubai has become a destination of choice for many expatriates. Al-Maktoum (2008) stated that the UAE's population reached 5.6 million in 2007, with 1.45 million of that population being in Dubai and of whom more than 83% were expatriates.

Husain (2007) reported that the number of millionaires within the UAE who had over US\$1 million in cash deposits had reached 68,100, therefore enabling its residents to afford an education for their children at Tier One academic establishments worldwide. Typically these academic establishments are based within an Advanced Economy. One may expect, therefore, that the children of the more affluent residents of Emerging and Developing Economies are likely to attend universities in Advanced Economies. The individual components of cultural exposure all had strongly significant correlations with each other. With regard to the main hypotheses, every aforementioned cultural exposure variable has a significant relationship with eCommerce, with only current region of citizenship being correlated with eBanking.

4.2.18 Correlations for 2008 overall sample

The table in Appendix P illustrates an assessment of the hypotheses to determine if there is a relationship (or bearing) between cultural exposure and its four components for the 2008 sample and whether one uses eBanking and eCommerce. A significant relationship was determined to have a p-value less than .05. Once again, all the cultural exposure variables are highly correlated, as the individual components of cultural exposure all had strongly significant correlations with each other. With regard to the main hypotheses, every cultural exposure variable has a significant relationship with eCommerce, except for region of birth, but only eCommerce had a relationship with eBanking.

4.2.19 T-tests for differences in eCommerce for 2005 sample

Appendix Q illustrates the tests conducted to determine whether there are differences in the answers to a series of yes/no questions from the initial questionnaire depending on whether a person used eCommerce. A positive value for the t-statistic would indicate that people who did not use eCommerce tended to

answer yes to this question most often, while a negative value would indicate that people who did use eCommerce tended to answer yes more often. Therefore, a 'yes' answer to the following questions is associated with not using eCommerce,:

- 'I am concerned about delivery issues' (t = 8.426;p < .001);
- 'I am concerned about potential fraud' (t = 8.249;p < .001);
- 'I am concerned about security' (t = 11.162;p < .001);
- 'I feel that there is a lack of personal contact' (t = 3.968;p < .001);
- 'I have no credit card' (t = 2.811;p = .006);
- 'I have no desire to purchase anything' (t = 5.407;p < .001);
- 'Too expensive' (t = 2.541;p < .013);
- 'Unable to communicate verbally with representatives from the site' (t = 2.765;p = .007);
- 'Unable to negotiate better prices' (t = 2.765;p < .007);
- 'Ability to get answers by eMail, Instant Messaging, or forum' (t = 4.970;p < .001);
- 'Ability to get answers by phone' (t = 5.072;p < .001);
- 'Ability to return the merchandise I purchase easily' (t = 4.852;p < .001);
- 'Allows for better use of my time' (t = 2.325;p = .022);
- 'Better information about banking products' (t = 4.446;p < .001);
- 'Better presentation of products' (t = 2.662;p = .010);
- 'Better prices' (t = 4.007;p < .001);
- 'Better security' (t = 6.492;p < .001);
- 'My bank has no branches available locally' (t = 3.809;p < .001);
- 'Easier to order' (t = 3.386;p = .001);
- 'Faster delivery' (t = 4.628;p < .001);
- 'Nothing' (t = 2.302;p = .024);

- 'I find it difficult to get answers by eMail, Instant Messaging, or forum' (t = 5.011;p < .001);
- 'Concerned about identity theft' (t = 2.064;p = .042);
- 'Concerned about potential fraud' (t = 3.207;p = .002);
- 'Concerned about security' (t = 2.372;p = .020);
- 'Ability to get answers quickly by eMail' (t = 2.670;p = .009);
- 'Ability to get answers by phone' (t = 2.540;p = .013);
- 'Better information about banking products' (t = 2.354;p = .021); and
- 'Better security' (t = 2.872;p = .005)

While the 'Ability to get answers by eMail, Instant Messaging, or forum' (t = -2.044;p = .045), which was inverted from the other question holding the same name, was associated with using eCommerce:

- 'Ability to return merchandise easily' (t = -3.190;p = .002);
- 'Allows for better use of my time' (t = -8.825;p < .001);
- 'Better information about products' (t = -7.983;p < .001);
- 'Better presentation of products' (t = -2.792;p = .006);
- 'Better prices' (t = -7.149;p < .001);
- 'Convenience' (t = -13.644;p < .001);
- 'Goods unable to be purchased locally' (t = -12.866;p < .001);
- 'Easier to order' (t = -9.309;p < .001);
- 'Faster delivery' (t = -6.509;p < .001);and
- 'Do you use eBanking services?' (t = -3.862;p < .001).

4.2.20 T-tests for differences in eBanking for 2005 sample

The table in Appendix R tests whether there are differences in the answers to a series of yes/no questions from the 2005 questionnaire depending on whether a person used eBanking or not. A positive value for the t-statistic would indicate that people who did not use eBanking tended to answer yes to this question most often, while a negative value for the t-statistic would indicate that people who did use

eBanking tended to answer yes more often. The following variables were tested and found to be were all associated with not using eBanking:

- 'Ability to get answers by eMail, Instant Messaging, or forum' (t = 2.011;p = .045);
- 'I have no credit card' (t = 2.825;p = .006);
- 'Better security' (t = 3.049;p = .003);
- 'My bank has no branches available locally' (t = 3.585;p = .001);
- 'Faster delivery' (t = 2.375;p = .020);
- 'I find it difficult to get answers by eMail, Instant Messaging, or forum' (t = 2.047;p = .043);
- 'Concerned about identity theft' (t = 6.197;p < .001);
- 'Concerned about potential fraud' (t = 8.867;p < .001);
- 'Concerned about security' (t = 9.981;p < .001);
- 'Lack of personal contact' (t = 3.399;p = .001);
- 'Never tried to set up eBanking Services' (t = 4.694;p < .001);
- 'No desire to participate in eBanking' (t = 4.694;p < .001);
- 'Ability to get answers quickly by eMail' (t = 2.375;p = .020);
- 'Allows for better use of my time' (t = 2.031;p = .045);
- 'Better information about banking products' (t = 2.043;p = .044);
- 'Better security' (t = 5.583;p < .001); and
- 'Nothing' (t = 5.239;p < .001)

While the following were associated with using eBanking:

- 'I had a bad experience' (t = -2.011;p = .045);
- 'Allows for better use of my time' (t = -4.889;p < .001);
- 'Better presentation of products' (t = -5.886;p < .001);
- 'Better prices' (t = -2.205;p = .029);
- 'Tight security' (t = -2.252;p = .025);

- 'Convenience' (t = -4.113; p < .001);
- 'Good unable to be purchased locally' (t = -2.728; p = .007);
- 'Having the ability to communicate verbally with representatives from the site' (t = -2.076; p = .041);
- 'Ability to get answers quickly by eMail' (t = -9.247; p < .001);
- 'Ability to get answers by phone' (t = -3.684; p < .001);
- 'Allows for better use of my time' (t = -13.624; p < .001);
- 'Better information about banking products' (t = -4.477; p < .001);
- 'Better security' (t = -2.471; p = .014);
- 'Convenience' (t = -28.897; p < .001); and
- 'My Bank is not available locally' (t = -8.284; p < .001).

Much as in the case for the table in Appendix Q, the table in Appendix R has a similar structure in determining relationships between variables and differences in eCommerce framework. Most of the variables on the positive side would be expected to lead to a positive use of eCommerce, such as:

- 'Ability to get answers by phone';
- 'Better information about banking products'; and
- 'Convenience'.

Many of the variables on the negative side would correspond with a lack of use of eCommerce, such as:

- 'Never tried to set up eBanking';
- 'Lack of personal contact'; and
- 'Concern over personal fraud'.

4.2.21 ANOVA tests for eCommerce for 2008 sample

Appendix S illustrates the tests conducted to determine whether there is a significant difference between those who use eCommerce and those who do not use eCommerce on a series of Likert-scale questions using a series of ANOVA tests. The Likert-scale variables from 1 through 7 were treated as continuous because

they measured different levels of each question or variable. The following questions were significant:

- 'How many years have you been a resident of your current country of residence?' (F = 4.830;p = .029);
- 'When did you start to use the Internet' (F = 31.285;p < .001);
- 'When did you start to use eMail' (F = 38.013;p < .001);'
- 'When did you start to use eAuction' (F = 9.068;p = .003);
- 'When did you start to use eCommerce' (F = 143.082;p < .001);
- 'When did you start to use Social networking (business and personal)' (F = 8.610;p = .004);
- 'When did you start to use Internet research (educational)' (F = 7.181;p = .008);
- 'When did you start to use Share trading' (F = 4.547;p = .034);
- 'I am concerned about potential fraud' (F = 4.968;p = .027);
- 'I am concerned about security' (F = 5.584;p = .019);
- 'I believe that there is a lack of personal contact' (F = 6.067;p = .014);
- 'Ease of use' (F = 7.721;p = .006);
- 'I believe that there is a lack of personal contact' (F = 4.146;p = .043);
- 'I use eServices to Pay bills' (F = 8.565;p = .004);
- 'I use eServices to Transfer funds between accounts' (F = 8.312;p = .004);
- 'eServices allows for better use of my time' (F = 3.930;p = .049);
- 'eServices allows Convenience' (F = 5.040;p = .026); and
- 'If you use eBanking services what type of logon security does your online Banking service use?' (F = 5.261;p = .023).

4.2.22 ANOVA tests for eBanking for 2008 sample

Appendix T illustrates the tests conducted to determine whether there is a significant difference between those who use eBanking and those who do not use eBanking on a series of Likert-scale questions using a series of ANOVA tests. The Likert-scale

variables from 1 through 7 were treated as continuous because they measured different levels of each question or variable. The following questions were significant:

- 'How many years have you been a resident of your current country of residence?' (F = 4.050;p = .045);
- 'How many hours per week do you spend using the Internet for personal use?' (F = 7.707;p = .006);
- 'Internet' (F = 6.314;p = .013);
- 'eMail' (F = 13.051;p < .001);
- 'eBanking' (F = 25.831;p < .001);
- 'eCommerce' (F = 38.715;p < .001);
- 'eGovernment services' (F = 8.012;p = .005);
- 'Social networking (business and personal)' (F = 12.223;p = .001);
- 'Internet research (goods and/or Services)' (F = 6.954;p = .009);
- 'Share trading' (F = 10.365;p = .001);
- 'Voice over IP (VoIP)' (F = 19.527;p < .001);
- 'Better security' (F = 4.060;p = .045);
- 'Have access to the Internet at home' (F = 5.562;p = .019);
- 'Better prices' (F = 7.038;p = .009);
- 'Convenience' (F = 5.083;p = .025);
- 'eShare trading' (F = 6.357;p = .013);
- 'I don't have access to the Internet at home' (F = 4.566;p = .036); and
- 'I have had a bad experience' (F = 4.134;p = .046).

Most of the same relationship structure in the table in Appendix S also occurs here, meaning that the questions relating to the respondents usage of Internet, eBanking, eCommerce, and social networking all widely vary depending on whether one has Internet access or not. The survey variables that were different across the two surveys, however, with:

- 'Better security';
- 'Having access to the Internet at home; and
- 'Better prices'.

Are the variables whose means differ in this case.

4.2.23 T-tests for region of current citizenship for 2005 sample

The table in Appendix U illustrates the tests conducted to determine whether there are differences in the answers to a series of yes/no questions from the initial questionnaire depending on whether a person was currently residing in an Advanced Economy or an Emerging and Developing Economy for the year 2005. A positive value for the t-statistic would indicate that more people in Advanced Economies answer yes, while a negative value would indicate that more people in Emerging and Developing Economies answer yes to that particular question. The questions listed below are all associated with Emerging and Developing Economies:

- 'Concerned about delivery issues' (F = -2.375;p = .019);
- 'I am concerned about potential fraud' (F = -2.278;p = .024);
- 'I am concerned about security' (F = -3.389;p = .001);
- 'Ability to get answers by eMail, Instant Messaging, or forum' (F = -2.013;p = .045);
- 'I have no credit card' (F = -3.619;p < .001);
- 'Ability to get answers by eMail, Instant Messaging, or forum' (F = -4.383;p < .001);
- 'Ability to get answers by phone' (F = -2.654;p = .009);
- 'Allows for better use of my time' (F = -2.212;p = .028);
- 'Better information about banking products' (F = -3.812;p < .001);
- 'Better presentation of products' (F = -2.270;p = .025);
- 'Better security' (F = -2.682;p = .008);
- 'My bank has no branches available' (F = -3.934;p < .001);
- 'Easier to order' (F = -3.175;p = .002);
- 'Faster delivery' (F = -3.800;p < .001);

- 'I find it difficult to get answers by eMail, Instant Messaging, or forum' (F = -3.270;p = .001);
- 'Concerned about potential fraud' (F = -2.033;p = .043);
- 'Ability to get answers quickly by eMail' (F = -4.732;p < .001);
- 'Ability to get answers by phone' (F = -2.694;p = .008);
- 'Allows for better use of my time' (F = -2.670;p = .008);
- 'Better information about banking products' (F = -3.146;p = .002);
- 'Better security' (F = -3.148;p = .002); and
- 'Better information about banking products' (F = -4.323;p < .001).

Many of the aforementioned factors, especially Internet adoption or non-adoption would separate an Advanced Economy from an Emerging and Developing Economy. The following questions were associated with Advanced Economies:

- 'Ability to return merchandise easily' (F = 2.069;p = .040);
- 'Allows for better use of my time' (F = 4.015;p < .001);
- 'Better prices' (F = 2.003;p = .046);
- 'Convenience' (F = 4.314;p < .001);
- 'Good unable to be purchased locally' (F = 2.535;p = .012);
- 'Easier to order' (F = 2.195;p = .029);
- 'Do you use eBanking services?' (F = 3.782;p < .001);
- 'Better security' (F = 2.476;p = .014);
- 'Convenience' (F = 3.219;p = .001);and
- 'My Bank is not available locally' (F = 5.060;p < .001).

4.2.24 T-tests for region of current citizenship for 2008 sample

The table in Appendix V illustrates the tests conducted to determine whether there are differences in the answers to a series of yes/no questions from the initial questionnaire depending on whether a person was currently residing in an Advanced Economy or an Emerging and Developing Economy for the year 2008. A positive value for the t-statistic would indicate that more people in Advanced

Economies answer yes, while a negative value would indicate that more people in Emerging and Developing Economies answer yes to that particular question.

Therefore, the following questions are associated with Emerging and Developing Economies:

- 'How many years have you been a resident of your country of residence?' (F = -6.014; p < .001);
- 'eMail' (F = -2.097; p = .036);
- 'eBanking' (F = -3.632; p < .001);
- 'eGovernment Services' (F = -3.704; p < .001);
- 'Internet Research (educational)' (F = -2.466; p = .014);
- 'eCommerce via the Internet' (F = -2.367; p = .019); and
- 'Having the ability to communicate verbally with representatives from the site' (F = -2.300; p = .024).

The questions identified below have all been associated with Advanced Economies:

- 'I am concerned about potential fraud' (F = 2.459; p = .015);
- 'I am concerned about security' (F = 2.125; p = .034);
- 'I don't have access to the Internet at work' (F = 2.914; p = .004);
- 'I have no desire to use the Internet' (F = 2.218; p = .027);
- 'I have no Internet access' (F = 2.946; p = .003);
- 'Better security' (F = 3.296; p = .001);
- 'Cheaper Internet access' (F = 2.635; p = .009);
- 'Ease of use' (F = 3.159; p = .002);
- 'Have access to the Internet at home' (F = 3.900; p < .001);
- 'Have access to the Internet at work' (F = 4.615; p < .001);
- 'I am concerned about potential fraud' (F = 2.629; p = .009);
- 'I am concerned about security' (F = 2.436; p = .016);
- 'I don't have access to the Internet at home' (F = 2.532; p = .012);

- 'I don't have access to the Internet at work' (F = 2.787;p = .006);
- 'I have no desire to use the Internet' (F = 2.610;p = .010);
- 'I have no Internet access' (F = 2.620;p = .009);
- 'Better security' (F = 3.595;p < .001);
- 'Ease of use' (F = 2.511;p = .013);
- 'Faster Internet Access' (F = 2.213;p = .028);
- 'Have access to the Internet at home' (F = 3.130;p = .002);
- 'Have access to the Internet at work' (F = 2.625;p = .009);
- 'Advertisements/banner-Ads' (F = 4.960;p < .001);
- 'eMail offers' (F = 3.501;p = .001);
- 'Link from other site' (F = 3.118;p = .002);
- 'Traditional commerce by purchasing goods/services in person' (F = 2.109;p = .036);
- 'Ability to get answers by eMail, Instant Messaging or Forum' (F = 2.224;p = .027);
- 'Ability to get answers by phone' (F = 2.668;p = .008);
- 'If you purchase goods and services on the Internet how often did you purchase online goods and/or services using eCommerce in 2008?' (F = 2.515;p = .013);
- 'If you purchase goods and services on the Internet what percent (%) of the online purchases would you source from eCommerce companies' outside Dubai?' (F = 3.728;p < .001);
- 'Having access to the Internet at home' (F = 3.400;p = .001);
- 'Having access to the Internet at work' (F = 3.019;p = .003);
- 'If my credit card is accepted by most eCommerce sites' (F = 2.447;p = .017);
- 'Nothing' (F = 3.326;p = .002);
- 'I am concerned about potential fraud' (F = 2.536;p = .012);

- 'I am concerned about security' (F = 2.730;p = .007);
- 'I don't have access to the Internet at home' (F = 2.300;p = .022);
- 'I don't have access to the Internet at work' (F = 2.598;p = .010);
- 'I have no desire to use the Internet' (F = 2.765;p = .006);
- 'I have no Internet access' (F = 2.740;p = .007);
- 'Better security' (F = 3.167;p = .002);
- 'Have access to the Internet at home' (F = 2.610;p = .010);
- 'Have access to the Internet at work' (F = 3.195;p = .002);
- 'Apply/order cheque book' (F = 3.517;p = .001);
- 'Apply/order credit card' (F = 2.442;p = .016);
- 'Buy and sell shares' (F = 2.547;p = .012);
- 'Enquire about banking products i.e. loans and mortgage' (F = 3.755;p < .001);
- 'Integrate data into your home/work accounting systems' (F = 2.005;p = .046);
- 'Order statement' (F = 3.613;p < .001);
- 'Ability to get answers quickly by eMail' (F = 3.258;p = .001);
- 'Ability to get answers by phone' (F = 4.082;p < .001); and
- 'Better information about banking products' (F = 3.948;p < .001).

Although there were many more variables in the 2008 survey than in the 2005 survey, the type of variables that turned out to be significant were very similar.

4.2.25 ANOVA tests for region of current citizenship for 2005 sample

Appendix W illustrates the tests conducted to determine whether there are differences in the answers to a series of yes/no questions from the initial questionnaire depending on whether a person was currently residing in an Advanced Economy or an Emerging and Developing Economy for the year 2005. The Appendix W and Appendix X tables, unlike the Appendix U and Appendix V tables, are based on ANOVA tests where the eleven levels of economic development are compared to each other to determine whether there is a difference

over the interval. A p-value of less than .05 indicates a variable that was affected by variations in the region of current citizenship. questions that tested as significant were as follows:

- 'Concerned about delivery issues' (F = 2.313, p = .020);
- 'I am concerned about potential fraud' (F = 2.602, p = .009);
- 'I am concerned about security' (F = 3.429, p = .001);
- 'I had a bad experience' (F = 2.276, p = .022);
- 'I have no credit card' (F = 4.548, p < .001);
- 'Ability to get answers by eMail, Instant Messaging, or forum' (F = 8.905, p < .001);
- 'Ability to get answers by phone' (F = 2.243, p = .024);
- 'Allows for better use of my time' (F = 6.542, p < .001);
- 'Better information about banking products' (F = 3.831, p < .001);
- 'Better security' (F = 3.186, p = .002);
- 'Convenience' (F = 9.381, p < .001);
- 'My bank has no branches available locally' (F = 4.977, p < .001);
- 'Easier to order' (F = 7.337, p < .001);
- 'Faster delivery' (F = 4.219, p < .001);
- 'I find it difficult to get answers by eMail, Instant Messaging, or forum' (F = 2.886, p = .004);
- 'Allows for better use of my time' (F = 5.523, p < .001);
- 'Better presentation of products' (F = 1.976, p = .049);
- 'Better prices' (F = 3.964, p < .001);
- 'Convenience' (F = 7.198, p < .001);
- 'Good unable to be purchased locally' (F = 2.271, p = .022);
- 'Easier to order' (F = 3.302, p = .001);
- 'Faster delivery' (F = 2.325, p = .019);

- 'Do you use eBanking services?' (F = 8.254, p < .001);
- 'Concerned about identity theft' (F = 3.295, p = .001);
- 'Concerned about potential fraud' (F = 4.235, p < .001);
- 'Concerned about security' (F = 2.661, p = .008);
- 'Lack of personal contact' (F = 8.479, p < .001);
- 'Having the ability to communicate verbally with representatives from the site' (F = 2.869, p = .004);
- 'Ability to get answers quickly by eMail' (F = 16.341, p < .001);
- 'Ability to get answers by phone' (F = 2.106, p = .035);
- 'Allows for better use of my time' (F = 7.311, p < .001);
- 'Better information about banking products' (F = 9.837, p < .001);
- 'Better security' (F = 2.719, p = .006), 'Convenience' (F = 4.309, p < .001);
- 'Ability to get answers quickly by eMail' (F = 5.479, p < .001);
- 'Allows for better use of my time' (F = 3.306, p = .001);
- 'Better information about banking products' (F = 5.152, p < .001);
- 'Convenience' (F = 7.157, p < .001); and
- 'My Bank is not available locally' (F = 7.387, p < .001).

Positive F-scores are associated with residents in technologically weaker nations, likely to be Emerging and Developing Economies, while the latter are more positive benefits associated with Advanced Economies. This has been typical in virtually all the t-tests and ANOVAs.

4.2.26 ANOVA tests for region of current citizenship for 2008 sample

Appendix X illustrates the tests conducted to determine whether there are differences in the answers to a series of yes/no questions from the initial questionnaire depending on whether a person was currently residing in an Advanced Economy or an Emerging and Developing Economy for the year 2008. A p-value of less than .05 indicates a variable that was affected by variations in the region of current citizenship. Questions that tested as significant were as follows:

- 'How many years have you been a resident of your current country of residence?' (F = 6.578;p < .001);
- 'Internet' (F = 3.139;p = .001);
- 'eMail' (F = 2.523;p = .006);
- 'eBanking' (F = 2.504;p = .007);
- 'eGovernment Services' (F = 3.136;p = .001);
- 'I don't have access to the Internet at home' (F = 2.281;p = .014);
- 'I don't have access to the Internet at work' (F = 3.063;p = .001);
- 'I have no Internet access' (F = 2.809;p = .002);
- 'Better security' (F = 1.905;p = .044);
- 'Have access to the Internet at home' (F = 2.099;p = .025);
- 'Have access to the Internet at work' (F = 2.569;p = .005);
- 'I don't have access to the Internet at home' (F = 1.900;p = .046);
- 'I don't have access to the Internet at work' (F = 1.930;p = .042);
- 'I have no desire to use the Internet' (F = 2.901;p = .002);
- 'I have no Internet access' (F = 2.038;p = .030);
- 'Advertisements/banner-Ads' (F = 3.684;p < .001);
- 'eMail offers' (F = 2.502;p = .007);
- 'Mail order process' (F = 2.175;p = .020);
- 'If you purchase goods and services on the Internet how often did you purchase online goods and/or services using eCommerce in 2008?' (F = 2.032;p = .031);
- 'If you purchase goods and services on the Internet what percent (%) of the online purchases would you source from eCommerce companies outside Dubai?' (F = 2.367;p = .011);
- 'eBanking' (F = 2.391;p = .011);
- 'Do you feel that your online commerce is secure?' (F = 2.304;p = .013);

- 'Having access to the Internet at home' (F = 2.933;p = .010);
- 'Having access to the Internet at work' (F = 2.481;p = .025);
- 'By having a better experience when buying through an eCommerce site' (F = 2.486;p = .025);
- 'I don't have access to the Internet at work' (F = 1.932;p = .050);
- 'I have no desire to use the Internet' (F = 2.569;p = .008);
- 'I have no Internet access' (F = 2.251;p = .020);
- 'Apply/order cheque book' (F = 2.260;p = .020);
- 'Ability to get answers quickly by eMail' (F = 1.966;p = .045);
- 'Ability to get answers by phone' (F = 2.705;p = .006);
- 'Better information about banking products' (F = 3.928;p < .001);
- 'I have had a bad experience' (F = 2.119;p = .040); and
- 'Fraud protection systems' (F = 3.161;p = .003).

4.2.27 Conclusion

Table 31 – Demographic profile comparison between eCommerce users and non-users

Demographic	Profile for the eCommerce user		Profile for the Non-eCommerce user	
	Demographic Result - 2005	Percent	Demographic Result - 2005	Percent
Gender	Male	58.0	Female	51.9
Age	25-54	81.9	25-54	73.4
Education	Master's degree	49.2	Master's degree	23.4
Region of last educational institute	Advanced Economies	75.1	Emerging and Developing Economies	70.1
Region of citizenship at birth	Advanced Economies	58.8	Emerging and Developing Economies	78.6
Region of birth	Advanced Economies	56.5	Emerging and Developing Economies	73.4
Current region of citizenship	Advanced Economies	67.2	Emerging and Developing Economies	74.0
Length of time as resident of Dubai	0-4	58.4	0-4	47.4

Hours per week online	0-4	48.8	0-4	59.1
Do you use eBanking Services?	Yes	80.8	Yes	47.4

Table 31 – Demographic profile comparison between eCommerce users and non-users with the combined primary data gathered from 2005 and 2008 stipulates that gender can be a demographic factor in the adoption of eCommerce. 58% of the male respondents utilised eCommerce whereas 51.9% of all females who were surveyed stated that they did not use eCommerce. Age did not seem to be a contributing factor in the adoption of eCommerce within Dubai as 81.9% of the respondents who partook in eCommerce, and 73.8% of those individuals who chose not to adopt eCommerce within Dubai were aged between 25 – 54 years of ages. However, those people who had not embraced eCommerce tended to be slightly less educated, with only 46.8% having a post-graduate education and only 23.4% of those having completed a Master’s degree. Nonetheless, within this survey, the level of education that a user had did not dictate whether they would use eCommerce or not.

What *Table 31 – Demographic profile comparison between eCommerce users and non-users* does clearly identify is that cultural exposure does have a clear impact on a person’s propensity to adopt eCommerce. If the individual belongs to a country categorised as an Advanced Economy there is a likelihood that they will be more susceptible to adopting eCommerce. Conversely, a person who has a higher exposure to a country or region belonging to an Emerging and Developing Economy are more predisposed to not utilising eCommerce.

The last but by no means least interesting finding identified by the combined primary datasets is that only 80.8% of eCommerce users also participated in eBanking as opposed to nearly 50% of all non-eCommerce users do participate in eBanking within Dubai.

Table 32 – Demographic profile comparison between eBanking users and non-users

Demographic	Profile for the eBanking user		Profile for the Non-eBanking user	
	Demographic Result - 2005	Percent	Demographic Result - 2005	Percent
Gender	Male	58.4	Female	51.4
Age	25-59	92.4	25 - 59	83.1
Education	Master’s degree	48.0	Master’s degree	30.6
Region of last educational institute	Advanced Economies	70.3	Advanced Economies	50.3
Region of citizenship at birth	Advanced Economies	53.4	Emerging and Developing Economies	57.9

Region of birth	Advanced Economies	53.4	Emerging and Developing Economies	60.1
Current region of citizenship	Advanced Economies	62.0	Emerging and Developing Economies	53.0
Length of time as resident of Dubai	0 - 7	74.3	0 - 7	51.4
Hours per week online	1 - 4	47.8	1 - 4	52.5
Do you use eCommerce Services?	Yes	85.5	Yes	55.7

Table 32 – Demographic profile comparison between eBanking users and non-users with the combined primary data gathered from 2005 and 2008, illustrates that gender (as with eCommerce) may be a demographic factor in the adoption of eBanking within Dubai. 58.4% of respondents were identified as male as opposed to those users who opted out of eBanking, a majority of these individuals were female at 51.4%. As with eCommerce, age does not stand out as an influencing factor in the adoption of eBanking within Dubai, as 92.4% of those respondents who were actively using eBanking were aged between 25 and 54 years, whereas 83.1% of the users who undertook this survey who chose not to adopt eBanking within Dubai were from the same age demographic. As with eCommerce, the highest level achieved by both eBanking and non-eBanking adopters was a Master's degree. However, there was, statistically, a higher percentage of eBanking users who held a Master's degree, with 48% as opposed to 30.6% of non-eBanking users. Yet this result does not influence the adoption of eBanking to the extent that it indicates a clear trend for technology adoption.

Table 32 – Demographic profile comparison between eBanking users and non-users, highlights, but not to the same extent as within the eCommerce dataset, that cultural exposure does influence a person's predisposition for eBanking adoption. Where a respondent is associated with an Advanced Economies there is a statistically higher likelihood that they will more readily adopt eBanking - in this instance, it was 59.78% - on the other hand, those respondents who declined to partake in eBanking averaged at 55.33%.

One unique quality that was identified with the eBanking primary data was that a higher percentage of respondents (85.5%) identified that they also utilised eCommerce. The more striking fact is that 55.7% of all non-eBanking users do participated in eCommerce within Dubai.

In conclusion, the measures of cultural exposure were generally strongly correlated with eCommerce at 64.4%, whereas 74% of the non-eCommerce users were identified as coming from a strongly influenced Emerging and Developing Economies background. Conversely, when we consider the adoption of eBanking,

where the findings were not as heavily correlated, only 55.3% of the respondents who did not participate in eBanking had a strong Emerging and Developing Economies background as opposed to an average of 59.8% who did use eBanking coming from a country belonging to an Advanced Economy.

This research identified that the respondents belong to '1' of '4' classifications, these being:

1. Low cultural exposure to an Advanced Economy who does not use eServices;
2. Low cultural exposure to an Advanced Economy who does use eServices;
3. High cultural exposure to an Advanced Economy who does use eServices;
and
4. High cultural exposure to an Advanced Economy who does not use eServices;

These classifications or 'quadrants' are identified in Figure 24 – The Culturally Motivated Technology Adoption Model.

Those respondents who used both eCommerce and eBanking tended to be born in, educated in, and citizens of Advanced Economies, while those who did not use these technologies tended to be from Emerging and Developing Economies. In general, this applied to both the 2005 and 2008 samples. Various inhibitors have been identified through this study, with several proving to be significant. These include lack of a credit card, difficulty in obtaining online answers, concerns over fraud and security, and lack of personal contact. It is likely that if there is no significant correlation between eBanking and cultural exposure, those in Advanced Economies are making an active choice not to use eBanking based on their knowledge of the strengths and the weaknesses of the system. Those who used eCommerce and eBanking were likely to be willing to use eCommerce and eBanking in the future, but those who did not use these technologies were far less likely to be interested in using eBanking than eCommerce, again supporting the argument that people are less inclined to use eBanking.

5 THEORETICAL MODEL

5.1 Introduction

This section outlines the basis of a technology adoption model that provides insight into the consequence of 'cultural exposure' to an Advanced Economy on technology adoption within a Developing and Emerging Economy.

When one contemplates the adoption and diffusion of technology, there are several questions raised on how success and/or failure are influenced by factors such as the environment, culture or newness of the technology. It is reasonable to deduce that where there are intricate relationships between individuals and organisations within a multi-faceted, multi-cultural society, there will be a disproportionate group of people who potentially will either adopt or not adopt a technology, depending on their cultural exposure.

The 'top down' and 'bottom up' models of adoption and/or diffusion provide a directional perspective to the process (Carr, 1995). Another dichotomous theory relates to the scale of innovation efforts by distinguishing between macro-level theories and micro-level theories. Macro-level theories focus on the institution and systemic change initiatives. Innovation typically involves broad aspects of curriculum and instruction and might encompass a wide range of technologies and practices (Carr, 1995). Micro-level theories, on the other hand, focus on the individual adopters and a specific innovation or product rather than on large scale change (Rogers, 1995).

Carr goes on to say that the adoption and diffusion of an innovation does not guarantee its successful acceptance by the community at large.

Fichman (1992) specifies that innovation diffusion theory bestows a useful perspective on one of the most persistently challenging topics identified today with Information Technology - how to improve technology assessment, adoption and implementation. Technology diffusion is the dissemination of technical information and knowledge and the subsequent adoption of new technologies and techniques by users. Technology diffusion is a component in the broader innovation process (Smartstate, 2010).

The model describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups. The process of adoption over time is typically illustrated as a classical normal distribution or 'bell curve' (Rogers, 1995).

The bell curve model indicates that the first group of people to use a new product is called innovators, followed by early adopters, next come the early and late majority, and the last group to eventually adopt a product are called laggards.

As identified through previous research, a reference model of technology diffusion typically follows the S Curve (Brancheau & Wetherbe, 1990; Quaddus, 1995; Rogers, 1995).

The bell curve and the S Curve model are important as they can provide an accurate prediction of technology adoption when subjected to the norms. However, when an attribute such as cultural exposure, or lack thereof, is entered into the equation, how will these time tested models be affected?

5.1.1 Diffusion of Innovations

Rogers' (1995) 'Diffusion of Innovations' (DOI) theory refers to innovations being communicated through certain channels over time and within a particular social systems. Rogers (1995) indicates that the DOI describes individuals as possessing different degrees of willingness to adopt innovations and thus it is generally observed that segments of the population adopt an innovation non-proportionately over a period of time.

Rogers (1995) has also determined that the aforementioned categories possess specific distinguishing characteristics as shown below:

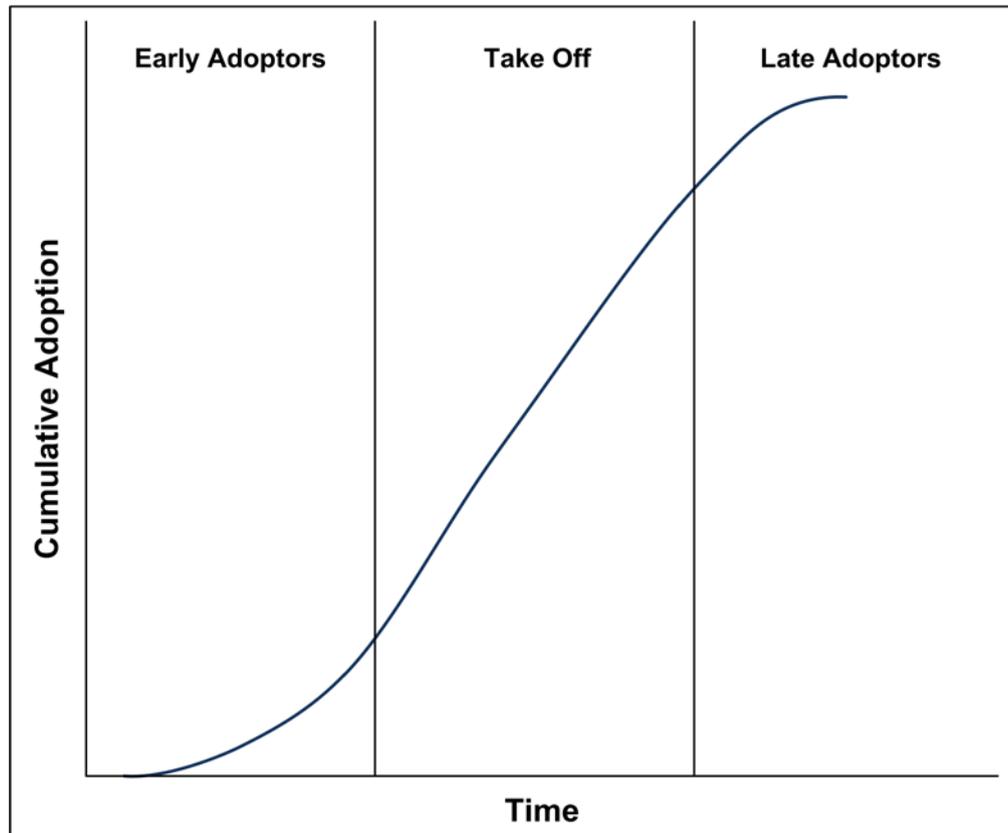
- Innovators - venturesome, educated, multiple informational sources;
- Early adopters - social leaders, popular, educated;
- Early majority - deliberate, many informal social contacts;
- Late majority - sceptical, traditional, lower socio-economic status; and
- Laggards - neighbours and friends are main informational sources, fearsome of debt.

Figure 22 – Rogers' diffusion process shows that when the adoption curve is converted to a cumulative percent curve a characteristic S Curve is generated that represents the rate of adoption of the innovation within the population (Rogers, 1995). This rate of adoption of innovations is impacted by five factors:

- Relative advantage;
- Compatibility
- Trialability;
- Observability; and
- Complexity.

The first four factors are generally positively correlated with rate of adoption, while the last factor, complexity, is generally negatively correlated with rate of adoption (Rogers, 1995). The actual rate of adoption is governed by both the rate at which an innovation takes off and the rate of later growth. Low cost innovations may have a rapid take-off while innovations whose value increases with widespread adoption may have faster late stage growth. Innovation adoption rates can, however, be impacted by other phenomena.

Figure 22 – Rogers' diffusion process



Source: (Rogers, 1995, p. 195)

5.1.2 Diffusion of Innovation Theory in Information Systems

Moore and Benbasat (1991), working within an Information Systems context, expanded upon the five factors which impact on the technology adoption, as identified within Rogers diffusion innovation theory, generating a total of eight factors that impact on the acceptability of technology. These factors are:

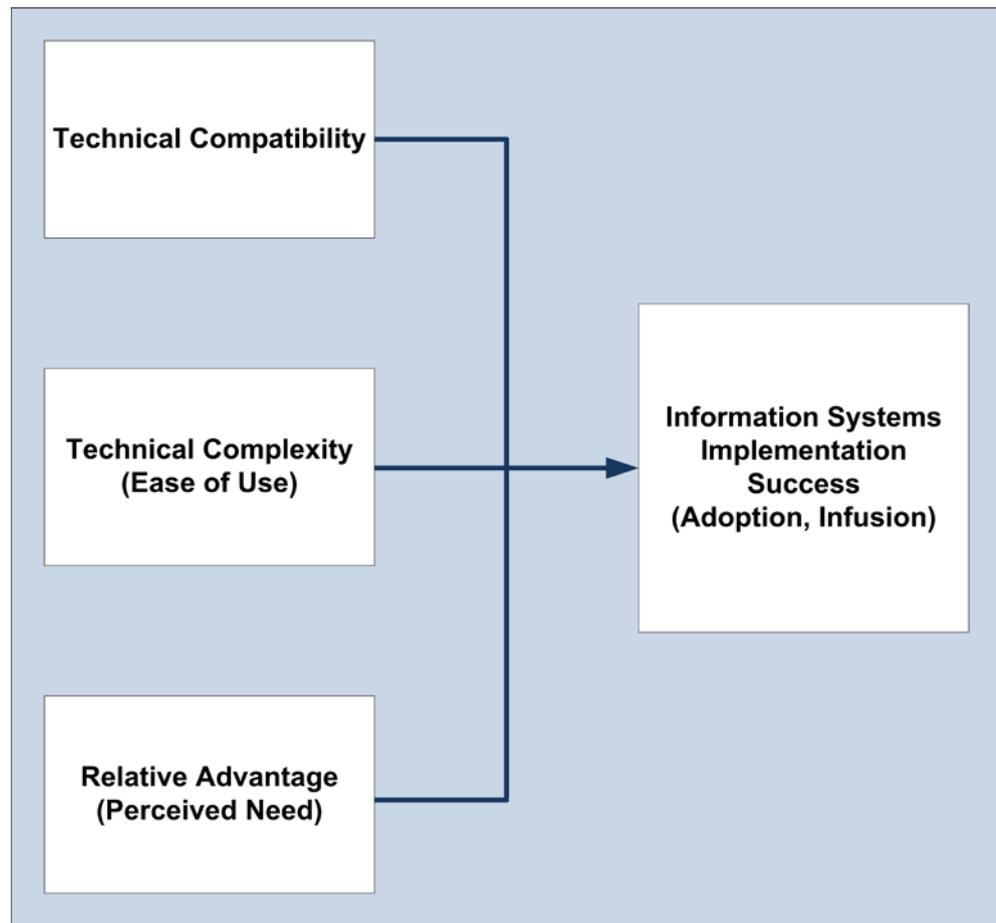
- Voluntariness – decision made under one's free will;
- Relative advantage – the degree to which an innovation is seen as being superior to its predecessor;

- Compatibility – the degree to which an innovation is seen to be compatible with existing values;
- Image - the degree to which the use of the innovation is seen as enhancing to an individual's image or social status;
- Ease of use - the degree to which a person believes that using a particular system would be free of effort;
- Result demonstrability - concentrated on the tangibility of using the innovation, including their observability and communicability;
- Visibility - focused on the physical presence of the innovation in the organisational setting; and
- Trialability – the degree to which an innovation may be experimented with on a limited basis.

Moore and Benbasat (1991) go on to suggest that it is not necessarily voluntariness which will actually influence behaviour, but rather a perception of voluntariness. Innovations diffuse because of the cumulative decisions of individuals who potentially will adopt them. Therefore, it is not the potential adopters' perception of the innovation itself, but their perceptions of using the innovation that are key to how prolifically the innovation diffuses.

Since the early applications of diffusion innovation theory to Information Systems research, the theory has been applied and expanded upon. This research has consistently found that technical compatibility, technical complexity, and relative advantage, or perceived need, are important catalysts to the adoption of innovation. Previous research has led to the generalised model presented in *Figure 23 – Diffusion Variance Model* below (Agarwal & Prasad, 1998; Bradford & Florin, 2003; Cooper & Zmud, 1990; Crum, Premkumar, & Ramamurthy, 1996).

Figure 23 – Diffusion Variance Model



Source: (Agarwal & Prasad, 1998; Bradford & Florin, 2003; Cooper & Zmud, 1990; Crum et al., 1996)

5.1.3 The Culturally Motivated Technology Adoption Model

The 'Culturally Motivated Technology Adoption Model' (CMTAM) is a new model that looks at the effect that cultural exposure has on innovation diffusion and technology adoption. There have been previous innovation diffusion theories and technology adoption models which have been developed previously by notable researchers such as Ajzen and Fisher (1980), Brown and Venkatesh (2003), Davis (1989), Davis et al. (1989), Fishbein and Ajzen (1975), Miller and Dollard (1979), Morris and Venkatesh (2000), Prochaska et al. (1994), Rogers (1995), Venkatesh and Davis (2000), Venkatesh et al. (2003) but there has been limited analysis taking how diverse cultural traits could impact innovation adoption.

One significant difference between the CMTAM and these significant contributions to academia, is that the model determines two prominent attributes described as, enabler and inhibitor attributes that can predetermine a user's predisposition towards adopting an existing or new technology. These catalytic attributes are:

- Acceptance; and
- Cultural exposure.

Cultural exposure in the context of this research defines the level of exposure an individual has to an Advanced Economy. If a person has never had prolonged exposure to an Advanced Economy, they are considered to be from an Emerging and Developing Culture. This research used a scale of '1' to '4', representing cultural exposure, with '1' being an Emerging and Developing Economy and '4' representing an Advanced Economy.

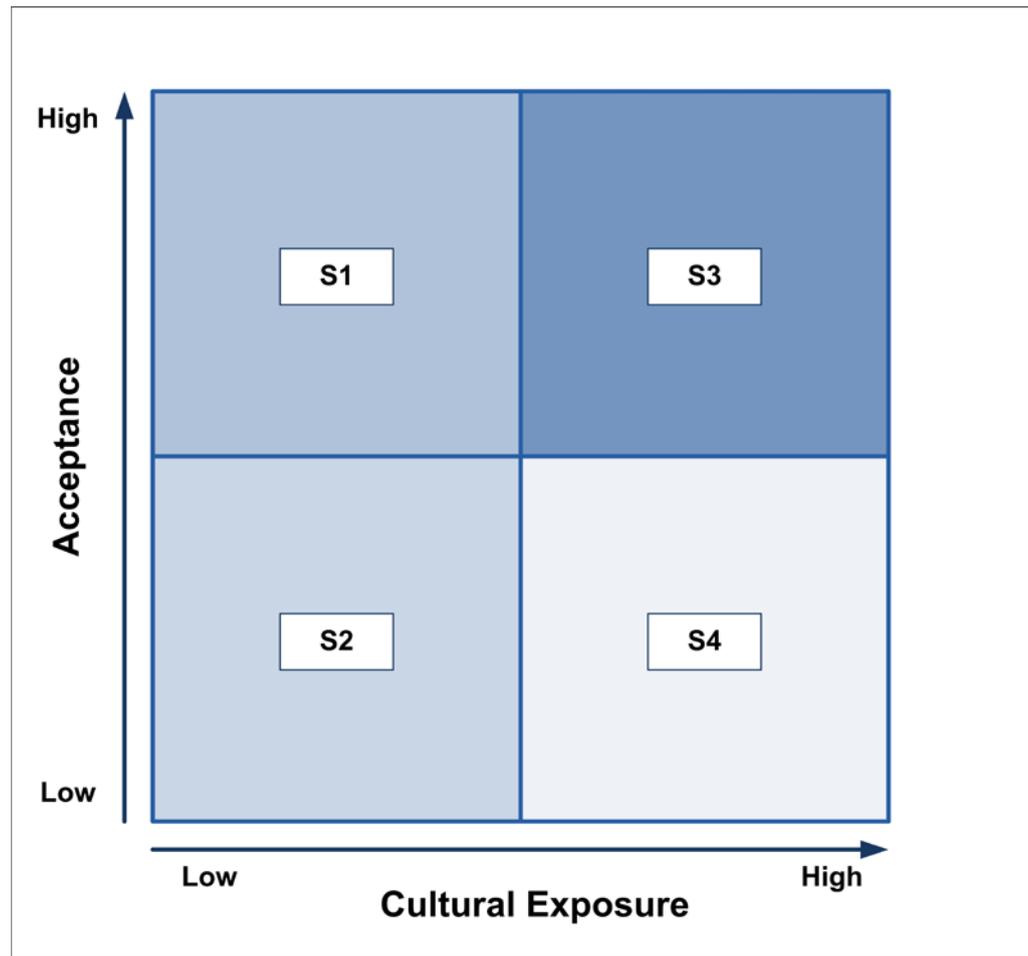
The 'x' axis of the CMTAM represents the exposure an individual has to an Advanced Economy environment. Therefore, those individuals who are deemed to have a low cultural exposure are deemed to have originated from a Developing and Emerging Economy. Conversely, those individuals who score at the top end of the high cultural exposure quadrant are deemed to have had either considerable exposure to an Advanced Economy or have originated from one.

The 'y' axis of the CMTAM identifies both whether an individual adopts the technology in question and their level of acceptance to the said technology. Where an individual has an overall 'low acceptance', it is perceived that they would most probably not adopt a particular technology by choice; conversely, when the individual has a 'high acceptance' score it is assumed they will be an adopter of the prescribed technology.

As shown in *Figure 24 – The Culturally Motivated Technology Adoption Model* the model consists of four quadrants, labelled S1, in the top left quadrant, S2, bottom left quadrant, S3, top right quadrant and S4, the bottom right quadrant.

When results fall within quadrants S1 and S3 this identifies that a technology has been adopted, whereas results that are found within quadrants S2 and S4 determine that the technology has not been adopted. Even though an individual is determined to be either an adopter or non-adopter of the technology in question they still could be identified with either 'low', 'neutral' or 'high' acceptance levels within a group of 'acceptance attributes'. This assumption is valid and acceptable as it would typically require a combination of several acceptance attributes to be either 'low', 'neutral' or 'high' to positively or adversely affect the overall adoption or non-adoption of a technology.

Figure 24 – The Culturally Motivated Technology Adoption Model



5.2 Factors influencing technology adoption

Rogers (1995) and Al-Ghaith, Sanzogni and Sandhu (2010) specify that there are several acceptance variables that either positively or adversely affect technology adoption; these being:

- Newness of the technology;
- Trust;
- Security;
- Privacy concerns;
- Quality;
- Loyalty;
- Relative advantage;
- Compatibility;

- Complexity;
- Trialability; and
- Observability.

These variables, when taken within a positive frame of reference, would be deemed as enablers that provide a positive influence over the individual to adopt an innovation. Whereas, when a variable is identified as having a negative connotation they would be deemed to be inhibitors, which retard or stop the adoption of technology.

5.3 Cultural variables

Although Hofstede (1994) described cultural variables as the dimensions of understanding cultural differences, within this study cultural variables also means the influence imposed by general cultural practices in combination with variables unique to an individual, as outlined by Anderson and Fenichel (1989).

When it becomes necessary to measure cultural variables within society, it is important to consider the following attributes:

- Country of birth;
- Country of previous and current citizenship;
- Country educated;
- Length of residence in a region;
- Educational level;
- Languages spoken;
- Urban verses rural background;
- Socioeconomic status;
- Age;
- Gender;
- Company employment;
- Social circle; and
- Religious beliefs.

Although this is not a definitive list, by answering these questions one can determine the level of cultural exposure to which an individual may have been subjected.

Grigorenko (2009) describes cultural variables as measured through the use of different mechanisms and that not all methodologies and techniques would be appropriate for all cultures. This means that even within differing cultures there are both similarities and distinct individual belief structures each having a unique interpretation and influence upon the aforementioned cultural variables.

As discussed by Lefley (2002), contact time in, and experience of, a culture are pivotal to how this cultural exposure positively or negatively effects one's own belief structure.

5.4 Analysis supporting the CMTAM

Figure 25 – The CMTAM identifying the eServices adoption groupings and trends

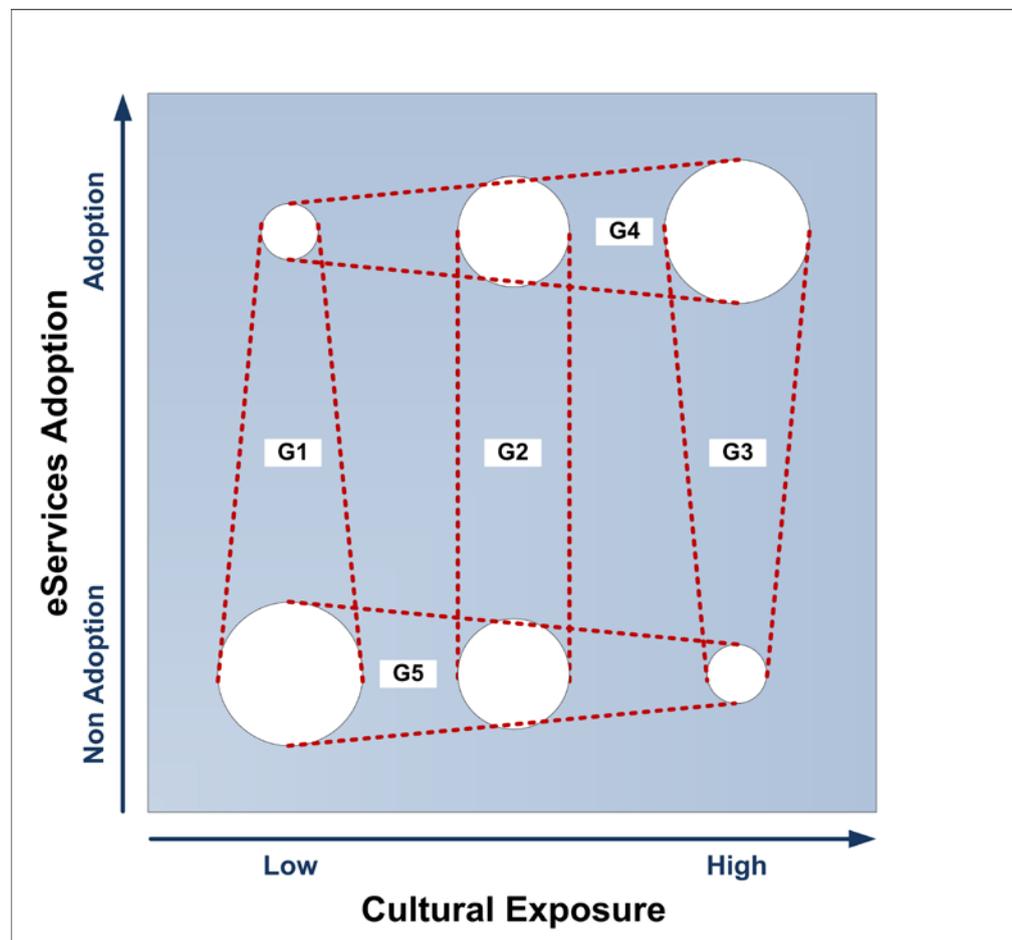


Figure 25 – The CMTAM identifying the eServices adoption groupings and trends highlights the eServices adoption usage patterns that emerged during the statistical analysis of the collected data. It should be noted that the circles shown within this diagram are for illustration purposes only and do not represent exact ratios.

The statistical analysis supporting the CMTAM can be broken down into three distinct groups, these are:

- Group One (G1) - Respondents coming exclusively from an Emerging and Developing Economy;
- Group Two (G2) - Respondents who have had varying levels of exposure to an Emerging and Developing Economy and an Advanced Economy; and
- Group Three (G3) - Respondents coming exclusively from an Advanced Economy.

It should be noted that Group Four (G4) illustrates that when a respondent has more exposure to an Advanced Economy there is a higher prospect that they will adopt eServices; and Group Five (G5) shows when a respondent has more exposure to an Advanced Economy there is a lower likelihood that they will not be using eServices.

Section 4 eServices analysis within Dubai and Section 5.7.1 Comparison between Emerging and Developing Economies and Advanced Economies technology adoption of eServices within Dubai provide the statistical analysis and a level of validation for the observations made within the sub-sections below.

The research instrument used four questions to identify the individual's level of cultural exposure. These questions were:

1. 'What country was the last educational institute you studied at situated in?'
2. 'What was your country of citizenship at birth?'
3. 'What country were you born in?' and
4. 'What is your current country of citizenship?'

The answers to these questions were categorised as either an Emerging and Developing Economy or an Advanced Economy as shown in Table 11 - Advanced Economies.

5.4.1 Group One - Respondents coming exclusively from an Emerging and Developing Economy

Those users who had a low cultural exposure score (i.e. all responses related to a country belonging to an Emerging and Developing Economy) had the propensity not to use eServices (59%). These users are represented in Group One.

5.4.2 Group Two - Respondents who have had varying levels of exposure to an Emerging and Developing Economy and an Advanced Economy

Group Two represents those individuals from an Emerging and Developing Economy who had some level of exposure to an Advanced Economy. An interesting aspect of this group is that approximately 50% of these respondents had adopted eServices.

5.4.3 Group Three - Respondents coming exclusively from an Advanced Economy

Group Three demonstrates a reverse trend compared to Group One (discussed in Section 5.4.1 Group One - Respondents coming exclusively from an Emerging and Developing Economy above) In Group Three, the majority of the respondents (68%) utilised eServices.

5.4.4 Groups Four and Five – the comparison of eService adopters' and non-adopters'

Groups Four and Five, as illustrated within *Figure 25 – The CMTAM identifying the eServices adoption groupings and trends*, illustrate that the more cultural exposure a respondent has to an Advanced Economy, the more likely they are to partake in eServices adoption. Conversely, the less exposure to an Advanced Economy, the less likely they are to adopt eServices. This observable fact is clearly demonstrated in

Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy graphs the respondents eServices adoption, 'uses' and 'does not use', against their cultural exposure. The blue line identifies the individuals who partake in eServices adoption and the red line identifying the respondents who have no adopted eServices. The 'x' axis identifies the exposure to an Advanced Economy, where '1' has no or very limited exposure and '4' identifies an individual originating from an Advanced Economy.

Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy

5.5 Theory behind the CMTAM

As discussed extensively in *Section 2.2.4.1 - Advanced Economies and Emerging and Developing Economies*, the IMF (a United Nations agency established to promote trade by increasing the exchange stability of the major currencies) has classified all countries within two major categories. These are either an Advanced Economy or an Emerging and Developing Economy.

The CMTAM was developed to measure the effect, if any, that cultural exposure has on the enablers and inhibitors that adversely or positively influence the adoption of technology within a society. These could be classified as either an:

- Advanced Economy;
- Emerging and Developing Economy; or
- A hybrid of both an Emerging and Developing Economy and an Advanced Economy.

An individual's involvement in technology adoption is gauged by their acceptance or non-acceptance of the technology in question. This acceptance is greatly influenced by:

- Inhibitors;
- Enablers;
- Derailment factors; and
- Motivators.

Results that indicate an individual adopts a technology are plotted within either the S1 and S3 quadrants those that designate a respondent as a non-technology adopter would be plotted within either the S2 and S4 quadrants. The position of a respondent belongs between these quadrants will be determined by their cultural exposure.

Where an individual has been identified as a technology adopter the research instrument determines what acceptance criteria are deemed to be motivators or potential derailment factors.

When an individual has been identified as a non-technology adopter the research instrument determines what acceptance criteria are deemed to be enablers or potential inhibitors.

Figure 26 – Directionality between the CMTAM quadrants

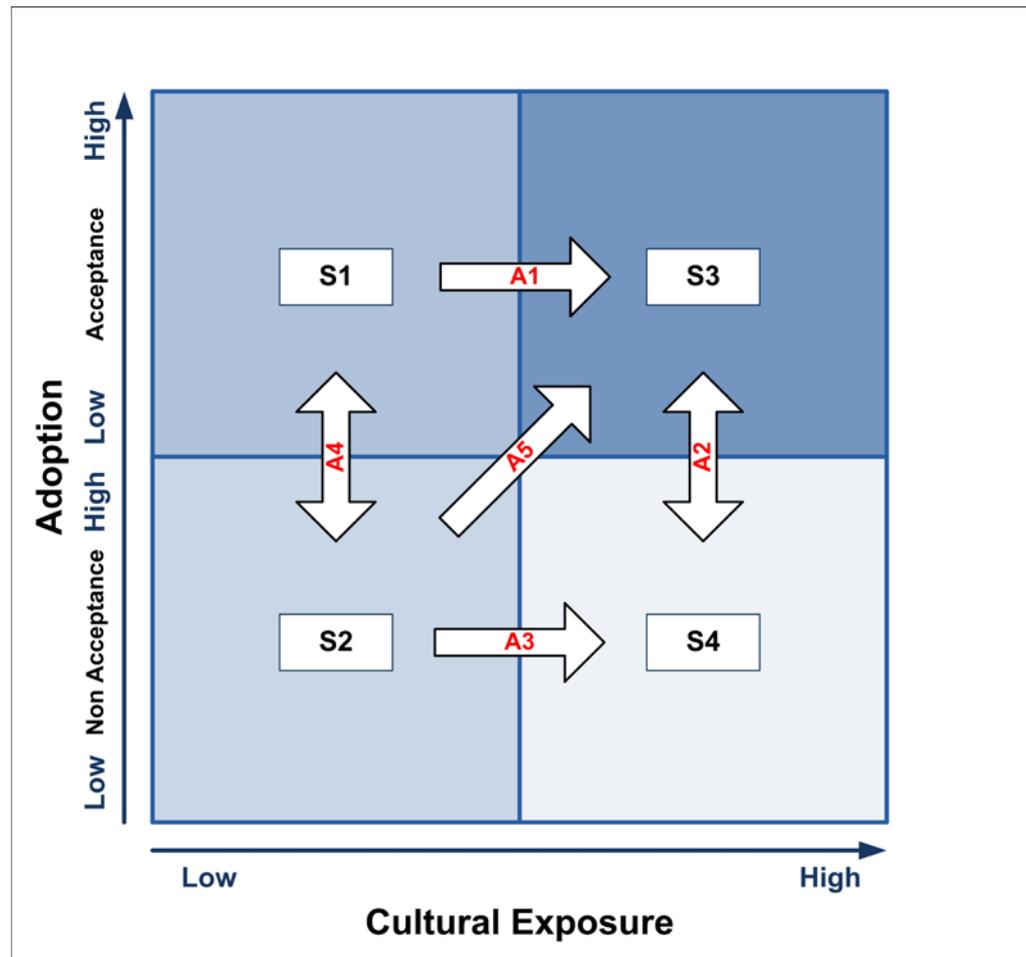


Figure 26 – Directionality between the CMTAM quadrants identifies the single and bi-directional progression between the quadrants and is explained in the subsequent sub-sections.

5.5.1 Quadrant S1

A person who would be classified within quadrant S1 would be an individual who partakes in the prescribed technology, and who is also considered to have low cultural exposure. These individuals would utilise the prescribed technology as well as potentially having more than one of the following criteria:

- Born in an Emerging and Developing Economy;
- Citizen of an Emerging and Developing Economy;
- Resident of an Emerging and Developing Economy;
- Educated in an Emerging and Developing Economy; and/or
- Working in a country or region deemed to belong to an Emerging and Developing Economy.

For an individual to progress to quadrant S3, demonstrated by arrow A1 in *Figure 26 – Directionality between the CMTAM quadrants* they would have to increase their cultural exposure. This could be achieved by:

- Moving to an Advanced Economy;
- Attending a higher institute of education in an Advanced Economy; and/or
- Working in a country or region deemed to belong to an Advanced Economy.

Considering that this individual has already been a user of the prescribed technology, there would be no added benefit for them to participate in such an exercise; conversely, if the motivation for using the prescribed technology changes then it is conceivable that the respondent would revert back to non-technical adoption.

Such motivators to use the technology studied could be:

- Ease of use;
- A need or desire;
- Alleviation of perceived adoption inhibitors; and
- Convenience.

This is not an exhaustive list and is included for explanatory purposes only.

Arrow A4 in *Figure 26 – Directionality between the CMTAM quadrants* identifies a bi-directional transition between quadrant S1 and S2 showing that is highly conceivable that an individual can move from a state of adoption, identified by quadrant S1, to a state of non-adoption or quadrant S2. The inhibitors that could affect such a move are described in *Section 5.6 - Inhibitors, enablers, derailment factors and motivators which affect the model*.

5.5.2 Quadrant S2

An individual who is deemed to belong to quadrant S2 would be a person who does not partake in the prescribed technology, and who is also considered to have low cultural exposure. These individuals do not utilise the prescribed technology and could be identified by one or more of the following traits:

- Born in an Emerging and Developing Economy;
- Citizen of an Emerging and Developing Economy;
- Resident of an Emerging and Developing Economy;

- Educated in an Emerging and Developing Economy; and/or
- Working in a country or region deemed to belong to an Emerging and Developing Economy.

There are three conceivable migratory pathways for an individual 'residing' in quadrant S2, as identified by arrows A3, A4 and A5 displayed in *Figure 26 – Directionality between the CMTAM quadrants* above. These migratory pathways show the potential movement from:

- Quadrant S2 to S4 via arrow A3;
- Quadrant S2 to S1 via arrow A4; or
- Quadrant S2 to S3 via arrow A5.

It should be noted that when an individual, who currently does not engage in technology adoption, transcends from a quadrant that depicts a low cultural exposure, such as S2, to a quadrant that is deemed to be of a high cultural exposure, this does not necessarily dictate that they will automatically partake in technology adoption. For technology adoption to take place there needs to be both an alleviation of technology adoption inhibitors as well as a positive reaction to the cultural exposure.

5.5.2.1 Quadrant S2 to S4 via arrow A3

Arrow A3 in *Figure 26 – Directionality between the CMTAM quadrants* identifies an individual who progresses from quadrant S2, (non-technology adoption having a low cultural exposure score, identified as a Emerging and Developing Economy) to S4 (non-technology adoption having a high cultural exposure score, identifying them as a member of an Advanced Economy). This situation is achieved by the individual having more than one of the following criteria:

- Citizen of an Advanced Economy;
- Resident of an Advanced Economy; and/or
- Educated in an Advanced Economy.

When an individual, who does not engage in technology adoption, migrates from a quadrant that depicts a low cultural exposure, such as S2, to a quadrant that is deemed to be of a high cultural exposure, it does not necessarily dictate that they will automatically partake in technology adoption.

It is conceivable that an individual who demonstrates this condition could be considered as a laggard in Rogers' (1995) model.

It is considered exceedingly unlikely that an individual would be originally classified as belonging to an Advanced Economy and not engaging in technology adoption being categorise in quadrant S4, and then being classified as a member of an Emerging and Developing Economy but not engaging in technology adoption. This is based on the assumption that an individual is unlikely unlearn cultural exposure. Conversely, a person could make a conscious decision to ignore experiences gained from being exposed to an Advanced Economy.

5.5.2.2 Quadrant S2 to S1 via arrow A4

The arrow described as A4 shown in *Figure 26 – Directionality between the CMTAM quadrants* identifies an individual who progresses from quadrant S2, as non-technology adoption having a low cultural exposure, from an Emerging and Developing Economy who now is engaged in technology adoption but still remaining an individual deemed belonging to an Emerging and Developing Economy. This circumstance can be achieved when the provider of the prescribed technology either alleviated the perceived inhibitors to technology adoption, which were important to the individual, or there is a particular need or requirement for this person to now engage in this technology adoption.

Arrow A4 is also bi-directional meaning that is highly conceivable that an individual can move from a state of adoption, identified by quadrant S1 to a state of non-adoption or quadrant S2, as described in *Section 5.5.1 - Quadrant S1*.

5.5.2.3 Quadrant S2 to S3 via arrow A5

When an individual moves from quadrant S2 to quadrant S3, as shown by arrow A5 in *Figure 26 – Directionality between the CMTAM quadrants*, they have traversed from an Emerging and Developing Economy to a quadrant that identifies the individual as having undertaken a higher cultural exposure from an Advanced Economy, as well as becoming an adopter of an innovation. This is achieved by an individual broadening their cultural horizons, perhaps through being a:

- Citizen of an Advanced Economy;
- Resident of an Advanced Economy;
- Educated in an Advanced Economy; and/or
- Working in a country or region deemed to belong to an Advanced Economy.

Exposure to an Advanced Economy alone does not ensure that an individual will start to engage in technology adoption. It is conceivable that this cultural exposure would also work in tandem with one or more of the following situations:

- A need to use the technology;

- Acceptance of the risk potentially posed by the inhibitors; and/or
- The inhibitors have been addressed and are now alleviated.

5.5.3 Quadrant S3

An individual who both partakes in technology adoption and belongs to an Advanced Economy would be classified within the S3 quadrant. This individual would be considered to have high cultural exposure. These respondents would potentially have all of the following criteria being:

- Born in an Advanced Economy;
- Citizen of an Advanced Economy;
- Resident of an Advanced Economy;
- Educated in an Advanced Economy;
- Working in a country or region deemed to belong to an Advanced Economy; and/or
- Working in a country or region deemed to belong to an Advanced Economy.

While considered highly unlikely, it is not inconceivable that an individual would revert to the classification of engaging in technology adoption but belonging to an Emerging and Developing Economy, and therefore being grouped in quadrant S1. The rationale for this statement is based on the reasoning that an individual is unlikely to unlearn cultural exposure. Conversely, a person could make a conscious decision to ignore the insights gained and lessons learned from being exposed to an Advanced Economy and therefore their choice to utilise or forego technology adoption would be deemed 'behavioural intention' as opposed to a decision based on cultural exposure.

It is far more conceivable for an individual to transcend from quadrant S3 to quadrant S4, as shown by arrow A2 in *Figure 26 – Directionality between the CMTAM quadrants* above. For the purpose of this model, when an individual already partakes in technology adoption, enablers are considered motivators and inhibitors are deemed derailment factors. For an individual to digress from quadrant S3 to quadrant S4 they would need to be de-motivated from utilising technology adoption. Derailment factors that could cause such a phenomenon could include:

- Had a unpleasant experience;
- Newness of the technology;

- Trust;
- Security;
- Privacy concerns; and
- Quality.

Considering that this individual was already a user of the prescribed technology it is in the best interests of the technology provider to ensure that they identify and alleviate all potential derailment factors to ensure the continuation of technology adoption.

Such motivators to use the technology studied could be:

- Positive user experience;
- Ease of use;
- A need or desire;
- Alleviation of perceived adoption inhibitors; and
- Convenience.

Again, this list is not exhaustive and is included for descriptive purposes only.

5.5.4 Quadrant S4

An individual who does not engage in technology adoption and belongs to an Advanced Economy would be classified within the S4 quadrant, and this individual would be considered to have high cultural exposure. An individual would potentially have all of the following criteria:

- Born in an Advanced Economy;
- Citizen of an Advanced Economy;
- Resident of an Advanced Economy;
- Educated in an Advanced Economy and/or
- Working in a country or region deemed to belong to an Advanced Economy.

This individual could be classified as a late majority or laggard in Rogers' (1995) terms. The rationale for this user not to adopt the particular technology could be one of several reasons, such as:

- No need to use the technology;

- A conscious decision not to partake in the technology adoption; and/or
- Is deterred from adopting the technology through the existence or non-existence of perceived inhibitors.

The arrow identified as A2 shown in *Figure 26 – Directionality between the CMTAM quadrants* describes an individual who progresses from quadrant S4 - non-technology adoption having a high cultural exposure, therefore being a person from an Advanced Economy who now is engaged in technology adoption but still remaining an individual deemed belonging to an Advanced Economy. This can be achieved when the perceived inhibitors to technology adoption are addressed by the provider of the prescribed technology, or when there is a specific need for the previously reluctant person to adopt the technology.

5.5.5 Expected results identified by the model

It is hypothesised by this research that technology adoption differs between an Emerging and Developing Economy and Advanced Economy in that inhibitors, enablers, derailment factors and motivators to technology adoption affect these societies differently. It is also believed that a higher percentage of individuals belonging to an Emerging and Developing Economy are more likely to either be classified as laggards, not engaging in technology adoption or taking longer to engage in technology adoption when compared to their Advanced Economy counterparts. Inhibitors, enablers, derailment factors and motivators are discussed further in *Section 5.6 - Inhibitors, enablers, derailment factors and motivators which affect the model*.

Although this phenomenon does not necessarily negate Rogers' (1995) 'Innovation Decision Process Model', as shown in *Figure 28 – Innovation Decision Process Model five stages of technology adoption*. it does however potentially revolutionise two variables. These are the 'time' and the allocation of results to the 'five stage' variables where a society belonging to an Emerging and Developing Economy would take both longer to adopt a technology than that belonging to an Advanced Economy. It also varies the expected ratios between the 'five stages' of the innovation decision process model.

5.6 Inhibitors, enablers, derailment factors and motivators which affect the model

Within this model, the terms inhibitors and enablers refer to the variables that would persuade (or dissuade) an individual who does not utilise a prescribed technology, to adopt or reject that technology. Derailment factors and motivators refer to the attributes that could positively or negatively affect the adoption of an innovation by an individual who already engages in technology adoption.

5.6.1 Perceived enablers of innovations

Mendelsohn (2006) identifies that innovations have a number of enablers that stimulate and encourage people to use eServices. It should be noted that enablers also refer to activities that can be taken up by marketers and application developers. These enablers to eServices have been identified below and compared to the results outlined within *Section 4 - eServices analysis within Dubai*.

Enablers for consumers of eServices are:

- Wide variety of product ranges: eService users look favourably on eServices organisations which have a wide range of products and services where they can easily compare both functionality and prices to ascertain the best buy possible.
- Convenience: It is important for the eConsumer to be able to conveniently access eServices on a 24x7. Convenience has been identified as being relevant attribute for respondents from both the Emerging and Developing Economies and Advanced Economies, although those individuals from an Advanced Economy identified 'convenience' as being the most important factor to their innovation adoption.
- Ease of information and content retrieval: Respondents who are deemed belonging to an Emerging and Developing Economy identified 'ease' as being one of the most important enables for them to partake in eServices.
- Ease of use: The innovation that is to be adopted by the user needs to be intuitive and not overly complicated and as identified in *Section 4 - eServices analysis within Dubai* the respondents from an Emerging and Developing Economy identified 'ease of use' as one of the most important factors in their motivation to adopt innovation.
- Security: Current levels of transactions in eServices are conducted with a high level of security and there are reduced dangers of passwords being stolen or identity being hijacked. Interestingly security is far more important to those respondents from an Emerging and Developing Economy than that of an individual from an Advance Economy, who would put 'convenience' over 'security' in their motivation to adopt an innovation.
- Value for money: The eService provide needs to provide value for money, in quite a few cases, especially when these goods are sold to consumers outside the state or country where the eService company resides, they are exempt of tax and therefore cheaper, conversely some countries, like the UAE, change import duty on purchases made outside the country. eServices

organisations have a different cost structure which enables them to potentially offer much lower prices than traditional shop fronts. This research shows that, especially, the respondents from an Emerging and Developing Economy identify price as one of the most important factors in their decision to use or not use eServices. It, however, needs to be noted that 'value for money' was not one of the highest rated enablers for those respondents from an Advanced Economy.

- Communication with eService provider: The ability to have precise and effective communications between the eConsumer and the eService provider has been identified as an important enabler for those respondents who were from an Emerging and Developing Economy. This research identified that by having the ability, for the eConsumer, to receive answers to their questions quickly, especially via 'instant messaging', was an important factor in their decision to utilise eServices.
- Ability to return unwanted products: eService providers need to ensure that their mechanism to initiate the return of unwanted, damaged and/or incorrectly purchased goods needs to be simple. Companies such as Amazon have streamlined their returns policy to the point where, depending on the product, they credit the purchase without the need of the eConsumer physically returning the products. The more transparent an eService provider makes it for an eConsumer to conduct business the better it is to foster 'customer loyalty'. This research highlighted the concerns and expectations motivating the respondents from an Emerging and Developing Economy in their use of eServices, where there was an identified focus on the importance of the 'ability to return unwanted goods'.
- Customer service: The relationship and trust level between traditional consumers and suppliers is highly important and there is an expectation that this relationship be duplicated when migrating the goods and/or services to an 'e' platform. The eService provider needs to build up this level of trust and focus on the development of the eService 'motivating factors' and mitigating the 'derailment factors', in order to develop a level of trust as part of their eService customer service strategies.
- Multi-channel integration: Developers can integrate different channels, such as Amazon or eBay, into their site and offer a wider range of products. Users can order items online from stores and then visit the stores to verify their purchase and collect the items. Multi-channel integration could be conceived as a combination of the enablers 'ease of use' and 'convenience' which were identified as being important from the respondents from the an

Emerging and Developing Economy an Advanced Economy within this research.

5.6.2 Perceived inhibitors of eServices

Temkin & Doyle (2006) infer that inhibitors of eServices include various factors that discourage transactions and create resistance among buyers, sellers and intermediaries. In *Section 5.6.1 Perceived enablers of innovations* Inhibitors identified the enablers positively effecting innovation adoption although it needs to be said if these 'enablers' are ignored or poorly executed then they potentially would become 'inhibitors' to innovation adoption. Inhibitors identified within this research and highlighted in *Section 4 - eServices analysis within Dubai* are outlined below:

- **Security:** eConsumers often fear that they may be cheated when they enter into eService transactions. Some of these concerns relate to hacking, viruses, and identity theft. People also feel that returning a product bought through online purchase creates a problem, since it involves packing and bearing the courier charges with no guarantee of a refund. Security was a major concern for those respondents identified as belonging to an Emerging and Developing Economy, interestingly individuals who participated in this research originating from an Advanced Economy were satisfied with the current level of security offered by their eService providers.
- **Trust:** Perhaps one of the major issues in eServices is that one never knows if what they have bought and paid for is what they actually get. Fraudsters trick the gullible into buying a number of products and opt for services that are lower in quality and quantity than what is promised. Once the defective or unwanted goods are received, it is very difficult to return the items and recover their money. Individuals from an Emerging and Developing Economy identified 'potential fraud' and 'identity theft' as a concern in their adoption of eServices conversely they also stated that if these perceived risks are mitigated to their satisfaction then they would consider eServices adoption in the future.
- **Inhibitions:** Some people feel more comfortable physically visiting a store and buying the products as they like the shopping experience. Some items, such as clothes, perfumes, and high value products, may need to be physically examined and sampled before people decide to buy.
- **Problems with systems:** In some cases, Internet connections are not very robust and may function intermittently giving a 'page expired' message. Slow connections or excessive traffic create a burden on the server and

pages are slow to download. This failure and drawback of the system also acts as a major inhibitor.

- Information glut: One of the problems is that there is excessive information available and a search throws up many pages with similar products and offers. In such cases, the user is confused and may defer a purchase.
- Site design and usability: Users require appropriate content and information about the products. The site should also be easy to use with working hyperlinks, easy navigation, robust search functionality, product image, ability to use a 'shopping cart' and protection with a unique login and ID. If any of these features are lacking, or not adequate, then the user may become frustrated and give up.

Technology adoption issues and unwillingness to use eServices due to either poor knowledge or mistrust are more prevalent in countries classified as an Emerging and Developing Economy.

5.7 Application of the Model to the eServices adoption within Dubai

This section compares the CMTAM with the primary data collected as part of research. The results of this comparison are broken into two sections, the first being the comparison between Emerging and Developing Economies and Advanced Economies technology adoption of eServices within Dubai. The second section provides an insight into the importance of various inhibitors, enablers, derailment factors and motivators to the adoption of eServices within Dubai by individuals who belong to Emerging and Developing Economies and Advanced Economies.

5.7.1 Comparison between Emerging and Developing Economies and Advanced Economies technology adoption of eServices within Dubai

As seen in Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy it is clear that the 'yes' users of eServices within Dubai depict a traditional S Curve as modelled in the diffusion of innovations theory.

Rogers (1995) stated that successful innovation will go through the S-shaped adoption curve, representing a period of slow adoption before experiencing a sudden period of rapid adoption and then a gradual levelling off. Typically, within an Advanced Economy, the period of rapid expansion occurs where the social and technical factors merge permitting innovation to experience exponential growth.

Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy also highlights that the higher the cultural exposure to an Advanced Economy, the more likely the respondent would

be a user of eServices within Dubai. Those respondents who were classified as non-users of eServices exhibit a low adoption rate also exhibit a low cultural exposure score.

The primary data collected indicates that the more exposure to the Advanced Economies an individual has, the more likely they will use eServices. However, this data also indicates that those respondents who are fully exposed to the Advanced Economies reverse the trend. This can be explained through Rogers' (1995) Innovation-Decision Process Model, which identifies the 'five stages of technology adoption', as shown in Figure 28 – Innovation Decision Process Model five stages of technology adoption.

Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy graphs the respondents eServices adoption, 'uses' and 'does not use', against their cultural exposure. The blue line identifies the individuals who partake in eServices adoption and the red line identifying the respondents who have no adopted eServices. The 'x' axis identifies the exposure to an Advanced Economy, where '1' has no or very limited exposure and '4' identifies an individual originating from an Advanced Economy.

Figure 27 – eServices usage model comparing users and non-user of eCommerce within an Emerging and Developing Economy

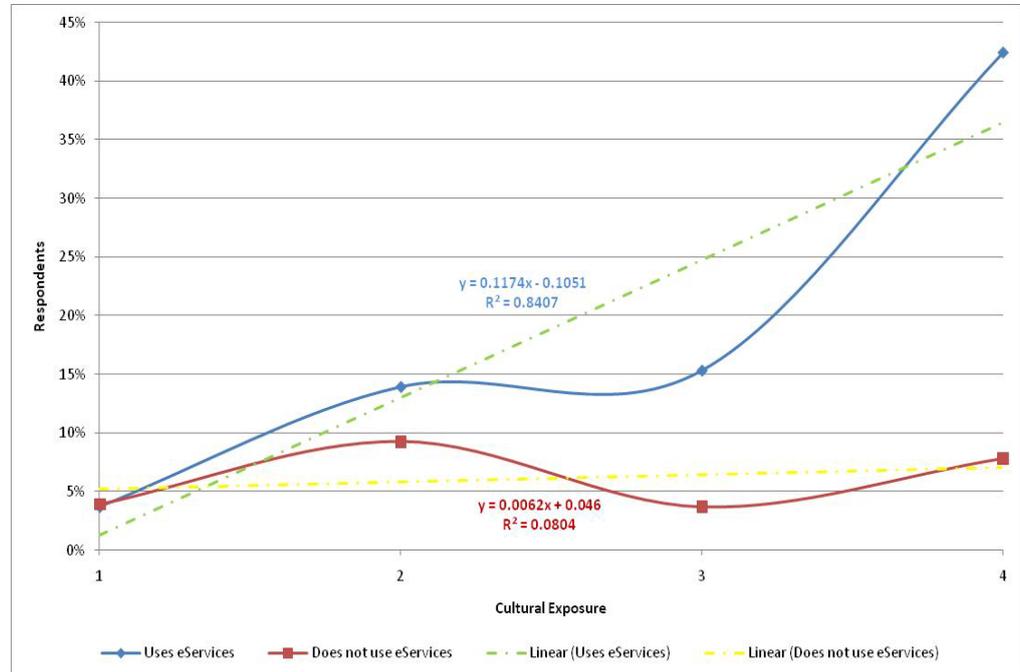
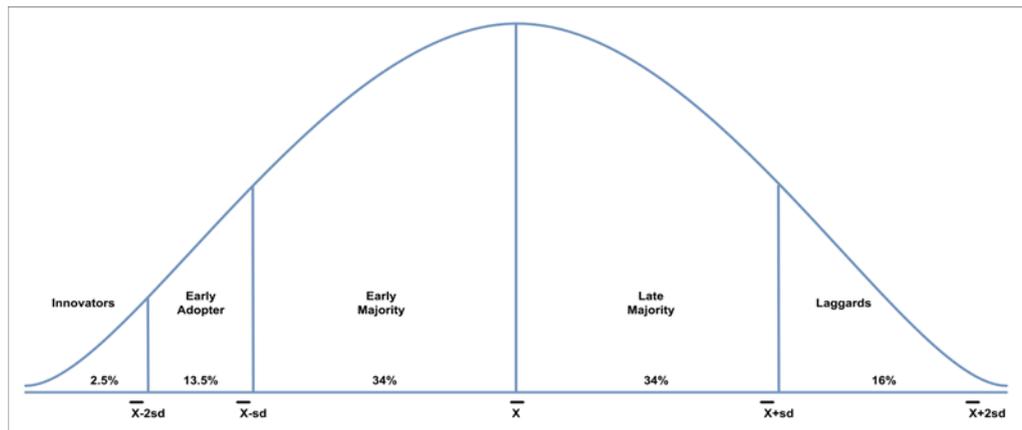


Figure 28 – Innovation Decision Process Model five stages of technology adoption



Source: (Rogers, 1995, p. 195)

Rogers (1995) stated that within any given innovation there is a certain percentage of the populace who will readily adopt the innovation, while others will be less likely to adopt. Rogers also argues that there is usually a normal distribution of the various adopter categories that forms the shape of a bell curve. He goes on to state that innovators are individuals who are ready to adopt an innovation, these individuals make up approximately 2.5% of the population. Early adopters will consist of approximately 13.5% of the population. Most people will fall into either the early majority (34%) or the late majority (34%) categories. Laggards are those individuals who resist innovation no matter what the incentive and comprise approximately 16% of the population. The concept of adopter categories is important as it advocates that all innovations go through a natural, predictable, and occasionally lengthy process before becoming widely adopted within a population.

Figure 29 – Delta between users and non-users of eServices compared between Emerging and Developing Economies and Advanced Economies

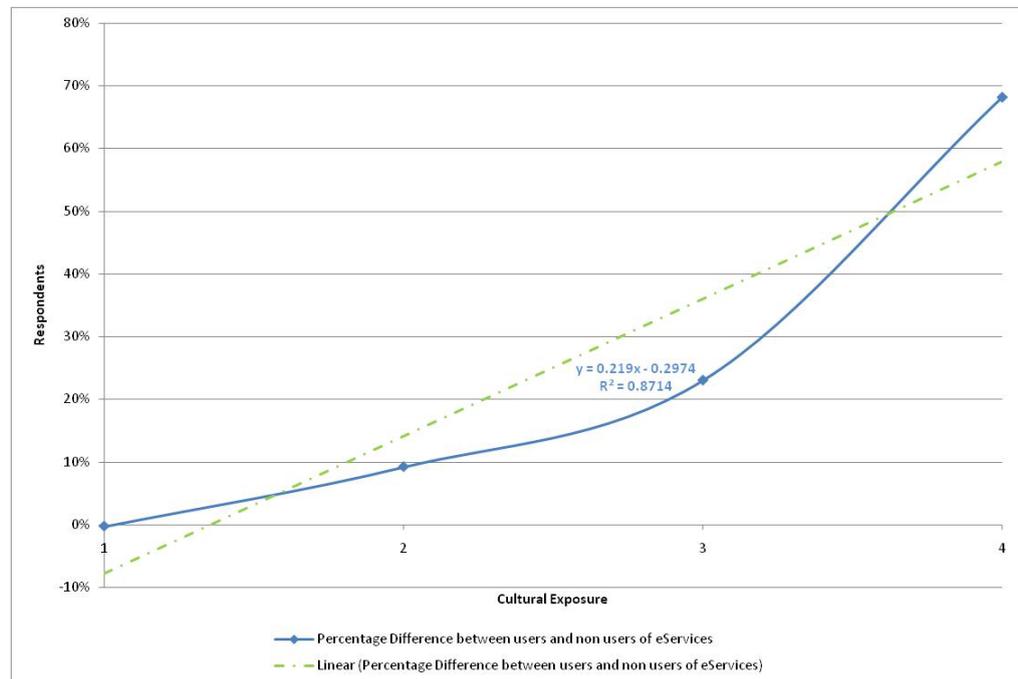


Figure 29 – Delta between users and non-users of eServices compared between Emerging and Developing Economies and Advanced Economies identifies clearly that the gap between those respondents who are users and those who are non-users increases with a higher exposure to the Advanced Economies.

The importance of the information shown in this figure is that the primary data not only clearly identifies there is strong evidence that users from an Emerging and Developing Economy have a higher tendency not to adopt eServices, but also the more cultural exposure that an individual has to an Advanced Economy, the more susceptible they are to technology adoption - in this instance eServices adoption within Dubai.

Figure 30 – eServices adoption time line comparison between eCommerce and non-eCommerce users and Advanced Economies and the Emerging and Developing Economies illustrates, that, in all cases, those respondents who used eServices within Dubai were also early adopters of other eServices technologies. Typically, they would have used Internet based services at least 14-months prior to those users who did not use eCommerce.

When the same primary dataset is compared, not by eCommerce usage, but by those respondents who are solely from an Advanced Economy and those with an Emerging and Developing Economy backgrounds, a similar trend is noted. In all cases those individuals who originated from an Advanced Economy utilised

eServices a full 16 months earlier than those individuals who had an Emerging and Developing Economy background.

Figure 30 – eServices adoption time line comparison between eCommerce and non-eCommerce users and Advanced Economies and the Emerging and Developing Economies

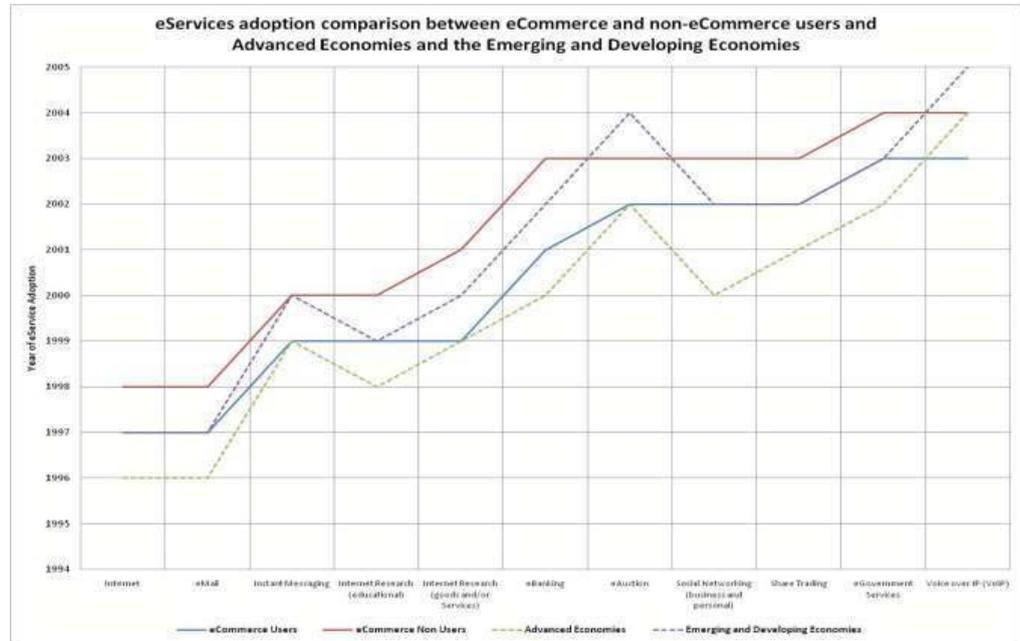
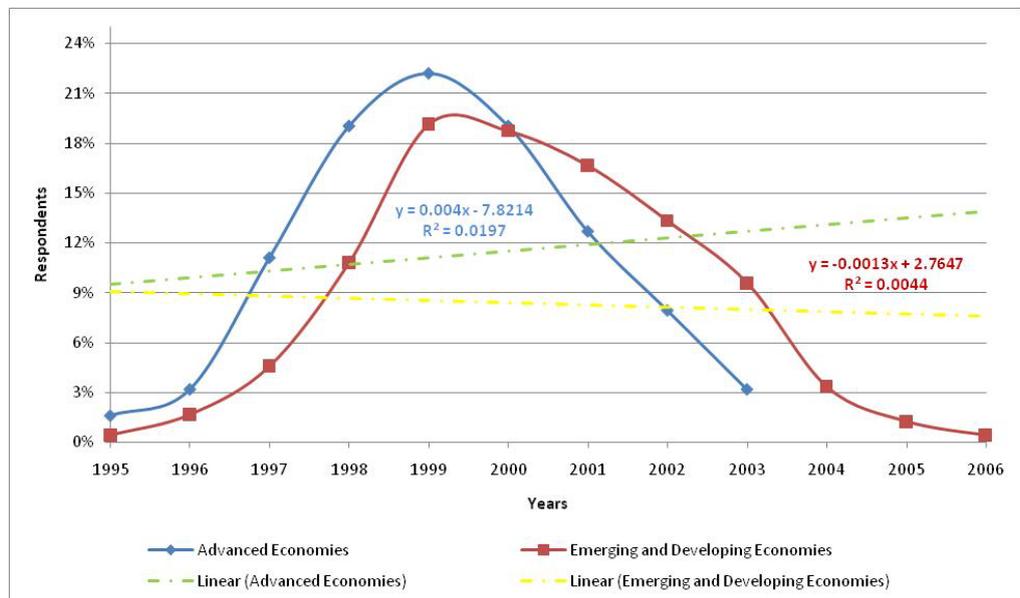


Figure 31 – eServices adoption curve comparison between Advanced Economies and the Emerging and Developing Economies



The primary data collected for eServices usage was analysed as a whole entity and then compared to Emerging and Developing Economies and the Advanced Economies, as presented in *Figure 31 – eServices adoption curve comparison between Advanced Economies and the Emerging and Developing Economies*. This

figure identifies a pattern showing the innovation adoption trends between Emerging and Developing Economies and Advanced Economies. This research reaffirms Rogers' (1995) innovation decision process model and also shows that the variable 'time' and the percentage breakdown between the 'five stages' of the innovation decision process model differ greatly between an Emerging and Developing Economy and an Advanced Economy.

As shown in *Figure 32 – Social networking adoption within Dubai* those individuals identified as belonging to an Emerging and Developing Economy clearly have adopted social networking far earlier, as much as four to five years, than those respondents who have a high cultural exposure or who are deemed to be from an Advanced Economy.

The reporting elements that are used in the figures between *Figure 32 – Social networking adoption within Dubai* and *Figure 58 – eServices adopter – Goods unable to be purchased locally* are three-dimensional surface contour graphs produced using Microsoft Excel 2007. This type of graph identifies peaks and troughs within ranges. Each of these graphs typically has between three and five ranges, as identified in the legend, which broken down by different colours, as follows:

- Range one – Darker Blue;
- Range two – Red;
- Range three – Green;
- Range four – Purple; and
- Range five – Lighter Blue.

These ranges cover the surface area of the charts.

The 'x' axis represents attributes such as age, time, duration, Likert scale attribute and sequential number groupings.

The 'y' axis typically shows a range between '1' and '4', where '1' identifies the lowest cultural exposure to an Advanced Economy and '4' determines the highest cultural exposure to an Advanced Economy.

Figure 32 – Social networking adoption within Dubai

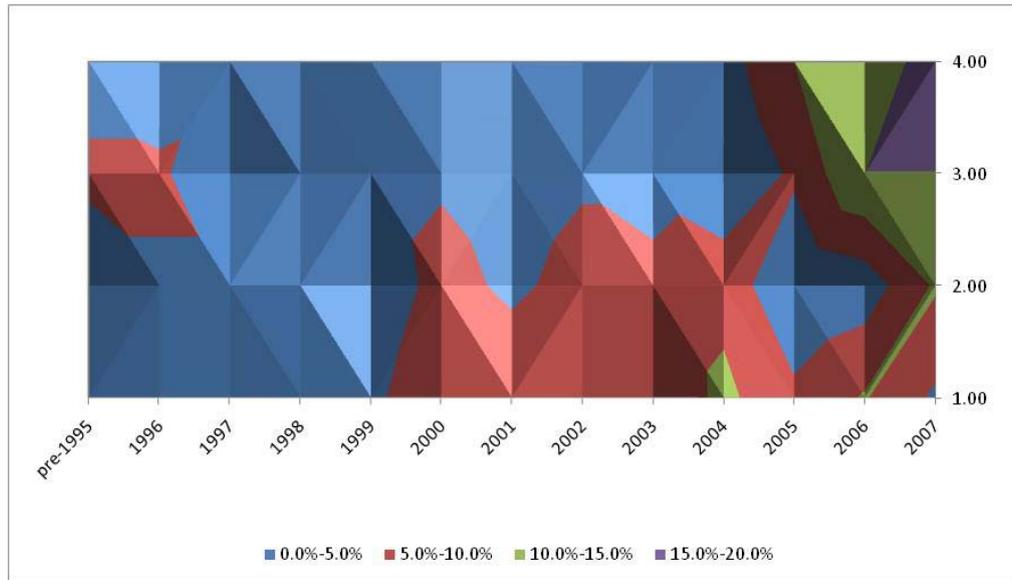


Figure 33 – Hours per week spent on social networking activities

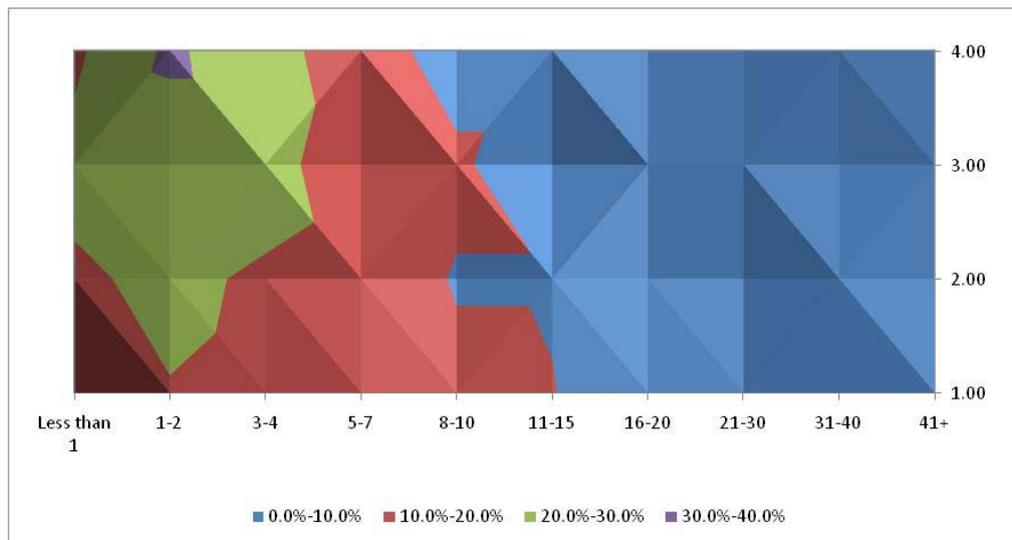
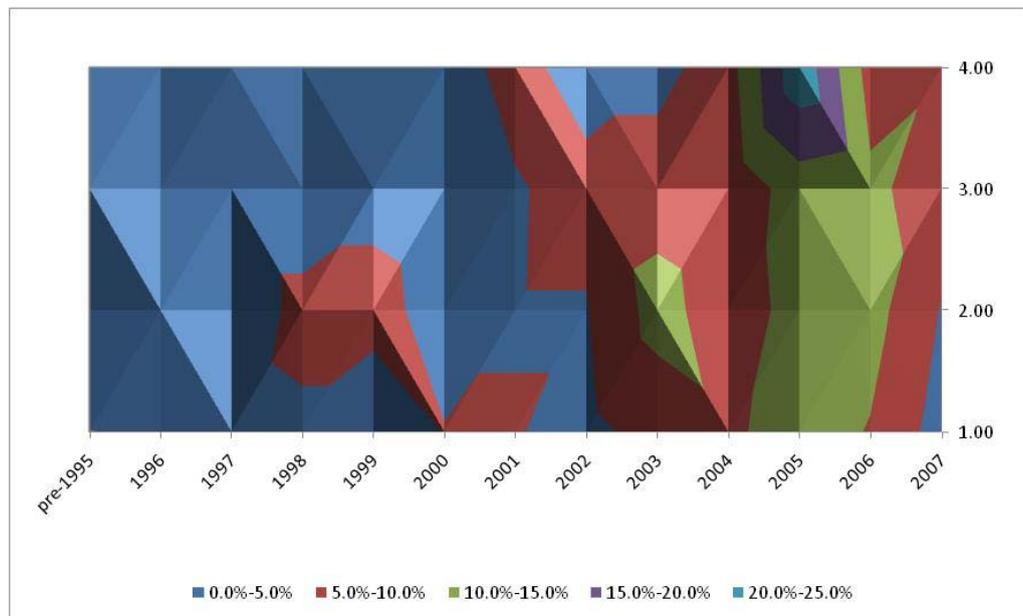


Figure 33 – Hours per week spent on social networking activities illustrates that the most prolific social networking users are those with a low cultural exposure, and from an Emerging and Developing Economy, with approximately 20% using social networking between 11-15 hours per week.

This phenomenon can be explained by the fact that individuals who are deemed to have come from an Emerging and Developing Economy have a higher affinity for family, extended family and tribe; whereas those individuals originating from a more Advanced Economy focused region have a higher affinity for their own self-interests and are more single-parent family focused (Reigeluth, 1997). Therefore, it can be reasonably deduced that the rationale for the adoption of social networking within Dubai by the Emerging and Developing Economy respondents is so they can

inexpensively communicate with their family, extended family and friends back home in their originating country. This is further supported by the results outlined in *Figure 34 – Voice over IP adoption within Dubai*, which identifies that those respondents who have a low cultural exposure have had a steady adoption of ‘Voice over IP technology’ since 2003; whereas individuals with a high cultural exposure had a concentrated adoption, approximately 20% to 30%, in 2005.

Figure 34 – Voice over IP adoption within Dubai



5.7.2 Inhibitors, enablers, derailment factors and motivators that influence the adoption of eServices within Dubai

The research instrument posed four questions to the respondents in relation to their eService adoption and non-adoption. These were:

1. If you don't use eServices please identify which of the following inhibitors influence your decision not to use eServices?
2. If you don't use eServices would the following enable you to use eServices?
3. If you use eCommerce do you feel that the following derailment factors could influence your decision to frequently use eServices? and
4. If you use eServices do you feel that the following motivating factors encourage you to use the eServices more frequently?

For the purpose of this section, the responses to these questions have been broken down to the various inhibitors, enablers, derailment factors and motivators.

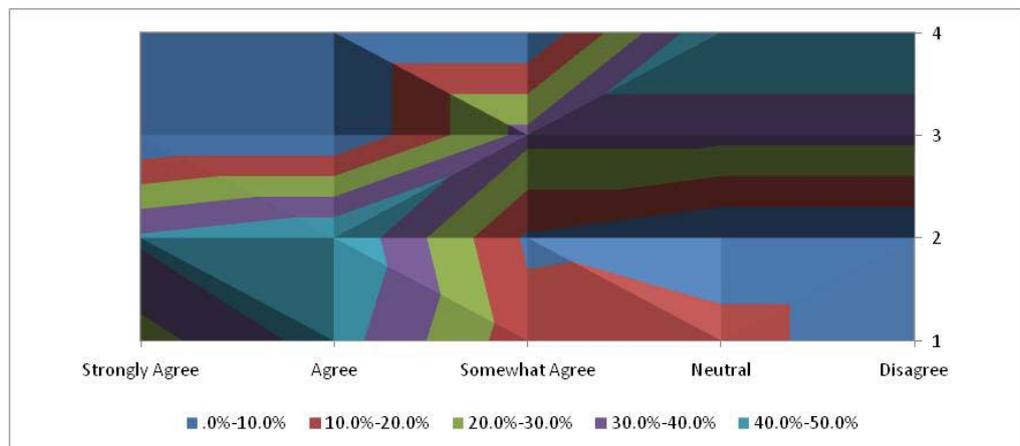
The questions surrounding the inhibitors, enablers, derailment factors and motivators were designed using a Likert -scale with seven elements, these being:

- Strongly agree;
- Agree;
- Somewhat agree;
- Neutral;
- Somewhat disagree;
- Disagree; and
- Strongly disagree.

5.7.2.1 Inhibitors to eServices adoption

There are several attributes that were identified as interesting within this research, meaning they either portrayed an overwhelming difference between the respondents of the Emerging and Developing Economies and the Advanced Economies, or they validated an eServices adoption concept.

Figure 35 – eServices non-adopter - I am concerned about potential fraud



Within the research instrument there were two statements that focused on the aspect of security and the importance placed by the respondent upon these elements in their decision not to use eServices. These statements (against which respondents provided a rating) were:

1. I am concerned about potential fraud; and
2. I am concerned about security.

The interesting trend which has been identified by Figure 35 – eServices non-adopter - I am concerned about potential fraud and Figure 36 – eServices non-adopter - I am concerned about security is that the eServices non-adopters from the Emerging and Developing Economies placed a very high value on both of these

attributes in their decision not to use eServices within Dubai. However respondents from an Advanced Economy did not identify these security concerns as a major influence on their decision not to adopt eServices. This would infer that when eServices companies and governments develop programs to encourage eServices usage within their community they will need to base their approach on the users' rationale for not adopting eServices. If these organisations focus on, for example, securing the eServices environment then this may not solicit eServices acceptance by members belonging to an Advanced Economy. This is identified by the light blue shading in the top left and bottom right quadrants of the aforementioned figures.

Figure 36 – eServices non-adopter - I am concerned about security

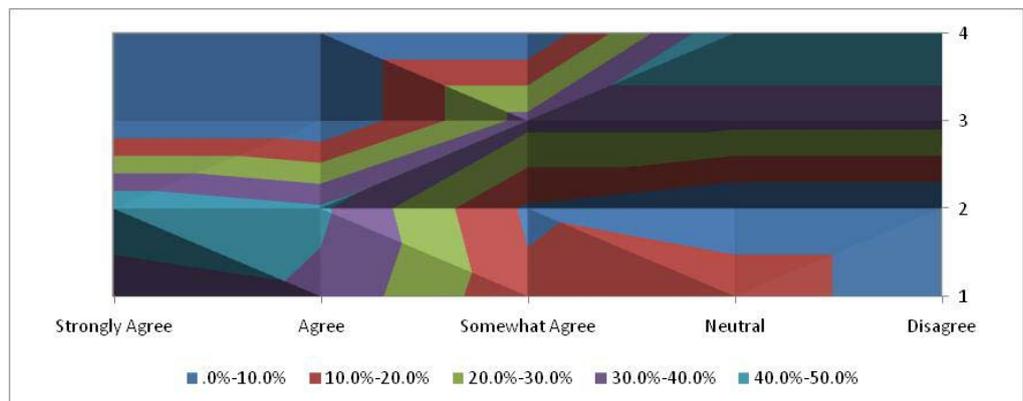


Figure 37 – eServices non-adopter - I feel that there is a lack of personal contact

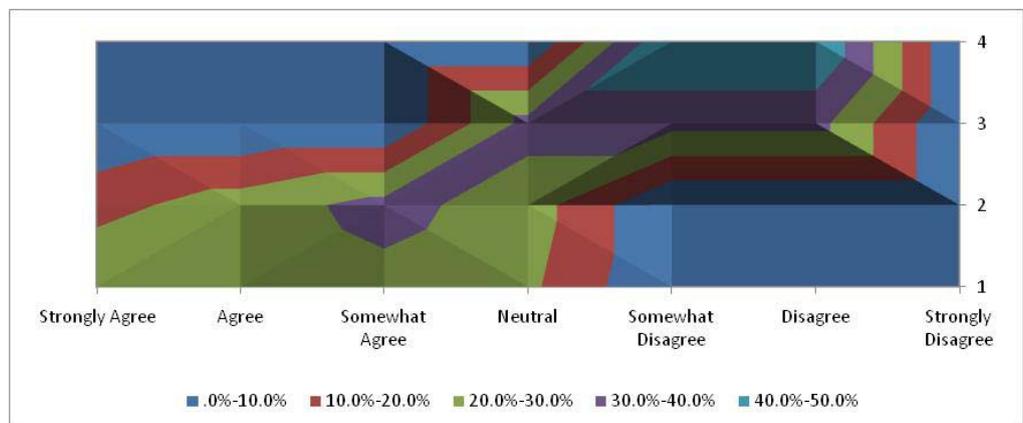


Figure 37 – eServices non-adopter - I feel that there is a lack of personal contact, Figure 38 – eServices non-adopter - I find buying goods/services from eServices sites difficult and Figure 39 – eServices non-adopter - I find it difficult to return the merchandise I purchase easily all portray the same trend, where the respondents classified as being from a region that is an Emerging and Developing Economy all stated that the following inhibitors affected their use of eServices within Dubai:

- I feel that there is a lack of personal contact;
- I find buying goods/services from eServices sites difficult; and

- I find it difficult to return the merchandise I purchase easily.

Respondents from an Advanced Economy did not necessarily believe these elements were important in their decision not to partake in eServices.

Figure 38 – eServices non-adopter - I find buying goods/services from eServices sites difficult

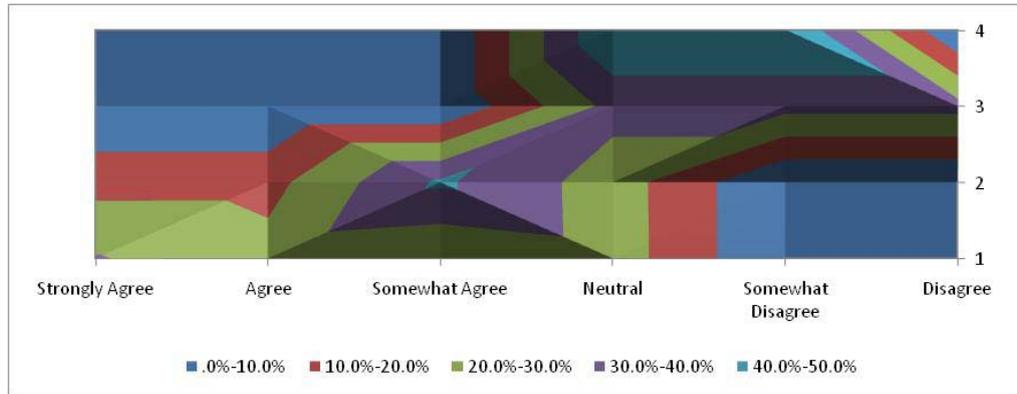


Figure 39 – eServices non-adopter - I find it difficult to return the merchandise I purchase easily

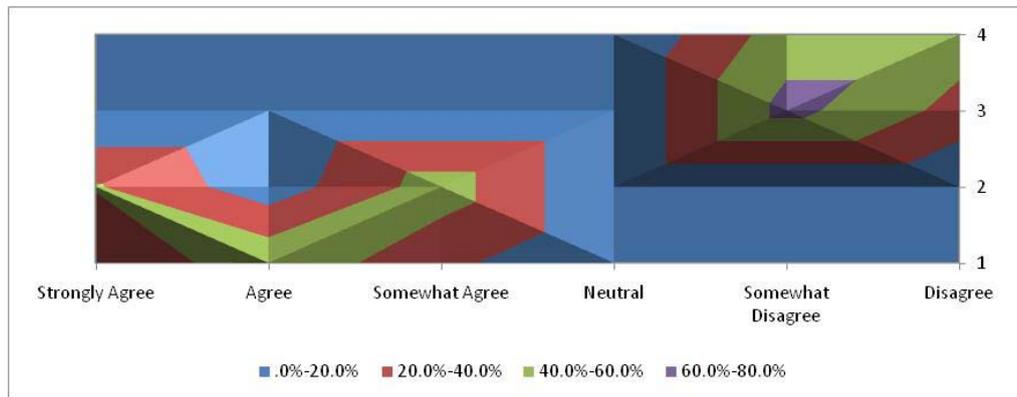
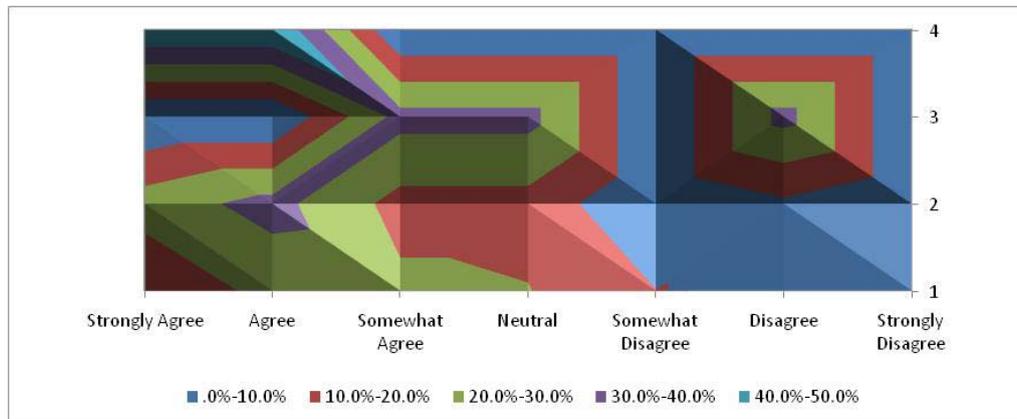


Figure 40 – eServices non-adopter - Unable to communicate verbally with representatives from the site



The inhibitors that do affect both Emerging and Developing Economy and Advanced Economy eServices Adoption are highlighted by Figure 40 – eServices non-adopter - Unable to communicate verbally with representatives from the site and Figure 41 – eServices non-adopter - Unable to negotiate better prices.

The importance level differs slightly between the two groups with the respondents from an Advanced Economy believing that both factors are the main reasons why these individuals are not adopting eServices.

Figure 41 – eServices non-adopter - Unable to negotiate better prices

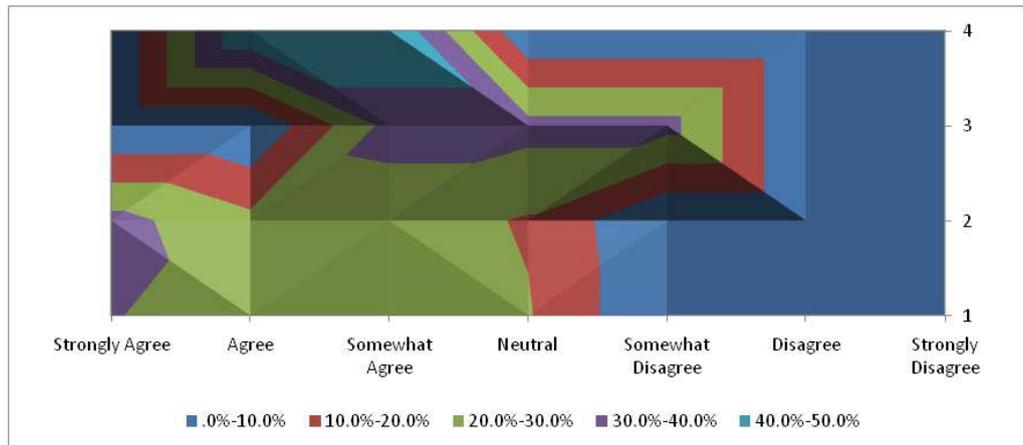
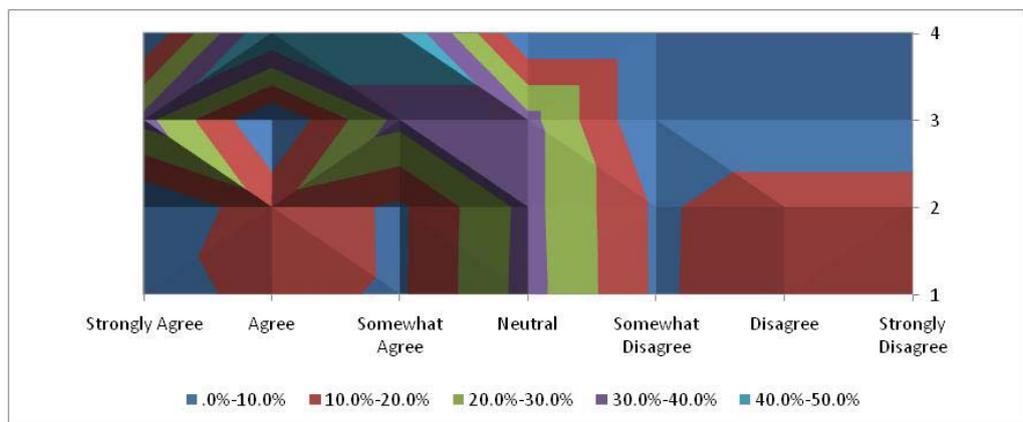


Figure 42 – eServices non-adopter - I have no desire to purchase anything identifies that those members primarily from an Emerging and Developing Economy would be in favour of adopting eServices should their perceived inhibitors be addressed. Another interesting observation from this figure is that those respondents with high cultural exposure definitively state they have 'no desire to purchase anything' using eServices as a commercial medium.

Figure 42 – eServices non-adopter - I have no desire to purchase anything



5.7.2.2 Enablers to eServices adoption

Several attributes within this research portray a significant difference between the importance of certain eServices enablers for those respondents classified as from

an Emerging and Developing Economy and an Advanced Economy. The varied results are portrayed below. Typically, attributes identified as inhibitors, once addressed, would be the enablers.

Figure 43 – eServices non-adopter – Installation of fraud protection systems

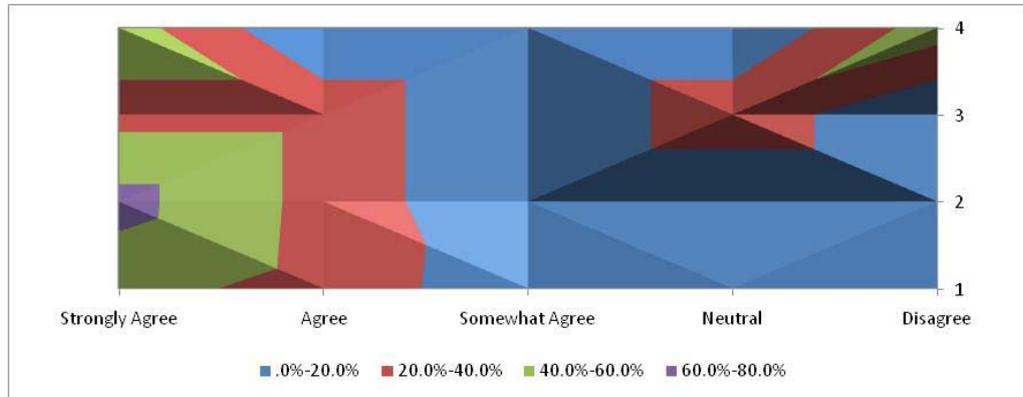


Figure 43 – eServices non-adopter – Installation of fraud protection systems and Figure 44 – eServices non-adopter – Provide tighter security show that should the security concerns surrounding eServices be addressed, a majority of the participants from the Emerging and Developing Economies would look more favourably upon using eServices. However, the introduction of 'fraud prevention measures' would act as an enabler to those respondents from an Advanced Economy.

Figure 44 – eServices non-adopter – Provide tighter security

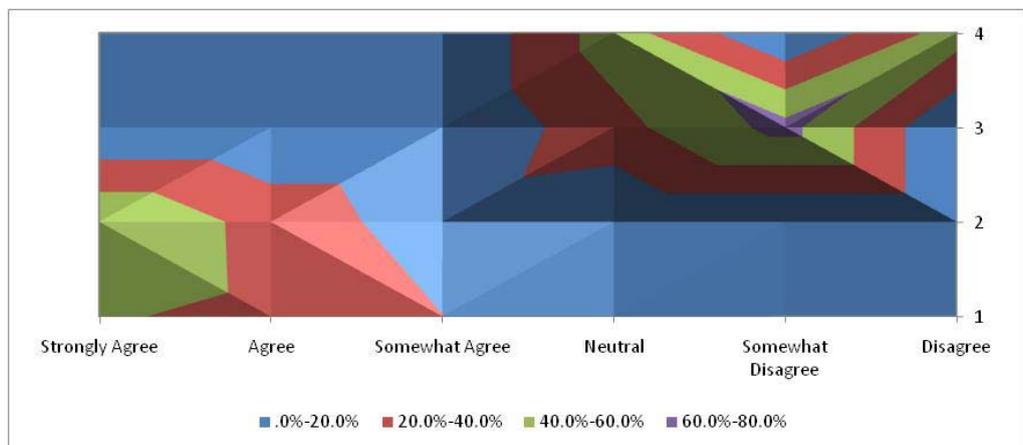


Figure 44 – eServices non-adopter – Provide tighter security and Figure 46 – eServices non-adopter – Having the ability to negotiate better prices from an eServices site highlight that there are two common enablers for both the respondents coming from an Emerging and Developing Economy and an Advanced Economy. These are:

- Having the ability to communicate verbally with representatives from the site; and

- Having the ability to negotiate better prices from an eServices site.

Figure 45 – eServices non-adopter – Having the ability to communicate verbally with representatives from the site

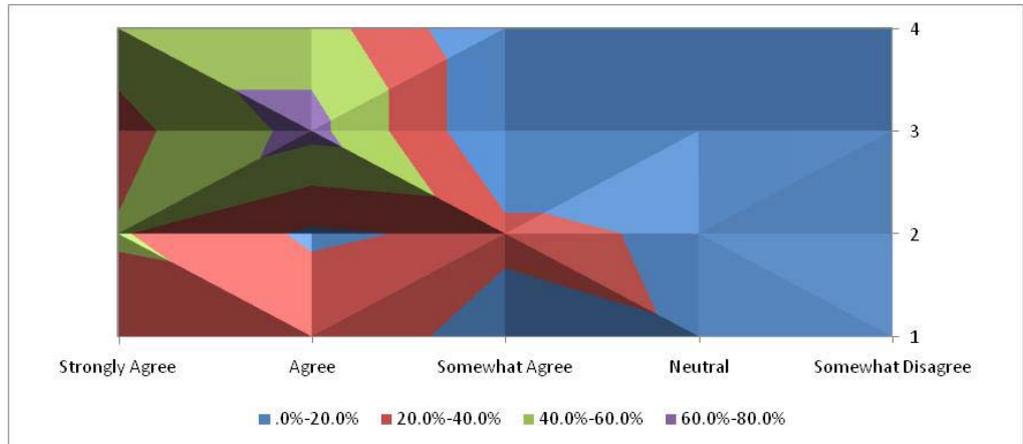


Figure 46 – eServices non-adopter – Having the ability to negotiate better prices from an eServices site

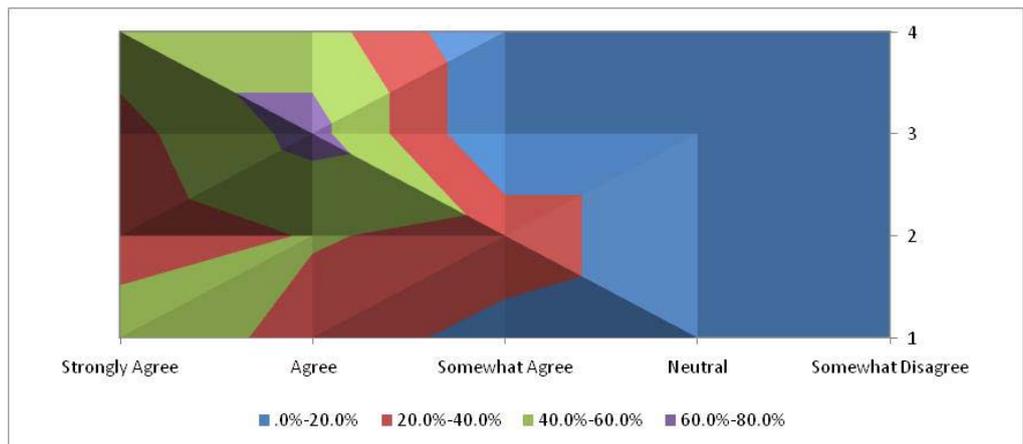


Figure 47 – eServices non-adopter – Nothing will encourage the user to adopt eServices

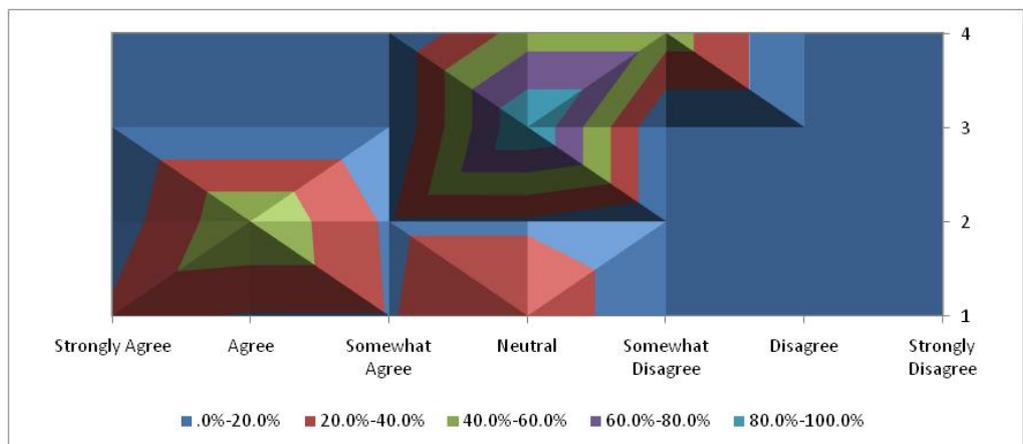


Figure 47 – eServices non-adopter – Nothing will encourage the user to adopt eServices shows that members from an Emerging and Developing Economy are more open to eServices than those respondents not participating in the adoption of eServices within Dubai from an Advanced Economy, These ‘technology holdouts’ would be considered as laggards under Rogers’ (1995) innovation decision process model and it can be reasonably assumed that if they resided within a region classified as an Advanced Economy, they would still not participate in eServices adoption.

5.7.2.3 Derailment factors to continued eServices usage

Unlike the perceived inhibitors and enablers to eServices adoption within Dubai outlined in the two previous sections, there is a greater amount of commonality between what constitutes a derailment factor for both an Emerging and Developing Economy and an Advanced Economy. These similarities are outlined below.

Figure 48 – eServices adopter – I am concerned about potential fraud

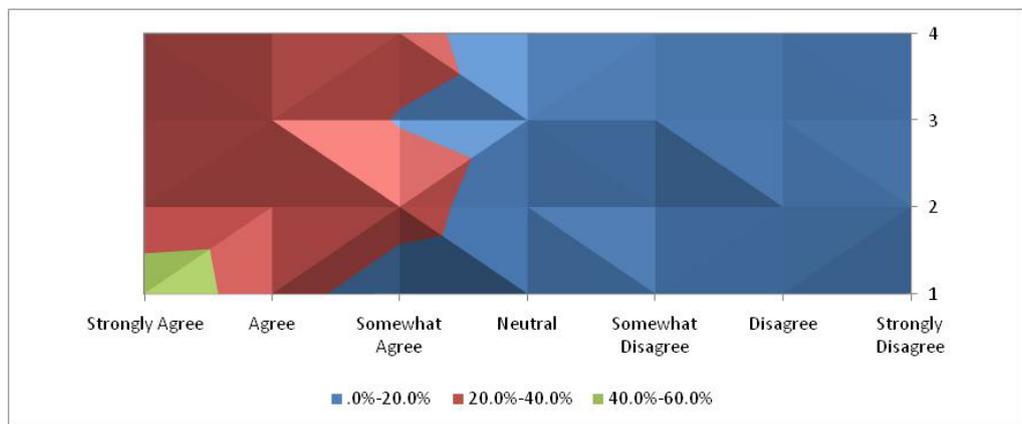


Figure 49 – eServices adopter – I am concerned about security

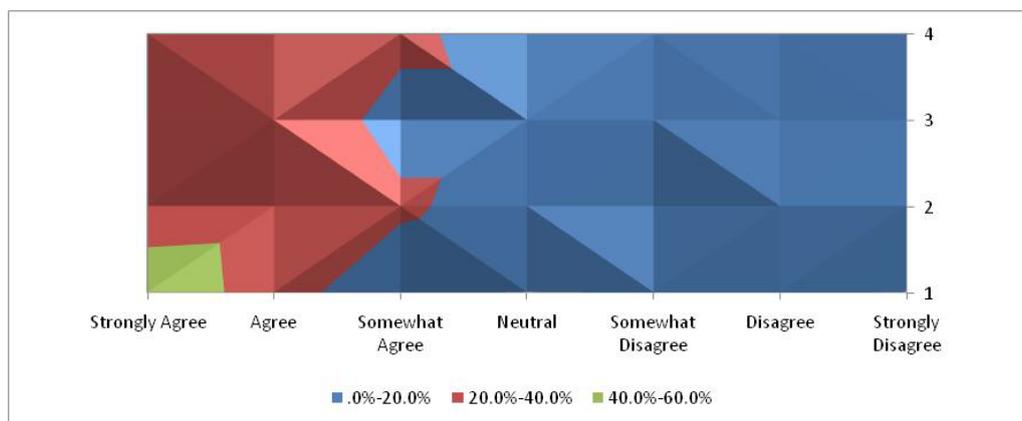


Figure 48 – eServices adopter – I am concerned about potential fraud and Figure 49 – eServices adopter – I am concerned about security have a similar profile in that a worsening of these two derailment factors could encourage the current users of eServices within to Dubai to stop such usage. However, although both user

classifications cite the same concern, those respondents from a predominantly Emerging and Developing Economy 'strongly agree' that should there be a lapse in security measures they would forego eServices adoption.

Figure 50 – eServices adopter – I believe that there is a lack of personal contact

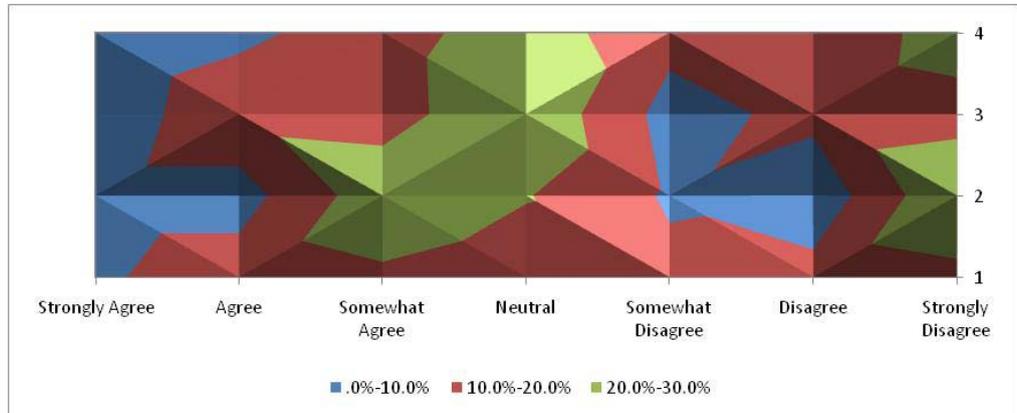
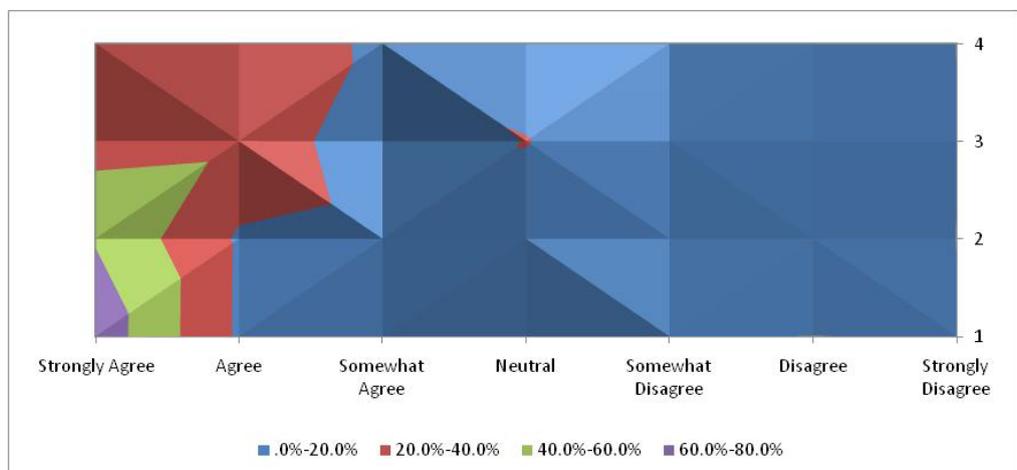


Figure 50 – eServices adopter – I believe that there is a lack of personal contact again shows that both the members from an Emerging and Developing Economy and an Advanced Economy have very similar thoughts on the requirement of personal contact between the eServices user and the eServices provider. This particular derailment factor for eServices adopters has recently been addressed by quite a few eServices providers, with the advent of ‘instant chat’ capabilities allowing the user to ‘instant message’ a company representative if desired.

5.7.2.4 Motivating factors which encourage eServices usage

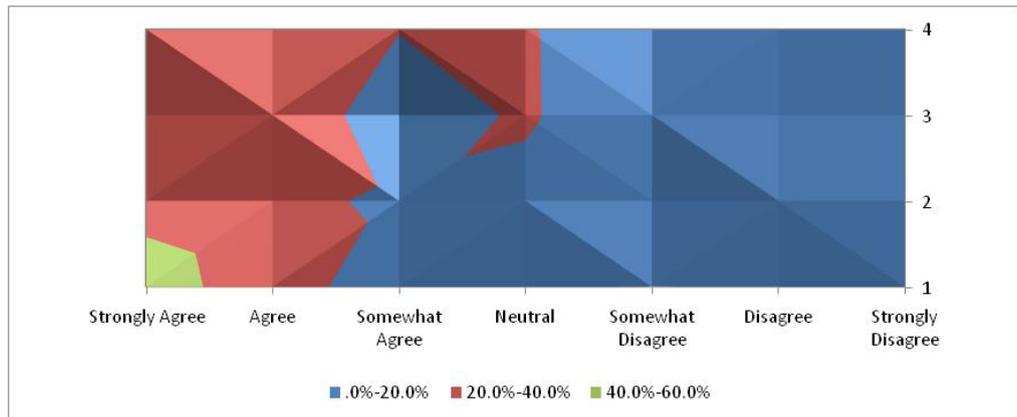
In contrast to the derailment factors, the motivating attributes tend to be specifically important to either individuals with a low cultural exposure or a high cultural exposure. In very few cases were the motivating factors equally important to both parties.

Figure 51 – eServices adopter – Better security



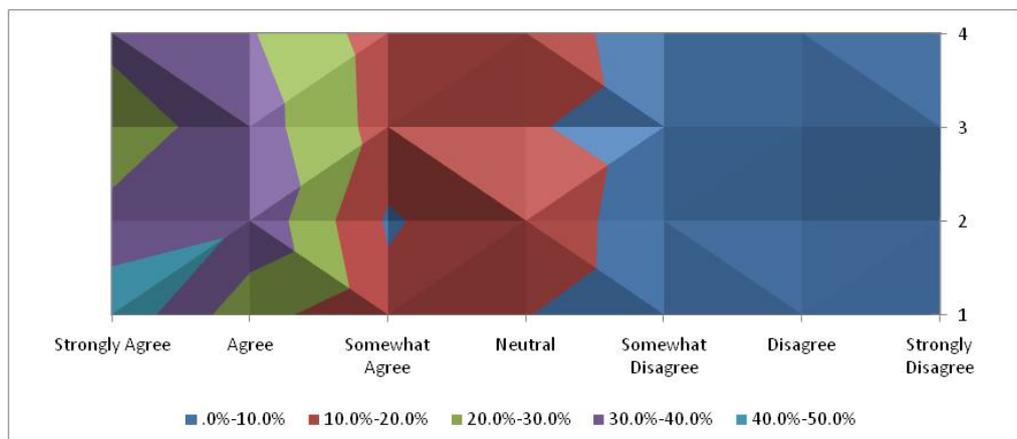
As highlighted within *Figure 51 – eServices adopter – Better security*, individuals from an Emerging and Developing Economy who partake in eServices ‘strongly agree’ (approximately 68%-80%) that eServices sites with a stronger security focus motivate them to continue using eServices; whereas those individuals with a high cultural exposure believe that security is important but not a definitive factor in their eServices usage.

Figure 52 – eServices adopter – Ease of use



Similar to the previous figure, ‘better security’, *Figure 52 – eServices adopter – Ease of use* shows that respondents who have a background in the Emerging and Developing Economies prefer to use eServices sites that are ‘easy to use’ and for them to continue using eServices this attribute is an important motivator. Those individuals who have a strong Advanced Economy background also believe that ease of use is an important motivator to continue their use of eServices but not as prolifically as their Emerging and Developing Economy counterparts.

Figure 53 – eServices adopter – Ability to get answers by eMail, Instant Messaging, or forum



As shown by *Figure 53 – eServices adopter – Ability to get answers by eMail, Instant Messaging, or forum* the Emerging and Developing Economies respondent places a greater emphasis on communication with a representative from the

eServices company. Not being a native speaker of the language used for the eServices site may account for this trend.

Figure 54 – eServices adopter – Ability to return merchandise easily

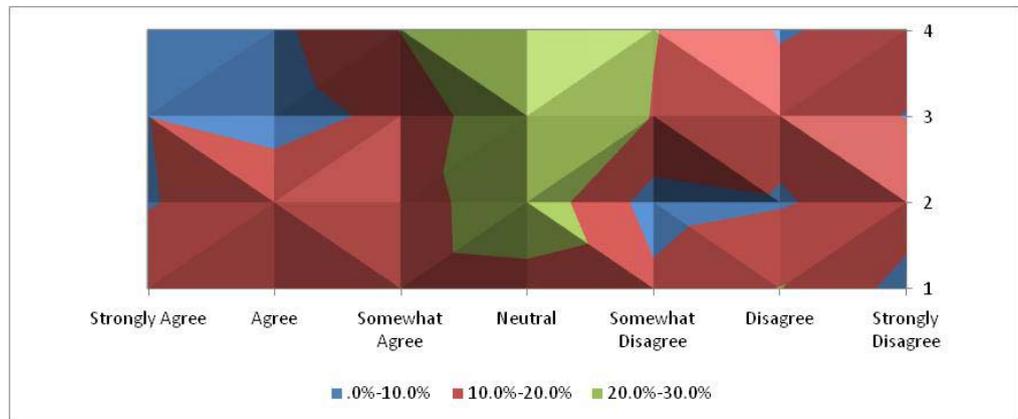
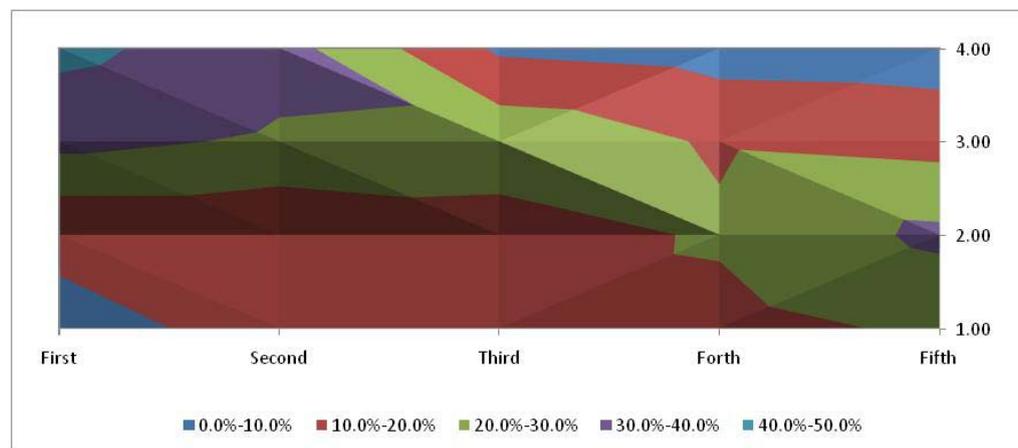


Figure 54 – eServices adopter – Ability to return merchandise easily is an interesting representation of the importance the Emerging and Developing Economies user assigns to being able to return merchandise. However, this could be explained in part by Figure 55 – eServices adopter – Researching potential purchases where the users from an Advanced Economy believe that researching potential eServices goods and services is paramount. Conversely, those users from an Emerging and Developing Economies background place little importance in researching potential products.

Figure 55 – eServices adopter – Researching potential purchases



Two of the most important motivators for an eServices user belonging to an Advanced Economy are highlighted in Figure 56 – eServices adopter – Allows for better use of my time. From the thirteen motivation questions within the research instrument, the most important to the Advanced Economy eServices were about quality of life, such as 'better use of time' and 'convenience'. These users identified motivators such as 'security', 'communications', 'ease of use' and 'quality of goods and/or service' as being secondary to 'quality of life'.

Figure 56 – eServices adopter – Allows for better use of my time

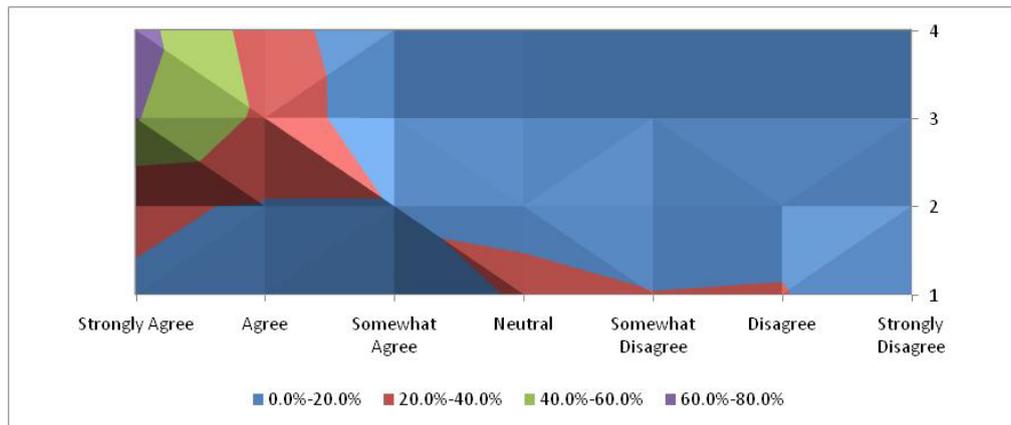
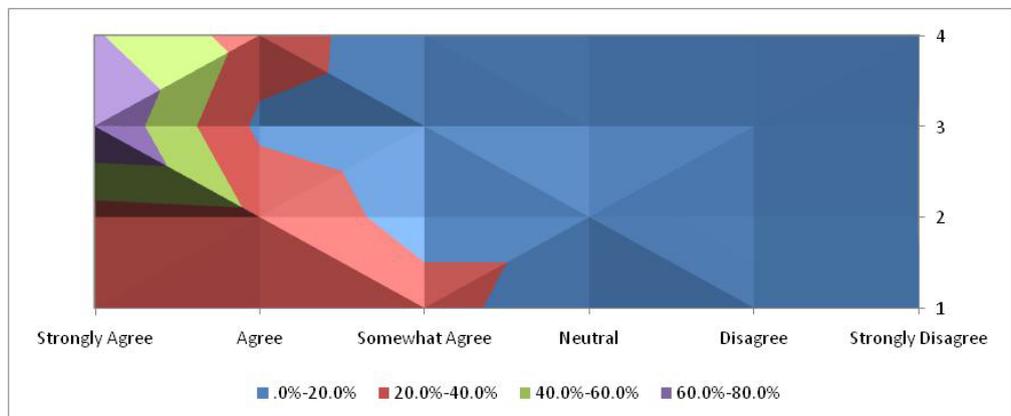


Figure 56 – eServices adopter – Allows for better use of my time also shows that those respondents from an Emerging and Developing Economy disagreed that they used eServices for convenience. This could be attributed to the fact that, typically, people from an Emerging and Developing Economy prefer traditional modes of commerce with a face-to-face purchase (Reigeluth, 1997). The adoption of eServices by the respondents from an Emerging and Developing Economy could be explained by looking for goods and/or services that cannot be sourced locally - eServices therefore provides the only commercial medium to procure such items.

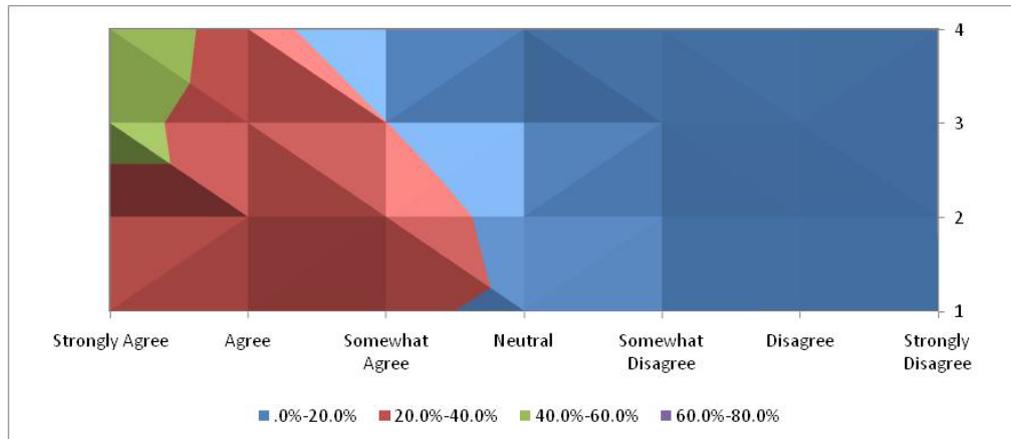
Figure 57 – eServices adopter – Convenience



The rationale for respondents from both the Emerging and Developing Economies and Advanced Economies sourcing goods and/or services internationally is not typically due to these items being illegal and/or taboo within Dubai, as there are stringent customs checks on all goods imported into the country. It is more likely due to the fact that common-day-items are overly expensive within Dubai. Dubai could be classified as a closed market where all companies who reside outside a free zone require Emirati sponsorship of 51%. These sponsorships are typically held by large families who monopolise the Dubai commercial market and easily control the price to the end user. Prior to eServices, there was no easy and effective way that

an individual could purchase goods and/or services from outside of Dubai (Hafez, 2009; Husain, 2007; Randeree, 2009; Salama, 2009).

Figure 58 – eServices adopter – Goods unable to be purchased locally



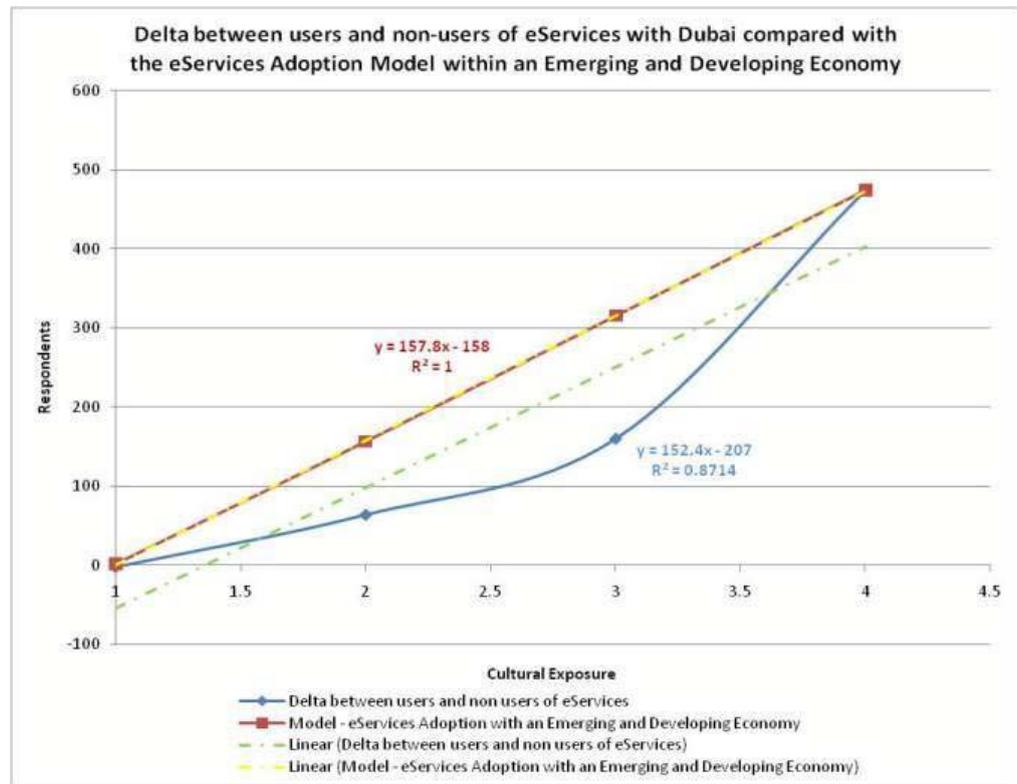
5.8 Conclusion

The model underlying this study has primarily utilised correlations to assess whether there is a significant relationship between cultural exposure and the eCommerce and eBanking variables. Additionally, it has assessed the relationship between each of the four components of cultural exposure:

1. 'What country was the last educational institute you studied at situated in?'
2. 'What was your country of citizenship at birth?'
3. 'What country were you born in?' and
4. 'What is your current country of citizenship?'

The cultural exposure variable was determined separately for both the eBanking and eCommerce questions for both years 2005 and 2008 by computing a weighted average for each component of cultural exposure to differentiate the four factors and provide a fairly continuous range for the cultural exposure variable. Additionally, t-tests were utilised to determine whether the answers to specific questions differ between those who are using eBanking and those who are not, and F-tests were used to determine whether those who answered Likert-scale questions had differential answers based on the Likert-scale value for each question.

Figure 59 – Delta between users and non-users of eServices with Dubai compared with the eServices Adoption Model within an Emerging and Developing Economy



As shown above in Figure 59 – Delta between users and non-users of eServices with Dubai compared with the eServices Adoption Model within an Emerging and Developing Economy, there is a clear correlation between the level of cultural exposure to the adoption of eServices within Dubai (where a '1' x-axis relates to no exposure to an Advanced Economy and a '4' relates to full exposure to an Advanced Economy) in relation to the aforementioned four culturally relevant questions asked during the primary data collection stage of this study. The primary data collected in relation to the 2005 data set identifies that all the cultural exposure variables are highly correlated. As such, in a normal situation, those individuals who are born within an Emerging and Developing Economy are more likely to be living in that country and being a citizen of that country; the same applies for those in Advanced Economies.

The individual components of cultural exposure all had strongly significant correlations with each other. With regard to the main hypotheses, every aforementioned cultural exposure variable has a significant relationship with eCommerce, with only current region of citizenship being correlated with eBanking.

During this study, a significant relationship was determined to have a p-value less than .05. Again all the cultural exposure variables are highly correlated, as the individual components of cultural exposure all had strongly significant correlations

with each other. With regard to the main hypotheses, every cultural exposure variable has a significant relationship with eCommerce, except for region of birth.

Table 33 – Technology Diffusion Models and studies

Date	Technology Adoption Theories and Methodologies	Author
1963	Diffusion of Technology	Rogers
1963	The S Curve & Technology Adoption	Rogers
1969	Bass Diffusion Model	Bass
1975	Theory of Reasoned Action	Fishbein & Ajzen
1979	Social Cognitive Theory	Miller & Dollard
1980	Theory of Planned Behaviour	Ajzen & Fisher
1989	Meme	Dawkins
1989	Technology Acceptance Model	Davis
1989	Revised Technology Acceptance Model	Bagozzi, Davis, & Warshaw
1994	Transtheoretical Model	Prochaska, Redding, Harlow, Rossi, & Velicer
2000	Implications of age & technology adoption	Morris & Venkatesh
2000	TAM2 - Extension of the Technology Acceptance Model	Venkatesh & Davis
2001	Digital Divide	Williams
2001	Challenges for technology adoption in homes	Venkatesh & Brown
2003	Technology adoption lifecycle	Brown & Venkatesh
2003	Unified Theory of Acceptance & Use of Technology	Venkatesh, Morris, Davis, G. & Davis, F.
2010	The Culturally Motivated Technology Adoption Model	Kelaart-Courtney

Table 33 – Technology Diffusion Models and studies identifies a historical timeline of Technology Adoption Theories and Methodologies and their authors. This section will focus on three of these works, comparing them the CMTAM. These selected works are:

- Rogers' Diffusion of Technology;
- Technology Acceptance Model (TAM); and
- Unified Theory of Acceptance & Use of Technology (UTAUT).

As discussed previously, Rogers (1995) identified five determining characteristics of innovations that influence an individual's decision to adopt or reject an innovation. These are:

1. Relative advantage, which describes how improved an innovation is compared to its predecessors;
2. The level of compatibility that an innovation has to be incorporated into an individual's life;

3. The complexity of an innovation - if the innovation is too difficult to use, potentially, an individual will not adopt it;
4. Trialability determines how easily an innovation may be experimented with as it is being adopted; and
5. Observability determines the extent that an innovation is visible to others.

As demonstrated by Figure 59 – Delta between users and non-users of eServices with Dubai compared with the eServices Adoption Model within an Emerging and Developing Economy, Rogers' Technology Diffusion Model is still appropriate for modelling innovation adoption within an Emerging and Developing Economy as well as an Advanced Economy. It needs to be noted however that there are two attributes that differentiate the adoption of technology within these two regions. These are time, and the percentage breakdown between the five stages - innovators, early adopters, early majority, late adopters and laggards. The realisation that time and the percentage breakdown between the five stages differs between the Emerging and Developing Economies and the Advanced Economies is important as this enables researchers to estimate the adoption cycle of an innovation within an Emerging and Developing Economy when it has already been adopted within an Advanced Economy.

Davis (1986) developed the TAM, providing empirical evidence on the relationships that exist between usefulness, ease of use and system use. Since TAM's inception, considerable attention has focused on testing the robustness and validity of the instrument used by Davis. Adams, Nelson, and Todd (1992) replicated Davis' (1986) experiments to demonstrate the validity and reliability of the instrument that he developed and the measurement scales used. These researches also extended the instrument with different settings and, similar to the methodology used in this research, using two different samples. This demonstrated the internal consistency and replication reliability of the two scales.

The original instrument used for this research was completed by 112 employees of IBM's Toronto Research Laboratory in Canada, who were employed as developers, development analysts and managers. However, the research instrument used by Davis focused only on the usage of the innovation in question, with no demographical data collected. In itself, this is not a defect nor a shortfall as it was not part of the scope of Davis' work, but it should be considered as an opportunity for potential extension to his research.

UTAUT was formulated by Venkatesh et al (2003), with the aim of explaining intentions to use an information system and subsequent usage behaviour. UTAUT identifies four key constructs:

- Performance expectancy;
- Effort expectancy;
- Social influence; and
- Facilitating conditions.

These constructs are considered direct determinants of usage intention and behaviour. The following attributes are posited to mediate the impact of the four key constructs on usage intention and behaviour:

- Gender;
- Age;
- Experience; and
- Voluntariness of use.

The UTAUT theory was developed through a review and consolidation of the constructs of eight models employed in earlier research to explain information systems usage behaviour.

Although UTAUT captures and analyses demographical attributes such as 'gender' and 'age', as well as placing an emphasis on 'social influence' within the research instrument, culture is not investigated within this research. Again, this is not a shortfall or an inadequacy of the research as its focus is solely on the adoption of the innovation. Using culture as an element within this research would create a new dimension.

The value of the CMTAM is that it incorporates these cultural aspects with technology adoption, providing an understanding of the inhibitors, enablers, motivators and derailment factors that influence the adoption of an innovation. By understanding the level of cultural exposure to an Advanced Economy acquired by an individual, countries and/or regions, an innovation provider and/or government would be able to estimate the level of adoption, understand, and potentially neutralise, the inhibitors and derailment factors that adversely influence this adoption.

6 ESERVICES COMPARISON BETWEEN DUBAI AND ADVANCED ECONOMIES

6.1 Introduction

Within itself, the eServices usage and trends within *Section 4 – eServices Analysis in Dubai*, are both intuitive and informative. However, in order that this research be understood in the greater context it is important to compare these findings with research from regions or countries belonging to Advanced Economies. This will help identify distinct or similar patterns of usage and eServices adoption trends that may or may not be unique to Dubai and potentially other Emerging and Developing Economies.

6.2 eCommerce usage comparison between Dubai and Advanced Economies

Mulpuru et al. (2008) reported that online retail, within the US in 2007, exceeded US\$175 billion and is projected to grow to US\$335 billion by 2012. Business-to-Consumer eCommerce continues its double-digit year-over-year growth rate, possibly attributed to the fact that sales have been shifting away from traditional bricks and mortar stores. It appears that online shoppers are less sensitive to adverse economic conditions than the average US consumer. Mulpuru et al. (2008) also infer that despite the continued growth of eCommerce, online retailers face several challenges to growth. Online stores have been perceived by consumers as a second choice commerce medium, and online retail has become increasingly seasonal.

Table 34 – Profile of eCommerce users within the Advanced Economies and the Emerging and Developing Economies markets

Demographic	Western European	United Kingdom	Dubai
Male	53%	50%	56%
Average Age	39	40	25-34
Highest level of education (Master's degree)	40%	32%	40%
Bank online	64%	68%	76%
Confident of online security	46%	51%	64%

Source: (Favier, 2007, p2; Lewis, 2008, p3)

When one studies the information identified within Table 34 – Profile of eCommerce users within the Advanced Economies and the Emerging and Developing Economies markets, and Table 35 – Profile of eCommerce non-users within the

Advanced Economies and the Emerging and Developing Economies markets, it can be seen that the Western European and UK results are quite similar in nature. However, when compared to the study conducted in 2008 within Dubai, an Emerging and Developing Economies country, there are several salient points that immediately stand out. These are:

- Age;
- High level of education; and
- Confident of online security.

Although there is quite a difference between the same attributes of an individual in Dubai and those from the UK or US, this phenomenon is easily explained. Al-Maktoum (2008) reports that Dubai has an expatriate population that exceeds 83% of the total population - an estimated 1,180,260 people broken down into 42.3% Indian; 17% Emirati; 13.3% Pakistani; 7.5% Bangladeshi; 9.1% Arab and 10.8% individuals from an Advanced Economy.

As already discussed, due to the requirement for experienced employees who are western educated within Dubai, there is a greater emphasis on recruiting individuals from outside the Middle East and Asia to work in the Dubai region. This statement does not negate the fact that these individuals may have come from a Middle Eastern or Asian background, but suggests that their country of birth and, in 95% of cases, their highest education level was achieved outside the Middle East and Asia. Great Britain has had a long political and trading relationship with Dubai and it stands to reason that a large percentage of expatriates originate from this nation. British expatriates also tend to have lived in Dubai for the longest time period. This study has identified that approximately 16% of respondents had been a resident of Dubai for over 16 years and a further 16% had been resident for a minimum of 8 years.

Table 35 – Profile of eCommerce non-users within the Advanced Economies and the Emerging and Developing Economies markets

Demographic	Western European	United Kingdom	Dubai
Male	51%	52%	55%
Age	40	39	25-34
Highest level of education (Bachelor degree)	26%	31%	39%

Bank online	27%	56%	35%
Confident of online security	28%	21%	35%

Source: (Favier, 2007, p2; Lewis, 2008, p3)

Figure 60 – Dubai eCommerce usage

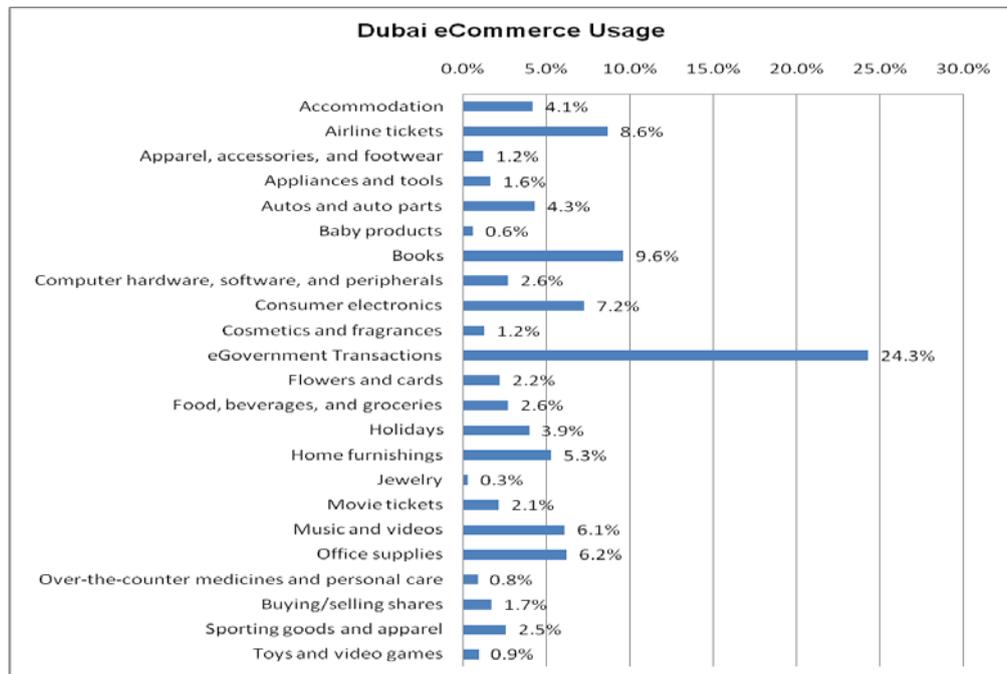
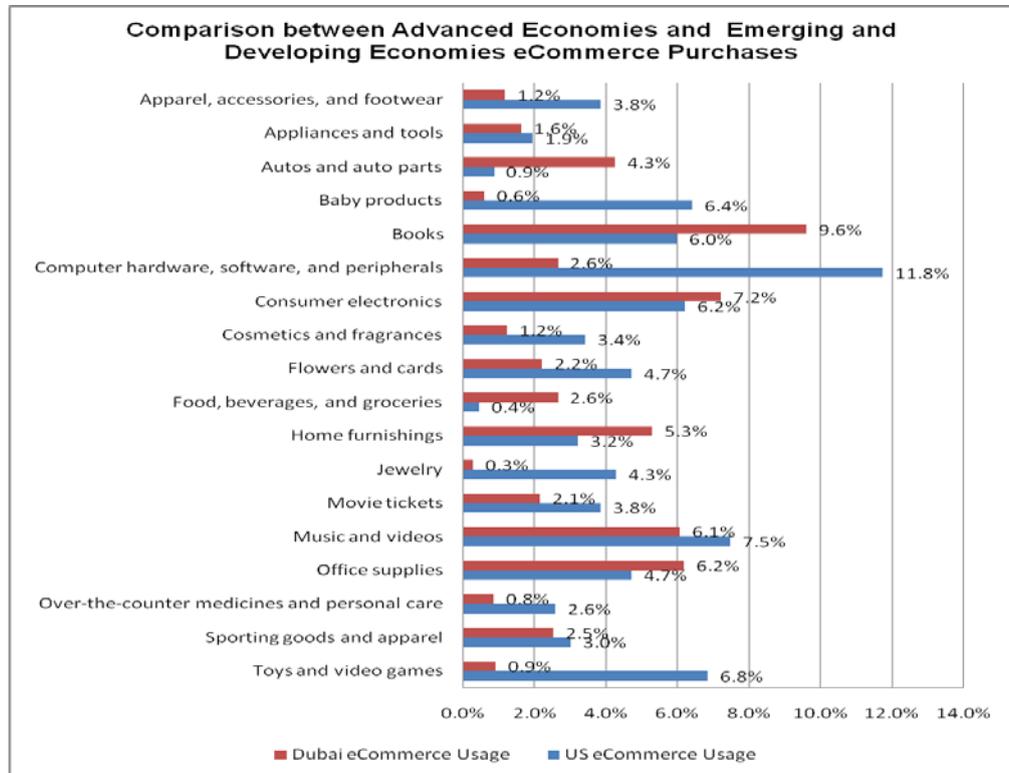


Figure 60 – Dubai eCommerce usage identifies the breakdown of the eCommerce transactions undertaken by the respondents within Dubai. When one compares these usage trends with Advanced Economies it becomes apparent that there are distinct goods and services preferred by those who partake in eCommerce within Dubai and those users who utilise eCommerce within the US and Europe. These trends are highlighted in Figure 61 – eCommerce usage comparison between Dubai and the US, Figure 62 – eCommerce usage comparison between Dubai and Europe and Figure 63 – eCommerce usage comparison between Dubai, Europe and the US. These three figures compare the eCommerce usage between Dubai, an Emerging and Developing Economy and countries from an Advanced Economy, and the most notable observation between the nine similar usage categories is that Dubai as an Emerging and Developing Economy lags behind the Advanced Economies in all but two usage categories, these being ‘Office Supplies’ and ‘Consumer Electronics’.

One of the noticeable points identified Figure 60 – Dubai eCommerce usage is the high percentage of eGovernment transactions; at 24.3% this high usage is understandable as over 42.7% of all respondents stated that they use eCommerce for convenience and that within Dubai the use of traditional government services is

quite laborious and taxing. Leatham (2005) states that Dubai currently has in excess of 470 eServices available for citizens, of which more than 90% are online.

Figure 61 – eCommerce usage comparison between Dubai and the US



Source: (Mulpuru et al., 2008, p3)

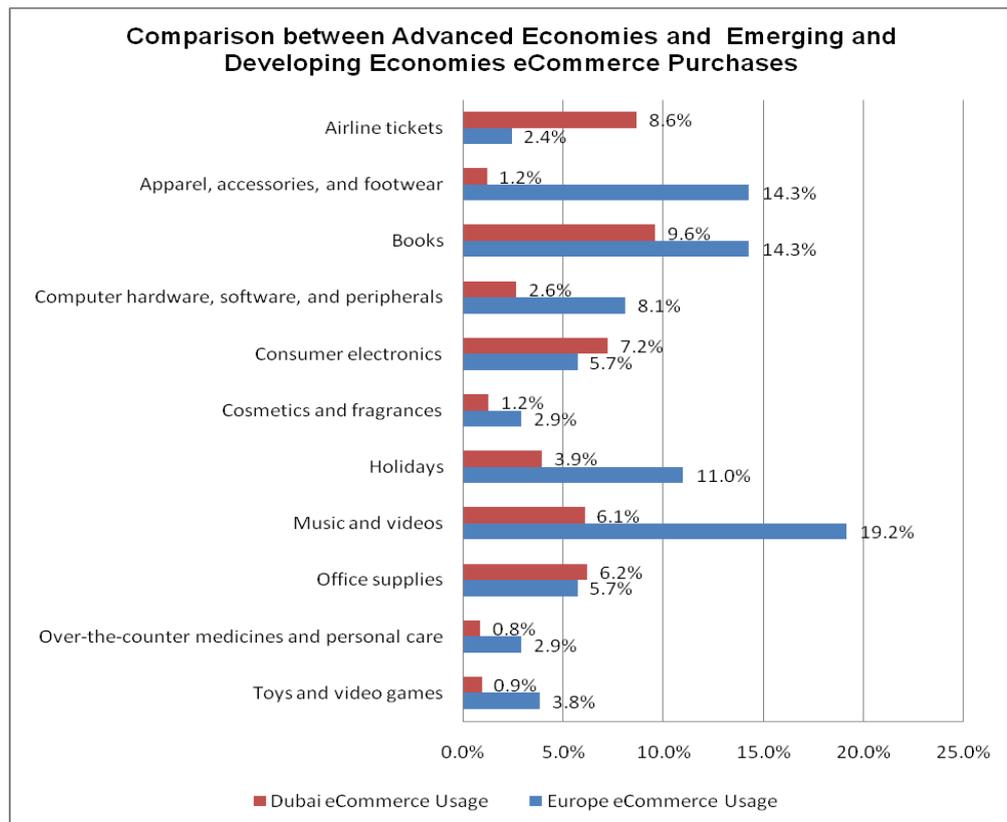
Figure 61 – eCommerce usage comparison between Dubai and the US identifies that the US shows a higher eCommerce usage in twelve of the eighteen categories.

Several of the more salient categories are:

- Apparel, accessories, and footwear;
- Baby products;
- Computer hardware, software, and peripherals;
- Jewellery; and
- Toys and video games.

These have considerable uptake within the US, whereas items such as 'Autos and Auto Parts' and 'Books' have a 37.8% higher uptake within Dubai than in the US.

Figure 62 – eCommerce usage comparison between Dubai and Europe



Source: (Lewis, 2008, p4)

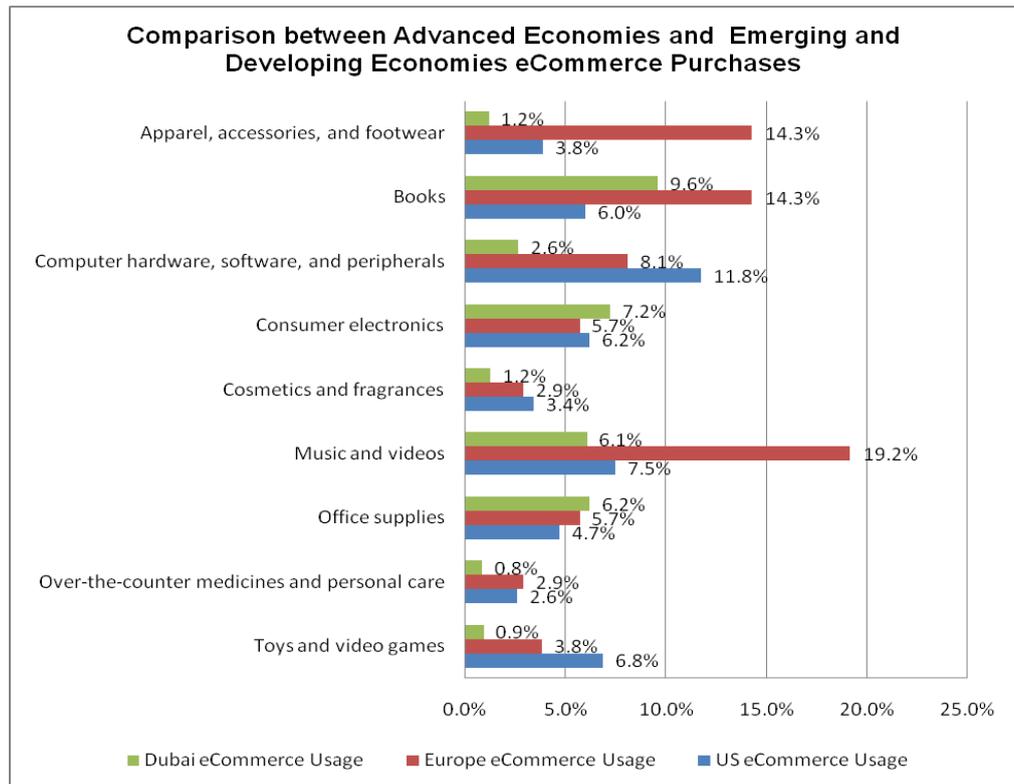
Figure 62 – eCommerce usage comparison between Dubai and Europe highlights that Europe has a higher usage in eight of the eleven categories. With the more salient categories being:

- Apparel, accessories, and footwear;
- Books;
- Computer hardware, software, and peripherals;
- Cosmetics and fragrances;
- Holidays;
- Music and videos;
- Over-the-counter medicines and personal care; and
- Toys and video games.

It should be noted that the category 'Airline Tickets' is the only group in which Dubai exceeds Europe in terms of purchases using eCommerce, by 70.1%.

Figure 63 – eCommerce usage comparison between Dubai, Europe and the US compares the eCommerce usage between the three regions. The most notable observation between the nine similar usage categories is that Dubai as an Emerging and Developing Economies lags behind the Advanced Economy in all but two usage categories, these being ‘Office Supplies’ and ‘Consumer Electronics’.

Figure 63 – eCommerce usage comparison between Dubai, Europe and the US



Source: (Lewis, 2008, p4; Mulpuru et al., 2008, p3)

6.3 eBanking usage comparison between Dubai and Advanced Economies

Budd and Budd (2007) state that while a majority of banking institutions, especially in the Advanced Economies, have invested heavily in eBanking infrastructure, the majority of banks within Dubai are still adopting eBanking strategies and implementing the required infrastructure to support this commerce medium. Budd and Budd (2007) note that only eighteen of the forty-six banks available within Dubai have mature and well-developed eBanking platforms. Of these eighteen banks, only ten are regional, with Emerging and Developing Economy roots. The remaining eight were international banks originating from countries belonging to the Advanced Economies.

Ensor, Lussanet, Tongeren and Camus (2007) state that eBanking has grown steadily within the UK over the past decade and is currently used by approximately 31% of the adult population, which equates to fifteen million users. Ensor et al. (2007) also identify that over 74% of UK Internet users regularly purchase goods or

services through eCommerce. This trend is similar within Dubai where out of the individuals who took part in this study, 75% purchased goods and /or services online and a lower percentage (65.9%) utilised eBanking services. This could be attributed to the fact that eBanking users within Dubai prefer to use eBanking rather than traditional methods of banking for three main reasons. These are:

1. Convenience;
2. Allows for better use of my time; and
3. Ease of use.

Figure 64 – eBanking usage comparison between Dubai and the UK

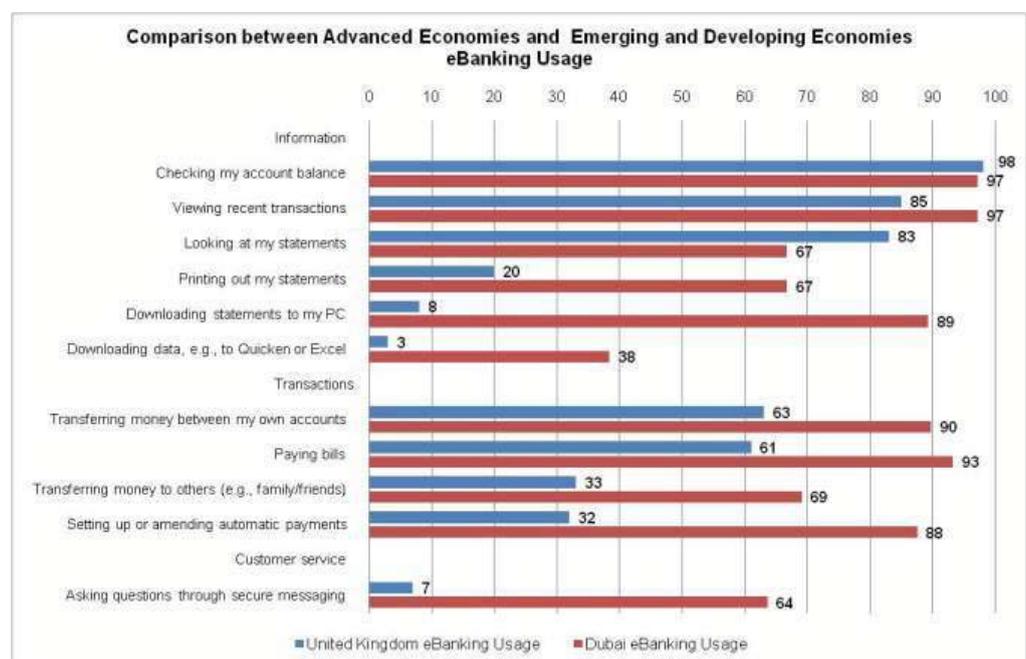


Table 36 – Profile of eBanking users within the Advanced Economies and the Emerging and Developing Economies markets

Demographic	United Kingdom	United States	Dubai
Male	51%	50%	57%
Age	40	43	25-34
Highest level of education (Master's degree)	36%	31%	39.4%
Shop online	88%	67%	87%
Confident of online security	59%	57%	75%

Source: (Ensor, Lussanet et al., 2007, p4; Graeber, 2007,p5)

Table 36 – Profile of eBanking users within the Advanced Economies and the Emerging and Developing Economies markets, and Table 37 – Profile of eBanking non-users within the Advanced Economies and the Emerging and Developing Economies markets, indicate that the UK and US are quite similar in nature but when compared to Dubai, an Emerging and Developing country, there are several salient points that immediately stand out. These are:

1. Age;
2. High level of education; and
3. Confident of online security.

Table 37 – Profile of eBanking non-users within the Advanced Economies and the Emerging and Developing Economies markets

Demographic	United Kingdom	United States	Dubai
Male	49%	46%	54%
Age	41	47	25-34
Highest level of education (Master's degree)	22%	18%	30%
Shop online	57%	34%	47%
Confident of online security	29%	17%	56%

Source: (Ensor, Lussanet et al., 2007, p4; Graeber, 2007,p5)

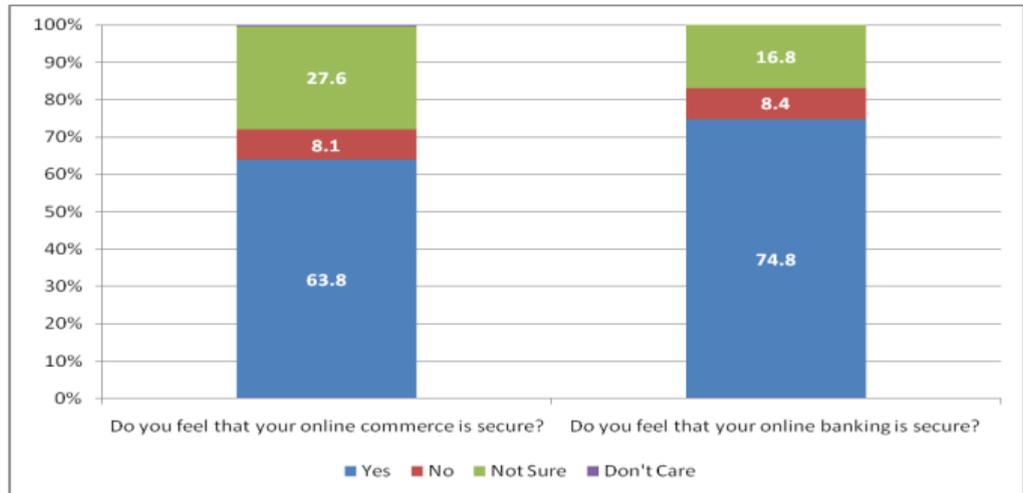
6.4 Internet and eServices security concerns between Dubai and Advanced Economies

Reitsma and Klevchuk (2007) identified that Europeans continue to be concerned about their security and privacy online whether they purchase products, participate or disclose their personal information. Additionally, this trend does not differ between younger and older users of eServices. Conversely, the Reitsma and Klevchuk study also highlights that more time spent online alleviates the user's inherent security and privacy concerns.

Reitsma and Klevchuk (2007) state that security concerns are high with European Internet users. With over half of the European Internet users connecting to the Internet daily, consumers' security concerns remain high despite these frequent

online visits. Reitsma and Klevchuk (2007) have identified that the UK's online population has the highest concerns with regard to security and privacy, even though the UK has the highest penetration of online shoppers throughout Europe with over 63% of UK online consumers stating they have continuous concerns about their credit card and identity security when purchasing items through the Internet.

Figure 65 – Dubai eServices users' perception of eCommerce and eBanking security



As shown in Figure 65 – Dubai eServices users' perception of eCommerce and eBanking security, a majority of those individuals who participated in either eCommerce, (63.8%) or eBanking (74.8%) are confident that their eServices are secure.

Figure 66 – Dubai respondents' perception of Internet security

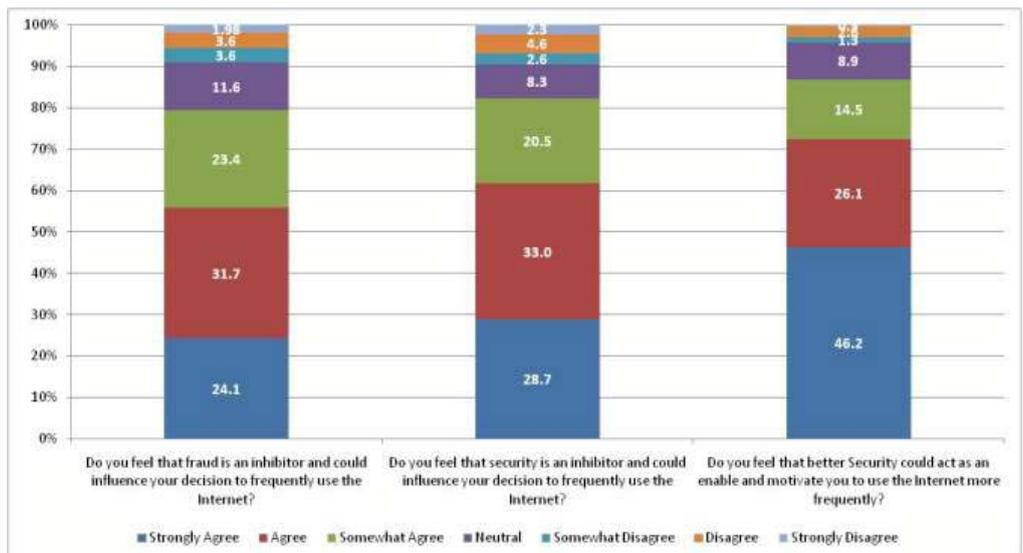


Figure 66 – Dubai respondents' perception of Internet security, above, illustrates that all of the respondents who were involved in this study believed that the level of Internet security and the potential for online fraud were major inhibitors. Over 79%

were concerned with potential fraud and 82.2% of all respondents had concerns relating to the security provided by the Internet. Conversely, over 86.8% of all Dubai residents who were involved with this study believed that if tighter security measures were enforced within the Internet it would motivate users to utilise its functionality more readily.

Figure 67 – Dubai respondents’ perception of eCommerce security

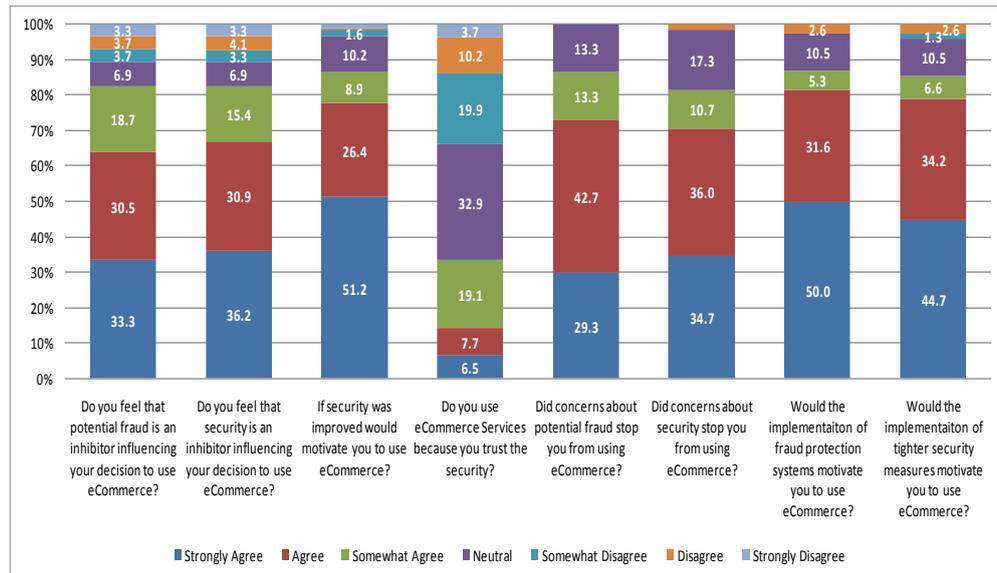


Figure 67 – Dubai respondents’ perception of eCommerce security, above, provides a comprehensive view of the inhibitors, enablers and motivators of eCommerce usage within the Emirate of Dubai. One of the most significant points illustrated by this chart is that only 33.3% of all respondents use eCommerce Services because they trust the security provided by the eCommerce vendors. Figure 68 – Why do respondents within Dubai use eCommerce services, below, explores this phenomenon in more depth and it is quite clear that security, at 23.3%, is the least important factor in why users within Dubai utilise eCommerce services. The most important factors were: ‘Convenience’, 93.5%, ‘Allows for better use of my time’, 91.7%, ‘Goods unable to be purchased locally’, 89%, ‘Better information about products’, 84.6%, and ‘Easier to Order’, 86.2%. The least important factors were the, ‘Ability to get answers by phone’, 45.9%, and ‘Ability to return merchandise easily’, 36.6%.

Figure 68 – Why do respondents within Dubai use eCommerce services?

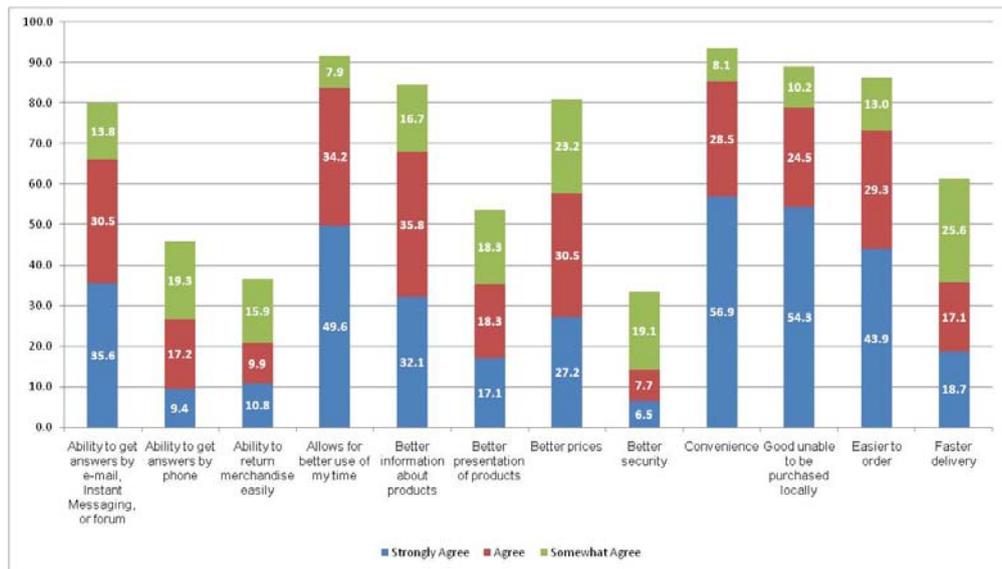


Figure 69 – Dubai respondents' perception of eBanking security

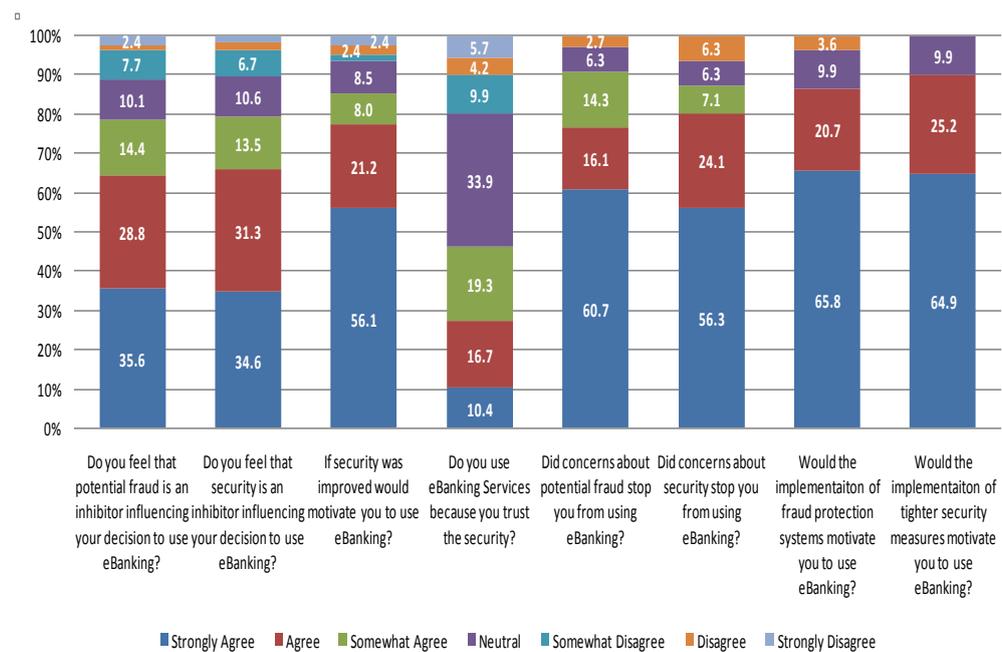
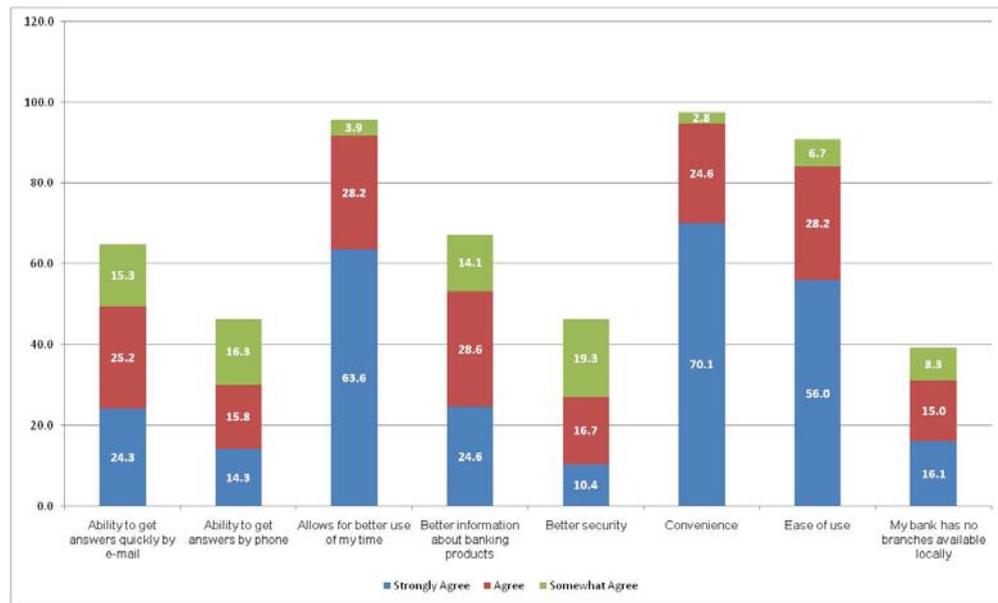


Figure 69 – Dubai respondents' perception of eBanking security above, displays a similar trend as in Figure 67 – Dubai respondents' perception of eCommerce security where there is a surprisingly low importance attached to 'Do you use eBanking Services because you trust the security'. Only 46% of the sample indicated that security influenced their decision to use eBanking. Like eCommerce, both 'Convenience', 97.5%, and 'Allows for better use of my time', 95.7%, were deemed more important than factors such as security, as illustrated in Figure 70 – Why do respondents within Dubai use eBanking Services.

Figure 70 – Why do respondents within Dubai use eBanking Services



6.5 Conclusion

A parallel can be drawn between Dubai and Singapore in respect to their shopping facilities. The two countries have similar weather patterns and this has been a catalyst for the creation of indoor entertainment environments. Both Dubai and Singapore advertise themselves as a shopping oasis; both countries have nationwide shopping sales – the ‘Great Singapore Sale’ and the ‘Dubai Shopping Festival’ (Davidson, 2007; Oakley & Brown, 2009). It is not difficult to see, therefore, why the Dubai local and expatriate communities would be susceptible to using more traditional commercial methods.

However, for the expatriate, these sales do not have the same attraction. Sales last for approximately four to six weeks; people from all over the world come to shop; it is crowded, and traffic is built-up in countries where the road infrastructure, although superior, often cannot handle the congestion. More often than not, the items on sale are extremely highly priced, with numerous luxury goods beyond the reach of many; service is poor and, often, warranties are not honoured or are difficult to enforce as there is no or little after-sales service. It is no surprise then that the expatriate gravitates to the Internet for their commercial needs (Al-Alawi & Kuzic, 2007; Ashrafi, Yasin, Czuchry, & AlHinai, 2007; Iqbal, 2009; Kassim & Souden, 2007).

Within Dubai the average eCommerce user profile shows respondents to be younger (25-34 years old), with a higher percentage of eCommerce users being male (56%), as compared to the Advanced Economies who averaged 51%. These individuals tend to be as educated as eCommerce users within Western Europe, with conversely fewer UK eCommerce users holding the same education level. Moreover, the Dubai based eCommerce user’s opinion differs from their Advanced

Economy counterparts in that they have a strong belief that their eCommerce transactions are secure with 64% trusting the security of their transactions. The enablers that drive the eCommerce user within Dubai to partake in eCommerce also differ from those within the Advanced Economies. Johnson and Hult identify the following enablers that are important to eCommerce users in Canada, an Advanced Economy (Johnson & Hult, 2007):

- Having a credit card, 96%;
- Ease of use, 91%;
- Inexpensive delivery costs, 82%; and
- Positive buyers experience online, 77%.

The motivation for the Dubai based eCommerce users is quite different, in that they use eCommerce based upon the following four main enablers:

- Convenience, 93.5%;
- Allows for better use of my time, 91.7%;
- Goods unable to be purchased locally, 89%; and
- Easier to order with 86.2%.

Seemingly, for the Dubai eCommerce user, quality of life and having the ability to concentrate on non-commerce pursuits is preferable to 'Better Pricing', 'Faster Delivery', or instant commercial gratification, and better security, which rated the least important of all enablers at only 23.3%.

In relation to the non-adoption of eCommerce in either an Advanced Economy or an Emerging and Developing Economy, there are several differences between the average demographic profiles for these individuals. Within Dubai, the non-eCommerce user is male (56%) whereas his Advanced Economy counterpart number averages only 51.5%. The Dubai non-eCommerce user tends to be younger, but more highly educated, with 39% achieving a Bachelor degree level. They have a higher tendency to use eBanking (35%) as opposed to their Western European counterparts at 27%, but far less than those non-eCommerce users from the UK, where 56% of all non-eCommerce users do use eBanking.

Within Dubai, the following inhibitors significantly influence a user's decision to partake in eCommerce:

- Potential fraud, 86%;
- eCommerce is not secure, 80%;

- Having to pay for delivery, 79%;
- Unable to communicate with the sales people, 61%;
- Can't negotiate, 59%;
- No personal contact, 59%; and
- Difficult to return goods, 55%.

It is easy to understand the aforementioned inhibitors and how they relate to eCommerce adoption within Dubai. As identified previously, a majority of identified laggards had a high exposure to countries from Emerging and Developing Economies, which have a high tendency to be agrarian in nature. Gellner (1988) and Reigeluth (1997) argue that typically an agrarian society has a strong tendency to negotiate enthusiastically face-to-face and for long durations of time, Kelaart-Courtney (2004) described this trait as the souq mentality.

Johnson and Hult (2007) and Mulpuru et al. (2008) have identified that within Advanced Economies, the main inhibitors that affect the adoption of eCommerce are:

- The ability to see the item prior to purchase, 64%;
- Reluctant to pass out personal information over the Internet, 62%;
- Reluctant to pass out financial information over the Internet, 44%; and
- A preference to research items on the Internet, then purchase them offline, 33%.

The non-eCommerce users of Dubai have a much stronger aversion to adopting eCommerce due to potential and/or perceived security issues and potential fraud than individuals who have also chosen not to partake in eCommerce within an Advanced Economy. Rae et al. (2001) infer that agrarian society members have an inherent mistrust of new technologies and customs that move away from the imbedded traditions followed by that society.

The Dubai residents who partook in this study and adopted eBanking were mostly males, at 57%. Again like those using eCommerce, these individuals tended to be younger at 25-34 years old, where within the Advanced Economies these individuals on average tend to be approximately 41 years old, a gap of 12 years. The average Dubai based eBanking user typically outstrips the Advanced Economies (33.5%) with regard to the highest academic level achieved, being more highly educated individuals, at 39%. The level of respondents within Dubai who partake in eBanking

and also utilise eCommerce (87%) is slightly less than the UK at 88% but these individuals are far more likely to use both eBanking and eCommerce than their US counterparts at only 67%. Again eBanking users within Dubai have identified that they are mostly confident that their online transaction is secure (75%) as opposed to an average of only 58% of the eBanking users within the Advanced Economies.

Within Advanced Economies it is typically females who are the laggards regarding eBanking, with an average of 53% not utilising the eBanking facilities. Within Dubai, however, the trend is that 54% of men have not adopted eBanking. Again the average age of the Dubai non-eBanking user is 25-34 compared to Advanced Economies non-eBanking users, who are approximately 44 years old. More Dubai based non-eBanking users are Master's degree holders at 30%, whereas within the Advanced Economies only about 20% have obtained the same level of education. Within the UK the respondents who have not adopted eBanking tend to adopt eCommerce, with 57% using eBanking. The Dubai non-eBanking users (47%) have adopted eCommerce although within the US a low 34% of those users who decline to use eBanking have accepted eCommerce as a commercial medium. Within Dubai the non-eBanking user actually has quite a high confidence level in security at 56%, whereas within the Advanced Economies only approximately 23% of the respondents believe that their online transactions are secure.

As reported by the Dubai Statistics Center (2009a), Dubai has a ratio of approximately of 1:3, females to male, therefore the propensity of Dubai typically having a 'male' dominated data set is reasonable with these skewed trends in usage and non-usage when comparing gender with Advanced Economies.

7 CONCLUSIONS

7.1 Introduction

Prior to this study, the research and academic understanding of the adoption of eServices within both Dubai and Emerging and Developing Economies required further investigation. This study was conducted to address this gap in the currently available research and literature. The principle outcome of this research is that there is now a more comprehensive model of eServices adoption within an Emerging and Developing Economy with particular application to Dubai, as well as a thorough understanding of the enablers and inhibitors that affect this adoption.

Nguyen and Johanson (2008) remark that Emerging and Developing Economies need to review the lessons of the past and the lessons from other nations. This includes countries like Vietnam, where the knowledge economy has created a sharp and steep divide between the knowledge workers who have a lot of newfound wealth and flaunt it; and the poor in the mountain regions where about 90% of the people live on less than a dollar a day. To make ends meet, the poor have taken up anti-social activities such as smuggling, drug running, pornography, prostitution and other such activities. Along with corruption, these developments threaten the moral and cultural fabric of Vietnam (Nguyen & Johanson, 2008).

7.1.1 Research aim and objectives

The aim of the current study was to investigate the influencing factors affecting the consumer adoption of eServices within Dubai; and to develop a new theoretical model incorporating enabling and inhibiting factors based upon the findings from the investigation and data analysis undertaken within this research.

7.1.2 Operational objectives

The four operational objectives for this study were to:

1. Investigate the relevance of established models for adoption and implementation for eServices;
2. Explore the adoption and implementation factors that influence the success of eServices, establish their relative importance and formulate them into a cohesive model;
3. Test the specific relevance of this model in the eServices environment within Dubai; and
4. Establish whether the model for eServices adoption developed can be generalised to an emerging market context, using Dubai as the initial test case.

These aims have now been accomplished. The major contributions of this study are outlined in *Section 7.2– Major contributions of the study*

7.2 Major contributions of the study

This research, by addressing the important but empirically under-represented subject of technology behaviour within an Emerging and Developing Economy, has made a number of major contributions to the understanding of eServices adoption and implementation success for local and expatriate residents of these communities. This contribution is subdivided into two main categories: the eServices providers; and eServices research.

7.2.1 Contributions to eServices providers

This study offers eServices providers more insight into both the enablers and inhibitors and the purchasing trends of the eServices user within Dubai and, potentially, other similar Emerging and Developing Economy markets. With this knowledge, these organisations can align their current business strategies and models to support their eServices portfolio and marketing strategies, therefore enhancing their competitive advantage. This study also provides considerable insight into the current mindset of individuals living in Dubai and their current approach to technology adoption. This understanding will assist the Dubai government in developing strategies to encourage its residents to incorporate eGovernment services into their daily routine and assist Dubai in becoming a knowledge or information based society (Al-Maktoum, 2005; Friedman, 2005; Machlup, 1962; Sambidge, 2010) .

The contributions that this study provides to eServices providers and Government entities are as follows:

1. The adoption model, supporting primary data and in-depth analysis outlined within *Sections 4, 5 and 6* provide insightful knowledge to assist eServices providers in the planning of marketing and IT investment, potentially leading to a higher level of market penetration for their goods and services;
2. This research has helped highlight the most significant enablers and most debilitating inhibitors that affect the adoption of eServices within an Emerging and Developing Economy. It has identified the following important enablers and inhibitors:
 - The most significant enablers for eServices users within Dubai are that eServices:
 - Allows the user to manage their time more effectively;
 - Provide higher quality information about products;

- Can provide an avenue to solicit better prices for goods and services;
 - Is more convenient than using traditional commercial methodologies;
 - Provides an alternative mechanism to source goods and services that cannot normally be purchased locally; and
 - Enables goods and services to be purchase more effectively and is typically easier.
 - Current non-eServices users within Dubai identify the following derailment inhibitors:
 - Purchases are open to potential fraud;
 - Transactions are not secure;
 - Purchases require an expensive delivery fee;
 - Companies do not allow communications with their sales people;
 - Goods and services purchases are fixed in price and do not allow for negotiations between the supplier and purchaser;
 - Provides no avenue to have personal contact with the company or their sales people; and
 - Purchases are difficult to return if they are faulty or not required.
3. This study has contributed to an understanding of the adoption and implementation success of eServices currently within Dubai and the individuals who partake in this technology. The findings of this research will allow eServices companies to consider new goods and services more attuned to current users and a greater understanding of what laggards require to give them the confidence to adopt eServices within Dubai;
4. The cultural findings outlined within this study that focus on the inhibitors surrounding eServices adoption within Dubai provide the Dubai government with an accurate demographical profile of those users who can be classified as late majority or laggards under Rogers' (1995), Innovation Decision Process Model. They can use this profile to target both educational

campaigns and literature designed to alleviate the inhibitors that effect the adoption of eServices; and

5. The findings of this research provide valuable insight into the needs for curriculum development in colleges and universities so that they can best equip both their faculty and student body on how best to address the needs of a knowledge or information based society.

7.2.2 Contributions to eServices research

Although there have been several academic studies conducted on eServices adoption over the past ten years, such as the research conducted by Al-Abed and Hellyer (2001), Al-Alawi and Kuzic (2007), Akhter (2007) and Godwin (2006), it is noted that these researchers focused on the cultural aspects affecting business interactions. There has, however, been a considerable number of journal publications and extended research conducted in other Emerging and Developing Economies, such as that undertaken by Chong (2003), Casmir and Yngström (2003a), Casmir and Yngström (2003b), Dada (2006), Karanasios and Burgess (2006), Schneeberger (2007) and Tarafdar and Vaidya (2004). Again, these academic papers focused on important aspects such as security, systematic change within a Developing and Emerging Economy, eCommerce from the organisation's point of view and various cultural aspects within Developing and Emerging Economies. It is imperative to provide both a theoretical and applied focus on the potential cultural influence on the adoption of eServices, the enablers and inhibitors, as well as the purchasing trends surrounding eServices within a society that is rapidly moving.

This study has contributed to eServices research in the following areas:

1. Significant contribution has been made to the measurement of several critical concepts of technology adoption within a highly dispersed cultural environment using multi-dimensional attributes as opposed to using dichotomous methods;
2. This study has clarified the definition and measurement of technology adoption. The adoption of eServices cannot be measured by a dichotomous choice of adoption and non-adoption; alternatively it needs to consider when a particular eService becomes adopted and why the user adopts. In addition to the aforementioned contribution, the construct adoption of eServices not only looks at the particular eService that was adopted, but also incorporates the time factor, classified as the 'early adopters matrix', which looks at eService adoption in a more representative manner going beyond just the typical binary measurement to include multi-point-in-time eServices adoption decision points;

3. This study has adapted Rogers' (1995) innovation diffusion model into the context of eServices adoption within an Emerging and Developing Economy. It is clearly demonstrated that even though there is a more flat S Curve, the model is still relevant within an Emerging and Developing Economy. This research was also able to investigate those attributes suggested by Rogers that may be applicable to eServices adoption success;
4. This study also enhanced the Venkatesh et al. (2003) UTAUT Model for technology adoption in the context of eServices adoption within an Emerging and Developing Economy. Although the UTAUT looks at how demographic attributes affect one's adoption of technology, this research adds another dimension to the model by looking at cultural influences to technology adoption. This research was also able to investigate those attributes, suggested by Venkatesh et al. (2003), that have a greater or lesser influence on eServices adoption success within an Emerging and Developing Economy and an Advanced Economy;
5. The study has contributed to the existing body of knowledge on enablers and inhibitors related to eServices adoption within an Emerging and Developing Economy. This study has identified several significant factors for eServices adoption and has developed a useful consumer eServices model, which may assist eServices companies, governments and academia in making informed decisions with regard to business, marketing and education strategies for the future;
6. Although there is a growing body of literature dedicated to the analysis of the adoption of eServices within an Advanced Economy, there was little empirical research on topics relating to the enablers and inhibitors of eServices adoption within Emerging and Developing Economies, especially in an economy which is rapidly developing such as Dubai. This study will be able to provide useful insight to future research in relation to this topic; and
7. In addition to identifying enablers and inhibitors to the adoption of eServices, this study was able to provide an in-depth comparison between 'two points in time' within a rapidly developing socioeconomic climate.

The hypothesis proven by this research identified that technology adoption uptake is lower if an individual has a low cultural exposure to an Advanced Economy than if they have a high cultural exposure and/or are from an Advanced Economy. This research also recognised that eServices inhibitors, enablers, derailment factors and motivators to technology adoption are regarded differently by these communities. The primary data and its analysis identified that a higher percentage of individuals

belonging to an Emerging and Developing Economy were more likely to be classified either as a laggard - not engaging in technology adoption or taking longer to partake in technology adoption when compared to their Advanced Economy counterparts.

Rogers' (1995) Innovation Decision Process Model is not disproved by this research but the analysis of the primary data collected does show that there are two distinct technology adoption curves: one for members from an Emerging and Developing Economy; and the other for individuals from an Advanced Economy. These curves sit within the high level parameters outlined by Rogers in his own research, but the attributes of 'time' and the allocation of results to the 'five stages' identified within the Innovation Decision Process Model are noticeably different.

The analysis of the primary data illustrates that members of an Emerging and Developing Economy would take longer to engage in technology adoption than those belonging to an Advanced Economy, as well as varying in the expected ratios between the 'five stages' of the Innovation Decision Process Model.

7.3 Main conclusions and observations

This study has identified that users of eCommerce and eBanking within the Emirate of Dubai are typically expatriates originating from a country within an Advanced Economy or those nationals and/or expatriates from an Emerging and Developing Economy background with prolonged and extensive exposure to an Advanced Economy, typically where they have completed their final academic studies. Nationals and/or expatriates from an Emerging and Developing Economy with limited or no exposure to an Advanced Economy tend to prefer traditional methods of commerce, associating commerce more as a social experience.

In the case of eGovernment services and eBanking, the user has total control of their finances and statistics show that, again, there is a preference for the Advanced Economy user to use offshore banks through which expatriates can transfer funds quickly and effectively between countries.

7.4 How does the eCommerce trends and usage align with other world regions

Other Emerging and Developing Economies such as Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, Singapore, and China, like the Dubai, have considerable expatriate communities. It is logical therefore to assume that the trends surrounding the adoption of eCommerce identified in Dubai would be similar to those in the GCC countries.

7.5 Government and business policy implications and recommendations

HH Sheikh Mohammed bin Rashid Al-Maktoum, Prime Minister and Vice President of the UAE, and Ruler of Dubai stated during the inauguration speech at the opening

of the Dubai Men's College that Dubai needs to invest in ICT infrastructure and training for young Emiratis so that Dubai can move into the information age (Al-Maktoum, 2005). This was reinforced by Sambidge (2010) in his report of a speech delivered by Sheikh Ahmed Bin Saeed Al-Maktoum, the uncle of the current Ruler of Dubai, that the UAE's, (and indirectly Dubai's), clear desire is to focus on quality education so that Dubai can play an influential role in the knowledge based economy.

In 2007, HH Sheikh Mohammed mandated that 70% of all Dubai government manual processes should become eServices. By 2008, most Dubai government departments achieved a target of transforming 90% of their services into eServices (e4all, 2009). Under this mandate, the Dubai government went through a considerable business transformation effort and, at times, the quality of the eServices was neglected. The Dubai eGovernment had to step up quality measures as this initiative had a huge impact on customer satisfaction and technology adoption (e4all, 2009).

This research provides an in-depth analysis of the enablers and inhibitors that govern the usage of eServices within Dubai, as well as a full demographic profile of the individuals who participated within study. This information can be used to provide mitigation strategies and marketing campaigns to assure potential users that perceived inhibitors have been fully alleviated and that participating in eServices is safe and beneficial to the user.

eServices companies will be able to use this data to create marketing profiles of users so that they will be able to create marketing campaigns to target specific demographics and product ranges.

An eServices company that uses this research will be able to create lists of potential 'user targeted' goods and services, based on user demographics and purchase trends. This could then be used to drive future revenue, based on the analysis of the product groups and preferred purchase patterns that have been identified within the primary data.

The eServices company will need to create a marketing strategy that focuses on both the functional and non-functional aspects of the data. For example, companies need to understand the demographic and usage results, as well as what enablers would encourage the user to use eCommerce, like any other commercial enterprise, whether Internet based or bricks and mortar.

7.6 Limitations of the study

As with most complex and comprehensive research models, it is difficult to incorporate all iterations of the variables; to try would only create a research instrument that would become problematical and potentially have a high completion

rate failure. Therefore, it was important to design the research instrument in such a way that it was able to gather the required information without risking the veracity of the primary data. This said, the research instrument could have been made shorter by potentially removing the eBanking portion. Conversely, there was considerable insight obtained by comparing the individuals who partook in:

- eCommerce but not eBanking;
- eBanking but not eCommerce;
- Both eBanking and eCommerce; and
- Neither eBanking nor eCommerce.

However, the research and analysis of the above attributes could be the focus of future research within this subject.

In regards to future research, the following changes should be considered to enhance the research methodology and approach:

- Ensure that the research question on the questionnaire is clear and concise, written in simple English, noting that English in Dubai is typically (over 97%) a second or third language;
- When developing a project plan, take into account that in summer there is a mass exodus from the UAE. Academic organisations, for example, generally break at the end of June through to the beginning of September. Due to the heat of the summer months, many expatriates also go back to their home country on leave;
- If time had permitted, the researcher would have interviewed UAE local eCommerce organisations to understand their business plans and motivations; and
- Although the researcher approached, through authorised channels, approximately 4,000 - 4,500 UAE Nationals only a very small percentage replied to the questionnaire. This could have been due to the fact that they were not comfortable with the English terminology within the questionnaire. An English and Arabic version with the pick box answers in English might have solicited more response; and
- The researcher would probably also shorten the size of the question pool within the questionnaire, as 64 questions may have been too many. However, on average, the questionnaire took no more than 15 minutes to complete.

7.7 Areas of future research

Numerous areas of future research arise from the study undertaken. The importance of culture is the most prominent finding from the current research and further aspects of culture and acceptance of all types of eServices could be beneficial. This could inform whether other factors are related to, or form part of the cultural aspects.

A similar study with data collected from another Emerging and Developing Economy could provide a valuable comparison and validate the process and findings from this research. Differences would provide an interesting area of further investigation.

Case studies and lessons learned from government and commercial organisations would provide a more informed situation, particularly as essential services, controlled by either government or non-government organisations, move to electronic means of distribution, delivery and management. Although finite in their generalisability, case studies can provide guidance to organisations in associated industries and endeavours, and contribute to a much bigger picture, aiding decision makers at all levels.

It would could also be academically valuable to focus on a single eService for Emerging and Developing Economy, such as eCommerce, eBanking, eAuction, eGovernment and Social networking eService providers.

This would provide a highly focused and in-depth review and analysis of these individual eServices and their perceived usefulness to the residents of an Emerging and Developing Economy.

This study could provide a valuable tool for those companies who already have an eCommerce presence in the Dubai, as well as those organisations contemplating setting up a new eServices venture within the region.

GLOSSARY OF TERMS

The following glossary terms have been collated from Smartstate (2010), Galileo Communications Incorporated (2010a), Whatis.com (2010b) and Zelmer (1996).

ACH (automatic check handling): A form of electronic payment. Funds or payments can be transferred electronically in two ways: by wire transfer or through an automated clearinghouse. Wire transfer is an online, real-time payment system designed to handle large-dollar, time-critical payments, mostly between large banks. ACH, in contrast, is designed to be an 'electronic check.' It is typically used to process high volumes of relatively small-dollar payments for settlement within one or two business days. ACH transactions are settled in a manner similar to the way checks are settled: The clearinghouse takes all ACH files received daily from its member banks, sorts them by the originating bank (the bank where the check was cashed or deposited) and the paying bank (the bank against which the check was drawn), totals the accounts, and credits or debits appropriate accounts accordingly.

acquiring bank: The bank that provides an e-commerce business with its credit card processing account. This bank sends credit card and purchase information from e-commerce transactions to a credit card association (such as Visa and MasterCard), which forwards it to the issuing bank.

ADSL (asymmetric digital subscriber line): A communications protocol for connecting computers and other electronic devices to a network, such as the Internet. ADSL offers more bandwidth than current telephone modem connections. ADSL can operate over most existing telephone lines but is currently available in only a few areas and generally costs more.

affiliate programs: Programs (sometimes called associate or commission-based advertising programs) designed to drive targeted traffic to your site. They typically pay a commission based on purchases made by traffic sent from you, the referring site.

API (application program interface): The specific method prescribed by a computer operating system, or by another application program, by which a programmer writing an application program can make requests of the operating system or another application. Unlike a GUI (graphical user interface), which is a direct user interface, the API interfaces with an operating system or a program.

ASP (active server page): An HTML page that includes one or more scripts, or small embedded programs, that are processed on a Microsoft web server (Internet Information Server) before the page is sent to the user. Typically, the script in the web page (at the server level) uses input from a user's request to access data from a database and then builds or customises the page before sending it to the requester.

authorisation: In multi-user computer systems, a system administrator defines for the system which users are allowed access to the system and their individual privileges of use (such as access to certain file directories, hours of access, amount of allocated storage space, and so forth). When users log in to a secured computer operating system or application program, the system or application identifies what resources the user can be given during this session. Authorisation can mean both the preliminary establishment of permissions by a system administrator and the actual checking of the permission values that have been set up while a user is requesting access. On the Internet, authorisations are defined for anonymous users that are accessing a system via the Internet.

AVS (address verification system): In 1996, VISA/MasterCard headquarters introduced a new regulation requiring all businesses who manually key in the majority of their credit card transactions to have a special fraud prevention feature on their credit card processing equipment. This feature is referred to as an address verification system (it checks to see that the billing address given by the customer matches the credit card). If you opt not to use AVS, VISA and MasterCard will not support your transactions and will charge you an additional 1.25% on those sales.

B2B: B2B (business-to-business), also known as e-biz, is the exchange of products, services, or information between businesses rather than between businesses and consumers.

B2B websites can generally be sorted into:

Company websites, since the target audience for many company websites is other companies and their employees. Company sites can be thought of as round-the-clock mini-trade exhibits. Sometimes a company website serves as the entrance to an exclusive extranet available only to customers or registered site users. Some company websites sell directly from the site, effectively e-tailing to other businesses.

Product supply and procurement exchanges, where a company purchasing agent can shop for supplies from vendors, request proposals, and, in some cases, bid to make a purchase at a desired price. Sometimes referred to as e-procurement sites, some serve a range of industries and others focus on a niche market.

Specialised or vertical industry portals that provide a 'subWeb' of information, product listings, discussion groups, and other features. These vertical portal sites have a broader purpose than the procurement sites (although they may also support buying and selling).

Brokering sites that act as an intermediary between someone wanting a product or service and potential providers. Equipment leasing is an example.

Information sites (sometimes known as infomediary), which provide information about a particular industry for its companies and their employees. These include specialised search sites and trade and industry standards organisation sites.

B2C: short for business-to-consumer, or the retailing part of e-commerce on the Internet. It is often contrasted to B2B or business-to-business.

backbone: In a hierarchical network, the backbone is the top level, employing high-speed data transmission and serving as a major access point; smaller networks connect to the backbone.

bandwidth: The amount of electronic data that can be transferred through an electronic connection in a given time. For modems connected by telephone to the Internet, the modem's speed represents the maximum possible bandwidth of the connection, such 56.6 Kps (kilobits per second). Competent website operators strive to keep the size of web page files low to conserve bandwidth and speed downloading.

bank card: A plastic card that is widely accepted by merchants as a result of a standard set of rules for the authorisation of its use, clearing, and settlement of transactions, used to credit an account for processing a sales transaction. The most common bank card is a credit card. Transactions are usually not profitable for amounts of less than \$5 (US); micropayment schemes are designed for much smaller increments of payment.

batch: A collection of credit card transactions saved for submitting at one time, usually each day. Merchants who do not have real-time verification systems must submit their transactions manually through a POS terminal. Batch fees are charged to encourage a merchant to submit his or her transactions at one time, rather than throughout the day.

browser: A software program used for locating, requesting, and displaying web pages. Examples include Netscape Navigator, Microsoft Internet Explorer, and Opera.

capture: The submission of a credit card transaction for processing and settlement. POS terminals and real-time processing software capture transactions to submit to merchant account providers or credit card processors.

cardholder: A person or company who has an active credit card account with which transactions can be processed.

cascading style sheets (CSS): A method used to attach styles such as specific fonts, colours, and spacing to HTML documents. Because they cascade, some elements take precedence over others.

CFR (cost and freight): Indicates that a quoted price includes the cost of the goods and transportation charges but not of insurance.

CGI (common gateway interface): A way of interfacing computer programs with HTTP or web servers, so that a server can offer interactive sites instead of just static text and images.

CGI script: A program that is run on a web server, in response to input from a browser. The CGI script is the link between the server and a program running on the system; for example, a database. CGI scripts are used with interactive forms.

chargeback: A chargeback occurs when a card holder disputes a credit card transaction with his or her credit card issuer. The card issuer initiates a chargeback against the merchant account. The amount of the disputed transaction is immediately withdrawn from the merchant's bank account, and the merchant has 10 days in which to dispute the chargeback with proof of purchase, signature, proof of delivery, etc. A chargeback fee is usually assessed to the merchant on top of the actual transaction. See also retrieval request.

CIF (cost, insurance, and freight): A term indicating that a quoted price includes the cost of the goods, insurance, and transportation charges.

client: The computer in a client/server architecture that requests files or services. The computer that provides services is called the server. The most common types of client on the Internet are computers running browsers or eMail programs. The client may request file transfer, remote logins, printing, or other available services. The client also means the software that makes the connection possible.

commerce server: A web server that contains the software necessary for processing customer orders via the web, including shopping cart programs, dynamic inventory databases, and online payment systems. Commerce servers are usually also secure servers.

cookies: Small files that are automatically downloaded from a web server to the computer of someone browsing a website. Information stored in cookies can then be accessed any time that computer returns to the site. Cookies allow websites to personalise their appearance by identifying visitors, storing passwords, tracking preferences, and other possibilities.

credit card: A bank card establishing the privilege of the person to whom it is issued to present it as payment to a merchant; the card bearer must reimburse the credit card company the amount of the sale. Credit card transactions are usually not profitable for amounts of less than \$5 (US); micropayment schemes are designed for much smaller increments of payment.

credit card processors (or third-party processors): Merchant services providers that handle the details of processing credit card transactions between merchants, issuing banks, and merchant account providers. Website operators usually must first establish their own merchant account before contracting for credit card processing services.

crawler: See robot.

cXML (commerce XML): A new set of document type definitions (DTD) for the XML specification. cXML works as a meta-language that defines necessary information about a product. It will be used to standardise the exchange of catalogue content and to define request/response processes for secure electronic transactions over the Internet. The processes include purchase orders, change orders, acknowledgments, status updates, ship notifications, and payment transactions.

database: A file or file system containing organised information and, most commonly, a filing and retrieval system for storing information. Most database software also includes tools for data analysis. Examples of database software include Oracle, Sybase, and Microsoft Access.

DCS (destination control statement): A document that accompanies nearly all commercial shipments that declares the shipment's contents are licensed for export to a particular destination. The anti-diversion clause in the DCS precludes the diversion of the shipment to any other destination.

DDS (digital data storage): debit card: A financial instrument used by consumers in place of cash. Unlike a credit card, debit card purchases are deducted automatically from the cardholder's account, like a check. Visa and MasterCard now offer debit cards through banks and other financial institutions.

dHTML (dynamic HTML): An extension of HTML that gives greater control over the layout of page elements and the ability to have web pages that change and interact with the user without having to communicate with the server. The three components of DHTML pages are HTML, Java script, and cascading style sheets.

digital signature: A digital code that can be attached to an electronically transmitted message that uniquely identifies the sender. Like a written signature, the purpose of a digital signature is to guarantee that the individual sending the message really is who he or she claims to be. Digital signatures are especially important for e-eCommerce and are a key component of most authentication schemes.

digital wallet: A consumer account set up to allow e-commerce transactions through a particular credit card processing system. Before the consumer can make a purchase, he or she must first establish an account with the credit card processor, who provides an ID and password. These can then be used to make purchases at any website that supports that transaction system. CyberCash's 'Digital Coin' system is an example of a digital wallet system.

discount rate: A percentage fee paid to the merchant account provider or ISO for handling an electronic transaction. Most web merchants pay between two and 10 percent of their revenue from online credit card or electronic check orders.

domain: A designation for particular location on the Internet. A domain, for example 'MerchantWorkz.com,' contains files that make up the content of web pages under that address. MerchantWorkz.com/intro.htm and MerchantWorkz.com/report3.htm are different web pages located within the same domain. Domain names are associated with IP addresses.

download: To transfer files or data from one computer to another. To download means 'to receive'; to upload means 'to transmit.'

e-cash: A trial form of electronic funds transfer over the Internet (and soon by eMail). The e-cash software stores digital money, signed by a bank, on the user's local computer. The user can spend the digital money at any shop accepting e-cash, without the trouble of having to open an account there first, or having to transmit credit card numbers. The shop just has to accept the money, and deposit it at the bank. The security is provided by a public key digital signature.

eCommerce: The processing of economic transactions, such as buying and selling, through electronic communication. E-commerce often refers to transactions occurring on the Internet, such as credit card purchases at websites. See also Internet commerce.

EDC (electronic data capture): The use of a POS terminal for validating and submitting credit card transactions to a merchant account provider or other credit card processor. In online credit card processing, software takes the place of the POS terminal.

EDI (electronic data interchange): EDI is a global computer network, separate from the Internet, used to handle financial transactions between banks and other institutions.

EFT (electronic funds transfer): Transfer of money initiated through electronic terminal, automated teller machine, computer, telephone, or magnetic tape. In the late 1990s, this increasingly includes transfer initiated via the web. The term also applies to credit card and automated bill payments.

EMC (export management company): A firm that provides exporting services to other firms. The export management firm will either take title to act as an intermediary merchant or provide export management services in exchange for fees or a commission.

euro: The common currency shared by most of the members of the European Union (Britain, Greece, and Denmark are not participating). Introduced in January 1999, the euro will eventually replace national currencies such as the German mark, French franc, and Italian lira.

export license: Permission granted to ship a product to a foreign recipient. In the US, export licenses are either general licenses or IVLs (individual validated licenses).

e-zine: A regular publication on some particular topic distributed in digital form, chiefly now via the web but also by eMail or floppy disk.

factoring: The purchase of debts owed, or 'accounts receivable', in exchange for immediate payment at a discount. In e-commerce, the term is often applied to ISOs that offer to process credit card transactions through their own merchant account rather than through an account established by the merchant, in exchange for a percentage of the transaction or other fee. Factoring of credit card debt is illegal.

FAQ (frequently asked questions): A list of the answers to frequently asked questions, usually questions asked by visitors to a website.

file compression: You can use PKZIP, ZipIt, gzip, or another compatible archiver to compress a file (to code the data in it in a way that makes it more compact). Compressed files save storage space and are faster to transmit.

freight forwarder: A firm that handles export shipments for other firms.

front end: The user interface that appears on a web page and allows a visitor to the site to interact with dynamic features, including databases, shopping cart programs, and online purchase processing software.

FTP (file transfer protocol): A set of standard codes for transferring files over the Internet. FTP is usually used for retrieving large files or files that cannot be displayed through a browser. Windows FTP and Fetch are examples of FTP software.

gateway: A device that connects two computer networks that use different protocols. It translates between protocols so that computers on the connected networks can exchange data. For example, commercial online services often have gateways for sending eMail to Internet addresses.

gateway page: Also known as a 'jump,' 'doorway,' or 'bridge' page. In order to optimise a website's ranking with search engines, some Webmasters build gateway pages, pages customised to each search engine with specific meta tags and keywords. These pages are intended to appeal to search engine robots, and are not always visible to customers who visit the website.

general license: A declaration by the U.S. Bureau of Export Administration that permits the open export of certain non-strategic goods and services to designated countries. Exporters of these goods need not acquire an IVL (individual validated license).

GIF (graphic interchange file): A file type that contains a graphic, photo, or other image. GIFs are commonly found on the web, along with another graphic file format, the JPEG. GIFs tend to take less memory and bandwidth than JPEGs, and can contain animation. JPEGs offer greater image clarity, especially for photo images.

holdback: A portion of the revenue from a merchant's credit card transactions, held in reserve by the merchant account provider to cover possible disputed charges, chargeback fees, and other expenses. After a predetermined time, holdbacks are turned over to the merchant. Note: Merchant account providers almost never pay interest on holdbacks.

HTML (hypertext markup language): A set of codes that determine how a web page will appear, including graphics, links, and text characteristics. Other code sets that build on HTML include dHTML, VRML, and XML.

HTTP (hypertext transfer protocol): The protocol most often used to transfer information from web servers to browsers, which is why web addresses begin with 'http://.'

ICS (Internet commerce services): The services an Internet commerce provider offers to enable clients to handle many facets of their business on the Internet.

ICT (information and communications technology - or technologies): Is the umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the US.

interchange: A standard format for sharing or transferring data electronically between parties that do not share a common application. Usually a format that is platform-independent is agreed upon as a standard. Examples of common interchange formats include EDI (electronic data interchange), ASCII (American Standard Code for Information Interchange), and GIF (graphics interchange format).

Internet commerce: A broad term covering all commercial transactional activities on the Internet. Internet commerce can range from vendors selling software from a web storefront (website) to large corporate procurement systems using an Internet-based VPN (virtual private network) to deal with trading partners. Internet commerce is not synonymous with e-commerce, which covers all electronic commercial activities.

IP address (Internet protocol address): A designation for a particular location on the Internet, such as '140.23.719.6.' IP addresses are associated with domain names.

ISO (independent service organisation): A firm or organisation that offers to process online credit card transactions, usually in exchange for transaction fees or a percentage of sales. Merchants must generally establish a merchant account before contracting for ISO services, although some ISOs claim not to require separate merchant accounts. See also factoring.

ISO 9000: A set of standards for electrical and electronic products, formulated by the International Standards Organisation. Product quality standards in most nations must either meet or exceed ISO 9000 standards.

ISP (Internet service provider): A firm that provides access to the Internet, including web browsing and eMail. ISPs often offer connections that can be accessed by dialling a telephone number through your computer's modem.

issuing bank: The bank that maintains the consumer's credit card account and must pay out to the merchant's account in a credit card purchase. The issuing bank then bills the customer for the debt.

IVL (individual validated license): Written declaration by the U.S. Department of Commerce granting permission to export specified products to a specified foreign recipient. See also `general_license`.

Java: A programming language frequently used on websites. Some Java programs, or 'applets' are downloaded from the web server to the visitor's own computer, which then runs them. This distinguishes Java programs from other web programming languages, such as PERL, that reside and run on the web server (only the results are downloaded to the visitor's computer).

JPEG (or JPG): A file format used for storing graphic images, usually photographs. JPEG files are larger than GIFs of the same image but offer better colour control and clarity. See also GIF.

keyword: A word or phrase used in a search engine query, for example, to find web documents relating to a particular subject.

LAN (local area network): A network that connects computers that are close to each other, usually in the same building, linked by a cable.

MAP (merchant account provider): A bank or other institution that hosts merchant accounts and processes online credit card transactions. The term is also often used broadly to include any credit card processing service, including ISOs.

merchant account: A bank account established by a merchant to receive the proceeds of credit card purchases. By establishing a merchant account, the merchant bank agrees to pay

the merchant for valid credit card purchases in exchange for the right to collect on the debt owed by the consumer.

merchant bank: A bank that holds a merchant account. After a consumer buys a product using a credit card, the merchant bank places funds into a merchant account in exchange for the right to collect on the debt owed by a consumer. See also merchant account provider.

meta tag: A special HTML tag that provides information about a web page. Unlike normal HTML tags, meta tags do not affect how the page is displayed. Instead, they provide information such as who created the page, how often it is updated, what the page is about, and which keywords represent the page's content. Many search engines use this information when building their indices.

MP3: A digital audio compression algorithm that achieves a compression factor of about 12 while preserving sound quality. It does this by optimising the compression according to the range of sound that people can actually hear. MP3 is currently (July 1999) the most powerful algorithm in a series of audio encoding standards developed under the sponsorship of the Motion Picture Experts Group (MPEG) and formalised by the International Organisation for Standardisation (ISO). MP3 files (filename extension '.mp3') can be downloaded from many websites and can be played using software available for most operating systems (also downloadable), e.g. Winamp for PC, MacAmp for Macintosh, and mpeg123 for Unix.

merchant services provider: A bank, ISO, or other firm that provides services for processing financial transactions, usually credit card sales. Many MSPs provide merchant accounts, while others require their clients to establish merchant accounts on their own. Some MSPs claim that they do not require merchant accounts; this may indicate factoring, which is illegal in many areas. See also holdback.

micropayment: Very small charges, perhaps even less than a penny, processed through e-commerce systems. Until this time, e-commerce has been largely limited to purchases of \$10 (US) or more. With micropayments, however, e-commerce merchants can sell products for far lower prices, such as charging small fees for downloading documents or charging per click for online advertising. Micropayment systems are still largely experimental and not widely available.

monthly minimum: The minimum amount in fees and percentages charged by a merchant services provider in a given month. If account activity does not generate the monthly minimum, the account holder must make up the difference.

MOTO discount rate (mail order / telephone order discount rate): The discount rate charged by the merchant account provider for credit card transaction in which the actual credit card was not available to the merchant. MOTO discount rates are generally higher than swipe discount rates to account for the increased chance of fraud or non-payment.

multimedia: Is media and content that uses a combination of different content forms of media, including text, graphics, audio, video, etc.

network: A group of interconnected computers, including the hardware and software used to connect them.

nexus: The process used to determine if a company must collect sales tax in a particular state. Generally, this is determined by whether a company has a substantial physical presence in the state, i.e., a store, an office, a warehouse, or a similar physical structure.

payment gateway: The code that transmits a customer's order to and from a merchant's bank's transaction-authorising agent — usually a MAP (merchant account provider). See also payment gateway provider.

payment gateway provider: A company that provides code and/or software for an e-commerce site to enable it to transfer information from its shopping cart to the acquiring bank, and on through the rest of the credit card transaction. See also payment gateway.

Perl: Perl is a general-purpose programming language invented in 1987 by Larry Wall. With over one million users worldwide, it has become the language of choice for web development, text processing, Internet services, mail filtering, graphical programming, systems administration, and every other task requiring portable and easily-developed solutions.

PIN (personal identification number): An alphanumeric or numeric code used to verify the identity of an individual attempting to use a credit card, debit card, or other account

phishing: In the field of computer security, phishing is the criminally fraudulent process of attempting to acquire sensitive information such as usernames, passwords and credit card details by masquerading as a trustworthy entity in an electronic communication. Communications purporting to be from popular social websites, auction sites, online payment processors or IT administrators are commonly used to lure the unsuspecting public.

POS terminal (point of sale terminal): An electronic device used for verifying and processing credit card transactions. If the credit card is available, the merchant can swipe the card through the terminal. See also swipe discount rate and MOTO discount rate.

protocol: A set of rules that regulate the way data is transmitted between computers.

public key encryption: A method of encrypting electronic data. Developed to account for weaknesses in symmetric encryption, public key encryption does not require the transmission of decoding keys themselves.

recurring fees: Regular, usually monthly, charges for maintaining a merchant account. Recurring fees include the discount rate, transaction fees, statement fee, and monthly minimum.

real-time processing: The verification and processing of credit card transactions immediately following a purchase. Real-time verification on the web usually takes less than five minutes. Real-time verification is especially important for websites that sell products and services that consumers expect immediately, such as memberships to the site or software downloads.

reserve account: See holdback.

retrieval request: A retrieval request is what happens when a card holder cannot remember a credit card transaction, or the bank wants order information for some reason. The card issuer initiates a retrieval request, in which the merchant has 10 days to respond with the order information or the retrieval request will turn into a chargeback. There is usually a retrieval request fee issued against the merchant also in these cases.

robot: A software application that automatically finds and retrieves information from the web. Also called a 'spider' or 'crawler'.

SET (secure electronic transaction): A system for encrypting e-commerce transactions, such as online credit card purchases. Developed by Visa, MasterCard, Microsoft, and several major banks, SET combines 1,024-bit encryption with digital certificates to ensure security. SET is still in development.

settlement: A process of completing fund transfers so that all parties in a transaction are paid for their goods or services.

SSL (secure socket layer): A system for encrypting data sent over the Internet, including e-commerce transactions and passwords. With SSL, client and server computers exchange public keys, allowing them to encode and decode their communication.

search engine: A remotely accessible program that lets you do keyword searches for information/sites on the web.

secure server: A web server or other computer connected to the Internet that is capable of establishing encrypted communication with clients, generally using SSL or SET.

server: The computer in a client/server architecture that supplies files or services. The computer that requests services is called the client.

setup fees: Fees charged for establishing a merchant account, including application fees, software licensing fees, and equipment purchases.

shopping cart program: A software package that runs as part of a website to collect and record purchasing decisions by a visitor. Shopping cart programs are stored on web servers.

smart card: A plastic card containing a computer chip that can store electronic 'money'. Unlike a credit card, a smart card can only spend out the dollar amount its owner has already put into the card account. It is similar in function to a prepaid calling card but is available for all purchases.

spam: Unsolicited eMail. There are two common usages: 1) mass eMailing by commercial sites to recipients who have not requested any contact, and 2) eMail sent to intentionally annoy or harass the recipient, including crashing his or her computer by overloading its eMail capacity.

spamexing: Stuffing a web page full of words in the hope of making it high on the list for search engine robots. Sometimes a web page will have a list of many words, or the same word repeated many times, with the text in the same colour as the background. Spamexed web pages will be rejected by search engines.

spider: See robot.

swipe discount rate: The discount rate charged by a merchant account provider for transactions in which a credit card is available for inspection by the merchant. Swipe discount rates are generally lower than MOTO discount rates because the merchant can match signatures and perform other checks for fraud or misuse.

T-1 (also T-2, T-3): Commercial connections to the Internet. T-1 connections offer approximately 25 times the bandwidth of 56.6 Kps telephone modems.

tag: A code within a data structure that gives instructions for formatting or other actions. HTML documents are set up using HTML tags, which serve various functions, such as controlling the styling of text and placement of graphic elements and providing links to interactive programs and scripts.

tag line: A line of copy used in an ad that captures the theme of the advertisement or broader campaign and is placed prominently within it.

Technology diffusion: The dissemination of technical information and knowledge and the subsequent adoption of new technologies and techniques by users. Technology diffusion is a component in the broader innovation process.

terminal: An end-use device (usually with display monitor and keyboard) with little or no software of its own that relies on a mainframe or another computer (such as a PC server) for its intelligence. A variation of this kind of terminal is being revived in the idea of the thin client

or network computer. The term is sometimes used to mean any personal computer or user workstation that is hooked up to a network.

thin client: A simple client program (not required to know how to interpret and display objects much more complex than menus and plain text) or hardware device that relies on most of the function of the system being in the server.

transaction fee: A charge for each credit card transaction, collected by the MAP (merchant account provider) or ISO. Transaction fees usually fall between \$0.20 and \$1 (U.S.).

turnkey: A business solution in which the provider assumes total responsibility from design through completion of the project. For example, you can have a turnkey website (a complete site built according to your specifications), a turnkey e-commerce solution (which would include all the software and merchant accounts required to enable an e-store to accept credit cards), or a turnkey search engine submission service (which writes your keywords and submits your site to search engines and directories for you). Many consulting firms refer to themselves as turnkey solution providers, meaning that they can assess your needs and do all the coding required to build an entire e-commerce capable website.

turnkey application: Software that requires little or no modification when inserted into a website. In e-commerce, many MAPs (merchant account providers) and ISOs offer turnkey applications for processing credit card orders online.

URL (uniform resource locator): An address for a file (or page) located on the Internet, usually the web. Example: 'www.MerchantWorkz.com'.

VPN (virtual private network): A private network of computers that is at least partially connected by public phone lines. A good example would be a private office LAN that allows users to log in remotely over the Internet (an open, public system). VPNs use encryption and secure protocols like PPTP to ensure that data transmissions are not intercepted by unauthorised parties.

VRML (virtual reality modelling language, or virtual reality markup language): A specification for displaying three-dimensional objects on the World Wide Web. You can think of it as the 3-D equivalent of HTML. It is used to create the illusion of three-dimensional objects for onscreen virtual reality environments. The computer shows an apparently three-dimensional object from a certain position, and then creates the illusion of movement by gradually changing the viewpoint. The objects can be programmed to respond to mouse clicks.

Web host: A web hosting company (usually an ISP) leases server space and web services to companies and individuals who wish to present a web or e-commerce presence but do not wish to maintain their own servers. The servers are connected to the same fast Internet

backbone as the ISP. Cost structures are determined by the amount and complexity of services offered, such as scripting tools, credit card processing, etc.

Webmaster: The alias or role of the person(s) responsible for the development and maintenance of one or more web servers and/or some or all of the web pages at a website. The term does not imply any particular level of skill or mastery. The web master is often also the designer of some or all of the site's pages.

Web server: A computer dedicated to storing the various files that make up web pages and the protocols needed for communicating with other computers via the Internet.

Web (short for simply Web): The entire collection of files written in HTML and similar mark-up languages available on the Internet. Clients on the Internet use their browsers to request these files from web servers and then display them as web pages. The web is only a portion of the Internet; other parts include eMail communication and FTP.

XML (extensible markup language): A metalanguage containing a set of rules for constructing other markup languages. With XML, people can make up their own tags, which expands the amount and kinds of information that can be provided about the data held in documents. It enables designers to create their own customised tags to provide functionality not available with HTML. For example, XML supports links that point to multiple documents, as opposed to HTML links, which can reference just one destination each.

zip: See file compression.

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