Facilitating adoption of e-banking in Saudi Arabia through reduction of perceived risk in e-banking

A thesis submitted for the degree of Doctor of Philosophy

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2015

Abstract

A significant amount of work has been done over last one decade on identifying factors that influence adoption of e-banking among consumers. Despite a decade of research the same issues have been highlighted as influencing factors of adoption of e-banking and this is because the existing research has provided little practical guidance on how to address the issues highlighted in the researches in order to increase adoption of e-banking. This research aims to investigate one of the key factors identified as influencing factor of adoption of e-banking, perception of risk. This research looks at perception of risk in Saudi e-banking sector in detail, identifying the factors that affect the perception of risk and how to resolve this so as to reduce the perception of risk and increase adoption of e-banking. This research also considers the influence of cultural factors on perception of risk and adoption of e-banking.

This research adopts a pragmatist philosophy and mixed method design in order to provide sufficient depth and understanding of the findings to be of practical use. Data was collected using questionnaire surveys and focus groups in two stages. Based on the findings of the questionnaire survey the conceptual framework was validated. Then focus group interviews were conducted to obtain more insight into the responses and findings of the research. One of the contributions of the focus groups was identification of solutions to the problems that related to perception of risk.

This research finds security and financial risks are the key risks affecting perception of risk in Saudi e-banking sector. But in addition other risks such as transaction risk, time risk, and performance risks also influence perception of risk. In addition, this research finds that e-banking should be implemented considering the cultural dimensions in mind because cultural factors also have a significant influence on the perception of risk in Saudi e-banking sector. Based on the findings, this research proposes several solutions to reduce perception of risk in Saudi e-banking sector. The key recommendation is that e-banking channel should preserve some of the attributes of the brick and mortar channel which are valued high by Saudi customers such as one-to-one interaction.

Keywords: *E-banking in Saudi Arabia, perception of risk, adoption of e-banking in Saudi Arabia, culture and perception of risk, culture and adoption of new technology, factors affecting perception of risk, transaction risk, security risk, financial risk, performance risk, time risk, psychological risk, social risk*

Acknowledgement

This dissertation consummates my Doctor of Philosophy at the Brunel University. This would not be possible without the advice, assistance, cooperation and encouragement from a number of people. I would like to acknowledge their help and support.

First, I will like to thank the all mighty Allah for giving me the strength and courage during even the most difficult of times.

Next, I would like to express my sincere appreciation to my supervisor Dr George Ghinea, for his valuable comments and feedback which helped me in completing this research project. It would not have been possible for me to complete this research without his support.

I would also like to state the thanks to my friends. Without their love, support and encouragement this would not have been possible.

And the last but not least, a very special thanks to my parents, Thank you for making me believe that I can do anything I set my mind on. Thank to you for always being encouraging, supporting and reliable. I am greatly indebted to you for what you have done for me.

Contents

1. Introduction

1.1 Overview

Banks are a vital part of our society- they help in channelling the funds through the economy so as to provide vital capital to the businesses for operations while providing the customers with an opportunity to generate financial gains for themselves by participating in the financial system. Thus, banks help the society in maximising output of both capita and resources (WB, 2013). One of the most significant contributors of capital to the banks is its customers who deposit their hard earned money in the banks which banks can then lend to the individuals/ organisations in need (Haubrich and Santos, 2005). These customers are likely to entrust their capital with the most trusted banking service providers. One of the aspects of this trust in banking service is the safety of the capital but that is not all; customers expect the banks to allow them to use and transact their capital in the manner they wish. It may sound simple but banks provide a range of services to its customers and consequently banking operations are quite complex.

Inefficiency in banks' operations can cause a huge value loss to the whole economy as the costs of operations are passed on to the market. Thus, it is in the wider interest of the society that the banks operate at maximum efficiency. Thus banks need not only circulate capital through the economic system but must do so efficiently so as to maximise their usefulness for the system in which it exists. E-banking is a mean of improving this effectiveness and efficiency. As mentioned in chapter 1 e-banking allows the banks to provide wider range of services indiscriminately to all its customers at a lower cost, both for itself and for its customers. In this respect, e-banking is quite useful for the economy. E-banking is a relatively new channel of e-banking service which is significantly more efficient than the conventional brick and mortar channel of banking (Okeke, 2014). The increased usage of technology in the banking sector is aimed at improving efficiency and banks are adopting technology not only for back end operations but also for front end.

E-banking involves carrying out the money flow across the system using a centralised computer system which is not limited by time or space restrictions and which can operate at a cost much less than any other medium (Usta, 2005). E-banking allows banks to provide its

customers round the clock access to their capital along with a range of other services that the bans provide (Lee, 2009). Thus, customers are free to access any banking service from wherever they want and when they want as long as they have access to Internet, which is quite ubiquitous now with the arrival of fast Internet on the mobile phones (Rowley, 2006).E-banking channel provides comprehensive banking services with good quality and is based on the strategy of improving customer satisfaction and increase consumption of commission based services (Beheshti et al., 2012).

Internet penetration in human society has moved to a next level with the arrival of fibre optics, superfast broadband, 3G and other technologies. Adoption the Internet has been on the rise in developing nations as the infrastructure is being upgraded and demand is rising as well. One of the most significant outcomes of this increased Internet penetration has been the rise in the number of organisations adopting electronic channels for delivery of services (Farzianpour, Pishdar, Shakib and Toloun, 2014; Usman and Shah, 2013). These include both private and public sector organisations. Not only is the electronic channel more efficient but is also useful in terms of saving costs, reducing time to delivery, round the clock access, and geographic freedom for accessing services etc. These services are beneficial for both the service providers and the customers and in order to benefit from these services several industries are adopting electronic channel for service delivery .One such industry is the banking sector (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Zeng, 2012; Zhang et al. 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Farzianpour et al. 2011a, 2011b; Ruiz-Mafe et al., 2009). Banks are service based business-they provide monetary transaction and other kinds of services. Interestingly most of these services could be accomplished without face to face interaction and e-banking is quite interesting development because it allows banks to provide almost all the services online (Nasri and Charfeddine, 2012). This has been made easy with the arrival of plastic money.

E-banking channel has become extremely popular with banks worldwide because it provides numerous benefits to both, the banks and their customers (Shah et al. 2014; Masocha et al., 2010). Banks are service based businesses and the only way in which banks can compete with each other is by providing the best quality service and technology is a great tool to achieve that (Kundi and Shah 2009). As Rachwald (2008) comments, the level of usage of technology in the banking sector is already at an all-time high and it is likely to grow further with time.

Interest in e-banking has also been pushed ahead by the increased adoption of other e-services which has not only made people comfortable in using e-services but has also uncovered the huge potential of the electronic channel of service delivery (Nasri and Charfeddine, 2012).

E-banking is being widely adopted by both the banking service providers and the customers as it provides several benefits such as reduction in costs associated with face-to-face customer service, maintenance of brick and mortar branches, shortening of processing times, increased transaction speed, improved flexibility of how, when and where transactions are carried out etc. (Khan and Mahapatra, 2009; Angelakopoulos and Mihiotis, 2011). Banks benefit significantly from electronic channel adoption. For example, Kondabagil (2007, p. 6) estimates "direct costs of a banking transaction effected through branch, ATM and the Internet to be $1.27, $0.27 and $0.01 respectively." Similarly, the time saved in online transactions equates to roughly 1 percent of GDP in some countries (McEachern, 2009). It is estimated that online transactions save around 10 percent of the transaction time over transactions in brick and mortar branches. Moreover, transactions take up a large amount of staff time and with customers choosing to transact online banks can divert their resources towards other aspects of business (Khanfar, 2007; Turban et al. 2010) such as relationship and service management (Humphrey et. al., 2005; Masocha et al., 2010).

Similarly, customers can utilise the time they save from needing to travel to a bank branch to something which may generate positive value for them. In this manner, the e-banking channel improves efficiency. Customers can carry out a whole lot of their banking business online , such as paying off their bills, transfer funds, check balances, apply for loans etc. (Khan and Mahapatra, 2009; Angelakopoulos and Mihiotis, 2011). E-banking also allow banks to manage their relationship with the customers because informing the customers of changes in bank's offerings and providing them updates on new products and services has become quite easy and cost effective. This has created a whole well informed supply chain which maximises value for all participants

Consequently a large number of banks and their customers are adopting Internet banking to interact with each other and to carry out their business (Masocha et al., 2010). However, there are certain factors which affect people's perception of e-banking and consequently their use of e-banking. Ideally speaking, banks would prefer most of their customers use online channel due to its inherent benefits ;however, banks cannot push their customers to use the

online channel as this will simply result in loss of unwilling customers' business. In such cases, the best strategy for the bank is to understand the factors that affect people's perception and use of e-banking and identify any barriers amongst these factors. Banks can then target reduction of these barriers in order to increase adoption of e-banking. In order to be able to do so, banks must first generate sufficient knowledge of the inhibitors of e-banking (Nasri and Charfeddine, 2012).

Perception of risk has been found to be one of the key factors negatively affecting the adoption of e-services such as e-banking (see, for example, Farzianpour et al. Yoon ;2014 and Occeña, 2014; Nasri and Charfeddine, 2012; Masocha et al. 2011; Wei et al., 2010; Aleid et al. 2009; Al-Somali et al., 2009; Shih and Fang, 2006). Bauer (1960, cited in Bauer et al. 2005) introduced the concept of risk and associated risk with two parameters of customer action- uncertainty (that is, likelihood) and consequences (that is, impact). What is of concern is the perception of risk may influence the adoption of e-service more than the risk itself because of the psychometric perspective. Risk is, to some degree, tangible but perception of risk is mostly psychological and may be influenced by a number of intrinsic and extrinsic factors which may not be under an individual's control (Hsi-Peng et al, 2005). What is worrisome is that perception of risk for different individuals can be shaped by different factors and it may not be possible to manage all these factors different. Individual's own perception of risk determines whether the individual adopts a particular e-service voluntarily or not and this perception may be shaped by his/her personal unique circumstances, which may include for example, some past experiences (Nasri and Charfeddine, 2012). Service providers have invested millions of dollars in technological developments which are aimed at reducing the risks in e-banking sector. For example, there are better security measure son e-banking websites, authentication processes have been improved etcetera. The primary assumption behind adoption of such measures to reduce risk is that the reduction of risk will lead to rise in adoption of e-banking service. This may be true but only to a limited extent especially if considered in context of countries like Saudi Arabia where the perception rather than actual risks in e-banking may be driving consumers' behaviour. Evidence indicates that the high uncertainty avoidance characteristic of Saudi culture leads to greater inhibiting effect of perception of risk than the risk itself. For example, despite having a moderate penetration of internet, which gives access to e-banking services, a very small percentage of Saudi consumers use e-banking service (Eid, 2011).

Since our perception of risk drive us to take some irrational decisions, including lower adoption of technology despite its obvious benefits, it is essential for e-banking service providers to learn more about what drives the perception of risk among the consumers and adopt strategies which would help in reducing this perception of risk. This may include informing or educating customers, communicating with customers or some similar strategy or a combination of these. What is most critical is to rationalise the perception of risk, that is, to ensure it is linked with the reality (Usman and Shah, 2013).

Risk is often associated with something unexpected and hence it is difficult to capture this as an objective reality. With this in mind, most of the existing literature has looked at the notion of perceived risk which Yousafzai et al. (2003: 851) defined in the context of e-banking as "the potential of loss in the pursuit of a desired outcome from using electronic banking services." Thus, perceived risk is the uncertainty associated with possible negative outcomes in future as a result of using a product or service. Accordingly, Bauer (1967 cited in Bauer et al. 2005) suggests that perceived risk is affected by both perceived likelihood of occurrence and perceived impact if it occurs. As mentioned earlier, the impact of perception is quite significant as compared to the impact of the risk itself because humans often exaggerate the unknown yet perceived negative outcomes. Thus, perceived risk can have a greater impact on the adoption of e-banking than actual risks. Due to this reason it is essential to address the issue of perception of risk as a critical factor in enhancing the adoption of e-banking (Usman and Shah, 2013; Farzianpour et al. 2014; Yoon and Occeña, 2014).

There are a range of factors which may influence an individual's perception of risk. Since there is difference in factors which will influence different individuals' perception, it is essential that we consider the context of individual's perceptions. One of the problems with past researches is the elementary level consideration of perceived risks; for example, many researchers consider perception of risk same as risk itself when it comes to e-banking. For example, the question, "have you suffered any financial loss while using e-banking?" is related to risk itself and not perception of risk even though it is true that risk itself will have a great deal of impact on perception of risk. However, it is unwise to consider this as the only factor contributing to perception of risk as discussed in literature review chapter. This research aims to fill this gap by considering perception of risk as a superset of several influencing factors. This research aims to understand which factors would affect perceived risks in e-banking among Saudi customers. Next section provides more details on the rationale behind this research including the reason for selecting Saudi Arabia as case study.

1.2 Rationale behind the research

Banks provide banking service which includes depositing and withdrawing money, accessing different loan and other financial products and services etc. In other words, they maintain the money flow from capital providers (that is, depositors and lenders) to borrowers. Since there are a specific number of individuals with specific amount of money it is essential for banks to target as many depositors and borrowers as possible. This can only be achieved by providing superior customer service.

E-banking services include a range of services such as money transfers, paying bills, checking latest bank offers on different products, applying for loans and other products online etc. (Usman and Shah, 2013; Kolodinsky et al., 2004). E-banking allows banks to provide customers with comfort and privacy. Most researchers have agreed that e-banking provides a range of benefits to customers. It also helps the banks by reducing transaction costs. It is for this reason, adoption of e-banking is considered useful and value creating for all (Lee et al., 2013a). For example, in Saudi context it presents certain sections of the society such as the women, to gain access to banking services. Saudi culture prohibits interaction between women and men except within the family. Also women are not allowed to travel on their own which means that they are dependent on men for carrying out their bank transactions. This leads to two social problems- it increases the burden on the men who are expected to work as well as complete other banking tasks. Secondly, it limits woman from starting their businesses as they will need to travel to banks or depositing cash (Nugroho and Chowdhury, 2014; Tambunan, 2012). E-banking can allow these women to access banking services without violating religious values and can thus, empower Saudi women. For example, woman can start their online businesses from home accepting payments online (Nugroho and Chowdhury, 2014; Tambunan, 2012). This is likely to help Saudi economy significantly because with restrictions on carrying out banking transactions, the power of Saudi women entrepreneurs is largely underutilised. E-banking will help in ensuring that women, no matter what they wish to use e-banking for, would not feel any restrictions in using banking services. It is also useful for other sections of Saudi population such as the elderly who are restricted in accessing conventional brick and mortar channel of banking. For many elderly people travelling to bank is not possible forcing them to rely on other to carry out banking

transactions. Thus, e-banking can help a large segment of population in accessing e-banking services opening up new possibilities for them.

According to the statistics published by Pew Research (2013), the number of internet users rose sharply between 2000 and 2008 but this growth has slowed down considerably after that. It is also found that in certain parts of the world such as Saudi Arabia the adoption of e-banking services remain low despite a moderate to high level of internet penetration (Eid, 2011; Al-Ghaith et al. 2010). For example, Saudi Arabian population has an internet penetration of above 50 percent but Eid (2011) estimated that only 11 percent of Saudis use e-banking. This means that just be providing access it cannot be assumed that people will start using e-services. In certain cases, it requires a push and which can come only through reduction of barriers such as perceived risks in e-banking (Eid, 2011; Al-Ghaith et al. 2010; Al-Somali, 2009). It is absolutely essential for Saudi banks to increase adoption of e-banking because if they fail to do so their operational inefficiency will be at levels which will make it almost impossible for these banks to sustain in the long run. Thus researchers (for example, Bauer and Hein, 2006; Lee, 2009; Farzianpour et al. 2014) recommend that service providers and researchers should start addressing the barriers to adoption rather than merely focusing on facilitators, in order to increase adoption of e-banking.

According to Crespo and Rodrigues (2008: 1) "the essence of e-banking, as in e-commerce, is reliable transaction delivery in a fast-changing environment involving people, processes, and an operational or business infrastructure." One of the problems with e-banking systems is their inherent complexity (Shahar 2002). This complexity combined with lack of adequate guidance on implementation of e-banking systems has proved to be a challenge difficult to overcome (Yoon and Occeña 2014). For example, it is reported that "75% of e-banking initiatives fail during the operational phase" (Browns et. al. 2007). Technological innovations will not provide any real benefits if these innovations cannot be converted into practical solutions for real life problems and for this to happen, it is extremely important to have guidelines and standards (Yoon and Occeña 2014).

While identification of the barriers to adoption of e-banking is definitely a valuable starting point for increasing the possibility of success of e-banking projects, it cannot be considered useful if it does not result in actionable outcome. The problem with numerous studies is that different researchers have used different models and have thus uncovered different factors

into adoption of e-banking but there has been very limited research into compiling these findings together in one framework.

Adoption of e-banking has gained significant interest from the researchers within last one decade or so. Consequently researchers have developed and tested a number of theories for e-services in general and e-banking in specific. Most commonly used of these theories for e-banking are: Technology Acceptance Model proposed by Davis et al, (1989) (Cheng et al, 2006), Theory of Reasoned Action proposed by Fishbein and Ajzen (1975) (Gefen et al., 2003) and Theory of Planned Behaviour proposed by Ajzen (1991) (Shih and Fang, 2004) originally. These theories explain which factors contribute to an individual's decision to engage in a particular behaviour such as adoption of a new technology. However, the research became stagnant from there on. Existing research has provided little practical benefits; for example, some of the constructs used by researchers are quite arbitrary in practical terms. For example, UTAUT model uses a construct "perceived usefulness." Usefulness of e-banking is a perceptual term and despite acknowledging this most researchers continue to use objectivist ontology and positivist philosophy to investigate perceived usefulness in e-banking. One of the key issues with existing researches is that their extremely broad scope which means researchers fails to focus on specific issues which could lead to possible solutions. This research aims to fill this gap by looking specifically at perceived risks, what factors influence it and how it can be reduced to increase adoption of e-banking. Furthermore, there is lack of research on the inhibitors which inhibit the adoption of new technologies.

This research will take one step further than the research into the user related factors affecting adoption of e-banking and will aim to investigate deeply into the factors that may affect adoption of e-banking in practice. In particular this research will focus on the inhibitors affecting adoption of e-banking. While there is a general consensus that perceived risks will and do affect adoption of e-banking but none of the researchers have looked deeply into how perceived risks could be reduced to increase adoption of e-banking (Farzianpour et al. 2014).

E-banking implementation is already done using some frameworks but it is important to revise the existing frameworks used in the industry because:

- These frameworks were developed when most of the user related barriers to adoption were not known which means that most of these frameworks do not directly address these issues.

- These frameworks are too technical which means that these frameworks ignore the soft issues (e.g. culture, user perception, internet penetration etc) and their impact on the other dimensions of the system.
- These frameworks which have been mainly developed for the developed nations may not be suitable for the developing nations such as Saudi Arabia where the socio-cultural dimensions are different from the developed nations. In addition, internet penetration and English education levels are very low as compared to the developed nations and hence user perception towards e-banking in developing nations may differ significantly from the individuals in developed nations.
- Most of the existing frameworks have been developed in context of western nations. Although these have been applied to developing nations as well but none of the researchers have actually developed a framework for non- western countries which have different socio-cultural environment than developed countries. Realising the significance of cultural factors this research includes culture as a likely determinant of both perception of risk and adoption of e-banking. If this assumption is found to be true, it would mean that e-banking strategies developed on the basis of research conducted in western nations must be modified according to the cultural context of the developing nations where these are being applied.

1.3 Internet banking

Internet banking was first introduced in the United States in 1995 and later it spread to Europe, and recently it has grown significantly to the rest of the world. As the Pew Research (2013) estimates indicate use of e-banking has risen steadily among Internet users in last decade.

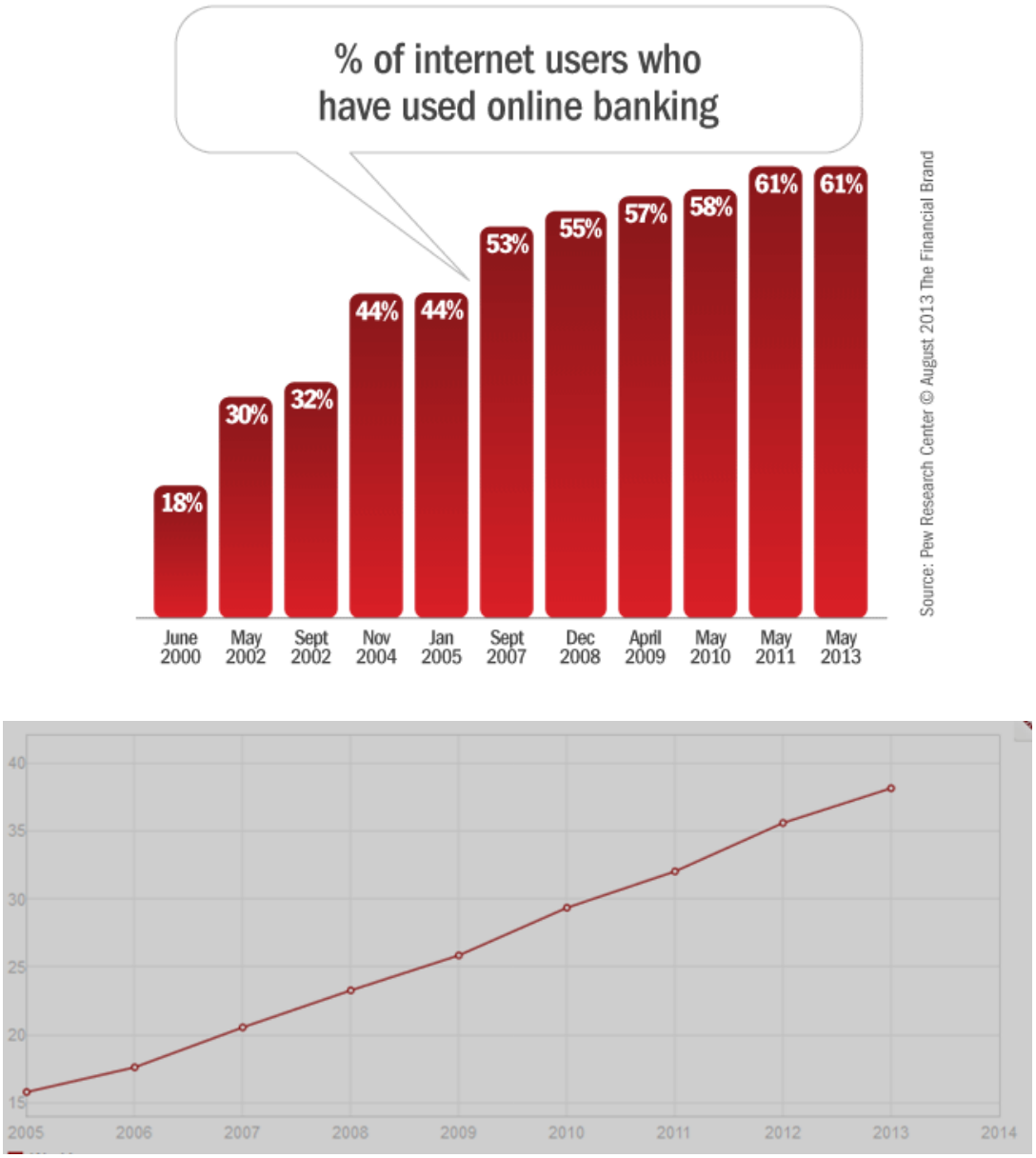

Chart 1.1: Percentage of Internet users worldwide. Source: World Bank (2014)[1]

Combining this with the data on the total number of Internet users in the world as estimated by the World Bank (2014)) indicates that the number of e-banking users have increased steadily in last 10 years. In past researchers such as Littler and Melanthiou (2006) had also predicted a rapid growth in the number of e-banking users worldwide. While Internet banking has been accepted and showed phenomenal growth and potential in the western world, the same cannot be said for developing countries like Saudi Arabia (Eid, 2011; Al-Ghaith et al. 2010).

[1]http://data.worldbank.org/indicator/IT.NET.USER.P2/countries?display=graph

Interaction between companies and customers is increasingly being determined by the proliferation and advancement in technology-based systems (Ibrahim et al, 2006; Bauer et al., 2005; Parasuraman and Zinkhan, 2002). The ever-changing world of Internet banking provides customers with several conveniences while also making it more efficient for the banks to reach out to their customers with offers and services. Many financial organizations today have begun to take initiatives to be more customer focused. A key component of their initiative is the implementation of the CRM or the customer relationship management software (Peppard, 2000). With the implementation of these systems and amenities electronic services are proving to be a viable method for communications between service providers and their customers (Rotchanakitumnuai and Speece, 2004).

Customer acceptance over seller offering is a greater determinant in the prolixity of electronic banking (Mols et al., 1999) and even though customer acceptance seems to play an important role, there have been only a few empirical studies on the subject (Sathye, 1999) therefore there is insufficient information about how exactly customers perceive and evaluate electronic services. Furthermore, Lee and Lin (2005) stated the need for further research into understanding customer perception of service due to the influence of Internet services (Ibrahim et al, 2006).

Evidently Internet banking has grown at a great speed; however there is no evidence that suggests that it is in fact accepted among customers. Robinson (2000) hypothesized that fifty per cent of the people who try Internet banking will eventually not remain active users, while Weeldreyer (2002, cited in Safeena, Abdullah and Hema, 2010) claims that Internet banking is not living up to all that it is made up to be. Moreover the highly publicised security failures of Internet banking may also have something to do with the lack of acceptance.

Banks are aware of the possibilities that the Internet opens them up to – moving from a local to a global frontier perhaps (Mavri and Ioannou, 2006). Internet banking allows customers to access their bank accounts and other services without having to deal with the hassle of mails, faxes, signatures, telephone conversations among other formalities (Thulani et al, 2009; Henry, 2000 cited in Dube et al. 2009) and simply put, the bank can provide information to the customers about its services on a single web page (Ibrahim et al, 2006). Through these services, customers can carry out majority of their banking services (transfers, balance reporting, bill payments, etc.) without having to leave their homes and offices (Ndlovu and Sigola, 2013). Banking online also greatly reduces the costs while still maintaining or even

enhancing the quality customer service (Hua, 2009). It is a universal connection that can be accessed from any computer worldwide (Thulani et al, 2009) and an innovation that allows a person to handle their own banking transactions without visiting the banks.

The challenge lies in the fact that banks need to improve the perception of customers to be able to attract more customers. One way many banks have accomplished this is by providing their customers with a wide array of convenient and accessible online services. They key determinant of the success of e banking are now customer satisfaction and retention (Bauer et al, 2005). Service organizations too have began to rely increasingly on technology to enhance the customer experience by improving the quality, delivery and reduce costs simultaneously (Farzianpour et al. 2014; Lee et al. 2013a; Vize et al., 2013; Beheshti et al., 2012; Ibrahim et al, 2006; Lee and Lin, 2005; Bauer et al, 2005; Gounaris et al, 2010). With time, growing education and awareness Internet banking will see a huge acceptance. People are beginning to realise the advantages of Internet banking and are increasingly accepting and shifting to it as well; its appeal lies in the low cost as well as easy access it provides.

With Internet banking it had become increasingly easy to open an account, transfer money, get invoice information and pay bills electronically (Farzianpour et al. 2014). Banks offer a few different kinds of services, some offer Internet banking with a physical branch location or a website with services while other offer "imaginary", "without branch" or "only Internet" banking (Huang et al. 2010).

There are different forms of online banking one that is web-based and allows a customer access to their account whenever they use the Internet while the other is where the customer must use the banks server via dial-up to access the account- this is done through an extranet, a direct connection between the bank and its customer.

Thulani et al (2009), Yibin (2003) divide Internet banking into three functional level/kinds: Informational, Communicative and Transactional.

- Informational (Websites) - The first level of Internet banking where in the bank has its marketing information on a standalone server. It is often a low risk informational system connected to the banks internal network.
- Communicative/Simple transactional (Websites) – while it allows some interaction between the bank's systems and the customer, the interaction is limited to e-mail,

account inquiry, loan application or static file updates (name and address). It cannot be used to transfer funds, etc.

- Advanced Transactional (Websites) - This level of allows customers to electronically transfer funds to/from their accounts, pay bills and conduct several other transaction online.

1.3.1 E-banking in Saudi Arabia

The traditional banking business has been significantly and inevitably impacted by the rapid technological development, leading to a rapid and unprecedented wave of change at global level. After becoming a member of the WTO, the Saudi Arabian banks seemed to face challenges from foreign banks, thus holding advantages in their advanced technology, stronger funds and modern management modalities. The most important reason for the survey of e-banking in developing countries is to increase it in other regions of the world (Eid, 2011; Al-Ghaith et al. 2010). Banks aim to improve their profitability by reducing operational cost by adopting technology based service channel. With this realisation a number of banks have started adopting Internet channel and consequently, the level of e-business on the planet has expanded significantly in last decade. However, data indicates that the adoption of Internet channel for online commerce and e-banking is still relatively slower as compared to the adoption of Internet for other means such as communication and knowledge exchange. It is believed that there are several contributing variables affecting adoption of e-banking in this regard (Lee, 2009) and one of the most critical one is perceived risks (Farzianpour et al. 2014; Lee et al. 2013; Vize et al., 2013; Huang et al., 2010).

Generally, perceived risk is not awarded a major role and has been generally overlooked by the researchers in the past. However, a new stream of researchers have started to investigate the impact of perceived risks on adoption of e-banking in developing countries like Saudi Arabia (Farzianpour et al. 2014; Lee et al. 2013; Vize et al., 2013; Eid,, 2011; Al-Ghaith et al. 2010; Al-Somali, 2009). This study will focus on identifying major risks and uncertainties associated with adoption of Internet banking, which is in the early stages of its market development in Saudi Arabia (Eid, 2011).

The number of Internet users in Saudi Arabia has been relentlessly expanding, this development has given the impulse and chances to worldwide and territorial e-trade. Web has led to high degree of variety in the acceptance and development of e-trade in distinctive locales of the world with diverse business environment, both infrastructural and financial.

However, there is an alternate side to this issue, since it changes lives and habits in unpredictable ways. Different studies have been directed and models created to recognize the diffusion of e-commerce in diverse cases as examined by Farzianpour et al. (2014); Okeke, (2014); Beheshti et al. (2012); Li (2012); Huang et al. (2010); Wu et al. (2011); Ruiz-Mafe et al. (2009). Existing studies present models that take a look at "infrastructure" (for instance, network equipment and programming, information transfers, item conveyance and transportations frameworks) and "administrations" (for instance, e-service frameworks, secure informing, electronic markets, and so forth.) as the essential diffusion variables.

Trust is another key issue identified as influencer of adoption of new technology. Numerous studies have also attempted to find correlations between trust and experience with a new system, concept, or relationships, including a correlation with the frequency of e-commerce activity. Other researchers have noted that trust may be significantly influenced by the culture of a given society being one of the critical issues that confront new businesses or utilize new business models like e-commerce (Kesharwani and Radhakrishna, 2013; Nicolaou et al. 2013; Kesharwani and Singh, 2012; Nasri, 2011). As indicated by Nasri (2011) findings, trust is the most critical long term haul hindrance in understanding the capability of e-commerce to customers. Also, trust is the key determinant that will focus the achievement or disappointment of numerous web organizations (Kesharwani and Singh, 2012; Nicolaou et al. 2013).

While some Middle East countries are technologically advanced, the rest of the Middle East countries are considered as the least technologically advanced nations in the world. Nonetheless, there are few experimental e-businesses still conducting studying in countries like Saudi Arabia (Shafei and Mirani, 2011). Research by Eid (2011), Al-Ghaith et al. (2010), Al-Somali (2009) have called for further research in the Middle East nations to examine both of facilitators and inhibitors of technology and telecommunication adoptions.

Since e-commerce channel is aimed at increasing the global reach of businesses, it is sometimes assumed that a single online store and configuration is sufficient to pull in clients' demand for firm's products/service. However, most studies have now recognised that

different consumer segments have different cultural backgrounds and hence different purchase behaviour. It is thus, essential for firms to investigate the hurdles in adoption of e-banking in context of their target customer segment.

According to Ziad et al. (2009) the latest report from the Middle East regions, e-commerce usage and growth is very limited as compared to the rest of the world, barring Africa. Thus, potential benefits that the Internet offered to business, creates an unprecedented opportunity to engage in national and international marketing campaigns that previously have been uneconomical.

This research criticises the past assumption that all individuals living in any location in the world have similar perceptions and expectations about the elements of online environment including confidentiality dimensions. This assumption is highlighted in ignorance of culture variable in most of the studies conducted on adoption of e-banking. Researcher's criticism is confirmed by researchers (such as Eid, 2011; Wu et al. 2012; Cyr, 2008; Talukder and Yeow, 2006; Peikari, 2010) who investigated the phenomenon in a cross-country context and found different results. Most of the past researches have been conducted in countries like US and UK which rank quite high in cultural dimensions such as individualism and low on uncertainty avoidance. However, culture in countries like Saudi Arabia rank quite low on individualism and high on uncertainty avoidance and hence the findings of studies conducted in western nations cannot be applied to culturally distant nations such as Saudi Arabia (Connolly and Bannister, 2007; Peikari, 2010). Additionally Talukder and Yeow (2006) state that there is a big difference in IT, particularly e-commerce, infrastructures between developing and developed countries and hence research into adoption of e-commerce in these countries should be conducted separately. A need to conduct more studies between the developed and developing nations and examine the differences on their perceptions about the attributes of online environment is therefore essential (Farzianpour et al. 2014; Okeke, 2014; Beheshti et al., 2012; Li, 2012; Huang et al., 2010; Wu et al. 2011; Eid, 2011).

1.4 Perception of risk

Every activity that humans engage in contains some form of risk and this ubiquity has led researchers to investigate how individuals perceive risk and how they respond to these risks. It will be wise to say that every individual has its own perception of risk and his/her own tolerance level and individuals tend to manage their risks according to their own perceptions (Farzianpour et al. 2014 However, the perception of risk does not equate to risk itself .(2013 because risk is governed by several uncontrollable factors whichmay alter the likelihood and/or impact of risk at any stage (Yoon and Occeña, 2014).

While individuals may choose different words to define it, risk, in principle, comprises of two attributes, impact and probability (Angelakopoulos and Mihiotis, 2011). It is essentially the possibility of occurrence of some event with negative consequences. Critics such as Rayner and Cantor (1987), however, disagree with this simplistic definition of risk and recommend that definition of risk should be broad, interactive to the level of societal level. Conceptually Risk has one non-debatable distinction with reality, that is, risk is merely about possibility of something happening and not the actual occurrence. Based on this distinction between reality and possibility, Rosa (2003: 56) defined risk as "a situation or an event where something of human value (including humans themselves) is at stake and where the outcome is uncertain."

Behaviour theories have discussed concept of risk extensively and in most of these theories the terms "risk" and "uncertainty" are often used interchangeably. What these behavioural theories also talk about is the concept of "perception of risk," which has a strong and deterministic impact on human behaviour. However, it is also agreed that risk is only psychologically constructed, that is, it is constructed by humans in their minds to signify our fear of the unknown. Since it is psychologically constructed, the perception of risk will depend significantly on the individual context, in which this psychological construction takes place (Koskosas, 2011). It is also to be noted that our perception of risk is not always based on facts. For example, individuals are far more scared of flying than driving even though the probability of accident while driving is far more than the probability of accident in airplane. This could be driven by our lack of control and knowledge about flying than driving. Our perception may also be driven by experiences of others around us even if we have not

experienced anything similar. For example, the perception of risk in e-banking may rise as a result of hearing of a friend or relative being defrauded even though it may have been a fault of the victim. Thus, individual perception is constructed on the basis of social and cultural learning and experiences and may not represent the whole truth (Koskosas, 2011).

The concept of risk perception started to get recognised in policy making arena in around 1960s. Later on it came to be considered as one of the most significant factors influencing adoption of technological innovations such as nuclear technology (Ndlovu and Sigola, 2013). Since then several researchers have attempted to understand perceived risk and what it means to different individuals. Currently there are two primary paradigms dominating the research on risk perception; the first paradigm is the 'psychometric paradigm' which is mainly linked with decision science and psychology discipline. According to the psychometric paradigm, risk is cognitively constructed by humans through a process of deciphering the signals it receives from their environment. Thus, risk may not be based on objective reality, is not independent of our own belief/perception and cannot be reliably and accurately measured (Slovic, 1992, cited in Koskosas, 2011). Risk is related to fear which is individual's self cognition in response to some type of threat which is not voluntary and not controllable. Thus, according to psychometric paradigm, risk is a subjectively created perception of the future uncertainty and its impact on individuals' welfare. This perception of formed as a result of the learning and experiences of individuals originating from individuals' socio-cultural, psychological, economic and institutional context. Another paradigm of risk, known as the "cultural paradigm" has also been discussed under sociology and anthropology disciplines. According to cultural paradigm, the subjective perception of risk is created not only by an individual's own experiences and learning but also the experiences and opinions of others, within the same socio-cultural context as them (Slovic, 1992, cited in Koskosas, 2011). Thus, while psychometric paradigm looks at construction of perception of risk at individual level, the cultural paradigm looks at the construction of perception of risk at the group level.

Two aspects that affect the construction of perception of risk are voluntariness and controllability (Okeke, 2014). Voluntariness refers to whether the individual took the risk voluntarily or was it forced to accept that risk. Controllability is about whether the individual is in control of the process which led to the emergence of the risk. These two aspects have a significant influence on individual's perception of risk with either being lower leading to rise in perception of risk (Schmidt, 2004).

Several researchers have looked at the impact of cultural context on construction of perception of risk and found that individuals from different cultural backgrounds exhibit difference in perception of risk (Alqahtani, Al-Badi and Mayhew, 2012; Eid, 2011; Wei et al. 2010; Al-Ghaith et al. 2010; Al-Somali et al. 2009). One of the most notable works in this regard is that of Geert Hofstede who proposed a national culture evaluation framework. He included, uncertainty avoidance, as one of the key aspects of his culture evaluation framework. Uncertainty avoidance is directly linked to individual's perception of risks and when individuals have a negative perception of risk (in terms of either of both, likelihood and impact) then they tend to avoid taking risks. On the other hand, certain societies such as Western societies tend to be more risk averse and do not have a bad perception of risks i.e. they consider risk as part of life and consider it as an opportunity. Hofstede framework is one of the most significant examples that an individual's perception of risk is influenced by his/her culture. This perception is also influenced by other aspects; for example, how media portrays risks, how much emphasis is given to risks in a society, what are the basic principles of society (for example, is it progressing or playing safe), what legal and technical tools are available for individuals to manage the risks. In brief, risk perception is influenced significantly by cultural, institutional and environmental factors (Shah et al. 2014).

This suggests that the perceived risk in e-banking could differ from country to country and thus it is important for us to investigate it in context of the country and its culture. The researcher is Saudi Arabian and it is useful for her future ambitions to investigate this concept in the context of Saudi Arabia. Furthermore, the researcher has access to a large network of individuals who will be useful for data collection purposes.

1.5 Perceived risk in e-banking

Perceived risk influences an individual's decision to use or not to use an online service. This perception may itself differ from individuals to individual (Hong and Yi, 2012). Perceived risk is one of the most significant factors that inhibit adoption of new technologies. Perceived risk can have several dimensions including but not limiting to financial, performance, physical, psychological, social and time risks (Büttner and Göritz, 2008; Shafei and Mirani, 2011; Masocha et al., 2010; Benjamin and Samson, 2011; Aransiola and Asindemade, 2011).

Banks are keen on increasing the penetration of e-banking services; however, in developing countries such as Saudi Arabia where e-commerce is a relatively new phenomenon, banks are facing multifaceted challenges in increasing the adoption of e-banking.

Turban (2001, cited in Nasri and Charfeddine, 2012) suggests that e-banking providers should take care of the following factors in order to reduce the customer's perception of risk:

- System Security.
- System Reliability
- Internet service reliability
- System Responsiveness
- Distrust of service providers.

Out of the factors mentioned above one of the factors which probably have the most significant impact on perception of risk is the security which includes protection of safety and privacy (Yoon and Occeña 2014). Security risk has also received the most attention from the researchers, practitioners, media and customers. This has led to global efforts to combat the security threat on online commerce and e-banking (Yoon and Occeña 2014).

However, different researchers have talked about several other types of risks such as time loss risk, financial risk, transaction risk, performance risk, and social risk etc. which also affect individuals' perception of risk in e-banking. What makes it cumbersome is the multifaceted nature of these risks; for example, performance risks may lead to financial and social risk. Take for example, that individual A was expected to transfer funds to individual B but the payment was delayed because of poor performance of the e-banking system. Thus, individual A can lose its reputation in the opinion of individual B and in addition, individual B may also impose some form of penalty in Individual A. There are several possible scenarios which will affect individuals' overall perception of the risks in e-banking.

Perceived risks have been included in technology adoption model y several researchers but none of the researchers have empirically tested its impact on adoption of e-banking. In particular, none of the researches have comprehensively constructed a framework including all types of risks in one framework. The problem with considering risk as one single dimension construct is that it becomes difficult to tackle. Risk, as a concept, is so vast and diverse that unless it is broken down into different categories, it will be almost impossible to devise a strategy to combat this.

While most of the researchers have investigated the factors affecting adoption of e-banking systems there has been little research into developing a practical strategy for facilitating the adoption of e-banking systems. This research is based on the assumption that reducing perceived risks is one of the most significant challenges in facilitating adoption of e-banking especially in developing countries like Saudi Arabia (Eid, 2011; Al-Ghaith et al. 2010). Hence this research looks at the link between perceived risks and adoption of e-banking in context of Saudi Arabia. More significantly it looks at which different types of risks affect the overall perception of risks in e-banking and how. Furthermore this research also looks into possible solutions to the perceived risk issue. This research integrates the previous research findings into the factors affecting adoption of e-banking and combines it with practical solutions to develop a framework for facilitating the adoption of e-banking systems through reduction of perceived risks.

1.6 Research aims

The overall aim of this research is to identify the factors that influence the perception of risks in e-banking and consequently adoption of e-banking. This research aims to emphasise the role of culture in adoption of new technology. Thus, this research aims to provide a practical framework which the e-banking service providers can use to improve e-banking services so as to improve their adoption in Saudi Arabia.

1.7 Research objectives

The aim of the research will be achieved through the following objectives:

- Investigating the concept of perceived risk in e-banking and how it affects adoption of e-banking.
- Identifying the range of factors that may influence perception of risk in e-banking.
- Evaluating the role of culture in influencing individuals' perception of risk in e-banking.
- Evaluating the impact of risk perception on adoption of e-banking in Saudi Arabia.

1.8 Contribution of the research

While identification of factors which are barriers to adoption of e-banking is a valuable starting point, the actual benefit of such research will be to develop a human capacity development framework which can help us facilitate the adoption of e-banking among those which intends to benefit. Such research is also important because it brings together the issues raised by both service providers and customers and eliminates any conflicts which may arise due to difference in the perceptions of the service providers and customers. For example, while the customers would demand very high level of security solutions such as biometrics but the practitioners have to consider the economic cost-benefits of such measures. This framework will also analyse the complex interlinking of several of these factors to analyse impact of all these factors in the context.

The key contribution of this research is the inclusion of culture as a factor affecting individuals' perception of risk in e-banking. Our perception of new technology including its usefulness, usage changes, risks etc. are determined by our experiences, knowledge and learning. These factors also influence our perception of risk and consequently it is possible that the culture influences our perception of risk. Indeed, researchers such as Geert Hofstede have included *uncertainty avoidance* which is same as risk avoidance as a key aspect in defining culture. According to him our culture influences our risk behaviour. None of the existing researchers have looked at investigating the role of culture in influencing perception of risk. It is essential to investigate this link because if such a link doe sexist, it would mean that we need to consider culture while developing e-banking solutions for any country. This also means that the solutions from western nations cannot be simply borrowed and implemented in Saudi Arabia. While the same technology could be used globally but the actual adoption of e-banking as in motivating the customers to use-banking must vary from country to country.

1.9 Structure of the thesis

The first chapter discussed the issue of perception of e-banking and why it is significant in context of adoption of e-banking. This chapter talked about why it is important to consider perception of risk and why it is important to increase adoption of e-banking. The reasons for selecting Saudi Arabia as case study were presented. The rationale for conducting this research and its likely contribution, both practical and theoretical are discussed in this chapter. The aim and objectives were provided. The reasons for considering culture as a key factor in perception of risk are also discussed in this chapter.

The next chapter of this thesis presents a review of the existing literature. Literature was obtained using certain key words such as "perception of risk" "risk in e-banking", "factors affecting perception of risk in e-banking" "perception of risk in e-commerce" etc. The chapter begins with a discussion of the term perception and how it is influenced by our experiences. This is followed by specific discussion of the term "perception of risk" in general and how it differs from risk itself. In this context the psychometric paradigm which differentiates risk from perception of risk is discussed. This is then followed by discussion specific to impact of culture on adoption of new technologies which is then followed by a discussion of the specific aspects of Saudi culture. The last subsection of this chapter discusses the various factors that may affect the perception of risk in e-banking.

Third chapter of this thesis discusses the various methodological tools and techniques that could have been used for this research and provides justification for the ones that were used. This research is based on pragmatist philosophy and mixed method strategy. Data was collected using focus groups and questionnaire surveys. Reasons for selecting pragmatist philosophical standpoint are discussed. One of the key drawbacks of past researches has been the use of positivist approach which reveals little information about the factors shaping perception/ behaviour of e-service users. This research aims to overcome this gap. Quantitative and qualitative portions of the research are discussed separately. In the quantitative section the formulation of questionnaire, administration of questionnaire and technique used to analyse quantitative data is discussed. Randomised sampling strategy was used for this research. Reasons for selection of randomised sampling strategy are also

presented in this chapter. This is followed by a discussion of the qualitative part of the research including conducting of focus groups and analysis of focus group data. This chapter then ends with a discussion of the ethical guidelines adopted for this research.

Chapter four presents analysis of qualitative and quantitative data. The two are analysed separately and the results are presented. Confirmatory Factor analysis was conducted to test the reliability of questionnaire. This was followed by regression analysis. Thematic analysis of qualitative data is presented in the same chapter. Themes for qualitative data analysis were obtained from the conceptual framework.

Chapter five presents the discussion of the findings. Data findings from the focus group are used to explain/contrast the findings from the questionnaire survey. Comparison is drawn with existing research and explanations are provided for similarities and difference in findings.

Finally**,** chapter six concludes the research. The key findings and contributions of the research are discussed along with its limitations.

2.Literature review

2.0 Introduction

There are several risks in using the online channel. However, what is concerning is not the risk but perception of risk as it affects the behaviour of individuals. Humans have been successful as a race because they have learnt the art of survival in any condition. This survival transpires into their day to day practices as well where individuals codify their past experiences and prepare for the future. This is supported by the notion of perceived risk Survival is also aided by an ability to codify and prepare. Risk perceptions are significant mainly at the individual level because at organisational or institutional level risks they have to be more calculated and based on rational. This is not to say that there is no rational behind perceived risks at individual level, but that the rational is mostly not based on objective and verifiable information. Also, the perception of risks among consumers has a direct impact on the adoption of risks, and hence it is in the interests of the service providers to minimise perceived risks. Considering the amount of savings from using the online channel, it can be concluded that the banking sector has much more to lose by lower adoption of e-banking than with actual occurrence of risks. In countries like Saudi Arabia where adoption of technology (especially the Internet) has been comparatively slower, perception of risk becomes even more critical. There are not only financial and technological issues to consider but also socio-cultural issue. Thus, investigating the perception of risk in the context of Saudi Arabia requires a different, more advanced approach.

Mitchell (1999) argued that perception of risk is a significant influencing factor in individual's decision to transact online because individuals are more concerned about losing money than interested in benefiting from online purchases. For example, customers will save time by transacting online but the security threats could make them loose significant amount of money. The potential risk to customers is equal to the amount of money they have in their account or even more. Perceived risk is thus representative of an individual's subjective belief about the uncertain future in context of a planned behaviour or action. Perceived risk is mainly linked with future negative outcomes only and positive future outcomes are generally considered risky (Ba and Pavlou, 2002).

In certain fields, particularly finance and business, risk is associated with rewards. In other words, individuals/ businesses are expected to take rationally calculated risks in order to get

rewards. Thus, firms which do not take risks cannot expect rewards. However, in case of e-banking customers expect risks to be minimised without any impact on the rewards. Rewards here refer to saving of time and cost, convenience that the customers enjoy. In case of banks the lower operating costs and better customer relationship management are the key rewards.

Perceived risk has a significantly negative impact on behavioural intention of using e-commerce (Pavlou, 2003). Thus, it is essential to reduce perceived risks in e-commerce in order to increase latter's adoption (Belkhamza and Wafa, 2009). There are several factors that lead to rise in perceived risks in e-commerce. Internet is based on the perspective of open access and this involves minimum regulation of Internet activity. Consequently, countries still follow their national laws in concern with e-commerce even though Internet is a global marketplace. The problem with this inconsistency in regulation is the rise of threats in online marketplace especially with respect to money transactions (Ozdemir and Trott, 2009; Pikkarainen et al, 2004). Most of the literature on adoption of innovations has focused on facilitators while little attention has been paid to the inhibitors which inhibit adoption of innovations (Farzianpour et al. 2014; Andrews and Boyle, 2004). While it is easy to determine and compare the quality of tangible products, the quality of service often depends on the perception of the individual. For example, individuals are often unsure of the service they would receive even after paying for the service and as such more price variations exist in service sector as compared to in products (Mitchell 1999). The inherent uncertainty associated with services combined with the uncertainty associated with Internet leads to a higher perception of risk about online services such as e-banking. These perceptions of risk are, however, not uniform and may depend on both individual and environment characteristics (Clarke and Flaherty, 2005). Nevertheless, researchers agree that perceived risk a key determinant in people's acceptance of new technology (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Farzianpour et al. 2011a, 2011b; Ruiz-Mafe et al., 2009).

Despite acknowledgement by researchers that perceived risks will affect adoption of e-banking there is a relative lack of empirical research in this area (Büttner and Göritz, 2008). The main area that needs exploration is that to find the factors that influence the perception of risk in e-banking. Identifying the origins of perception of risk will be useful in developing effective strategies to reduce overall perception of risk of e-banking.

2.1 Perception

Perception is an individual's perspective of viewing things. Perception may or may not be related to reality. For example, risk takers will have lower perception o risk while risk averse will have a higher perception of risk. Perception of risk influences our decisions in almost all aspects of life and if irrational perception of risk can lead to irrational decision making.

Human minds, at the basic levels, are programmed to overcome their day to day challenges such as survival. Generally speaking, human cognition helps humans in determining the right response strategies to the opportunities and risks in order to achieve the ultimate goal of success in whatever we do. With increased adoption of technology in our day to day lives, the challenges that we face have increased as well- from basic challenges such as increasing crop production, we, as species, have come to face bigger challenges such as exploring the outer space, overcoming the several diseases and making use of technology to improve our lives. One of the aspects that can explain the development of our cognitive capabilities is our social development (Brewer, 2004; Byrne, 2000). Humans interact with other humans like no other species can- without boundaries or restrictions on distance. We have learnt to become dependent on each other as we divide the roles in our society- individuals do what they are best at doing. This has led to development of business relationships, which is what makes us different than even our prehistoric predecessors (Tomasello, Carpenter, Call, Behne, and Moll, 2005). In order to survive in the business environment businesses must learn what the customers perceive and about their intention. Furthermore, businesses must be able to influence the perceptions of the customers to align it with the reality.

In order to understand people's behaviour it is essential to learn from the cues in their verbal and non verbal behaviour (Jones, 1990). Social cognition researchers assume that people's cognitive representations mediate their behavioural responses to the social world (Fiske and Taylor, 1991).

In this respect, perception is nothing but an individual self created interface between his inner and outer world. Developments in our external environment generate signals which the individuals interpret in context of their socio-cultural context and convert these into psychologically meaningful representations which define our inner experience of the world.

Humans build their perception based on several aspects such as the information they hold about particular situation, their socio-cultural perspective, as well as their knowledge from the past. This knowledge itself is built from their own experience as well as the experiences of others around them. Due to this reason, perception can be unique to every individual. Perceptions tend to differ from one individual to the next, such that the same situation can end up being viewed differently by several persons. The understanding of the situation may vary for different persons. Windschitl and Wells (1996) defined perception as "the process by which a person converts sensory information into a logical view of the world around them." But perception of individual could be influenced by their knowledge and past experiences and can often be founded on incomplete and unreliable information. At the same time, there is a consensus that people's perceptions guide their behaviour (i.e. reaction). In this vein it is appropriate to assume that individuals will refrain in engaging from activities which may cause them any harm. This brings us to the concept of perception of risk.

Risk is a term that always represents the possibility of negative outcomes. While treated as a mechanistic concept in several disciplines such as finance and economics, it is not the most common view of risk. In general risk is perceived not solely by technical parameters and probabilistic numbers, but in our psychological, social and cultural context. In this respect, our risk perception is influenced by our socio-cultural environmental and individual characteristics. This is viewed as the psychometric paradigm of risk perception (Slovic 2007).

There is difference between the risk perception of laymen and experts. While experts form their opinion on hard facts and verifiable intelligence, perception of laymen is defined by several influencing variables including their own socio-cultural context, media, past experiences, equity at stake etc. In addition, aspects such as controllability and voluntariness also affect people's perception of risk as discussed later in this chapter.

2.2 Perception of risk

The concept of risk in marketing was first introduced by Bauer (1960, cited in Nasri and Charfeddine, 2012) and grabbed the attention of a few researcher leading to extensive research on the subject. Cunningham (1967, cited in Nasri and Charfeddine, 2012) later

developed the concept and defined an individual's perceived risk as having two components with respect to consequences (financial loss, time wasted, social and or other possible damages that may be incurred) – how certain is individual in that the consequences are going to be unfavourable and the loss he/she will incur, if the consequences were in fact unfavourable (Farzianpour et al. 2014).

Most researches today have accepted the above-mentioned definition. However, some researchers such as Sjoberg (2000) argue that risk, sometimes only relates either to the probability of negative events or negative consequences and not a combination of the both. Later, more complex models produced more definitions, three of which are featured here. Dowling and Staelin (1994, cited in Pérez-Cabañero, 2007) divide risk into two components: product class risk (category) or product specific risk (specific brand/product), which is a lot like Bettman's (1973, cited in Zhang et al. 2012) inherent and handling risk concepts. Stone and Winter (1987, cited in Zhang et al. 2012) view risk as the expectation of loss – where the more loss you expect, the greater the risk. This is the most commonly used view of risk. Lastly, Greatorex and Mitchell's (1993, cited in Pérez-Cabañero, 2007) model has a more multi-attribute approach and it associates risk with the imbalance between the required amount and the obtained amount of an attribute.

According to most authors, the perception of risk is higher in case of services than in case of goods (Soltanpana, Shafe'ei and Mirani, 2012; Clemes, Gan and Du, 2012; Mitchell and Greatorex, 1993), which is mainly because of the implicated intangibility and heterogeneity of services (Lusch and Vargo, 2008; Lusch et al., 2008a) which makes the consumer uncertain (Mitra et al., 1999) and makes service difficult to access (Maglio et al., 2006). An empirical study by George et al. (1985) on the contrary concluded there was no difference between a specific goods category and their services when it comes to perceived risk. However, in another study, Laroche et al. (2003, cited in Pérez-Cabañero, 2007) argued that services do not always have higher perception of risk than goods. According to them what affects the perception of risk in goods and services is mental and not physical intangibility. For example, mentally intangible goods like music software can be riskier than certain tangible services, like electronic banking for instance.

Risk perception became a topic of research in 1960s when modernisation led to questions about perception of risk in adoption of technology especially from policy perspective (Breakwell, 2014; Cho, Reimer and McComas, 2014; Nasri and Charfeddine, 2012). The

world had witnessed the destruction that nuclear bombs could cause and there were obvious concerns about the use of nuclear technology for power generation. At the same time, policy makers considered this as the ultimate solution to the growing energy demand of increasing population worldwide (Nasri and Charfeddine, 2012; Farzianpour et al. 2014).

Policy makers realised that the perception of risk had to be managed in order to promote solution which may be perceived risky by common people despite the overwhelming support from the scientific community. Starr is a well known researcher in the field of perception of risk and he argued that individuals are likely to accept a new technology if the expected benefits are more than the perceived risk in adoption (Breakwell, 2014; Cho et al. 2014; Slovic, 2007). His work fuelled an interest in the field of management of perception of risk. The particular concern was about the gap between the views of the experts and the common people (Sjöberg et al. 2004).While experts are more rational and objective in their estimation of risk, public, with little information and knowledge behaves more risk aversely.

A group of cognitive psychologists with an experimental background in decision-making studies in the 1970's grew interested in risks and how people react to them. Lotteries and gambling are some of the areas they investigated and use these to define a concept of risk and use psychological scaling to measure it (Breakwell, 2014; Cho, Reimer and McComas, 2014; Gupta and Bansal, 2012; Sjöberg et al. 2004; Eiser, 2004). Langer (1975, cited in Gupta and Bansal, 2012) conducted some important work with reference to how people react to lotteries; however, they did not focus on the policy aspect of the issue. He found that, when it comes to lottery the preference is unrelated to everything else (Waerneryd, 1996, cited in Sjöberg et al. 2004). Furthermore, Kahneman and Tversky (1974, 1981, cited in Cho et al. 2014) found significant differences between the intuitions people had about probabilities. Their work contributed another vital part of the idea. However, assuming that risk was in fact about probability, despite the lack of evidence, it was tempting to conclude that their work had a lot to do with people's perception of risk and how they act upon it. So in the context of policy, risk perception is not a cognitive bias (Sjöberg et al., 2004).

The rationale behind risk and risk perception can provide insight into why studying of risk perception is sometimes more critical than studying risk itself even though risk has a significant influence on perception of risk. Risk, has a degree of tangibility and rationality and has possible solution while perception of risk can be irrational, intangible and often difficult to tackle (Breakwell, 2014). Take for instance, the financial cross of 2007-08. Prior

to the crisis the value of most assets was inflated due to optimism in the market. However, during the crisis liquidity dried up and people turned risk averse leading to a decline in assets to levels well below the fundamental values. This led to closures of several businesses which were, in a stable market, sustainable. Thus, the irrational pessimism led to value destruction in economy. Perception of risk has a significant impact on consumer decision making and managing this perception of risk is an absolute necessity for business managers. Very often, the irrationality leading to perception of risk is associated with customers' overall lack of knowledge and hence educating the customers is considered a key strategy to manage perception of risk (Hong and Yi, 2012).

Back to Starr's voluntary risk concept, variations to which were proposed by a number of authors in the 1970's; while his ideas addressed some interesting and important problems, the solution that he proposed was in need of great improvisation. Research had shown that people tolerate more risk if they were to do something voluntarily (Breakwell, 2014; Gorman, 2013; Schmidt, 2004; Sjöberg et al. 2004). A train passenger and a mountaineer for instance, in a way are both doing what they are 'voluntarily' and a more evident distinction between the two involves the concept of control, as one tends to perceive less risk in a situation that is under personal control. That being said, risk may as well be defined as insufficient controllability (Gorman, 2013). And people often believe that they are in more control than they actually are - an illusion of control (Breakwell, 2014). For example the risk of winning a lottery becomes higher if they were to pick the numbers themselves. Moreover, a person perceives the risk to be smaller depending on how much in control they believe to be – driving a car vs. being a passenger in a car (Gorman, 2013).

Unrealistic optimism – the general optimism about the outcome of an event (Breakwell, 2014) is related to the illusion of control. This exists commonly among men and women of all ages and educational levels (Slovic, 2007; Sjöberg et al. 2004). In a group for instance, people often perceive their own chances of a negative experience less than average which is not only less optimistic but also unrealistic since there is no way to tell if someone is in fact right is making such an assumption or clearly mistaken. "The best established results of risk research show that individuals have a strong but unjustified sense of subjective immunity" (Sjöberg et al. 2004: 10).

In the 1970's, several books suggesting alternative interpretations to Starr's findings about risk and related topics were published and led to the development of a psychometric model, which is discussed in the current report.

The psychological work in understanding perceived risk took several decades of work and led to the development of these two theories that dominate the field today – the 'psychometric paradigm' and the 'cultural theory'. The psychometric model deals with the disciplines of psychology and decision-making and believes risk to be inherently subjective. The cultural theory is developed by scientologists and anthropologists states that "Risk does not exist 'out there', independent of our minds and cultures, waiting to be measured" (Breakwell, 2014) and the thing to fear is one's cognitive process which determined the perception of threat or uncontrollability.

2.2.1 Perception of risk- The Psychometric Paradigm

Psychological research on risk perception began with the experimental investigation into decision-making and probability and utility assessment (Breakwell, 2014). People's use of mental strategies or heuristics to give meaning to uncertain things in the world has also been a major advance in the area (Cho et al. 2014). The rules may be applicable in some cases but in others they present with large biases and serious consequences on risk assessment. Trouble in understanding perceptions and cognitions can be seen through the research conducted – biased media coverage in combination with misleading personal experience and the anxiety due to the daily gambles in one's life causes people to misjudge risks and sometimes judge facts with baseless confidence (Cho et al. 2014).

How information is interpreted is greatly determined by the strong initial views one has. New evidence tends to appear as reliable only if it is consistent with pre-existing beliefs and is dismissed as unrepresentative and flawed if it suggests the contrary (Gorman, 2013). Further research therefore only enforces the fact that disagreements, when it comes to risk, can only be expected to persist despite evidence suggesting differently. It is when people lack any prior opinion at all that perception can be altered merely by presenting the information differently, for example, by speaking of mortality rates instead of survival rates (Drace and Ric, 2012).

The psychometric paradigm is a way to assess a lay mans judgement of risk. Lay people and experts often have a different definition of risk. While experts define risk in terms of mortalities, lay people tend to factor in other things like controllability, involuntariness, effects on future generation, potential for catastrophe and equity to name a few. Lay people are often show little faith in risk assessment that are conducted by experts (Drace and Ric, 2012; Breakwell, 2014; Cho et al. 2014). Despite relying greatly on statistical data, experts are often prone to the same biases as the layperson when expected to go beyond the data and rely on their intuition (Breakwell, 2014; Cho et al. 2014). Psychometric studies include a wide array of thematic fields like smoking, nuclear energy, volcanoes, skateboards, asbestos, floods, nerve gas incidents, swimming pools to name a few. An expert is usually specialized in a specific area therefore cannot be expected to grasp all of these topics and is therefore forced to rely on their intuition with they come across them leading to biased opinions (Drace and Ric, 2012).

The use of psychophysical scaling and factor analysis to produce cognitive maps of risk perception to generate quantitative data makes psychometric paradigm a promising approach to studying risk perception (Cho et al. 2014). This model has been used in to assess different risks across many industrial countries taking into account groups of both laymen and experts and this model is believed to be very well established in quantitative analysis of risk (Paleo, 2014).

Developing taxonomy of hazards to predict and understand responses to risks can be another effective approach to studying perceived risks. The taxonomy can be used to why people perceive some things/situations are more risky as opposed to others and maybe even the lag between the reactions and opinions of experts compared to those of laymen (Paleo, 2014). So how this works is, people make judgement about current and anticipated risks of various hazards and these judgements are studied in relation to other aspects like (i) factors that have been thought to influence risk perception (voluntariness, controllability, dread, knowledge, etc.), (ii) benefits of each hazard, (iii) deaths per annum caused by each hazard and (iv) the largest number of deaths per annum ever recorded (Paleo, 2014).

Starr's (1979) efforts to develop an empirical comparison of risk and benefits of technology to determine "How safe is safe enough?" and his idea of "essential optimum" that creates a balance between the risk and benefit were the motivating factors for the development of the psychometric paradigm. Patterns of acceptable risk trade-offs are therefore often based on

historical data. From his studies, Starr concluded that (i) acceptability of risk is approximately proportional to benefits to the third power, and (ii) people are 1000 times more likely to accept the risks associated with voluntary activities such as skiing compared to involuntary things such as the use of preservatives in food even if they provide the same level of benefits. Starr's conclusions and their merits have been under great examination and debate which will not be expanded upon here however it is important in that the concern for the validity of some of these concepts led Fischhotf et al. (1981) to produce "expressed preferences" through analysis of the data in the questionnaire.

Many studies showed that perceived risk can be predicted and quantified using the psychometric paradigm (Breakwell, 2014; Cho et al. 2014; Paleo, 2014). Psychometric techniques have helped to identify some of the differences and similarities among people with respect to risk perception and attitude and they have also demonstrated that "risk" had a different significance to different people for instance, the formerly discussed difference in approach between experts and lay people – experts solely rely on statistical data for annual fatalities and while a lay person will also be able to assess the same data to draw conclusions they tend to base their judgements of risk on other hazards like catastrophic potential, threat to future generations, etc and therefore their estimates of fatality often tends produce different results from the experts and even other lay people (Breakwell, 2014).

There is an evidently observed gap between perceived and desired risk according to people and people often view risks for activities as unexpectedly high for most activities, which suggests that they are not satisfied with the market's way of balancing risk and benefits. There seems to be very little orderly relationship between the perception of risks and benefits across the areas of hazards. Studies expressed preferences seem to concur with Starr's idea that people tolerate greater risk if the benefits from the activity are higher. However, expressed preferences contradict Starr's conclusion that voluntariness is the key to acceptance of risk by showing that other factors such as control, catastrophic potential, equity, and level of knowledge influence the equilibrium between perceived risk, perceived benefit and acceptance of risk (Cho et al. 2014) therefore various other models have been developed to better demonstrate this equilibrium between perceptions, behaviours and quantitative characteristics of hazards.

The psychometric paradigm assumes that when it comes to certain characteristics, people tend to perceive them similarly, e.g. voluntariness and controllability, catastrophic potential

and equity, knowledge of risk and observability, novelty and immediacy. Therefore with the help of multivariate analysis of these characteristics aka "items" they can be grouped into two or three factors consisting of several highly correlated items (Drace and Ric, 2012):

- Dread risk
- Unknown risk
- People affected risk

"Dread risk" includes, perceived lack of control, potential for catastrophe, inequitable balance between risks and benefits, and fatal consequences, while "unknown risk" consists of observability, experts and laymen's knowledge of risk, immediacy or delay of potential damage and novelty and lastly "people affected risk" consists of items that are personally affected, public affected and future generation affected.

Since a layperson's perception is highly correlated with "dread", the higher something is judged based on dread, the more the perceived risk and the higher demand for its regulation and reduction (Slovic, 2007). Issues discussed in media tend to be those that are often higher in dread and unknown risk dimensions like the GMO issue and therefore accidents within these characteristics are termed "high-signal accidents" and despite low immediate costs, often cause a great impact on society, e.g. Chernobyl, Bhopal, Three Mile Island (Slovic 2007).

Some researchers studied over- and underestimated risks and found that overestimation of risk is usually associated with dread and unknown domains while those that relate less to these domains are often underestimated (Drace and Ric, 2012). One classic example is the risk of radiation that often leads mass protests against setting up of nuclear power reactors even though they are much cleaner and safer for the nearby residents as compared to any other form of power generation including wind and hydro power which cause immense sound pollution (Gorman, 2013).

Based on the argument that psychometric paradigm has made it possible to identify similarities and differences between different risks and also to quantify and predict perceived risk, one can determine the public acceptance of a new risk in relation to the already analysed patterns. For instance, similar limitations in discussion of stakeholders are probable if a new topic is researched using a similar approach that was used to research a previous topic. For example, gene technology and nuclear energy share similar qualitative characteristics within

the psychometric factor space. Following public debate on nuclear energy, where it was judged as an unknown, uncontrollable, inequitable and potentially catastrophic in that it was likely to affect future generations, Slovic (1987) forecasted a similar public debate about GM technology as the same judgements were made against GM technology (Bauer 1995, Slovic 2007).

To summarise, psychometric paradigm provides a theoretical framework, which assumes that individuals based of multiple psychological, social, institutional and cultural factors subjectively define risk. It also assumed that these factors could be quantified using designed surveys (Breakwell, 2014; Cho et al. 2014; Paleo, 2014; Drace and Ric, 2012) additionally, examination of the various groups demonstrated that psychometric scaling can be used to identify and quantify the relationships in risk perception and attitudes among groups and therefore the paradigm has gained great credibility and popularity (Gorman, 2013). However, history has shown evidence that success is only weakly related to the actual empirical power and strongly with the apparent power of a model. Probably, a credible observational base is the only obligatory condition and what is credible seems to lie in the eye of the beholder (Cho et al. 2014).

2.3 Main factors in risk perception

Raymond A. Bauer et al. (2005) of Harvard University extended the concept of perceived risk which was first proposed in the field of psychology. He proposed two ways to look at perceived risks – type or content of the risk. While Bauer et al. (2005) comments that a customer's purchase is greatly influenced by perceived risk he does not look into great detail the factors that constitute perceived risk itself. Building on Bauer's idea, Cox and Rich (1964) worked to provide a more detailed description of risk and defined it with respect to uncertainty and negative impact. They explained that a risk is uncertainly and expectation of negative consequences results in the rise in consumer's perceived risk (Dowling and Staelin, 1994). So, in e-banking consumers are more willing to seek information, as there is less chance of a loss this also makes perceived risk more critical in e-banking since customers

will be more concerned with risks over the benefits (Huang et al., 2010; Farzianpour et al. 2014).

Several factors, such as product features, personality of the customer, demographics, culture and, social characteristics, play a vital role in defining perception of risk (Farzianpour et al. 2014; Li, 2013; Lee et al., 2013a; 2013b; Huang et al., 2010; 2011). In addition to this, perception of risk is also influenced by prior knowledge (Littler and Melanthiou, 2006) and risk/involvement relationship (Farzianpour et al. 2011a). Zhang et al. (012) believes that perception of risk is influenced by attributes such as price, durability, visibility and complexity (Zhang et al. 2012).

Customers face different types of risks at different levels of the purchase process. Mitchell (1999, cited in Zhang et al. 2012) categorises these risks into the following categories: predictability, reliability and effectiveness, practicality and availability. Anne-Sophie (2002, cited in Demirdogen et al. 2010) identified that the key risks in e-commerce are product, remote transaction, and Internet and website risks. For example, sometimes the retailer's description does not match the product received and this is a product risk and to minimise this retailers provide a certain time window for the customer to be able to return the product, if they chose, without being at a loss. In certain countries such as UK, such policies are enforced in online retailing by regulators through laws such as distance selling laws. But returning of product is easily applicable in context of a tangible product. Banking, however, does not provide a tangible product and can be a while before a customer realises if the services suit his needs as expected. For example, the terms and conditions of a loan are only affective or applicable in the later period of the loan and may not suit the customer.

2.3.1 Voluntariness

Individuals tend to overestimate the imposed risk while perception of risk reduces for risks taken voluntarily (Webb and Shu, 2013). According to Darker (2013) individuals are comparatively more likely to take a risk as long as they believe that they have autonomy and freedom of choice.

Firstly, A risk is that is chosen and not imposed is a wanted risk and is often associated with the expected benefits associated with it and the person thinks that they can stop the risk at any

time if they chose to do so. Secondly, one assumes that chosen risk is the best of all bad choices and therefore it is a means to avoid worse possibilities or a relative improvement in a way. So the relatively better risk that is chosen in comparison to others more risky options in a given context give the impression that the absolute risk is lower than it actually is (Darker, 2013; Eagly and Chaikan 1993). The right to choose is an important aspect of modern, western democracies especially since a lot of conflict is avoided when a set of possibilities are available to choose from as opposed to restricting the right to choose by imposing on people and only if all possibilities were to be rejected or perceived as equally harmful is the process of choosing rendered unsuccessful (Schmidt, 2004).

2.3.2 Controllability

Individuals tend to be more risk taking when they feel that they are in control. It provides the risk taker a sense of security (Schmidt, 2004). The controllability aspect leads to belief that the risk taker can minimise losses from risk taking. Loss of control itself is risk which ads on to the existing risk. It is important to note that perceived control and actually having real control are two separate things. Psychosocial studies show that we often tend to overestimate the control we have in a given situation. Perceived risk is with respect to personal risk is often believed to be far lower than for people in general i.e. everybody estimates that their risk is lower than the average risk. People hold faith is their own abilities, which is statistically impossible and often leads to a sense of unrealistic optimism (Schmidt, 2004). For example, it is not possible for everyone to be a safer driver than the average citizen. Similarly, people also tend to have a positive illusion of control in situations like earthquakes (Pedroso de Lima, 1993). Consequently, this results in risk denial (average risk minus personal risk) and shows a clear correlation with level of perceived control. They reverse may also be true however. For instance, we will not choose to fly an airplane if we lack the appropriate skill, and in fact we could be frightened to death if we were expected to fly a plane on our own. Therefore it can be said that out trust in someone's ability can also determine our sense of security in a situation. In regions prone to earthquakes for instance people seem to show great trust in political and religious institutions (Pedroso de Lima 1993) probably because they know that these are acts of God which are beyond their control and because they know that

recovering from such shocks require institutional response which can only be undertaken by the government.

2.3.3 Tangibility and intangibility

One way of categorising risks is as tangible and intangible. Tangible risks are the risks which can be objectively and realistically estimated and evaluated while intangible risks are the risks which are largely subjective and difficult to realistically estimate. Tangibility of risks might reduce the perception of risk because individuals are able to assess the impact of the risk and make informed decisions. But at the same time tangible risks may seem more likely to occur and hence the perception of risks could be high. However, in case of intangible risks the uncertainty associated with the damage/loss might lead to heightened perception of risk while at the same time intangibility could lead people into believing that the likelihood of occurrence is quite low.

2.3.4 Delay Effect

There is an often prolonged latency (physical, chemical or biological in nature) between the initial event and the actual impact of damage; this is described by the concept of delay effect. This delay makes it hard to recognize certain effects of the risks, as the relationship between the event and the consequences is not instantly evident (Darker, 2013). A typical example can be the development of lung cancer after years of habitual smoking, heart disease caused by unbalanced fat in the diet over a long period of time, holes in the ozone layer, and GM crops and their impact on the environment to name a few. The longer the delay between the initial event and the actual impact of damage the lower is the perception of risk. Also the stronger the impact and more likely the impact, higher would be the perception of risk (Schmidt, 2004).

2.3.5 Natural vs. Manmade

Individuals tend to accept natural risk more than the manmade risk because the former is considered equal for all and as act of God. For example, an earthquake may be a more acceptable risk rather than a car accident. This is probably because individuals tend to believe that manmade risks are avoidable and demand that the responsible person own up to their incompetency or carelessness or lack of knowledge that led to the incorrect action (Schmidt, 2004). We also start to question the intentions or actions of the responsible person that led to the situation at hand – were they just careless or did they do it on purpose, did they not respect the safety and health or others, did they compromise with quality of products to save money, and so on. On the contrary, it seems illogical to assign blame to nature for the natural disasters such as earthquakes because they were beyond our control and cannot be avoided by acting prudently (note that acting smartly in the case of a natural disaster can reduce risk of potential damage). Whether the reason is God's will or laws of nature or destiny and fate, natural disasters are better accepted.

2.3.6 Familiarity and Habituation

Habituation attenuates the perception of risk (Slovic 2007), even in cases when the risk is the same. Getting used to a risk tends to improve our decision making and also affects our behaviour because we know better the consequences of the risk from our past experiences. One of the problems with perception of risk is that it amplifies expected losses. Habituation reduces this uncertainty of outcomes and consequently reduces perception of risk (Slovic 2007). For example, may individuals continue to live in some areas prone to natural disasters and keep in resettling in the same area despite having experienced the natural disasters in the past.

Habituation is the idea that one gets used to a risk while familiarity is determined by how much a person knows about that risk, which is why new risks like nuclear power and genetic engineering that are not known to us are perceived as more dangerous. The inability to perceive these particular risks without senses makes it even more difficult for us to accept

them. Technology often provokes opposition and cautious behaviour as a result because laypeople cannot control or observe these new exotic risks on their own.

With reference to familiarity one of the biggest influences can be time – if a particular action has delayed effects it may hinder familiarity as opposed to something that is faster and presents more immediate effects. Another thing that influences familiarity is the uncertainly of being exposed i.e. if we are exposed to a risk we become familiar as opposed to if he are never exposed to it. Known risk is also believed to contribute more to familiarity than an unknown risk and plays a major role in risk perception (Schmidt, 2004).

During the BSC/CJD infection crisis in Europe, several factors including the novelty of the disease to the public made familiarity with the risk very difficult. There was no way to observe it since there seemed to be more physical difference between affected meant in comparison with the normal meat and additionally it's affects were unknown to scientists and the added aspect of delay in the onset of the CJD post consumption caused there to ultimately be a rapid drop in beef sales.

2.3.7 Social and Cultural Aspects

Our notions of how the world functions are greatly determined by our cultural belief system (Douglas and Wildavsky 1982, Rayner 1992) and these notions are often "images" that we have of this world that was socially influenced. Social representation is the knowledge the "facts" and "events" that are shared among a group about what is dangerous, how one can cope with a risk, is the environment really being degraded, etc. The social system and cultural context, that a person lives in, greatly influences their perception of particular risks (WBGU 1998).

Our socio cultural settings determine our reaction to any risk. The members of the society have to have collective knowledge of the risk so that all individuals within the society know how to respond to the risk. Different societies may exist in the same region and may have different perspective towards the risk. For example, people from the tornado zones in Alabama, USA tend to believe that it is controlled by the will of god or good fortune while the people in Illinois who experience similar threats believe that one's own actions determine their fate. In coherence with their beliefs, the people in Illinois have taken measures to protect

people against the weather and this has significantly reduced the number of storm related fatalities in Illinois in comparison to Alabama (Sims and Baumann 1972).

Cross-cultural comparison between risk perception in cultures of different countries like America and Japan, China and Monaco, Germany and Australia has been studied in the past (Rohrmann 1995), or even among people from different cultural backgrounds in one region, e.g. between Portuguese and Chinese in Monaco (Neto and Mullet 2001).

Lastly, the economic status of a person is another factor that determines how a person perceives risk. Mexican field workers for instance come from a low economic situation and therefore often do not concern themselves with the harm that pesticides that they use at work can do to them. On the other hand, people in better economic position often show more concern towards health issues such as obesity.

2.3.8 The Role of the Media

"Covered or not covered by the media"- that is the question. Media is a great influence on society today, reaching people through the television, newspapers, magazines, radio and the Internet. When the news of a risk that is reported by the media reaches the masses, they immediately begin to worry because the idea is that since it made it to the news the risk must be real. However strange, this reflects that people trust in the competence of the media to make them aware of the appropriate risks out there (Schmidt, 2004).

If a government official were to make a statement saying that the water is safe for consumption and the air we breathe is clean and the food we eat is nutritious and safe, a statement like this would cause the opposite of the desires effect. The idea that the water, food and air are being investigated can be enough to cause uncertainly and increase fear and suspicion (Covello et al. 1987; Schmidt, 2004) instead of taking comfort in the statement made by the official. This is an example of why despite the absence of a warning risk information by itself is enough to cause people to be afraid. From a numbers perspective, a risk covered by the media like the post September 11 anthrax threats against US government officials and people (4 people died in two months) could be negligible depending on how extensively it is covered. In the anthrax case, its novelty, out of control nature, and a possible

terrorist involvement and a hidden agenda were crucial factors in shaping the kind of influence it had on people (Al-Ghaith et al. 2010).

The topics that the media covers often tend to amplify the risk perception as they probably reflect ones psychological perception of the risk. The relationship between society and media can be iterated by a single statement i.e. media influences society but society does influence media (You can only buy what's been selling, and they only sell what's being bought) (WBGU 1998). The media has become one of the main determinants of whether a risk in perceived is amplified or attenuated and in this context the level of the media's influence can only be implied (Al-Ghaith et al. 2010).

2.4 Theories Related to Consumer Adoption of Internet Banking

Influences on consumer adaptation of Internet banking can be potentially explained using certain theories. Since one can consider it as a mass medium, mass media theories can also help to explain its adoption. Some of the theories which has been used to explain the adoption of new technology such as e-banking and e-commerce are discussed below:

2.4.1 The Theory of Prospective Gratification

Anticipation of negative vs. positive outcomes plays a big role in motivating Internet usage (LaRose et al., 2001). This can be combined with an individual's attributes such as self-regulation and self-efficacy. LaRose et al. (2011) found that expected outcomes influence a person's Internet usage behaviour more than other factors such as conventional use and gratification. In fact the expected outcome increases both the satisfaction sought and obtained. Additionally, LaRose states that gratification obtained fails to differentiate the desired outcomes obtained and that gratification sought suggested that the user isn't looking for something new, or something that is not available. Therefore suggesting that gratification can be both positive and negative but collectively they are possibly confused. Especially when we try to compare the obtained gratification with the one that are sought out and therefore they may present no reliable relationship to exposure. Comparatively, outcome

expectations reflect cultural beliefs from past experience about prospective outcomes and therefore are less ambiguous (LaRose et al., 2001). This means that individual's poor experience with any of the e-services can negatively affect their perception of e-banking services. This also means that users are aware of what they wish to achieve by using e-banking and they might not expect the bank to provide anything more than what they expect. In this respect risks such as transaction risks may become critical because this directly relates to customer expectations. Thus, banks at the minimum need to satisfy customer expectations from the service.

2.4.2 Rogers' Theory of Diffusion

Yet another theory is Roger's (2003) theory of innovation diffusion, wherein he discussed 5 innovation attributes to explain adoption rates: compatibility with the customers' expectation, complexity or ability to experiment with it and decide whether to adopt it and observability of its successful use.

Essentially Rogers' (2003) theory of diffusion describes it as a process by which an innovation is communicated to the members of a social system. Every member of this system then faces a 5-step decision-making process: 1) knowledge – person learns now the innovation functions and what it is about, 2) Persuasion – person forms an opinion (favourable or unfavourable), 3) Decision – person makes a choice to adopt or reject innovation based on some performed activities, 4) Implementation – uses the innovation, and finally 5) Confirmation – evaluates the results of the innovation.

The success of an innovation can be empirically represented on an S-shaped curved – initially 10-25% people adopt it, following, which there is a period of rapid adoption and finally the rest of the people adopt as well. This happens in accordance with the diffusion theory which states that the decision made by members in a social system depend on the decisions made by other members (Olatokun and Igbinedion, 2009).

According to Olatokun and Igbinedion (2009), with uncertainty being the main obstacle, the innovation-decision is made via a cost-benefit analysis. If people believe that an innovation will enhance their utility and possess an advantage that will benefit them, they will adopt it. Likewise, people also look at the costs, in that they determine how it might disrupt other

functioning aspects of their life. Some of these determining questions are posed before (its compatibility with their existing lifestyle and whether it is hard to use) while some questions are posed after exposure to the innovation. The unfamiliarity and the newness of the innovation also contributes greatly to the uncertainty associated with it, which often results in a delay in decision making while they try to gather more evidence. There is, however, some diversity in the decision making processes based on their personal characteristics which makes innovation adoption possible (Olatokun and Igbinedion, 2009).

This distribution of adoption is represented by a bell-shaped curve, which can be explained by five categories of innovativeness: 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards (262). Consequently, a domino effect can be seen in the pattern of interactions between these groups and one's personal characteristics.

Usually innovators are the adventurous groups that create cutting edge technologies and are often eager to try it themselves and explore the possibilities. The next group consists of the early adopters, who are respected for their decision-making and are often the opinion leaders in a social system. They use the data provided by the innovators and if they find that the innovation benefits the innovators they encourage its adoption. Since a good majority of the social system does not have the capacity to remain updated with the innovation but at the same time have the desire to keep up with the rest, so they often trust and rely on the decision of this group. And since their opinion is a good indication of whether it is going to be adopted, the conformists follow in their footstep.

With the early majority beginning to adopt, the rate of adoption rapidly increases. Thus begins the domino effect, since a majority adopts, even for the people that had their doubts earlier, it becomes a necessity as the result is economic/social benefit and failure to adopt can result in loss of status or even economic viability. Contextual pressure therefore motivates the late majority to adopt (Xue et al. 2011).

Laggards or the last adopters are usually the traditional ones who are suspicious and often only interact with other traditionalists or the isolated ones. And in either case, their limited social interaction results delay in information reaching them which leads to a decreased awareness of the benefits of the innovation.

The opinion leaders and whether they chose to adopt the innovation is the tipping point since it is based on their opinion that the majority adopts (Xue et al. 2011). So, the fate of the

spread of an innovation lies in the hands of this small yet critical group of opinion leaders and whether or not they chose to vouch for it.

A study examined the factors that determine adoption of Internet banking compared to the connections among the people that influence adoption (Xue et al. 2011) and found that the more efficient customers with the greater demand were the ones that lived in areas of greater population density. Some other findings were that: adopters tend to be faster when they can control time, their region and on personal characteristics. These customers also showed an increase in activity by performing more transactions, acquiring more products, etc... Furthermore, customers that adopted online banking were less likely to leave the bank. And there was also a correlation found in the amount of activity and the density of that region with respect to Internet banking users as opposed to users that lived in other regions. An efficient customer often shows a high post-adoption profitability and also a high service demand.

In case of this research the role of opinion leaders and innovators becomes quite critical because their adoption of e-banking and consequently their word of mouth marketing can influence the opinion of the laggards and can consequently lead to rise in adoption of e-banking. This is especially critical in countries like Saudi Arabia with closely knit society where the opinion of the individuals within the social circle really matters to individuals. This also means that while positive experience of certain individuals can motivate others to adopt new technology but at the same time poor experience of others can also work as deterrent for most individuals. It remains interesting to be seen if social risk is critical in context of e-banking in Saudi Arabia,

2.4.3 Technology Acceptance Model by Davis (1989)

Another model that is relevant to the adoption of Internet banking technology is the TAM or the Technology acceptance model developed by Davis (1989). TAM talks about adoption and intention to use as being influenced by two factors – the perceived usefulness and the perceived ease of use. Davis defines perceived ease of use as “the degree to which a person believes that using a particular system would be free from effort” and perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance”. So the perceived usefulness is influences by the perceived ease of use

while the intention to use influences real usage behaviour. The model explains causal relationships between various factors in a system – perceived usefulness, perceived ease of use, behavioural intention, and actual system use. The figure should be helpful in foreshadowing user acceptance of technology as it contextually represents mechanisms by which design choices influence user acceptance. According to TAM, Perceived Ease of Use partly determined Perceived Usefulness but Perceived Ease of Use cannot make up for the lack of Perceived Usefulness, which can be a result of other factors.

TAM was initially built to study technology adoption but it has been expanded significantly by other researchers to study critical issues that affect adoption of technology and innovations (Davis and Venkatesh, 2004). For example, Venkatesh et al. (2003, cited in Davis and Venkatesh, 2004) developed the UTAUT model based on TAM to study the factors affecting adoption of new technology. Additionally TAM can be altered to support a more human-centred design and used in technology development projects to determine the usefulness of solutions that are proposed to certain problems. Davis and Venkatesh (2004), concluded that, TAM can be enhanced from the original purpose to study planned product concepts in the consumer service industry, e.g. in the form of mock-ups.

TAM and UTAUT have been the most commonly used models to explain adoption of new technology. It looks at both drivers and inhibitors of adoption of new technology. However, one of the problems is over generalisation of the variables meaning that these models do not provide practical solutions. Another problem with these models is that they are excessively focussed on drivers and less focussed on inhibitors. In societies such as Saudi Arabia which rank high in uncertainty avoidance inhibitors may have a higher influence on adoption of new technologies as compared to the drivers; in other words, people are more concerned about the risks rather than getting driven by the benefits. In this respect focusing on perception of risk is critical especially in context of countries like Saudi Arabia. His research is an extension of the past researches which have used Tam or UTAUT model to explain factors adoption of new technology.

The table below summarized the theories associated with Internet banking adoption.

Theory	Author	
The Technology Acceptance Model	Davis (1989)	TAM model suggests that individual's decision to adopt new technologies is influenced by two factors: 'perceived usefulness' and 'perceived ease of use.'
Theory of innovation diffusion	Rogers, (2003)	Proposed following 5 attributes of innovation which helps explain adoption of innovation: relative advantage, compatibility, complexity, trialability and observability. According to Orr (2003) Innovation decision consists of the following five steps: 1) Knowledge, 2) Persuasion, 3) Decision 4) Implementation 5) Confirmation
The Theory of Prospective satisfaction	LaRose et al., (2001)	Expected outcomes can better predict Internet usage as compared to conventional usability and satisfaction research.
The Technology Acceptance Model	Davis and Venkatesh (2004),	Extended Davis's (1989) TAM model to study adoption of planned product concepts.
Theory of Innovation Diffusion	Xue et al. (2011)	Customers residing in high density areas exhibit greater transaction demand and higher efficiency indicating an impact of socio-cultural environment on innovation diffusion.

Table2.1 Summary of the theories associated with Internet banking adoption

2.5 Consumer adoption of Internet banking

With Internet's quick expansion into the lives of millions we can safely consider this decade as being the one when technological revolution and innovations have become significantly important in our general and professional lives. These rapid advancements have caused some major changes both economically as well as in the business world (Qureshi et al, 2008).

Research into adoption of Internet banking showed that there are many predetermining factors like demographics, motivation and behaviour towards technology which affect customers' willingness to accept it. It is also found that prior experience with computers and technology can influence customer's attitudes towards technology (Laforet and Li, 2005). Consumers are forced to consider concerns about password integrity, privacy, data encryption, hacking, and the protection of personal information (Benamati and Serva, 2007). A great amount of consumer involvement is also required in electronic banking, in that a consumer is expected to continuously maintain their involvement with the technology (Jane et al, 2004). So regular users are the ones who need to use it at a regular basis and have acquired a certain level of comfort with the technology (Servon and Kaestner, 2008).

Customer adoption is an acknowledged issue for financial institutions and there have been several studies that have tried to determine why individuals choose a specific bank taking into account important factors such as the service facilities, reputation and interest rates (Nasri, 2011). Farzianpour et al. (2014) explains that, Internet banks offer convenience and accessibility both of which are attributes which customers, who have less time to spend on activities such as visiting a bank, would prefer. In addition Internet banks must offer qualities like perceived usefulness, ease of use, reliability, responsiveness, security, and continuous improvement (Li, 2012; Liao and Cheung, 2008). Another study by Farzianpour et al. (2011) concluded that the most important quality attributes in the perceived usefulness of Internet-based e-retail were individual expectations regarding accuracy, security, network speed, user-friendliness, and user involvement and convenience. Mavri and Ioannou (2006) conclude that demographic variables such as an individual's age and individual attributes such as difficulty in using the Internet, fear of change, lack of information about products/services provided are

some of the crucial determining factors of a person's decision to use or not use Internet banking whereas the technical factors such as speed of transaction or the cost associated with an Internet connection have very little impact on decision making.

Researchers have identified different matrices for evaluating the quality of service in electronic channel. For example, Ibrahim et al. (2006) evaluate quality of service in electronic medium based on the following six dimensions: "1) the provision of convenient/accurate electronic banking operations 2) the accessibility and reliability of service provision 3) good queue management 4) service personalization 5) the provision of friendly and responsive customer service and 6) the provision of targeted customer service." Similarly, Qureshi et al. (2008) suggest that quality of service in e-banking can be evaluated on the basis of perceived usefulness, security and privacy. Similarly, Amin (2007) proposed the following four actors as key to determining the quality of service in e-banking: perceived usefulness, perceived ease of use, perceived credibility and computer self-efficacy.

Diffusion of e-banking is an example of diffusion of new technology. Diffusion of new technology often occurs through social learning and hence it is likely to spread faster in densely populated areas (Furst et al 2002). However, this higher adoption of new technologies in urban areas can also be attributed to facilitating conditions such as availability of high speed Internet. In terms of need, people in sparsely populated rural areas have more to benefit from e-banking because it minimises their efforts to walk to a physical branch which is often located at quite a distance. Also, Sinai and Waldfogel (2004) found that Internet is commonly used by individuals to overcome isolation and hence, adopting Internet is a "need" for rural residents. However, the evidence indicates that the adoption of e-banking in rural areas has been comparatively lower even in countries like US (La Rose et al, 2007).

Researches into the impact of demographics and economic status on adoption of e-banking have resulted in mixed results. For example, Guerrero et al. (2007) did not find any evidence of demographics or economic status to be significant predictors of adoption of e-banking. On the other hand, Courchane et al. (2002) and De Young et al. (2007) found that young and educated individuals are more likely to adopt e-banking. Orviska and Hudson (2009) conclude that probability of adoption of e-banking is likely to rise with age up to the age of 50 after which it starts to drop with rise in age. Other studies found regional prosperity (Sullivan and Wang, 2005), employment growth (DeYoung et al., 2007) and Internet literacy (Bughin, 2003) as significant predictor of adoption of e-banking.

While e-banking adoption has risen as a whole, it has not kept up with the pace of Internet usage (White and Nteli, 2004). For example, According to World Bank (2014) estimates, only 61 percent of Internet users use e-banking., The gap between potential and actual number of customers using e-banking is attributed to the lack of trust among customers, usually those that are 65 years and above (Ilett, 2005, cited in Wong, Loh, Yap and Bak, 2009; Perumal and Shanmugam, 2005). Some customers still prefer face-to-face interaction (Eid, 2011; Al-Ghaith et al. 2010) resulting from their fear of the online environment and lack of trust in the Internet. To reduce the impact of mistrust on the inhibiting factors like fear of the Internet or security, it is important to build trust with the customers (Farzianpour et al. 2014; Okeke, 2014; Beheshti et al., 2012; Li, 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Vatanasombut et al., 2008).

While use of e-banking has increased somewhat in years, banks continue to face one challenge and that is the lack of loyalty for e-banking channel. It is found that customers continue to keep on switching back and forth between the e-banking and brick-and-mortar banking channels (Sarel and Mamorstein, 2003, cited in Wong et al. 2009). Morgan and Hunt's (1994, cited in Wong et al. 2009) commitment-trust theory proposes that trust leads to commitment in relationships, and so, if trust is built amongst existing customers that will, over time, result in them committing to the e-banking service and therefore reduce the likelihood of customers 'jumping ship' (Wong et al. 2009; Vatanasombut et al. 2008).

The role that risk plays in building trust in well evident in previous literature (Eid, 2011; Pavlou, 2003), but what isn't evident is the relationship with between perceived risk and trust and how this affects Internet banking (Li, 2012). According to previous studies, perceived risk, as opposed to objective risk is what matters when forming trust (Li, 2012; Büttner and Göritz, 2008; Garbarino and Strahilevitz, 2004). Also, many studies in the past showed that while perceived risk is believed to be directly related to the intention to use Internet banking, there is also the fear of theft that influences intention. There is a lot of work required in exploring how perceived risk influences trust; for example, Chen and Dhillon (2003) argue that while reducing perceived risk is essential for improving trust but there is no certainty that reducing perceived risk will improve trust.

When we look at individual rationale for not adopting Internet banking the fear of security is a very important factor (Li, 2012; Huang et al., 2011; Orviska and Hudson, 2009). Researchers have found security to be a consistent predictor of the adoption of e-banking in

different countries such as Cheng et al. (2006) in case of Hong Kong, Poon (2008) in case of Malaysia, and Guerrero et al. (2007) in case of EU. Security risk has a significant and negative impact on trust in e-services and consequently on adoption of e-banking (Farzianpour et al. 2014; Dimitriadis and Kyrezis, 2011; Aldas-Manzano et al, 2011; Kelton et al. 2008). Here trust refers to the banking service provider and not the Internet service provider. Researchers have confirmed the link between trust and adoption of e-banking. McKnight et al. (2002) emphasize four elements of trust: "trust in the safeguards of the Internet, trust in the legal and technological structures of the Internet, trust in devices such as encryption to provide protection various threats and trust in the robustness and safety of the Internet environment." On close inspection it can be seen that these aspects of trust are related to different kinds of risks such as security risk, transaction risk, performance risks etc. This research focuses on perceived risk as an influencing factor in adoption of e-banking. Trust is not included as part of this research because the researcher believes that trust and perceived risks are closely interlinked and studying just one of these will be sufficient to improve adoption of e-banking. Furthermore, the researcher believes that influencing perception of risk is more practical (by resolving several risk issues) rather than influencing trust. Hence this research focuses on the link between perceived risk and adoption of e-banking.

2.6 Impact of perception of risk on adoption of technology

Farzianpour et al. (2014) comments that consumer's decision making process is a multidimensional process which takes into account the perception of risk, analysing different technologies, cultural issues etc. Online banking is a key subject area in context of perception of risk. E-banking is still under development phase and both providers and consumers are still trying to find a balance between supply and demand i.e. what will be their technological needs and how these can be satisfied (Littler, and Melanthiou, 2006).

A detailed investigation of existing researches is required to understand the consumer's interaction with technology (Aldas-Manzano et al. 2011). Online banking, for instance is

convenient for the customer and the provider but this convenience comes at the cost of high perceived risks among consumers (Boyes and Stone, 2003).

In many ways, e-banking is a disruptive innovation because it has led to a completely different way of conducting banking business. This, being a technological innovation, will obviously carry certain risks especially in terms of impact on the user. It is no secret that perception of risk acts as inhibitor in adoption of new technology (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Farzianpour et al. 2011a, 2011b; Ruiz-Mafe et al., 2009) . It is, thus, critical for providers to tackle this perception of risk in order to increase adoption of new technology. Reducing perception of risk requires a multidimensional approach- the customers need to be educated about actual risks, made aware of the benefits as well as the provider need to educate the customers on what steps it takes in order to reduce the risk for the consumer. E-banking providers have often advised customers to change passwords frequently (Li, 2012), avoid using publicly accessible devices for accessing e-banking service (Wu et al. 2011), etc. But these are unlikely to have an impact on the customer's perception of risk (Farzianpour et al. 2014). Merely providing e-banking service and promoting use of e-banking service is not likely to lead to adoption of e-banking service as can already be seen in the poor adoption of e-banking service among Saudi (Eid, 2011). It is essential that the providers work to reduce the perception of risks in e-banking (Farzianpour et al. 2014).

Based on the discussion above it can be hypothesised that:

Hypothesis 1: Perceived risks have a significant and negative impact on the adoption of e-banking.

2.7 Impact of culture on technology adoption

Baker (2011) used TAM2 model to study the in Saudi Arabian knowledge workers' adoption of new technology and the role played by Saudi culture in this adoption behaviour. According to his findings TAM2 models can explain up to 40.2 percent variance in adoption of new technology among Saudi knowledge workers. This is somewhat different from the Davis and Venkatesh (2002) findings which estimated that TAM2 can explain somewhat between 34 and 52% variance in adoption of new technology among US consumers. These findings

indicate that there is a possibility that the behaviour of individuals as far as adoption of technology is concerned can be influenced by their culture. However, more empirical researches are required to ascertain the truth.

Lee et al., (2013) employed Using Hofstede's cultural dimensions and Bass diffusion model to investigate the difference between American and South Korean consumers' adoption of mobile phones. Their findings indicate that while US culture plays a vital role in adoption of innovation, South Korean culture promoted imitation. This indicates that in individualistic societies such as the US, individuals' decisions are based on their personal views and not the collective views of the society. In such a society individuals are likely to seek direct information and on their own. On the other hand, in collectivist societies such as South Korean, individuals tend to seek information collectively. In such societies the decision to adopt or reject is taken at the collective social level. Saudi Arabia is a collectivist society (Hofstede, 2015) and hence decisions are expected to be taken collectively. This means that the adoption of e-banking will be either very high or very low based on the collective perception of the society. At the current levels it seems to be in the lower side (Eid, 2011). Gupta et al (2012) studied the role of organizational culture in adoption of technology in a government agency in a developing country like India found that it is a precursor to the users acceptance and use of the Internet technology (UTAUT). UTAUT is a well-researched and used model to study adoption of technologies in developing nations. Sana et al. (2010) used a sample of sixty four countries to study influence of culture on adoption of technology, specifically wireless communication. Their findings indicate that the technology diffusion patterns are similar in countries which share cultural attributes. Furthermore, the find that while masculinity aspect of culture has no significant bearing on the adoption of technology but uncertainty avoidance aspect, which is directly related to perception of risk, does have a significant influence on adoption of new technology. They recommend conducting further research to understand how the culture influences adoption of technology.

Hofstede's cultural indices are extremely useful in this regard because it provides five indices (not extended to six) which can be used to reasonable accurately create a profile of any national culture. It must be recognised that within countries itself, several different local/ regional cultures might exist and there is only a certain extent to which national culture can determine society's behaviour.

Technology Acceptance Model was one of the first models developed to study adoption of technology and with its various evolved form, remains one of the most commonly used frameworks in studying adoption of technology (Jan and Contreras, 2011; Lai and Li, 2005; Nistor et al. 2010). One of the problems with TAM, however, is that it addresses adoption at individual levels and cannot be used to study societal level adoption of technology. In order to use it to study societal level behaviour it is essential to add cultural dimension to this model (Khasawneh and Ibrahim, 2008).

Srite and Karahanna (2006) used Hofstede's cultural dimensions to study impact of culture on IT adoption in 30 different countries. The research led to the findings that social factors influenced adoption of IT more than perceived usefulness in high power distance, uncertainty avoidance, and masculine cultures alike. Akour (2006) used Hofstede's cultural dimensions to study the adoption of internet in Jordan. He found that power distance and collectivism aspects of the culture had a significant on adoption of technology while femininity and uncertainly avoidance were not found to be statistically significant influencers of adoption of technology. In another study by Li et al. (2009) it was found the collectivist and feminists are more concerned about collective opinions while masculine and individualistic societies tend to make decisions at personal levels. Individuals with high power distance tend get influenced by individuals higher up in the hierarchy and in cultures characterised by high uncertainty avoidance, individuals tend to act extra cautiously when faced with anything new. High power distance cultures are also interestingly less accepting of IT than low power distance cultures. At the same time, goal focused nature of masculine societies make them more likely to adopt IT (Li et al. 2009).

Li et al. (2009) studied the difference in Chinese and American consumers' attitude towards global websites. They found that time orientation and individualism aspects of cultures have an influence on adoption of global websites. These attributes influence perceived usability and perceived ease of use. The other four dimensions of Hofstede index were found to be insignificant influencers of adoption of global websites among Chinese and American consumers.

Setlock and Fussell (2010) found that due to higher value of personal relationships among Chinese consumers as compared to US consumers, Chinese consumers are more likely to interact face to face with other individuals and often use video chats to interact (Wang et al, 2009). In fact most Asian societies are high context cultures and tend to prefer video based

chatting as compared to North Americans (Kayan et al, 2006). This is relevant for this research because if Saudis are found to be of similar characteristics such as Chinese, it would means that they are more likely to value their personal relationships and more likely to prefer brick and mortar banking model where they can meet the teller face to face.

Authors	Factors	Findings
Baker et al. (2011)	IT adoption in Saudi Arabian culture in the context of developing and non-western countries	The authors findings aid the understanding of cultural context with regards to IT adoption and also reveal the need for further extensive research into cultural factors.
Lee et al., (2013)	Using Hofstede's cultural dimensions to explain the impact of Type I and Type II cultural differences on patterns of mobile phone adoption	People from individualistic cultures seek information independently and directly from the source while people from collectivistic cultures rely on the opinions and experience of like-minded people with the innovation.
Gupta and Dasgupta (2012)	How organizational culture influences adoption of Internet technology in a government agency of a developing country like India.	Adoption was directly influenced by organizational culture.
Sana et al., (2010)	The impact of culture on adoption, in the context of adoption of wireless communications.	Uncertainty avoidance has a great impact on diffusion while masculinity has none. Moreover, if Hofstede's cultural indices were available for more countries a more detailed and reliable study could be conducted.
Durfee et al (2006); Srite and Karahanna (2006); Akour et al, (2006); Zakour (2007); Li et al, (2009)	Moderating and direct effects of cultural values on IT were integrated and Hofstede's cultural dimensions were measured	Two studies conducted by Zakour et al. and Li et al. generated contrasting results - that cultural dimensions directly impacted IT adoption and that 4 of the dimensions had no impact at all respectively.

Table 2.2 research conducted on the cultural impact on adoption of technology using Hofstede's cultural dimensions

The table above clearly indicates that there is some discrepancy in the findings of past researchers on the influence of different aspects of culture on adoption of new technology. However, there is sufficient evidence indicating that an individual's culture is like to influence if he/she chooses to adopt e-banking and therefore we can hypothesize that:

Hypothesis 2 : E-banking is significantly influenced by cultural factors.

2.8 Hofstede's five Dimensions of Saudi Culture

Geert Hofstede's (2003, cited in Cronjé, 2011) mentioned that there are fives aspects of a culture which can be used to characterise a nation's culture. Hofstede's index is probably the most commonly used index for studying national cultures. The five dimensions were developed considering the "collective programming of the mind which distinguishes the members of one category of people from another" including the following four components: symbols, heroes, rituals and values, which represent "the deepest level of culture". Hofstede's five dimensions are: "power distance, individualism Vs collectivism; masculinity Vs femininity, uncertainty avoidance and time orientation."

The five dimensions in relation to Saudi Arabia are explained below:

Power Distance: This dimension refers to the extent to which a society behaves in hierarchical manner i.e. to what extent is there unequal distribution of power among members of the society (Cronjé, 2011). In high power distance society, individuals tend to work in the direction to achieve higher social status and consequently higher power. According to Hofstede index, Saudi Arabia ranks quite high in power distance scale indicating more centralised decision making and unequal distribution of power.

In context of adoption of technology, the reaction of the individuals higher in power model has a significant impact on the reaction of the overall society. For example, many religious preachers talk a lot of about evils of technology and this often influences the perception of individuals about using new technology. Since these individuals sit up high in the social hierarchy due to their higher perceived knowledge of Shariah principles, their words have a lot of impact on the perception and behaviour of individuals. Shariah principles require the Muslims to follow the words the words of religious preachers about how Shariah principles are to be applied in modern societies. These principles were written many centuries ago when

modern technology did not exist. Hence there are no existing principles linking the principles with adoption of modern technology. In this context the role of these religious preachers become quite significant as they interpret the Shariah principles and apply to modern context and preach how these should be applied in modern context (Ramly, Said, Rahman and Choo 2014).

Individualism versus Collectivism: This dimensions whether the individuals think as individuals or collectively as a group (Cronjé, 2011). Collectivist societies take decisions collectively and social and communal aspects play a vital role in people's decision making. Individuals are also influenced by the opinion of the others in the society (Li et al, 2009).

Saudi Arabia ranks high in collectivism (individualism score 25) and hence is a collectivist society where individuals think as a group and are concerned about society. In such societies the perception of risk works at social levels i.e. any event which could affect the perception of risk, does so for most of the individuals in the society. For example, if one person faced some fraud in online banking, it is likely to influence most people as if they had faced the fraud. Also in such society the adoption of e-banking will occur at collectivist level i.e. either it will be higher or very low. Currently it is at the lower spectrum (Eid, 2011). Also, in collectivist societies like Saudi Arabia, individuals are less likely to reject social norms and adopt a technology which has been rejected at social level.

Shariah principles affect the collectivist culture of Saudi society because it sets strong focus on practicing religion. Religious principles guided by Shariah binds the society together making it a uniform society which by and large thinks alike (Al-Ajam and Nor, 2013). The negative aspect of this is that the society rejects something as a whole and on the positive side society accepts things as a whole. Thus, what the e-banking service providers need to do is provide a trigger which will push the usage of e-banking.

Masculinity versus Femininity: Masculinity refers to tough values like competitiveness, success, performance orientation, assertiveness etc. which are normally linked to male roles. In masculine societies these values are given precedence over feminine values such as care, solidarity, service, maintaining warm personal relationships etc. (Cronjé, 2011). Individuals in feminine societies are more likely to be concerned about individuals in their social circle and would not engage in competition with them. Also individuals in masculine societies are

likely to adopt technology faster as they will exhibit their competitiveness by remaining abreast with technology (Li et al, 2009). Saudi Arabia scores moderately high (score of 60) indicating that values such as competitiveness, success, performance orientation, assertiveness will be valued high in Saudi society. This indicates that there will be greater fear of failure which could lead to rise in perception of risk.

Shariah principles guide Saudi society to a great extent in this regard. It supports the principles of equality (Cassell and Blake, 2012) which, to certain extent, takes away the feeling of competition among the societies. In Saudi society the feeling of equality among all human beings (Cassell and Blake, 2012) somewhat suppresses the desire to excel and prove oneself as better than others.

Uncertainty Avoidance: Out of al dimensions of culture proposed by Hofstede, the one which is probably most strongly linked with perception of risk is uncertainty avoidance. It refers to how individuals of the society will feel in situations characterised by unfamiliarity and uncertainty (Cronjé, 2011). Saudi Arabia ranks quite high in uncertainty avoidance (score 80). This indicates that Saudi society is likely to avoid risk and would avoid situations which are unfamiliar, uncertain and unstructured. Technological innovations are likely to be associated with al such attributes and this means that there is a high probability of rejection of technological innovations (Li et al, 2009).

Uncertainty avoidance is directly related to perceived risks because uncertainty avoidance is about avoiding any form of risk. Shariah principles put restrictions on individuals taking irrational risk (Cassell and Blake, 2012). This is one of the guiding principles of Islamic banking sector and banking products and services.

Long-term versus Short-term Time Orientation: This dimension refers to the extent to which the society focuses on the future. Long term oriented societies tend to save and invest in future and are likely to persevere despite shortcomings. Short term oriented societies tend to look for short term gains, tend to focus more on consumption and are often focused on credit (Cronjé, 2011). Saudi Arabia has lower ranking on long term orientation indicating it is a short term society which may be less patient with technology. They tend not to invest

efforts in technology if they do not see clear and immediate benefits of adopting new technology (Li et al, 2009).

This dimension has been replaced by another dimension termed 'pragmatism' in Hofstede's new index. On this index, Geert Hofstede explains: "The normative nature of Saudi Arabian society can be seen in its low score of 36 on this dimension. People in such societies have a strong concern with establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results."

This indicates that Saudi individuals are less likely to invest in technologies which provide long term benefits but no immediate short term benefits. Also respect for traditions would mean that they are more likely to continue to adopt conventional ways of doing business including brick-and-mortar banking model over the new e-banking model.

The long term orientation of Saudi society can be said to be somewhat influenced by Shariah principles as well because Shariah principles support consistency which in turn support long term orientation of the nations (Cassell and Blake, 2012). This is evident in the behaviour of Saudi individuals who tend to invest in immovable assets such as real estate more than in fast moving assets such as shares and stocks.

This research has adopted Hofstede's cultural dimensions but there are some other national cultural frameworks which could have also been used. Most noticeable of these alternative frameworks is that Seven dimensions of culture framework published by Fons Trompenaars and Charles Hampden-Turner in 1997 in their book "Riding the Waves of Culture." Fons Trompenaars and Charles Hampden-Turner (1997) identified the following seven dimensions for defining culture:

- Universalism versus particularism.
- Individualism versus communitarianism.
- Specific versus diffuse.
- Neutral versus emotional.
- Achievement versus ascription.
- Sequential time versus synchronous time.

- Internal direction versus outer direction.

There is some similarity in the dimensions proposed by Hofstede and Trompenaars and Charles Hampden-Turner (1997). For example, "Individualism versus communitarianism" dimension proposed by Trompenaars and Charles Hampden-Turner (1997) is same as the "Individualism versus collectivism" dimension proposed by Hofstede. Careful analysis of the dimensions proposed by Hofstede and Fons Trompenaars and Charles Hampden-Turner (1997) indicates that Hofstede's dimensions are suitable for investigating the adoption of technology. Furthermore, there exists research evidence of use of Hofstede's dimensions in investigating the adoption of technology. Furthermore, there exists sufficient evidence and analysis of Saudi culture based on Hofstede's dimensions but not based on the dimensions proposed by Fons Trompenaars and Charles Hampden-Turner or any other cultural framework. Considering these arguments Hofstede's dimensions were considered suitable for this research.

Shariah law is the most critical aspect of Saudi culture because whole of the Saudi culture is formed around the guidance of Shariah principles. On close inspection it can be understood that Saudi cultural dimensions are based on Shariah principles. For example Shariah principles prohibit excessive risk taking which is evident in Saudi cultural dimension of high uncertainty avoidance. Collectivism is also enshrined in Shariah principles which make each and every individual responsible for the welfare of the society. These principles are also likely to affect adoption of e-banking.

2.9 Types of risks customers may face in e-banking

Due to the development of information technology businesses are becoming more transparent and this increases customer risk perceptions and therefore this has become an important topic for firms that provide Internet-based services. Several researches in the context of e-commerce study the risks associated with online transactions. Keeping in mind the different perspectives, the researchers studied risks at the various stages of online transactions. For instance, they focused on security and privacy risks, reliability of the other party, time risk (Vijayasarathy, 2004; Vellido, Lisboa and Meehan, 1999), functional risk, psychological risk, social risks etc. (Crespo, Rodrı´guez and Garcı´a de los Salmones Sa´nchez, 2009;

Cunningham et al. 2005). The risks can be categorized as hard or soft risks – hard risks being more tangible such as loss of funds and time risks that can be measures. While there are also soft risks associated with online transactions, which depend on the context and perspective of an individual and cannot be measured. When people are asked question about these risks it is often seen that they are easily able to answer those pertaining to the tangible risks while they can answer about the soft risks vaguely, at best. This is because individuals cant Asses soft risks due to the intangible nature. It is also found that these risks are also more difficult to solve. For instance, if a customer loses money due to a fraud committed online, they bank is able to refund her the money but cannot so much to relieve her of the stress the situation caused her. However, both types of risk have a significant impact on perception and are therefore important components of the risk perception model.

According to Case (2002) the primary risk in e-commerce is associated with the product, remote transaction, the Internet and website risks and based on their analysis of these they recommended 18 strategies for reduction of perceived risks including but not limited to money back guarantee on unsatisfactory purchases, ensuring security of payment channel at the server side, as well as providing money back guarantee on purchases. A similar quantitative research was carried out by Dong, Li, and Yang (2005) where they looked at the impact of various aspects on perceived risks under seven dimensions including included payment, privacy, delivery and service as four dimensions of perceived risks in online channel.

In a research conducted by Cunningham et al. (2005), they found that the perceived risks from the e-customers are different from the traditional ones. They believed that the financial risk is the positive factor for confirming e-banking by customers, while the psychological, physical and time risks are considered as the negative factors that lead to refusal on their behalf. Since transactions like transfer of money are essentially something customers have no control over it is natural they perceive a risk (Kim, Steinfield, and Lai, 2008) – the individual can only send command for a transaction to be carried out but has no control over how it is undertaken or the number of aspects that may develop post transaction. This increases the perception of risks and inhibits one's willingness to carry out online transactions. Perceived risk is found to have a negative impact on e-commerce using online channel for purchases, attitude toward using online channel for purchases (O'Cass, and Fenech, 2003; Heijden, Verhagen and Creemers, 2003; Shih, 2004) and intention to adopt online channel for e-commerce (Pavlou and Featherman, 2003).

Cunningham et al. (1967) concluded that product risks and personal risks are both significant influencing factors on a customer's purchase behaviour. Similarly, Forsythe and Shi (2003) found that perceived risk has a significant impact on online shopping. Later studies by Chen and Li (2010) and Crespo et al. (2009) supported these findings.

A comparison of the use of online and brick mortar channel can be a good measure of perceived risk since in brisk and motor channels there is more control over the transactions and therefore less uncertainty, while in online channels he customer is not aware of most of the process as it occurs in the background. Hoffman, Novak and Peralta (1999) found that online customers are not as comfortable exchanging money or money related information, as they do not have enough trust due to the lack of control. This causes a heightened level of perceived risk, which reduces the motivation to engage in online services or information and could also explain why people are reluctant to use online banking.

Some research suggests that companies that use the online channel are not making efforts to build trust with their customers (Schoder and Yin, 2000), which makes the customer believe that things are not happening or that there will be undesirable consequences. So, customers tend to use online resources to seek information and make purchases in-store anyway (Urban, Sultan, and Qualls, 2000). For instance, the customer can research a product online and then walk into a brick and motor store and purchase it. This not only reduces time for the customer as her gets his product immediately but also allows him to see and feel the product before making a purchase. This can be applied to e-banking in that a person can chose to research the product/services online. Online banking is static and the information provided may not always answer all the queries that a customer may have this is in addition to a significant time delay associated with online banking transactions.

Banks do apply sophisticated authentication and encoding tools and engineering to merchandise identity of customers and their log in details but this is insufficient to bring forth trust among customers. This is the reason why customers' perceived lay on the line of online channel remains high despite advancement in encoding and authentication engineering (Forno and Feinbloom, 2001). Engineering leads to several benefits such as round the clock accessibility, freedom of geographical accessibility, speed of transaction etc. For example, a customer transferring money into someone's account would realize that the payment has been deducted from his account but he is not informed of when the money has arrive at its intended recipient. By word of mouth, that is, when a service is advocated by existing users

trust can be best built. This is especially true in closely-knit societies such as Saudi Arabia where people often share their experiences and where experiences of close friends and family members often influence individuals' behavior. This is similar to eBay wherein a customer can trust a seller based on the customer reviews by previous customers (Resnick, et al. 2000).

There is evidence that indicated that some people do adopt e-banking and other online services and that not all individuals are swayed by perceived risks. These people either have a lower perceived risk or that perceived benefits such as lower product/service costs. Reduce information costs, better efficiency, and better value for money etc. from the transaction outweigh the perceived risks.

Some consider this a social exchange between banks and customers, where there is an element of expected service in exchange for transfer of assets. Banks get paid in the form of deposits, which they use to generate profits, or in the form of transaction fees. In exchange, customers expect the banks to take up the transaction, which they do. Social exchange paradigm aims to predict what exactly it is that influences a customer's decision to engage in a particular transaction. In social exchange human relationship is the degree of trust of the counterparty, which is one of the key determinants of whether humans will engage (Coleman, 1990).

The delay in delivery of product or serviced increases risk perception, this is because one party has initiated a relationship with another in exchange of the product and service and there is no guarantee that the product/services will be delivered at all (Coleman, 1990). In some cases, contracting can reduce the chances of this, for instance in some pizza joints, if the pizza isn't delivered within a stipulated period of time, it is free. In the case of e-banking however, these contracts cannot be used since there are many possible reasons for delay and moreover, customers do not pay fees per transaction but rather a lump sum price. Additionally, the contract itself will be expensive to enforce, which is reason enough for people to deter from it. This is why trust plays a crucial role in establishing online relationships (Knights, et al. 2001).

Essentially trust would mean that one party will hand over assets to the other that can use them in any way for their own benefit (Jones, Wilinkens, Morris and Masera, 2000). And if the counter party were to deliver the services/product to the trusting party satisfactorily, this would reinforce their trust thus creating a relationship between the two parties. However, if they fail to deliver, the trust diminishes (Coleman, 1990). For instance, in case of online

banking, payment is taken out of the account as soon as instruction is issued to transfer the funds from the payee's account. If the funds don't get transferred the bank makes money out of charging interest, and sometimes penalties for late payment of bills. There could also be worse outcomes if the intended recipient does not receive the money that was to be transferred (Coleman, 1990).

The central operational risk in e-banking is security. In Czech, a survey about the future of e-banking with regard to innovations in the country and around the world was conducted by Georgesua (2000cited in Shafei and Mirani, 2011). According to him, the facilities provided through online channels present several risks and benefits for the customers and the law risk can be considered the most important because of the risk of fraud. The paper also suggested a mechanism to protect customers from the law risk in the web. Slovic (2007), through his research on e-banking in Slovenia categorised the main risks in banks in strategic, operational, law and credit risk groups.

Cunningham (2005) explores the view that e-banking channel is riskier than the brick-and-mortar channel. He looked at perceived risk at different stages of transaction. According to Cunningham, financial risk is the main driver of user behaviour while other risks such as time, physical and psychological risks play secondary roles in the user behaviour. He also found that there is a risk premium for using e-banking which is evident at each and every stage of the transaction.

One of the problems with perceived risks in e-banking is that most of the risks cuts across several risk categories; for example, e breach of security allowing unauthorised access to customer information can be classified as a security risk but at the same time it is also a financial risk. Similarly, delay in transaction is a time risk as well as performance risk which can also result in financial risk (Slovic, 2007). Risk tends to cut across various categories and therefore presents a challenge when trying to make a strategic decision since only considering a limited number of problems can make it difficult to evaluate a problem. Therefore a whole rounded approach is needed when taking such risks.

In conducting online transactions, customers usually perceive risks especially when finance is involved. Many studied found that customers are worried about security (Farzianpour et al. 2014). Agarwal et al. (2009) states that for electronic banking risk perception is usually higher. It can be argued that once the user activities are involved, the security issue plays a very vital role (Farzianpour et al. 2014). Security has become one of the key aspects affecting

adoption of online banking (Farzianpour et al. 2014; Farzianpour et al. 2011a, 2011b, Wu et al. 2011)

Psychological risks such as computer anxiety and communication apprehension also affect individuals' decision to adopt e-banking. For example, Mattila et al. (2003) found that individuals over 65 years of age are slowest adopters of new technology. Their perception was also driven by their perception of poor performance of the e-banking service; for example, poor support and training, complex interfaces, continuously changing web interface etc. In this regard resistance to change was also found to be a critical inhibitor of adoption of e-banking among older consumers (Sohail and Shanmugham, 2004).

2.9.1 Security and privacy

Security and privacy risk is mainly the risk that user's account information can be compromised and used in a manner which can cause some tangible or intangible damage/loss to the account holder. Security risks occur when customers are worried that other can see their personal financial information without their consent and this concern creates security risk (Littler and Melanthiou, 2006; Agboola and Salawu, 2008; Dube, Chitura and Runyowa, 2009; Masocha et al. 2011; Ndlovu and Sigola, 2013; Usman and Shah, 2013; Gerrard et al. 2006). In Internet banking security risk poses the biggest obstacle (Masocha et al. 2011). And improving the security can increase the preference for Internet banking among people (Angelakopoulos and Mihiotis, 2011; Demirdogen et al., 2010).

Privacy which relates to sensitive information which could lead to security and other forms of risks for the customers is critical for banks. For example, user information obtained from alternative sources could be used to obtain sensitive user information which could be used to inflict financial or non-financial damage to the customer. The various points and ways at which the user information can be compromised continues to increase the security and privacy risk in online transactions; for example, user information can be stolen using phishing, fraud, deception etc.

Security on the Internet is the most important of customer perceptions, which, in turn, influences the customers purchasing behaviour. As discovered by Angelakopoulos and Mihiotis (2011), the main reason for the customers deterring from the Internet banking is the

mistrust in services. Another study, which involved university employees, determined that if the costumers feel that their confidentiality with the Internet banking is not safe, they do not use it (Gülmez and Kitapçı, 2006, cited in Demirdogen et al. 2010; Agboola and Salawu, 2008). Auta (2010) and Li (2012) emphasize the importance of privacy and confidentiality in the adoption of online banking.

It has become a real challenge for banks to provide information security (Li, 2012; Farzianpour *et al*. 2011b; Gerrard et al. 2006) because users like to control all aspects of gathering information while using online services Farzianpour *et al*. (2011a). This issue has gained the attention of many researchers who have studied the government's behaviour against it. Wu *et al*. (2011) explored the similarities in online privacy regulations in USA and China. They found that the American legislative initiatives are more integrated and comprehensive when compared to the Chinese. Until recently, there was no specific right of privacy specified in dedicated legislation in China. These disparities create potential risks for customers in some countries.

According to consumers security risk is often associated with the possibility of losing money. Surveys show that the adoption of online banking services is greatly influenced by security risk. The gap between the actual and perceived security of a technology is what affects the behaviour of people (Huang et al., 2011; Demirdogen et al. 2010). It is the lack of awareness and incorrect knowledge about money security that threatens the success online banking (Huang et al. 2010; Gerrard et al. 2006)

There have been many studies with regard to privacy and security (Hernandez and Mazzon, 2007; Agboola and Salawu, 2008; Masocha et al. 2011; Auta, 2010; Angelakopoulos and Mihiotis, 2011; Aransiola and Asindemade, 2011; Benjamin and Samson, 2011; Wu *et al*. 2011; Li, 2012; Shah et al, 2014; Ndlovu and Sigola, 2013; Usman and Shah, 2013), According to Kolodinsky et al. (2004), security and privacy concerns are not equal. This means that impact of security risk perception on the overall risk perception could vary from individual to individual. Security concerns were found to be higher where technology is used for sensitive activities (Kolodinsky et al. 2004; Flaviàn, et al. 2006; Akıncı et al. 2004). However, security concerns also depend on the individuals' situation (Hernandez and Mazzon, 2007).

Rotchanakitumnuai and Speece, (2003) noted that if they doubt the system they are utilizing, individuals will always be apprehensive about their privacy, but in most cases, this does not

physically contact on immensely colossal corporate bodies that are postulated to be having better systems of managing their infrastructure. According to Polatoglu and Ekin (2001) and Hernandez and Mazzon (2007), individuals are more concerned about their security than their privacy. Security is a concern because, it involves losses and therefore, in online banking, perception of security, inclines to reduce if there has been much experience of utilizing the system and where the organisation has given the users adequate communiqué about the calibers of security that are enhanced (Shah et al. 2014; AbuAli and Abu- Addose, 2010; Ganesan and Vivekanandan 2009; Murdoch and Anderson, 2010; Koskosas 2011). Additionally, in most cases, institutions apprise users about the quantifications to taken to ensure their security but the institutions tell users how they must ascertain that they protect their privacy (Koskosas 2011). Therefore, security and privacy are centred between the organisation and the individuals, which make them difficult to assess. According to Choplin et al. (2011), where individuals fail to take certain measures to bulwark themselves they often incline to fail in the same and expose themselves to fraud and security issues.

According to CBN Annual report (2010) most of the fraud cases reported in 2010 could be attributed to poor internal control systems within the banks. Indeed, e-banking related fraud a significant contributor to banking sector's losses (Adams, 2010). Giles (2010) comments that with the online fraudsters becoming more sophisticated and organised, there is definite and urgent need of institutional level response to protect the clients or clients will lose faith in e-banking. Fraudsters are definitely more smart and capable than average users who stand little chance to protect himself against determined fraudster. However, banks have the scale and scope as well as incentives to strengthen its control systems so as to protect its customers (Cecil Eng et al. 2007). The recent efforts of the banking sector in this regard have already started yielding results. For example, the Financial Fraud Action (2011) report indicates that UK Fraud losses on credit/debit cards were at a 10 year low while online banking fraud losses fell by 24%. Such prudent and effective measures can boost the trust on online banking and can increase its adoption even among sceptical customers (Chang and Chang 2011). Benefits of fraud prevention measures are evident not only in banking but also in other sectors such as Insurance (Ormerod et al. 2012), healthcare (May 2010) and telecommunications (Estavez et al. 2006).

The inadequacy of security potentially leads to financial losses, punitive measures by regulators and negative media publicity (Shah et al, 2014) and there is definitely a need to bolster security in e-banking. Losses due to poor security in e-banking not only reduces usage

of e-banking but customers often switch banks due to poor experience (Vrîncianu and Popa, 2010; Benjamin and Samson, 2011). Thus, banks a lot to gain by improving security.

Banks can sue several strategies to combat security threats; for example improving collaboration between bank's staff and security agencies as well as a global effort to eliminate security threats (Aransiola and Asindemade, 2011).

Phishing is a common security threat in e-banking. This refers to a technique using which the fraudsters obtain customers' personal details which they then use to defraud the customer (Amtul, 2011). According to estimates more than a third of the financial market is a potential target for phishing.

Several possible solutions have been proposed to reduce security threats; for example, applying additional security measures such as biometrics (Vandommele, 2010; Bhattacharyya et al, 2009; Akinyemi Ibidapo, 2010) , One time passwords (Moskovitch, 2009) and multi level passwords (Herzberg, 2003).

Some researchers also argue about other methods such as data encryption in addition to biometrics and other authentication techniques (Shah et al, 2014; Ganesan and Vivekanandan 2009). Researchers such as Murdoch and Anderson (2010) argue that the authentication systems should be economically viable. The high cost of these biometric systems is perhaps the reason the banking sector has been so slow to adopt it.

Fraudsters have managed to remain one step ahead despite the variety of security measures adopted by the banks, and stories of online security threats are not rare (Gibson, 2011, cited in Usman and Shah, 2011). Researcher therefore hypothesises that security risks can significantly increase an individual's perception of risk. Hence:

Hypothesis: Security risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.2 Time risk

Every transaction takes some time to take place. E-banking transactions are expected to be faster than in-branch transactions but due to some issues that might not always happen. Time risk refers to two kinds of risks- firstly, that the transaction may not take place in time and

secondly, that the user may have to spend more time doing transaction online than in branch (Littler and Melanthiou, 2006).

The impossibility to overcome time constraints is one of the major reasons people resort to online services (Howcroft and Durking, 2000). It allows one to work from the comfort of their home and saves the time that it would have taken to go to the bank (Hernandez and Mazzon, 2007). Individuals are more likely to use online services when they see a potential to minimize time and therefore time plays a vital role when individuals want to manage their affairs (Kolodinsky et al. 2004). However, Taylor and Todd (1995) say that time is not a big reason in determining an individual's use of technology as security. Time is not about the duration for the online transaction but more about the convenience. In addition, Howcroft and Durking, (2000) stated that time is important but to the extent that is looked at as a variable in the process that has other easily quantifiable variables. In Rotchanakitumnuai and Speece, (2003) and Kolodinsky et al.'s (2004) opinion time risks depends on individuals ability to manage time, therefore their perceptions of time depends on whether doing online transactions will lower the time they are spending. According to Suganthi, Balachandher and Balachandran (2001), the most important aspect would be the comparison of what the duration of time is compared to what it would be, normally; for instance, paying bills online in a matter of minutes compared to the several minutes to an hour waiting in lines at the bank to do the same. This brings up the topic of facilities that are offered online versus the infrastructure that has been provided by the bank and the third parties(for instance the utility companies). Conducting online transactions is possible in many countries due to the level of technological development and penetration of the Internet. Time risks is therefore an issues that does not factor much into online banking because, there are many people who may create time to go to the bank while they run other errands they have.

Researchers, therefore concluded that time risks can significantly increase an individual's perception of risk. Hence:

Hypothesis4: Time risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.3 Cultural factors

Culture has a significant impact on how people behave in different situation and how they perceive things such as technology. Researchers have carried extensive research on how culture affects our behaviour and perception towards different aspects of technology. For example, Hiller (2003) fund that people from different culture have different perception towards usefulness of multilingual website. Similar findings were reported by Nantel and Glaser (2008) who fund that perceived usability of websites is influenced by our culture and language.

In context of adoption of technology, Tat et al. (2007) and Narteh (2012) speculated that adoption of technology may be significantly influenced by users' socio-cultural belief, values and experiences. Hence Narteh (2012) recommends aligning e-banking service with the socio-cultural perspective of the consumers in order to increase its adoption.

Tan and Teo (2000) found that for a technology to be adopted by consumers it has to be compatible with the consumers. One of the key requirements of using e-banking is being used to using internet and browsing websites. E-banking channel is nothing but an online channel of providing banking services but it is essential a website based channel. E-banking adoption may significantly depend on the extent to which it is compatible with the beliefs and values of the users.

It is well known that Saudis prefer to deal in cash and hence most small transactions are carried out in cash and in person. E-banking is a plastic card based transaction, and due to Saudis' preference for cash dealings it can be quite difficult to increase adoption of e-banking. In this respect the socio-cultural aspects may drive the behaviour in a manner which is likely to hinder adoption of e-banking.

Past researches have mostly overlooked the influence of culture on perception of risk and adoption of e-banking. Janelli and Yim (1997) criticise that Western intellectual traditions have dichotomised the explanation of human actions into the idealistic and the materialistic and suggested the rational choice theory must be considered in the social context. The relationship between cultural understanding and pursuit of developmental goal is therefore an important one.

Imitation of the behaviour of individuals in social network is a common phenomenon observed in consumers (Lee, 2009; Lim, 2003). This is a significant observation in context of

Saudi Arabian society because of the uniformity in Saudi society that stems from religious beliefs underpinned in common Shariah principles.

Saudi culture embraces values such as family values, society and community and this is quite evident in each and every aspect of life (Hofstede, 2015). Individuals mostly think collectively considering the wider impact on the family and social network. For example, when individuals take decisions, they consider how their decision will be perceived by other members in the social network. Individuals thus tend to follow the established norms and principles of the society. In case of Saudi Arabia Shariah principles are set of principles commonly followed by almost all Saudi individuals. This brings uniformity in their behaviour which is also likely to reflect in their adoption of technology. If it becomes accepted as a norm in the society, the adoption is likely to be rapid. But till it happens, very likely to adoption will remain low.

Several researchers have found evidence of impact of culture on acceptance of technology Guo et al, 2009; Twati, 2008; Georgescu, 2005, cited in Soltanpanah et al. 2012) and hence it is likely that it will affect adoption of technology. One of the most commonly used models to study acceptance of technology is the TAM model (Lai and Li, 2010; Law, 2007; Yi et al, 2006; Georgescu, 2005), but some authors criticise these models as being less specific (Khasawneh and Ibrahim, 2008). This research aims to fill this gap by developing a model specific to culture and perceived risk. Since Hofstede (2015) work on cultural profiling is the most commonly used and widely cited work in the field, this will be adopted for the purpose of this research.

One of the main aspects of e-banking is lack of human interaction as the consumer interacts with the technological interface of the bank. For Saudi customers, lack of knowledge of use of e-banking requires even greater assistance. On the other hand, as Aslam et al., (2011) found that e-banking is characterised by loss of personal service and relationship with the bankers. This means that adoption of e-banking is likely to be difficult for Saudi customers for two reasons; firstly, lack of knowledge and secondly, lack of support. .

Researchers therefore concluded that cultural aspects can significantly influence an individual's perception of risk. Hence:

Hypothesis 5: Cultural factors have a significant impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.4 Perceived Social risks

Social risk is the risk associated with loss of reputation among friends and family members as a result of some voluntary action (Murray and Schlacter, 1990). The possibility of losing reputation as a result of purchasing online can inhibit people's willingness to transact online. At the same time, some people may also get nervous about interacting face to face with bank's employees and in such cases, they are more likely to use indirect medium of communication, that is, Internet or telephone banking. However, Littler and Melanthiou (2006) argue that lack of direct communication in online banking is a built in deterrent.

Every individual lives in a society which consists of his/ her friends, family members and other individuals that he knows (Suganthi, Balachandher and Balachandran, 2001). The existing norms and behaviour of this social group have a significant impact on the behaviour of individuals as individuals tend to act in a manner which conforms to the norms and beliefs of his social group. Thus, individuals in certain groups may downplay or overestimate risks (Douglas and Wildavsky, 1982; Featherman et al. 2003 cited in Shafei and Mirani, 2011).

Social influences also affect people's adoption of e-banking. People transfer their own knowledge and beliefs about e-banking to other individuals in their social network and this eventually have a determining impact on the behaviour of other individuals (Littler and Melanthiou, 2006). This is particularly true in cases when there is an overall rejection of new technology. In such situations, it is essential for banks to tackle this social phenomenon by marketing to the group as a whole. One good example of the influence of social risks is that in social networks. Despite the inherent risks in using social networks, a large number of individuals engage in information exchange through these networks (Lee *et al*., 2013a; 2013b).

In case there is an overall rejection of the new technology, banks can use social leader approach to increase diffusion of e-banking. Becker (1970) found that the timing of an individual's adoption of new technology will depend on his/ her relative position in sociometric network and his/her most valued source of information. The individuals who adopt the new technology first are termed as 'opinion leaders'. Rogers (2003) carried Becker's work forward and found that the adoption of new technology can be linked to the

socio-economic status of individuals. On this basis they categorised individuals under different categories: early adopters to laggards. According to Rogers, opinion leaders are at the core of network and they lead the rest of the pack towards adoption/ rejection of new technology.

The rational decision approach proposed by Rosenberg (1976) suggests that individuals' adoption of new technology is often influenced by their perception of the future. According to this approach, individuals decide on optimal decisions based on their views on technological expectations and learning. Similarly, McFadden and Train (1996) explained that individuals decide to adopt a new product/ service based on whether they like it themselves and/or on the basis of the experience of others around them who have used that particular product/ service.

Combining Rosenberg and Roger's propositions it can be assumed that the early adapters of new technology are tech savvy users who like to lead the pack. Often these early adapters are young males who have good technical knowledge and a sound academic background (IDC, 2002). IDC report divided the customer segments on the basis of the participation in adoption cycle as follows: early adapters are mostly tech savvy males, early majority comprise of young working individuals, late majority are young working group with mostly females, and the laggards group consists mostly of old individuals.

One of the most significant drawbacks of studies on adoption of new technology is excessive focus on individual factors and lack of consideration for his socio-cultural environment (Rogers, 2003). Based on this criticism he identified five factors that affect adoption of new technology. These five factors are: perceived attributes of innovations; type of innovation decision; communication channels; nature of the social system, and extent of change by agents' promotion efforts.

Variable (Rogers, 2003)	Attributes of e-banking in Saudi Arabia
Perceived attributes of innovations	- Increased adoption but mainly among young consumers - Ease of transactions - Low cost
Type of innovation decision	- Voluntary decision - Collective decision making

	- Group thinking
Communication channels	- Multi channels
Nature of the social system	- Low Internet adoption as a whole, high among young population - Strong social network, strong familial and social bonds, broad social groups
Extent of change by agents' promotion efforts.	- Extensive promotion efforts required to push e-banking - Government support required to raise awareness and trust

Table2.3 five factors that affect adoption of new technology

Opinion leaders adapt new technologies without much push form the service providers and they consequently influence the opinion of other individuals in the society thereby creating an overall push for new technology. This means, studying the characteristics of potential opinion leaders for e-banking in Saudi Arabia should be the first step towards improving adoption of e-banking in Saudi Arabia. Li (2013) noticed that lifestyle orientations are other powerful cue to the admission of some new technologies. This insight can be applied by the marketers in Saudi e-banking industry to push for adoption of e-banking. However, the adoption of e-banking has remained sluggish at 15.3 percent even after a decade of introduction of e-banking in Saudi Arabia (Eid, 2011; Al-Ghaith et al. 2010). This indicates that early adapters may not be sufficient to push e-banking into mainstream Saudi society.

Social risks, according to Hernandez and Mazzon, (2007), imply the views of the society and how they influence an individual. It is therefore important to mention the cultural backgrounds of the individual when discussing social influences, because, according to Howcroft and Durking, (2000), individual's cultural background if closely knit, might influence their actions (Rotchanakitumnuai and Speece, 2003). According to Kolodinsky et al. (2004), Hofstede's cultural dimensions reflect the cultures of a society and hence are worth mentioning, because, there are some societies that are closely knit together yet others are not. Hofstede stated in one of the dimensions that where there are communal societies, individuals tend to work together and working together also entails making joint decisions (Polatoglu and Ekin, 2001). Social risks are hence viewed as to how members of the society view a certain phenomenon and how they influence the decisions of others, if they consider the technology to be bad, they might influence others. However, according to

Rotchanakitumnuai and Speece (2003), taking such a holistic view of this phenomenon implies that the society is not dynamic. Societies have all along shows levels of dynamism in that they might accept technology not because, it is wholly beneficial, but it helps in certain areas. According to Taylor and Todd (1995), online banking may not be viewed suspiciously by everyone and therefore, the society might be divided in its quest to determine how to adopt the same. But Suganthi, Balachandher and Balachandran, (2001), noted that there is therefore need to consider society on the basis of various factors including, occupation, welfare etc, because, this categorisation gives us a clearer view of determining how a social group interacts with technology. According to Kolodinsky et al. (2004), within a society, the younger members might be familiar with technology and hence willing to adopt the same, while the older members might not and also, the men, in societies where masculinity is prevalent, might be more inclined to use technology than women. On this point, the view held is that, in some societies, especially where women stay at home, as long as they have the technology at their disposal, they might use it more than the men, this is termed as 'gender use paradox'. In terms of the theory being examined, this factor raises the issue of facilitating conditions in the use of technology. Again, a look at other social groupings, might reveal that what working class might consider usage of Internet banking to be good than those who are not working, but this does not imply that those who are not working have a bad perception, it simply mean that they have not seen its use. Therefore, social risks are closely linked with the relevance of the technology.

Researchers, have, thus, concluded that perceived social risks can significantly increase an individual's overall perception of risk. Hence:

Hypothesis 6: Social risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.5 Performance risks

When customers engage in e-banking activity they have certain functional expectations with the system. The risks that these functional expectations may not be met are known as performance risks. Performance risk refers to consumers' concerns about the product or service level of performance in relation to expectations (Nicolaou et al., 2013). Laroche,

Bergeron and Yang (2004) defined performance risk as the possibility of defect or failure as a result of purchasing a product. In context of e-banking performance risk can arise in several situations such as transaction taking longer than anticipated, customers facing problems in accessing the service, or customers not being able to complete the transaction request due to connectivity issues etc. (Littler and Melanthiou, 2006).

For a customer to face performance risk, he/she must have some background knowledge about the system so to develop some expectations. However, e-banking is characterised by asymmetric information as well as lack of personal interaction which makes it difficult to correct errors. These factors lower the trust in the performance of e-banking leading to performance risk (Littler and Melanthiou, 2006). A few banks have tried using dummy websites to wallow users to practice using the website before trying to use the actual e-banking website (Cunningham et al., 2005) however, the impact of these was quite limited as there is significant difference in perception when it comes to using a dummy website and a real one even if they seem the same. This is because in the dummy website the customer is not concerned and can make decisions without worrying about the consequences. Also his/her steps are reversible. This is not true in real websites where nay step taken is the final step.

According to Polatoglu and Ekin (2001), a product is considered effective if it can do what it was supposed to do. When individuals buy products or services, the worth of the same is measured after the objectives have been achieved. Objectives therefore might relate to the cost of doing so, the time, the amount of work that can be done with the product etc. Online banking depends on an elaborate infrastructure (Featherman et al. 2003) and the performance of the infrastructure depends on its quality (Kolodinsky et al. 2004). It is therefore vital to examine performance from the tools that have been availed. Kolodinsky et al. (2004) have examined the challenges to online banking by assessing the problem of performance of the equipment that is meant to do the task. Suganthi, Balachandher and Balachandran, (2001) on the other hand examined the products that the company has in place and determined that such products, if they fail to do what the client needs, might be termed low in performance. According to Rotchanakitumnuai and Speece, (2003), an individual is able to view a product as effective depending on their personal circumstances and hence performance of the infrastructure might also be hinged on the ability of the individuals to interact with the same. This leads us to the point of quality, experience and level of usage of the system. According to Taylor and Todd (1995), individuals experience of using information technology can make

them see a system to be good, yet there are others who might dislike it because, they are not able to interact with the same nor carry their transactions. It is also vital for the individuals to examine performance from other persons' viewpoints. Performance, according to Hernandez and Mazzon (2007), is the speed to send or get money or do payment online. Kolodinsky, Hogarth and Hilgert, (2004) stated that it is the onus of the banks to consider time as a valid component that the banks must consider when providing online facilities. The banks must invest heavily on the infrastructures for the same.

Researchers, have, thus, concluded that performance risks can significantly increase an individual's perception of risk. Hence:

Hypothesis 7: Performance risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.6 Psychological risk

The cognitive risks that a customer faces while using a product /service are known as associated psychological risks. For example, when a purchasing experience does not correspond to the expected, people become nervous. This nervousness can be called psychological risk (Lim, 2003; Featherman et al. 2003).

Researchers such as Aslam et al. (2011) and Rockwell and Singleton (2002) suggested that individuals may reject adoption of e-services due to psychological barriers such as computer anxiety and communication apprehension. Thus, users with high degree of computer anxiety are less likely to use e-banking while those with high level of communication apprehension are less likely to use the services involving interpersonal communication. The psychological risk decline as people get used to using a particular product/service.

Technology apprehension is a significant barrier to adoption of e-banking, especially in certain segments such as much older individuals and less educated individuals (Hong and Yi, 2012). This technological apprehension means that the comprehensive efforts to increase penetration of Internet using technology-push model are likely to have limited impact. Adams et al. (2010) investigated the following psychological barriers to Internet use by older adults: perceived usefulness, perceived ease of use, Internet efficacy, perceived complexity of

navigation and perceived complexity of terminology. According to the findings the increased use of Internet led to positive perception of usefulness, ease of use, and efficacy of the Internet or e-mail. Age itself was not found to be a factor indicating that increased marketing of the Internet (aimed at the older user), combined with ease of browsing, availability of online support, , and increased provision of training for the older user would increase adoption of Internet based services such as e-banking.

Psychological risks according to Suh and Han (2002), inform us of the state of mind that an individual has. Kolodinsky et al. (2004) indicated that this state of mind is often influenced by individuals' surrounding, this surrounding comprises of the physical environment and unseen surrounding. According to environmental influences will affect perception and individuals are most likely to react to their perception. It is difficult to dissociate psychology from perception but in this context an individual's psychological state may lead to fear or impulsive actions which might affect their interaction with the online facilitates.

Take an instance where an individual is having other problems, for instance depression .This might affect their action and might lead to them not taking any caution when using online facilities, which might lead to compromise of their accounts and consequently losses to their finances. On the other hand an individual might also fail to take into account the benefits of such online facilities when they are in such a state and might develop a bad attitude to the same. According to Lederer et al. (2000), psychological risks are often short lived and might cause unexpected results and hence defining this risk in terms of its pattern is not easy. The views by Rotchanakitumnuai and Speece (2003) and Kolodinsky et al. (2004), are that the psychological state of an individual often leads them to fail to react appropriately when using technology, however, this cannot be said to be entirely true, because, technology usage also depends on experience and other variables. To examine psychological states of individuals and their usage of online banking therefore requires an individual approach or a case by case approach.

Researchers, have, thus, concluded that psychological risks can significantly increase an individual's perception of risk. Hence:

Hypothesis 8 : Psychological risks have a significant and positive impact on the overall perception of risks in e-banking in the Saudi Arabian banking sector.

2.9.7 Financial risk

Having examined various types and motivations of risks, it is now vital to consider the element of risk that is the focus of this discussion. Banking operations are numerous and different customers engage in different operations (Hong and Yi, 2012). However, in most cases, by virtue of them being linked to the bank, their operations often tend to be linked to financial or financially related transactions (Huang et al., 2010; Kolodinsky et al. 2004). This therefore means that they are most likely to be worried about the financial risks that they may face when engaged in online transactions. Such risks have been given above and mainly include loss of money in the process of transaction (Huang et al., 2010). Financial risk, also referred to as economic risk, is the possibility of monetary losses during online money transactions (Farzianpour et al. 2014). Littler and Melanthiou (2006) argue that most of the risk perception in e-banking originates from the possibility of a financial losses; in other words, financial risk is the primary risk in e-banking.

Perception of risks of online banking in most researches mainly refers to financial risks. Financial risk perception is the view that the person might lose their money (Polatoglu and Ekin, 2001). While this view is subjective, it is the biggest fear facing clients because it is not just a view but phenomenon that has taken place in many countries and area (Suganthi et al. 2001). Losing one's finances can be the result of fraud or bad system or processes. Therefore, in examining the issue of financial risks perception, it is also worth looking at the user perception of what causes financial risks. Rotchanakitumnuai and Speece, (2003) examined losses of money as a flaw in the system of banking that needs to be fixed. This makes the institution to be less effective in its operational procedures. According to Lederer et al. (2000), operational procedures can be classified in various ways including Systems procedures, corporate management procedures and human procedures. All these procedures often lead to failure of the whole banking system. Therefore, within a corporate body, an organisational system exists, which is comprised of various parts and where failure of one part denotes failure of the others. As mentioned earlier, suppose the financial system fails, can this be viewed from the perspective of other failures. Suppose the customer loses money, could this be the result of a bad process of online transaction that the bank has employed or could it be that the system itself is not able to collect correct instruction or is there a fraudster who has preyed on the customer?. All the questions given are curial in understanding the perception of financial risks from the customer.

According to Suh and Han (2002), when the customer realised that they have lost money, they contact the bank either in person or by phone. They are then asked to verify themselves as a matter of procedure and once the issues has been raised with the bank, the process of seeking to remedy the situation is now conducted at the bank though its internal fraud policies. Institutional procedures may be invoked while at the same time using industry regulations and government regulations to seek to find solution to the problem. According to Polatoglu and Ekin (2001), customers might perceive risks as a whole and not as a part but they may view all these risks under one big theme and that is, they have lost money. The biggest challenge is therefore for the bank to find their money and replace it. According to Rotchanakitumnuai and Speece, (2003), to the banks online transaction apparatus include the system, processes, persons and reserves of money kept aside for compensation. Perception of financial risks, therefore involves internal aspects of the company and the customers disposition including experience and other variables.

From the customer's perspective, the relevance of financial risks as a key risk of concern may be due to the importance of their finances to them (Polatoglu and Ekin, 2001; Kolodinsky et al. 2004). This is not a doubt on anyone, but it is the fear of losing their finances that makes them view anything that might jeopardise their finances as less attractive. However, Hernandez and Mazzon (2007), looks at this issue from another perspective by noting that the problem is lack of trust in the technology or inexperience. Experience cause trust and therefore the customers who do not have any experience may not trust the system being used. This view however fails to explain why some more experience clients may still not value technology. According to Kolodinsky et al. (2004), finances are important in every society and for those who do not intend to use the Internet for their online transaction, their fear might be due to the problems in using the same or the likelihood of them losing their money (Polatoglu and Ekin, 2001). When they have lost their money, the other challenge might be the process of getting it back (Suganthi et al. 2001). Perception of risks therefore involves perception of processes. This raises the question thus: is the Internet or technology an important tool for facilitating transactions or is it a barrier for the same. Also, another question that arises is about the position of technology in allowing users (clients) to interact with their world.

Researchers have thus concluded that financial risks can significantly increase an individual's perception of risk. Hence:

Hypothesis 9: Financial risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.8 Transactional risks

Internet has changed the manner in which we communicate and conduct business. Information is exchanged with lightning speed but at the same time not all users are comfortable using this technology. This lack of knowledge combined with some IT lapses could lead to poorer than inferior experience of using Internet based services. There is always a possibility that the transaction would not take place as expected and this leads to transactional risks (Ruiz-Mafe *et al*., 2009).

E-banking is a unique transactional environment characterised by trust, risk, uncertainty and interdependence (Farzianpour et al. 2014). In any online service the online environment acts as interface between the user and the provider and there is no direct interaction between the two. There thus, exists a spatial distance between the provider and the user and this means that the user is not able to view physical cues which will help him judge creditworthiness and build trust (Reichheld and Schefter, 2000). Furthermore, the transaction may not take place spontaneously leading to a greater degree of uncertainty (Grabner-Kraeuter and Faullant, 2008). The delay in transaction combined with the uncertainty that the transaction will take place as expected leads to higher perception of risk (Li, 2013). The reliability that the transaction will take place as instructed is critical for adoption of e-banking (Casalo et al., 2007; Hernandez and Mazzon, 2007; Lichtenstein and Williamson, 2006; Sayar and Wolfe, 2007). Time delay is not the only concern that customers may have regarding a transaction; customers may be worried that the transaction will not take place at all (Vatanasombut et al., 2008; Gerrard et al., 2006) and this could have serious implications for the customers; for example a business customer may lose a contract or his reputation as a result of unexpected delays or cancellation of transactions.

Thus, eliminating any perceptual gaps in expected and actual service delivered is essential for banks to improve adoption of e-banking (e.g. Vatanasombut et al., 2008; Liu and Wu, 2007;

Casalo et al., 2007; Lichtenstein and Williamson, 2006). Researcher, has, thus, concluded that Transactional risks can significantly increase an individual's perception of risk. Hence:

Hypothesis 10: Transactional risks have a significant and positive impact on the perception of risks in e-banking in Saudi Arabian banking sector.

2.9.9 Summary

The table below summarises the different types of risks which affect perception of risk as discussed by other researchers

	Security risk	Performance risk	social risk	time loss risk	Financial risk	Transactional risk	Psychological risk
Bauer (2002)	√	√	√	√	√		√
Kolodinsky et al. (2004)	√	√		√	√	√	
Featherman et al. (2003)	√	√	√	√	√	√	√
Cunningham et al. (2005)	√	√		√	√		√
Georgescu (2005)	√	√		√	√	√	
Slovic (2007)	√	√			√		
Demirdogen et al. (2010)	√				√		√
Gerrard et.al. (2006)	√	√				√	
Suh and Han (2002)	√				√	√	
Hernandez and Mazzon (2007)	√				√	√	
Flaviàn, et.al. (2006)	√					√	
Akıncı et al. (2004)	√				√		
Daniel(1998)	√				√	√	
Lee (2009)	√	√	√	√	√		

Shafei and Mirani (2011)	√	√	√	√	√	√	
Büttner and Göritz (2008)	√	√		√	√	√	
Littler and Melanthiou (2006)	√	√	√	√	√		√
Farzianpour et al. 2014	√	√			√	√	√
Hong and Yi (2012)	√	√		√	√		
Okeke (2014)	√				√	√	
Beheshti et al. (2012)	√	√			√	√	
Li (2012)	√				√	√	
Huang et al. (2011)	√				√	√	
Lee et al. (2013a; 2013b)		√	√				√
Wu et al. (2011)	√	√			√	√	
Ruiz-Mafe et al. (2009)	√	√		√	√	√	

Table2.4 summarises the different types of risks which affect perception of risk

2.10 Conceptual framework

Based on the literature review above the following hypothesis are formulated

Hypothesis 1 (H_1): Perception of risk has a significant and negative impact on Adoption of e-banking in Saudi banking sector.

Hypothesis 2 (H_2): Security and privacy risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 3 (H_3): Performance risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 4 (H_4): Social risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 5 (H_5): Time loss risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 6 (H_6): Financial risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 7 (H_7): Transactional risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 8 (H_8): Psychological risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

Hypothesis 9 (H_9): Cultural factors risk has a significant and positive impact on adoption of e-banking in Saudi banking sector.

Hypothesis 10 (H_{10}): Cultural factors have a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.

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Based on the hypothesis formulated above the following conceptual framework is propose

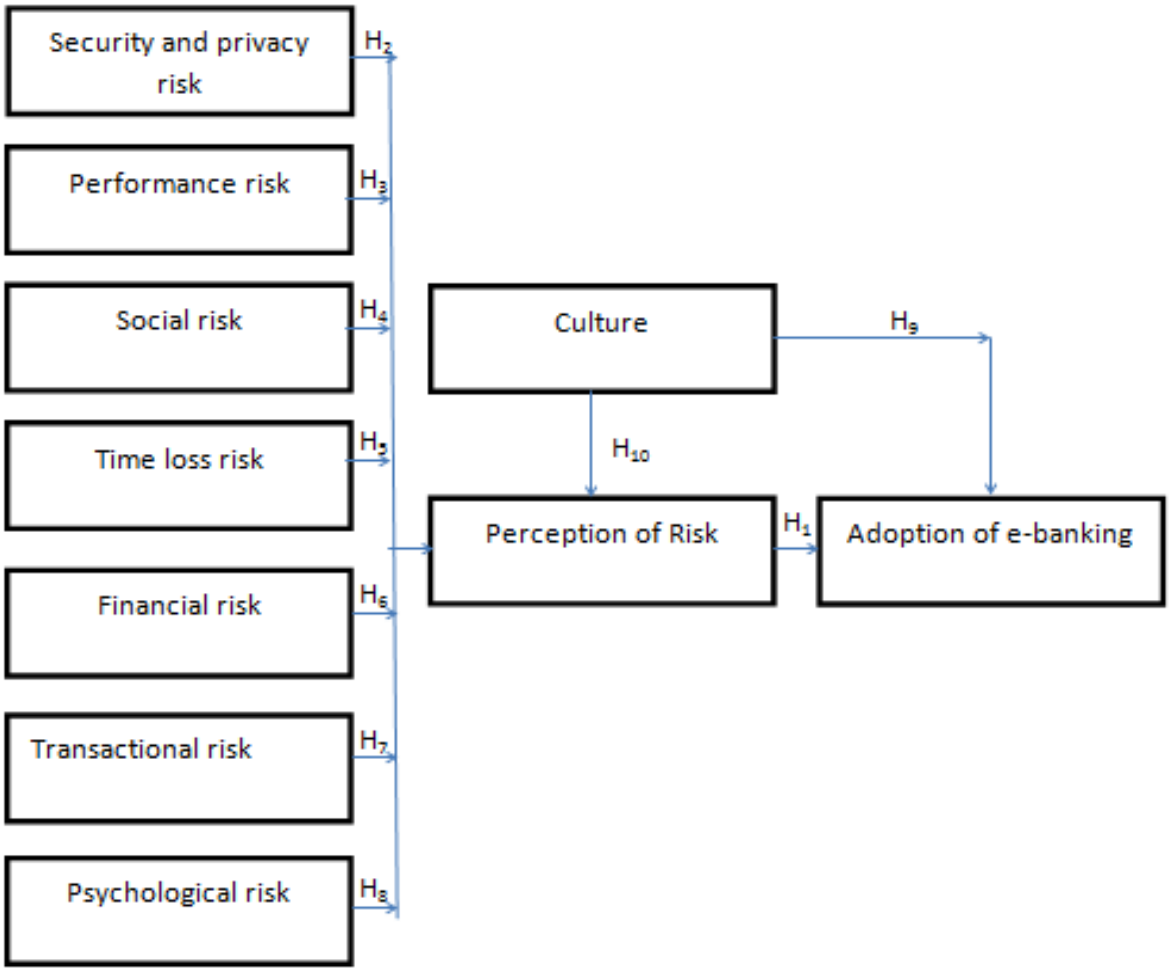

Fig2.1 conceptual framework is used in this research

Chapter 3: Data and methodology

3.1 Introduction

Chapter two presented a review of existing literature as well as the conceptual framework based on the review of existing literature. Following the previous chapter this chapter provide details of how data was collected and analysed for this research.

Every research requires collection of some form of primary and/or secondary data. In order to ensure that the data collected is suitable to achieve the objectives of the research, the researcher must identify what data is available, how it can be collected and analysed. This requires a systematic approach known as research methodology (Collis and Hussey, 2009; Leedy and Ormrod, 2010).

This research employs questionnaire surveys and focus group interviews as primary data collection instruments. Questionnaire is selected because it allows access to a wider spectrum of views and opinions. With pre-codified responses questionnaire surveys minimise the burden on the researcher as well as the respondent and allows the researcher to collect and analyse vast amount of information. Focus group interviews were selected in order to validate the findings of the questionnaire survey. These are subjective data collection instruments which allow collection of insightful and in-depth data from a large number of respondents in relatively shorter period of time. These two data collection instruments were used sequentially: first questionnaire survey was used to validate the framework and then focus group interviews were used for further validation of the framework. Online questionnaire survey was conducted between May 2013 and January 2014. Online questionnaire survey was selected because it is less costly, environmental friendly, easy to administer, collect and compile (Hunaiti *et al*., 2009). Focus groups allowed the researcher to obtain insight into the observed phenomenon and identify possible solutions from the perspective of the respondents. Figure 3.1 shows the sequence of research methodology stages discussed in this chapter.

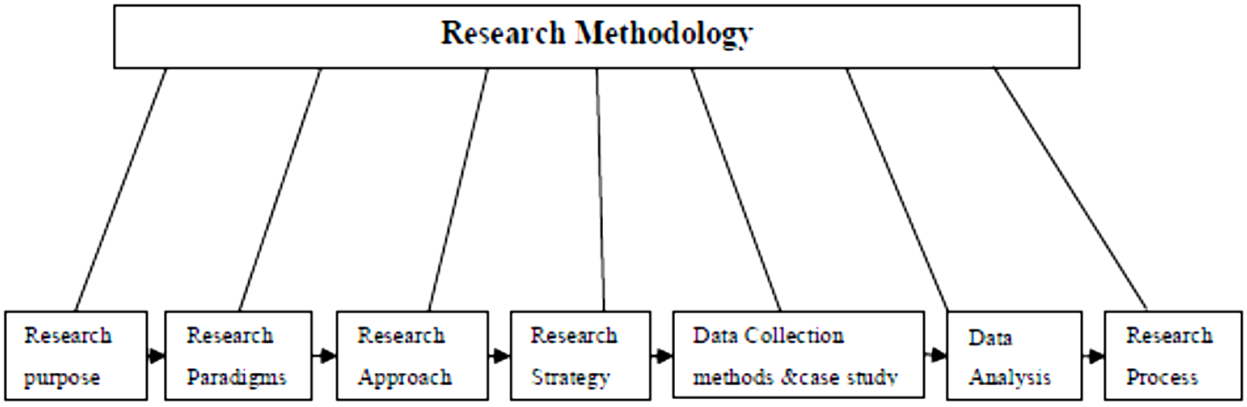

Figure 3.1: Schematic presentation of Research Methodology

3.2 Research Purpose

In the previous chapter literature related to risk, perception of risk as well as different dimensions of risks in e-banking were reviewed along with previous literature on the impact of culture on customers' perception on e-banking and on adoption of e-banking. Chapter two also contained an overview of the adoption of e-banking in Saudi Arabia along with the review of the literature on factors affecting this adoption. Finally a research framework was proposed based on the summary of the findings of the literature review.

As identified in the literature review chapter, past researches on adoption of e-banking have failed to take cultural influence into consideration. In addition, there has been a lack of research on understanding different aspects of risks and their impact on the overall perception of risk in Saudi banking sector. This research also assumes that cultural factors have a significant influence on the risk perception and adoption of e-banking. Hence, it can be hypothesised that adoption of e-banking will be significantly different in context of Saudi Arabia as compared to in Western nations where most of the existing research has focused. For example, the preference for using cash, high uncertainty avoidance characteristics etc. are likely to drive the consumer behaviour and are likely to inhibit adoption of e-banking. IN case of Saudi Arabia, high uncertainty avoidance may lead to over riding of perceived usefulness aspects of e-banking meaning the perception of risk may prevent individuals from adopting e-banking despite its obvious benefits.

This study attempts to clarify the aspect of consumers' perception of risk and its impact on adoption of e-banking in context of Saudi banking sector, taking its cultural context into consideration. One of the major shortfalls of past researches in this context have been that they provide little practical value and insight. This is often driven by the urge to find a definitive answer which drives the researchers into adopting positivist philosophical paradigm. But these researches do not provide the insight and are thus limited in assistance in providing solutions to the problems. However this research takes a step further than merely identifying the factors and tries to investigate how and why these factors influence perception of risk and consequently adoption of e-banking. This is essential in order to find a practical solution to the problem. Hence this research is explanatory research which investigates the impact of different factors on perception of risk and consequently on adoption of e-banking. Several authors have discussed perception of risks in different contexts as has already been covered in chapter 2. But this research investigates how perception of risk is influenced by culture and other product/service specific aspects. Such research is particularly relevant for countries like Saudi Arabia which have a uniform and strong culture based on commonly accepted principles (Shariah principles in case of Saudi Arabia). Furthermore, this research is not merely descriptive because it does not merely describe the relationship between perception of risk and adoption of e-banking. Instead this research explains the relationship between the variables and tries to find a solution to the problem, which is characteristic of explanatory research (Saunders et al. 2011).

Creswell (2003) identified the following steps which make up the empirical research process:

- Identifying the problem
- Review existing literature to identify the research gaps.
- Specify the purpose of the research
- Determine data collection and analysis strategy
- Collect data
- Analyse and interpret data
- Evaluate and report the findings.

Thus, the key step in any research is to identify research gap. Once research gap has been identified the purpose of research is identified as filling the research gap. The nature of the

available data is determined and consequently a data collection strategy is formulated bearing in mind the nature and availability of data. Once the data has been collected, it is analysed and interpreted. Finally, the findings of the research are reported along with the limitations of the research.

The table below shows the different aspects of the research design adopted for this research.

Research Level	Detailed Description
Type of research questions	Analyzing impact of Saudi customers' perception of risk on their acceptance of Internet banking
Strategy	Survey, Focus group
Paradigm	Pragmatist
Data collection method	Web based, focus group interviews
Participants	Banking customers
Type of results	Explanatory and Mixed (qualitative and quantitative)

Table 3.1: Overview of research design (Adopted from Dhillon (1995))

Sections below discuss the aspects mentioned in table 3.1 in more detail

3.3 Research Paradigms (Philosophy)

Taylor, Kermode, and Roberts (2007: 5), define paradigm as "a broad view or perspective of something." Weaver and Olson (2006: 460) define paradigm in context of research as, "paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished."

In simple terms research paradigm looks at two things: what is reality and how we can learn about the reality (Collis and Hussey, 2009). Here the reality refers to the phenomenon that the researcher aims to investigate. Depending on researcher's view of the reality, that is, whether it exists or not, will determine his choice of research approach, strategy and instruments to learn about the reality.

There are two main views on the nature of knowledge: the positivism paradigm and the interpretivist view (Collis and Hussey, 2009). Positivist view the world as discoverable reality i.e. definite solutions can be found. Interpretivists, on the other hand, view the problems and solutions as our perception i.e. they believe that the truth is what we think is

true. In other words, interpretivists believe that truth is our construction and hence can vary from individual to individual, which essentially means, it is not possible to find a definite and universal answer to the problem. Positivists argue that reality is logical and rational and hence scientific methods must be used to understand it. Interpretivists, however, believe in subjective reality and argue that reality is nothing but construction of our minds. They, thus, recommend using subjective/social science methods to understand reality.

In recent times, a number of researchers have started to advocate use of pragmatist philosophy which is essentially combination of both positivist and interpretivist views. Pragmatists believe that each research has a range of questions and selecting a specific philosophical view to answer all the research questions is a narrow, rigid and erroneous approach (Morgan, 2007). They, thus, recommend approaching the research questions with an open mind and selecting a research philosophy which is suitable for the particular question (Johnson and Onwuegbuzie, 2004). Pragmatists do not claim either of the research approaches to be suitable for answering all research questions; it instead proposes using both interpretivist and positivist approaches in tandem to benefit from the strengths of the two while minimising the weaknesses associated with either of these.

Pragmatists believe that a problem is made of several incremental problems and in order to find a solution we must solve each and every one of these incremental problems. However, pragmatists also believe that there is no definite philosophy which can answer all the questions all the time and hence recommends using a flexible approach i.e. using interpretivist and positivist paradigms as and when necessary. They thus recommend using either one of these on merit- depending on what we make of the problem.

3.3.1 Ontological, Epistemological and Methodological Stand of this Research

This research adopts the **Ontological position** that reality exists outside a researcher's mind. It is based on the view that the reality exists but may be difficult to understand and discover. In other words, there is reality but that we may not have the tools and skills to identify this reality as plain truth. In other words, truth is out there but due to our limitations we can only partially understand it. Thus, there exists a certain degree of subjectivity in all researches

(Hammersley, 1992). Hence, we can know the truth only to a limited extent and we can generalise our knowledge only to a degree of probability.

Unlike interpretivists who argue against existence of a reality, this research is based on the view that that there is a real world, just not as simple as the researchers have constructed it. Researcher believes that past researches on perception of risks in e-banking have tried to adopt an over simplistic approach to understand this complex aspect of human behaviour. It could be because of the inherent difficulties in identifying and estimating a number of behavioural aspects that might influence our perception of risk. This research acknowledges this challenge and instead of trying to identify all the aspects that may influence perception of risks this research aims to identify two of these. First one is the culture which almost all researchers agree will affect our perception and behaviour. Second is the product/service specific aspects which the researcher believes can be somewhat influences by the service provider. By addressing these two, the researcher aims to develop practical solutions to the problem rather than findings solutions which may be difficult to implement. Addressing cultural aspects was considered critical so that the service providers can prepare countermeasures in cases cultural aspects pose a barrier to adoption of e-banking.

Thus, the **Epistemological position** of this research is pragmatists which is neither completely positivist nor completely interpretivist. The aim of this research is not to create new knowledge but to understand in depth how perception of risk influences Saudi e-banking customers' adoption of e-banking. Hence this research can be categorised as normative.

Unlike other research paradigms that focus on antecedent phenomena, pragmatism focuses on the problem with the intention of actions and consequences (Cherryholmes, 1992). Selected supporting arguments for a pragmatic approach to this study include:

- Current electronic banking challenges are a present problem in need of purposeful actions and resolutions
- The changing nature of technology presupposes no foundations and no permanent knowledge
- The dearth of academic scholarship and developing country explanations of perceived risks and electronic banking adoption lends itself to pluralism, a pragmatic belief.

From the social sciences perspective, pragmatism opens itself as a solution to conflicts (epistemological, methodological and methods viewpoints) of the quantitative and qualitative paradigms where abduction, intersubjectivity, and transferability are adopted in favour of the dualisms of deductive vs. inductive, objectivity vs. subjectivity, generalisability vs. context-bound respectively (Morgan, 2007). In this context, pragmatism is knowledge obtained through an abductive reasoning process that shifts between inductive and deductive processes. Philosophically, this thesis lends itself to pragmatism in its adoption of abductive reasoning, intersubjectivity (mixed methods), and transferability. Abductive reasoning techniques apply to the use of: the qualitative literature review for identification of possible factors that could affect perceived risks and possible link between perceived risk and adoption of e-banking. This is followed by quantitative data analysis for testing of framework consisting of perceived risks constructs followed by a qualitative validation of the framework. The use of both qualitative and quantitative approaches (survey and focus groups) satisfies the intersubjectivity of the pragmatism doctrine (Guba and Lincoln, 1994). Finally, transferability is intended in the application of the outputs of this study in emerging economies with similar cultural, infrastructural, technological, and societal characteristics difficulties as Saudi Arabia.

In sum, the beliefs of pragmatism - workability, pluralism, anti-foundational, consequence oriented (Cherryholmes, 1992; Johnson and Onwuegbuzie, 2004; Morgan, 2007) - align with the objectives of this study - to evaluate the impact of perceived risk on e-banking adoption and propose improvement strategies this lends itself to multiple methods, different worldviews, different assumptions, and different data collection methods atypical in mixed methods studies (Mackenzie and Knipe, 2006).

Following the tenets of pragmatism, this methodology discussion continues with the introduction of the mixed methods design as the strategy associated with pragmatism in its support of multiple methods, different worldviews, different assumptions, and different forms of data collection and analysis (Creswell, 2009).

The Methodological position of this research is mixed methods including both qualitative and quantitative methods. Quantitative research provides accurate and true results based on statistical analysis of quantitative analysis. The problem however, that the findings do not provide sufficient insight and are open to discussion (Smith and Louis, 1986). However,

because this research is aimed at providing practical solutions which relate to whole of the population of Saudi banking customers, it was essential to achieve generalisation which is only possible through quantitative study.

This study combines both quantitative (survey) and qualitative methods (literature review, focus groups).

3.4 Research Approach

Research methodological approach depends on whether the study is trying to explore something new (inductive) or applying existing knowledge in a new context (deductive). The table below provides the key differences between the two approaches:

Deductive approach	Inductive approach
• Scientific principles; • Application of theory with new data; • Testing the cause-effect relationship between variables in new contexts; • Validity of data is critical and hence need to be controlled; • Structured approach • Researcher remains independent of the research; • Generalisation based on large sample size.	• Gaining insight into human perceptions and behaviours; • Understanding of research context is critical; • Qualitative data; • Flexible research process; • Researcher is part of research process and hence can influence the findings; • Not aimed at generalisation. • Small sample is sufficient

Table 3.2: Differences between Deductive and Inductive Research

Inductive approach is aimed at understanding the different perspectives of a social problem (Yin, 2009). Theory/ framework is the outcome of the inductive research (Saunders et al., 2011). Researcher analyses the observed trends in the empirical reality, induces general inferences from it and based on these inferences conceptualises a theory/ framework. Since the inferences are made within a context the theory/ framework may be contextual and not generalisable. Some researchers, however, may use data diverse enough to claim

generalisation (Collis and Hussey, 2009). Inductive research is aimed at moving from specific observations to broader generalization and theories. On the other hand, deductive research narrows down broad generalisation (theory/ framework) into something very specific (Saunders *et al*. 2011).

One of the key differences between inductive and deductive researches as highlighted by Creswell (2009) is the use of existing literature and theory. According to Creswell (2009), the deductive approach is designed to test theory; therefore, the literature is used to identify questions and/or interrelationships before data are collected. According to Creswell's (2003) view, this research can be categorised as deductive. In this research, a novel conceptual framework was formulated based on the literature review. Then this framework was tested in context of Saudi e-banking sector. However, this research moves beyond a purely deductive approach as the questionnaire survey was followed by further validation of the findings through focus groups. This represents the inductive part because the researcher aimed to obtain further insight into the findings rather than change the theoretical model.
This research is thus an abductive research as it combines both inductive and deductive aspects. Abductivist approach is considered suitable for pragmatist philosophical view.

3.5 Research Strategy

This research requires both generalisation as well as insight. Hence it was considered essential to use a mix of quantitative and qualitative strategy. Culture is a complex topic and its impact on perception of risk has not yet been explored in context of e-banking. Hence this part of research needed to be exploratory. At the same time it was essential to achieve generalisation in order to find solution which will apply to the whole Saudi banking customer population.

Perception is a behavioural topic and in most researches behaviour is studied using qualitative methods. However, the topic of e-banking is different as several renowned researchers in this field have used a quantitative approach to studying factors affecting the adoption of new technologies such as e-banking. Combining qualitative and quantitative

methods allowed the researchers to benefit from generalisation of quantitative methods and insight of qualitative methods.

The sequence of adoption of qualitative and quantitative methods in this research are shown in the diagram below:

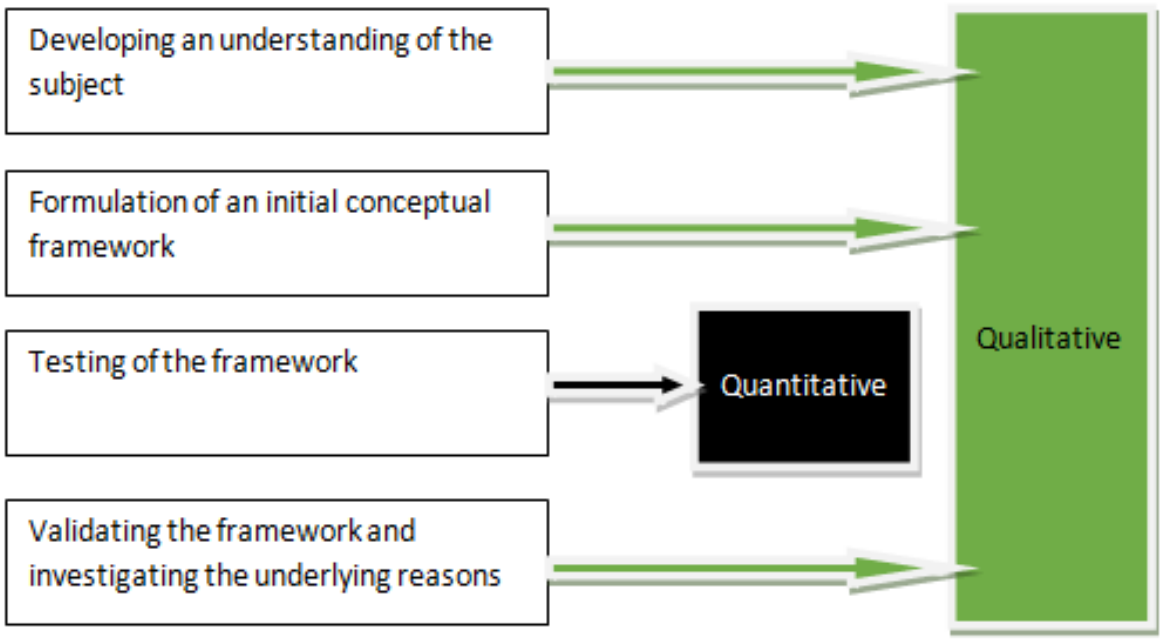

Fig 3.2 The sequence of adoption of qualitative and quantitative

3.6 Data Collection Methods

Data collection methods refer to the methodical tools that the researcher may use in collecting and analysing data. The methodical tools adopted for this research along with the rationale for selection of particular methodical tools is discussed in this chapter. Researcher must consider his./her epistemological, ontological and methodological position while considering the choice of methodical tools.

Research may utilise primary and/or secondary data for answering the research questions. In fact, most researches use a combination of both, as the researchers must review past literature in order to gain understanding of the phenomenon even if the research adopts primary data (Malhotra and Birks, 2006). In this respect, this research also adopts both primary and secondary data.

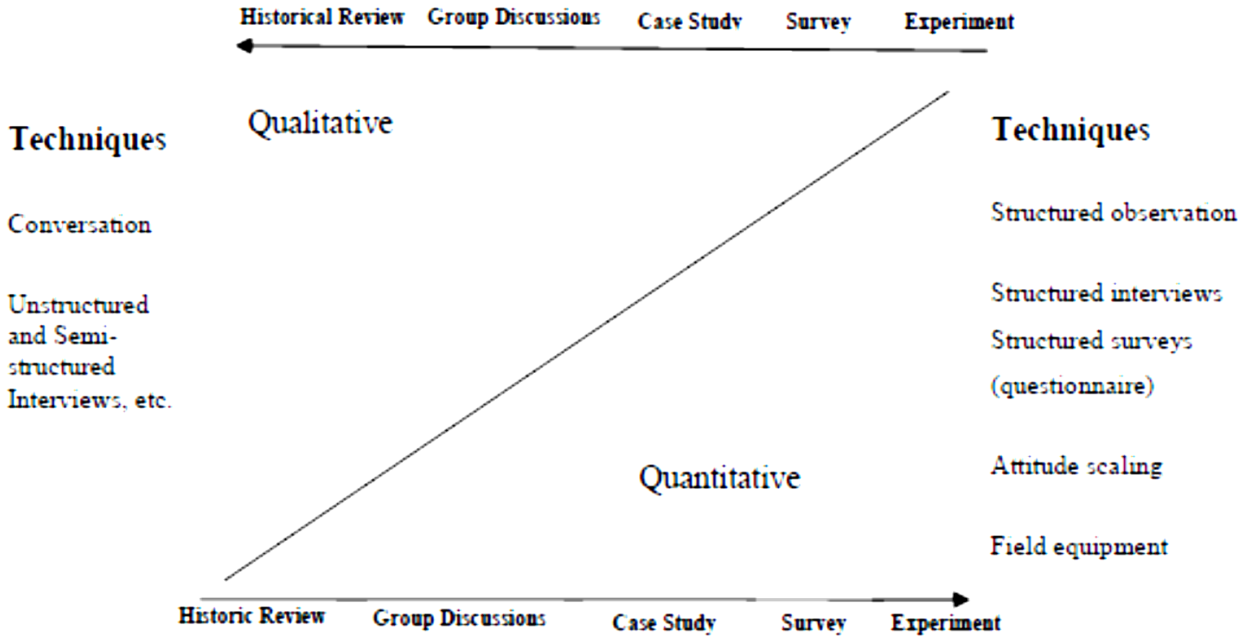

Figure3.3: Quantitative and Qualitative methods and techniques

The figure above shows the transition of methods from quantitative to qualitative. Primary data refers to the data collected by the researcher for the purpose of the research in focus. Researchers may use one or more of the primary data collection strategies for collection of primary data. Common primary data collection strategies include interviews, questionnaire surveys, observations, focus groups etc. (Saunders *et al*., 2011). Secondary data refers to the data that already exists and can simply be used by the researcher with or without modifications. These are quite cheap and convenient to use but may not be accurate (Yin, 2009).

Section below discusses the primary and secondary data in further detail.

3.6.1 Secondary Data

Secondary data is the data which has existed before the research and were not collected for this specific research. Sekaran (2003: 63) mentions that:

> *"[…] Secondary data can be extracted from various sources, including books and periodicals, government publications and information sources, the media, census, stock market reports, and mechanised and electronic information of all kinds such as the bar code, scanner data, and the Internet. Secondary data can be culled from the historical records of the organisation itself, from information already available on the Internet, or from external sources such as the ones mentioned above, either through the Internet or otherwise".*

This research, like most other researches, uses secondary data in form of published research and articles. Existing literature articles on relevant topics such as online banking, perception of risk, trust and acceptance of e-services etc. were reviewed to gain an insight into the subject. Such researches are extremely useful because it minimises the efforts of the researchers as the researcher need not rediscover that has already been discovered. For example, past researchers have already investigated the different aspects of risks in e-banking. However, these are quite fragmented and none of the researchers have looked at these risk factors comprehensively. Using this existing literature saves the reworking in terms of identifying the possible risk factors that could affect perception of risk in e-banking. It can then be compiled together in one comprehensive risk framework.

This research specifically looked at the literature referring to e- banking in Saudi Arabia. However, due to relative lack of such research in context of Saudi Arabia, research conducted in other countries was also included in the literature review. Secondary data from reputed organisations is quite useful because it is quite reliable; these organisations collect this data with large investment and with due consideration for data quality issues. This data present a useful and unobtrusive source of data for any research (Saunders *et al*. 2011). Websites of major banking sector institutions in Saudi Arabia, the IMF and World Bank were accessed to obtain data regarding usage of e-banking and the trends therein.

The acceptance of the Internet that resulted in the establishment of various forms of online presence combined with Web 2.0 technology and social media has increased the use of the Internet as a communications platform. Indeed, online news articles, blogs and bulletin boards have been established as a meaningful phenomenon for study (Garcia et al., 2009). The content analysis of such data has previously been applied to online banking service

quality research (Jun and Cai, 2001) where the authors analysed comments on Internet banking services posted on newsgroups using the critical incident technique (CIT) method.

Sampling for secondary data: In conformance with qualitative methods, a combination of theory-based, convenience, and purposeful sampling strategies were adopted (Miles and Huberman, 1994). The sampling frame included all material related to electronic banking available in the public domain. Being a study of an electronic phenomenon, the researchers' bias for electronically available content that was not only opportunistic and inexpensive, but also representative of the strides local media institutions have made in online publications. The reliability of online sources used for secondary data is of significant concern In order to ensure reliability of secondary data, researcher limited access to the information provided by globally recognised institutions (such as IMF, World Bank, UNCTAD etc.) and government websites (especially Saudi government websites) only. In order to search for online information relevant keywords such as "risks in e-banking", "online banking risks", "Saudi e-banking statistics", "Saudi online banking risks", "developing countries online banking risks" etc. were used.

For the literature several reputed online journal databases such as Science direct, Emerald Insight, Social Science Research Network, JStor etc. were used.

3.6.2 Primary Data

Primary data is the data that the researcher collects specifically for the purpose of particular research. This data is quite high quality, in the context of the research because it has been collected specifically to meet the objectives of the research. This can include both quantitative and qualitative methods. According to Fisher (2007, p. 153) there are two types of discoverers "Explorers" and "Surveyors." Explorers explore and try to obtain more information/ knowledge of the hitherto unknown. Since they do not know what the unknown they have to remain open to what they find. These explorers are akin to qualitative researchers. Surveyors, on the other survey what they know about. They have a plan and use structures to survey what they aim to find out. Surveyors have clarity in their aims and know precisely what they are looking for. They measure things; produce maps, and present their findings in tables of statistics (Fisher 2007). Surveyors are akin to quantitative researchers. In

this research the researcher plays both the roles- that of an explorer and a surveyor. For the quantitative part the researcher plays the role of a "Surveyors." However, for the quantitative part where the researcher aims to explore the underlying reasons for the responses and validate the model, the researcher plays the role of an "explorer."

3.6.3 Quantitative, Qualitative and Multi-method Research Methods

For any research the data needs to be collected and there could a range of data tools that the researcher can use. These data tools are categorised under quantitative and qualitative methods. Quantitative research aims to investigate a particular phenomenon and is objective in nature in which mathematical data is collected and analysed using statistical tests. Qualitative research is based on subjective data. It is commonly used for researching aspects related to social science and human behaviour. In qualitative researches, researcher reflects on and interprets the cues present in the subjective data presented by the participants (Collis and Hussey, 2009).

Taylor and Bogdan (1984) argue that "the phrase 'qualitative methodology' refers, in the broadest sense, to research that produces descriptive data: people's own written or spoken words and observable behaviour." Qualitative research allows the researcher to understand the context in which the study takes place (Silverman, 2001) and when the researcher is not sure what they are going to find (Creswell, 2003). According to Silverman (2001) qualitative research is particularly useful in researching phenomenon involving human behaviour, interaction, perception, relationships and social environments. While such researches can use quantitative data but the data has to be analysed qualitative as quantitative analysis of such data will miss the vital information useful to understand the phenomenon. In this research also, the researcher had to collect quantitative data due to the need to generalise the findings. However, to understand the concept the researcher had to analyse and interpret the findings qualitatively. However, the data had to be analysed from the perspective of the same set of respondents. Consequently the researcher used focus group interviews with the same group of respondents to analyse the findings of the data. In this manner this research used a combination of qualitative and quantitative methods to understand the phenomenon better and yet achieve the objective of generalisation.

The table below summarises the key differences between qualitative and quantitative research.

Quantitative Method	**Qualitative Method**
Focus on testing and verifying the variables	Focus on understanding the phenomenon;
Based on verifiable facts	Data is not verifiable- based on subjective interpretation of the respondent's point of view;
Approach is logical and critical	Interpretivist and rational approach ;
Controlled measurement	Observations is done in its natural settings
Objective 'outside view' distant from data	Subjective 'inside view' and closeness to data;
Hypothetical-deductive focus on hypothesis testing	Exploratory nature;
Result oriented	Process oriented;
Particularistic and analytical	Holistic view;
Generalisation by population membership	Generalisation by comparison of properties and contexts of individual organism

Table3.3: Differences between quantitative and qualitative research methods. Source: Saunders et al. (2011)

Qualitative and quantitative researches have their own benefits and drawbacks. Using multi-methods allows the researcher to overcome the drawbacks of one research method with the advantages of another. For example, it benefits from the generalisation of quantitative methods as well as insightfulness of qualitative methods.

Saunders, *et al*. (2011) and Creswell (2009) highlighted several benefits of using mixed methods in any research: Firstly, researchers can use different methods depending on the specific needs for each objective. Secondly, it allows triangulation. Triangulation means using different data collection methods and combining together the findings to ensure suitability of findings.

The table below compares qualitative and quantitative methods with mixed methods:

Quantitative research method:	**Qualitative research method:**	**Mixed methods research methods:**
Preconceived;	Emergent methods;	Combination of preconceived and Emergent methods;
Questions based on instrument; mostly pre coded.	Open-ended questions;	Combination of open ended and pre-coded questions.
Performance-data, attitude-data, observational-data census data;	Interview-data, observation-data, document-data and audio-visual data	Multiple forms of data drawing on all possibilities;
Statistical analysis	Textual analysis	Statistical and textual analysis

Table3.4: Comparison between quantitative, qualitative and mixed methods of a research

As indicated previously, this study has adopted a mixed approach to the research design and data collection activities, and a mixed method within the overall framework that includes the collection of both primary and secondary data. There were two stages of primary data collection adopted in this research: Firstly, a questionnaire survey was used to collect information from Saudi banking customers, relating to their views about the perception of risk and adoption of online banking technology. Secondly, a focus group survey was conducted in order to gain more insight into the findings of the questionnaire survey and to validate the framework.

From here on the chapter is divided in two sections. Part one will discuss the quantitative aspect of the research whilst part two will discuss the qualitative aspects of the research.

3.7 Quantitative method – questionnaire survey

The first part of this study involved conducting a structured questionnaire survey. This questionnaire was designed to investigate respondents' perception of the different types of risks in e-banking and its impact on perception of risk and acceptance of e-banking.

Questionnaires can be either open structured or closed structured (that is pre coded). Pre-coded questionnaires have structured answers and the respondents have to select their responses from among the given set of responses only. On the other hand, in open ended questionnaires respondents can type in whatever response they wish to report (Fisher, 2007). Pre coded questionnaires are the most common form of questionnaire survey as it allows easy collection, compilation (quantification) and analysis. Open ended questionnaire provide qualitative data which is as difficult to analyse as other subjective data such as focus group data and interview data. This research aims to compile together the views of different respondents and for this compilation it is essential to have a structured, pre coded questionnaire. Open ended questions are difficult to compile together.

There are several benefits and drawbacks of using questionnaire surveys. The table below lists some of them:

Questionnaire benefits	Questionnaire disadvantages
- Easy to administer remotely - Low time and monetary investment. - Comfortable for respondents - Anonymity can be guaranteed - Ability to collect vast amount of data	- Lack of insight - Poor verifiability of response - Cross verification is not possible; - Inaccurate responses could not be verified - Poor response rate - Respondents cannot clarify doubts

Table3.5: Advantages and disadvantages of questionnaire surveys Source: Leedy and Ormrod (2010), Saunders et al. (2011).

Cost and time benefits of collection of data as well as ability to access respondents from around the whole country were the main reasons for selection questionnaire survey for data collection. It also allowed the gender issues which would have prevented the researcher (who is a female) to collect data from male respondents as it is prohibited in Saudi culture for a female to talk to unrelated males. Questionnaires were also less time and effort consuming for the respondents who could fill these in their spare time from a location convenient for them.

3.7.1 Questionnaire Review and Development Process:

Questionnaire was developed based on the literature review and the conceptual framework. The key themes that the author identified are described in detail in chapter 2 but are briefly discussed here.

Theme 1: Adoption of e-banking: This is the primary dependent variable in this research. Adoption of e-banking refers to the intention of individuals using e-banking. i.e. whether they have recently used e-banking or are likely to use e-banking in near future. E-banking here refers to all forms of banking channels which occur over the Internet irrespective of the device used to access. However, this includes mobile banking because even in case of mobiles the channel of communication is still the Internet.

Theme 2: Perception of risks: The perception of risks is the focus of this research. Different types of risks are identified and categorised as per the literature sources. The focus is not on the intensity of the risk itself but the intensity of the perception of risk i.e. which risks are more critical according to users' perceptive. The concept of trust usually comes with uncertainty or risk; and if there was no risk there would trust and no action would be required. This theme thus looked at the individual's overall perception of risk in using e-banking.

Theme 3: Performance /technical risks: This theme looked at the perception of the pertaining to technical issues with the e-banking service which might lead to it will not perform as desired. This did not include safety issues but rather issues such as unavailability of Internet or breaking down of connection midway through the transaction etc.

Questionnaire: In terms of performance individuals have expectations which are often built according to their experience of using brick and mortar channel. When these expectations are not met it leads to higher perception of risk

- I am apprehensive that my e-banking service provider may not deliver the expected standard of service.

One of the benefits of e-banking is being able to access the account round the clock. One of the major concerns that individuals may have to being denied access to the account; for example, if the site is under maintenance or because the account is blocked due to suspected fraud. Either way, not being able to access the account when required is one of the concerns that customers face

- Sometimes I feel worried that I may be denied access to my account due to some fault at my e-banking service provider.

In some cases, customers find problems in completing the transaction. These problems can be both because of customers own mistake or because of some problem at banking firms' end. It is quite a common problem in countries with poor IT infrastructure. While the glitch may be on client side but customers often perceive the problem to be at the bank's end. This places more responsibility on the e-banking service provider to ensure seamless service.

- Sometimes I am worried that I may not be able to complete my transaction due to some problem at the e-banking service provider's end?

- I have sometimes found problems in accessing my e-banking account due to problems such as server unavailability, poor connection etc.

Theme 4: Social risk: This factor looked at from the bases of the customers' perception of the influence of their friends and family in their banking behaviour.

Questionnaire: Saudi Arabia is a close society and there is a possibility that individuals who violate the norms of the social group will be excluded from the social group.

- I think that I may lose the support of my friends/family members if I incur a loss by using e-banking.

Social relationships are a key characteristic of Saudi society and it is evident even in the business relationships. In Saudi Arabia it is quite common for individuals and business owners to have close relationship with the bank managers and they relay on the advice and support of the business managers to carry out their business. For these customers the bank managers is a human representation of the bank and in cases of some problems they know whom to go to. This helps them reduce uncertainty which is a key preference for Saudi nations. Thus, customer-manager relationship holds a lot of significance for the Saudi nationals and loosing this in e-banking system can be a major risk.

- I think that I will lose the valuable relationship with the bank staff (including the manager) if I use e-banking.

- I think that I will not be able to ask anyone for help if I fail to use e-banking properly.

Theme 5: Perceived security/ Privacy risk: Security risks have been highlighted as one of the most critical risk in e-banking. This research adopts Lee (2009: 131) definition of perceived lack of security: "a perceived potential loss due to fraud or a hacker compromising the security of Internet banking." Security risk here encapsulates two kinds of risks- fraud and privacy. Fraud refers to the risk of being defrauded by someone. In most cases, such fraud leads to financial loses. Privacy risk is the risk of some third party gaining unauthorised access to the personal details of the customer.

Questionnaire:. The key security and privacy issue is protection of customers' identity and relevant details so that the information cannot be used without their permission. In fact the manner in which online transactional information is handled is one of the key issues not only in Saudi Arabia but also in western nations. According to the literature review loss of personal data or information is the primary concern the individuals have in context of e-banking.

- I am afraid that if I use e-banking my personal details will be stolen.

Often this information can be protected if the people adopt safety measures. But give that most Saudi nationals are not well versed with online safety measures they are often reluctant

to carry out online transaction. Customers are concerned that some individuals may fraudulently obtain their personal and banking information and misuse it.

- I am worried that someone may access my bank account without my permission.

Customers can be protected if the bank takes some safety measures such as using three forms of passwords, sessions and other techniques. In fact most of the e-banking service providers are using this technique Customers may be concerned that e-banking service provider may not have the capabilities to protect them against malicious attacks online.

- Sometimes I feel suspicious about the reliability of my e-banking provider.

The overall concern that customers have is that the e-banking transactions that they undertake may not be insecure and information can be stolen while carrying out the transactions.

- I am worried that my e-banking transactions may not be secure?

While many individuals have not directly experienced any online fraud but their perception is influenced by what they hear from other sources. This perception is mainly exaggerated by the extensive media coverage of banking frauds that take place around the world even though less than 1 percent of banking customers face some kind of fraud.

- The news about e-banking fraud worries me that it may happen to me also.
- I am concerned that if I enter incorrect details I may not be able to change it.
- I am concerned about how my bank uses my private information.

Theme 6: Time loss risk: This is the perceived risk that there will be a time delay in on line transaction and that the online transaction may take longer than in-branch transaction.

Questionnaire: In brick and mortar branches transactions take place instantaneously while in e-banking channel the transactions may or may not take place instantaneously.

- I am worried that e-banking transactions may take more time that physically visiting a bank.
- I am sometimes worried that my e-banking transactions may take longer to proceed

What may be concerning for the customers is not that the transactions may be delayed but that they are unsure of when the transaction will be completed. For example not knowing when an interbank transfer will be completed. This is against the uncertainty avoidance characteristic of Saudi culture.

- I am worried that I will be unsure about how long the e-banking transaction will take.

Theme 7: Financial risk: This is about the perception that using online banking may result in some form of financial loss. This is one of the main concerns of t e- banking he customers. However, not all risks result in financial loss and hence this is included as a separate category.

Questionnaire: Most of the e-banking risks can be linked to financial risk i.e. the customers may be worried of some form of financial loss. While some risks such as fraud may lead to a direct financial risk but other risks such as time loss risk may lead to indirect financial risks. Irrespective of which risks lead to financial risks, customers are always likely to be worried about losing money as an outcome.

- I am afraid that using e-banking may cause me some financial loss.

Despite the risks the customers may still be willing to undertake smaller transactions online. For larger transaction higher degree of certainty may be desirable and hence customers may be more interested in visiting the bank personally. Also for smaller transactions, the time and effort required to travel to the bank may not be worth it.

- I find it risky to do large money transfers online.

Another financial risk is the additional banking charges such a transaction charges which are often incurred while doing online transactions. For example, some online retailers charge additional fee on card transaction. This may also be a concern for the customers.

- I think that e-banking may cost me additional charges.

Theme 8: Transactional risk: This refers to the perception that some of the transactions will not take place as desired and that there could be some glitches that the user may not know about.

Questionnaire: In transactional risks customers may be worried that transactions may not take place as expected. For example, customer may request for an immediate transfer but that transfer may not take place immediately.

- I am unsure that e-banking transactions will take place as expected.

Lack of certainty in e-banking transaction often leads to a perception of unreliability.

- I fear that e-banking technology is not reliable.

The lack of certainty originates from the lack of mechanism to confirm that the transaction has actually taken place. For example, the transaction may have been completed from the sender's side but not the recipient.

- I am concerned that in e-banking I cannot verify if the transaction has been actually completed.

Theme 9: Psychological risk: This refers to the perception that using e-banking might result in some form of mental or emotional stress. This could be an outcome of some other form of risk as well.

Questionnaire: People often get stressed if the e-banking system does not work as expected. For example they if the payment does not reach the recipient on time it may lead to

stress and anxiety. In case of brick and mortar channel the customer can confirm and has a valid proof in the form of till receipt that the transaction has been completed

- I am worried that I may undergo stress if something goes wrong with my e-banking account.

- I am concerned about the stress that I might undergo if I cannot access my e-banking account.
- I think using e-banking would lead to stress and/or anxiety.

Theme 10: Culture: Impact of culture on perception of risk is a significant contribution of this research. Five different aspects of culture as identified by Geert Hofstede are used to represent Saudi Culture and its impact on the perception of risk is evaluated. . Hofstede proposed five dimensions which can be used to distinguish culture of one nation form that of the other. These five dimensions are: power distance, individualism, masculinity, uncertainty avoidance, long term orientation. Out of these, power distance was not relevant to this research because it mainly refers to social inequality. Remaining four factors were considered relevant to perception of risk in e-banking and adoption of e-banking and were included in the questionnaire. However, to keep the length of questionnaire short selected number of questions were included in the questionnaire.
Also some of the questions on culture were integrated in other sections. For example, certain questions on the social risk theme were also linked with individualism/collectivism aspect of the culture.

One of the problems is socialisation. With no human interaction in e-banking customers can be worried about who to talk to if there is a problem as there is no one they know. Knowing someone human who can resolve their queries may be essential for them to adopt e-banking channel.

- I am not worried about lack of human interaction in e-banking.

- I am concerned that e-banking is not according to my religious beliefs.

  Shariah compliance is a major risk for Saudi nations especially people in the older generations many of whom do not use internet as they do not consider it halal.

- I am unsure about the benefits of e-banking.

Uncertainty avoidance is a major contributor to high perception of risk in Saudi society. When they see something happening with their own eyes it reduces uncertainty and give them confidence. For example, many individuals prefer to deal in cash because of the certainty it provides.

- I prefer seeing things happening with my own eyes rather than electronically.
- I prefer to be sure that whatever I have asked my bank to do has been done.
- I fear that e-banking does not allow me to control my banking activity like the branches do.
- I am not comfortable using cards over cash.

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The table below summarises the questionnaire review:

Construct	Definition	Questions
Security and privacy risk	Security and privacy risk is mainly the risk that user's account information can be compromised and used in a manner which can cause some tangible or	• I am afraid that if I use e-banking my personal details will be stolen. • I am worried that someone may access my bank account without my permission. • Sometimes I feel suspicious about the

	intangible damage/loss to the account holder (Usman and Shah, 2013).	reliability of my e-banking provider. • I am worried that my e-banking transactions may not be secure? • The news about e-banking fraud worries me that it may happen to me also. • I am concerned that if I enter incorrect details I may not be able to change it. • I am concerned about how my bank uses my private information.
Performance/ technical risk	The risks that these functional expectations may not be met are known as performance risks. Performance risk refers to consumers' concerns about the product or service level of performance in relation to expectations (Nicolaou et al., 2013).	• I am apprehensive that my e-banking service provider may not deliver the expected standard of service. • Sometimes I feel worried that I may be denied access to my account due to some fault at my e-banking service provider. • Sometimes I am worried that I may not be able to complete my transaction due to some problem at the e-banking service provider's end? • I have sometimes found problems in accessing my e-banking account due to problems such as server unavailability, poor connection etc.
Social risk	Social risk is the risk associated with loss of reputation among friends and family members as a result of some voluntary action (Murray and Schlacter,	• I think that I may lose the support of my friends/family members if I incur a loss by using e-banking. • I think that I will lose the valuable relationship with the bank staff (including the manager) if I use e-banking.

	1990).	• I think that I will not be able to ask anyone for help if I fail to use e-banking properly.
Time loss risk	Time risk refers to two kinds of risks- firstly, that the transaction may not take place in time and secondly, that the user may have to spend more time doing transaction online than in branch (Littler and Melanthiou, 2006).	• I am worried that e-banking transactions may take more time that physically visiting a bank. • I am sometimes worried that my e-banking transactions may take longer to proceed • I am worried that I will be unsure about how long the e-banking transaction will take.
Financial risk	Financial risk perception is the view that the person might lose their money (Polatoglu and Ekin, 2001).	• I am afraid that using e-banking may cause me some financial loss. • I find it risky to do large money transfers online. • I think that e-banking may cost me additional charges.
Transactional risk	It is a possibility that the transaction would not take place as expected (Ruiz-Mafe *et al*., 2009).	• I am unsure that e-banking transactions will take place as expected. • I fear that e-banking technology is not reliable. • I am concerned that in e-banking I cannot verify if the transaction has been actually completed.
Psychological risk	The cognitive risks that a customer faces while using a product /service are known as associated psychological risks. For	• I am worried that I may undergo stress if something goes wrong with my e-banking account. • I am concerned about the stress that I might undergo if I cannot access my

	example, when a purchasing experience does not correspond to the expected, people become nervous. This nervousness can be called psychological risk (Lim, 2003; Featherman et al. 2003).	e-banking account. • I think using e-banking would lead to stress and/or anxiety.
Cultural influence	Customer's cultural perspectives could cause a problem in the adoption of e-banking in many different ways (Aslam et al., 2011)	• I am not worried about lack of human interaction in e-banking. • I am concerned that e-banking is not according to my religious beliefs. • I am unsure about the benefits of e-banking. • I prefer seeing things happening with my own eyes rather than electronically. • I prefer to be sure that whatever I have asked my bank to do has been done. • I fear that e-banking does not allow me to control my banking activity like the branches do. • I am not comfortable using cards over cash.
Risk perception	"The potential of loss in the pursuit of a desired outcome from using electronic banking services" (Yousafzai et	• I think that using e-banking system will be risky. • I would be concerned about using e-banking. • I feel safe and secure using e-banking

	al. 2003: 851).	system.
Adoption of e-banking	This refers to the intention of using e-banking	• I think that using e-banking is wise. • I am very likely to use-banking in near future. • I would recommend others to use e-banking.

Table 3.6. Question mapping with constructs

3.7.2 Questionnaire development process

Steps mentioned by Churchill and Iacobucci (2002) and Moore and Benbasate (1991) were followed to develop the questionnaire for this research. The whole questionnaire development process consisted of the following 7 steps:

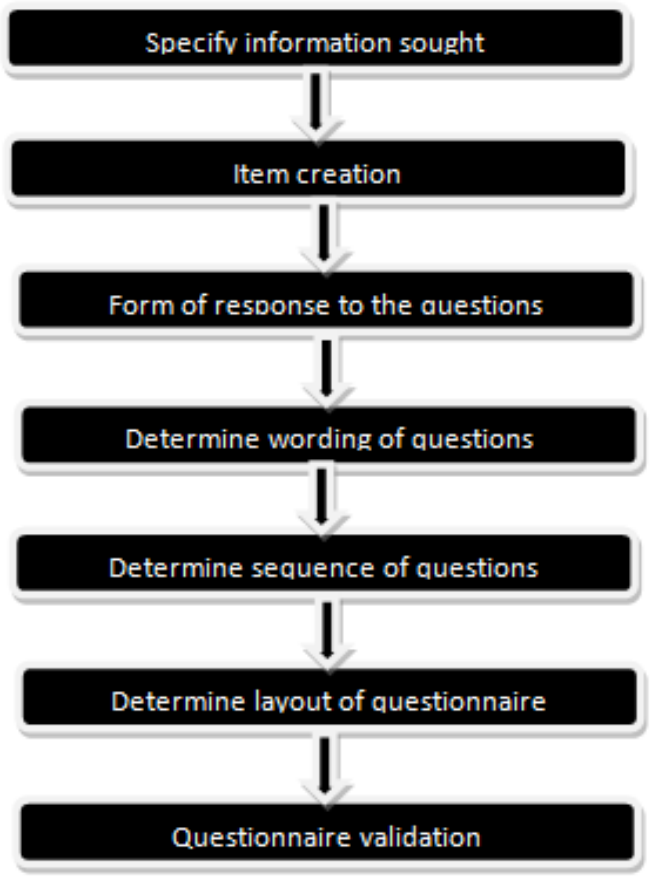

Figure3.4: Questionnaire development process. Source: Churchill and Iacobucci (2002); Moore and Benbasate (1991)

- **Step 1:** Specify Information Sought: Different constructs for the questionnaire were identified and the information required for the constructs was first clarified based on the literature review.
- **Step 2:** Item creation: The list of questions for each construct was formed on the basis of the learning/knowledge obtained from extensive literature review. Several studies have been conducted on different types of risks in e-banking and on perception of risks and adoption of e-banking. These have been discussed in the literature review section. In particular, in the literature review, the researcher tried to identify which different types of risk and other factors may influence perception of risks in e-banking. Different types of risks that may affect the overall perception of risk were identified and hypothesis were developed for the relationship between different type of risks and risk perception as well as for the relationship between risk perception and adoption of e-banking

- **Step 3:** Form of responses to the question: Since the sample size as going to be large, responses were pre coded to ensure ease of reporting, compiling and analysing. To ensure uniformity all questions were quantified according to a five point Likert type scale.

- **Step 4:** Determine the wording of each question: Asymmetric knowledge of the information sought can be a problem for researchers. Typically, the researcher knows what he/she is looking for and understands the wordings of the questionnaire in context of his/her research. But the respondents may interpret the same set of words differently. This problem was managed by conducting pilot surveys. A typical set of 10 respondents which were similar to the intended sample population was selected from among researcher's contact list. Questionnaire was tested using the set of these 10 respondents and these respondents were asked to provide their feedback on questions including ambiguity, lack of clarity, repetitiveness, quality of language etcetera. In addition, explanations of terms were given with each and every question to clarify, in very general terms, what the term meant.
- **Step 5:** Determine question sequence: The sequence in which questions are presented can influence the response of the respondents. For example, a positive response is likely to be followed by an equally positive response (Churchill, 1992). The questions

relating to the personal profile or demographics of the respondents were placed in the first section of the questionnaire. The contact details of the researcher were also given at the end of the questionnaire, in case the participants wanted to contact the researcher regarding the questionnaire or to express interest in participating in the focus group interviews. Questions were randomly distributed to ensure that respondents did not provide predetermined response. For example an affirmative question may or may not be followed by a negative question. This meant that respondents had to clearly read every question in order to answer it accurately. Discrepancies in responses were noted later on to identify contrasting responses which could have indicated that the respondent provided pre-determined responses without thoroughly reading the question.

There are several types of questionnaire formats such as rating based, multiple choice, ranking based etc. (Fisher, 2007). Questionnaire for this research was multiple choice based where the respondent had to select the best option out of the five options given. The five options were designed on the basis of five point likert type scale and ranged from strongly agree to strongly disagree was used.

- **Step 6:** Determine the layout and physical characteristics of the questionnaire: Fisher (2007) recommends that the design of the questionnaire should be attractive with logical and sequential structure for the respondent to see what the questionnaire is about. Respondents should be able to understand the questionnaire through their logical perspective. Also the questionnaire should not be too long as it may lead to boredom, poor response rate and incorrect responses. and the questionnaire should be short (Fisher, 2007). An unattractive and monotonous looking questionnaire, especially long ones, could be quite boring and could lead to lack of concentration leading to either vague/incorrect responses or no responses at all. The design and layout of the questionnaire has a significant influence on people's perception of the whole exercise. This, in turn, could affect their cooperation or willingness to participate and in worst case scenario can influence their responses (Churchill, 1992). For example, poorly designed/ laid out questionnaire can lead to uninterested respondents which could lead to false responses. To ensure that the layout and design of the questionnaire is interesting enough participants in the pilot survey were asked to provide their feedback on the design and layout of the questionnaire along with

suggestions on how it can be improved. In addition to his, the researcher looked at layout of several other questionnaires conducted in other researches as well as took suggestions from the online survey. Structure of the Questionnaire for this research was kept simple and more logical. Different sections were highlighted with different colours. The title of the section explained which variable it related to.

- **Step 7**: Questionnaire Validation (Pilot study Implementation): Pilot studies are quite useful in eliminating any errors that the questionnaire may have prior to conducting the questionnaire survey (Gill and Johnson, 2002). Researcher can refine the questionnaire based o the feedback received for each and every question as well as the questionnaire as a whole (Yin, 2009).

  A pilot study was undertaken in this research to clarify the issues that the respondents may face. For the pilot survey, the researcher selected 10 individuals from her contact list. The respondents were selected with diverse profiles to ensure adequate representation of all kinds of individuals. Respondents for pilot survey were selected from personal contacts of the researcher to ensure that she receives thorough, accurate and honest feedback on the questionnaire. Respondents were requested to answer the questions as well as provide feedback on each and every question.

  9 questions were revised based on the feedback and two questions were eliminated as the respondents commented these to be repetitive. Their opinion was also confirmed by the similarity of responses obtained for the similar questions. 3 questions were elaborated upon and based on the feedback, explanations of certain terms were added to four questions. The amount of revision that was required in the questionnaire indicated that the pilot survey exercise was very useful and in fact, essential for this research.

3.7.3 Translation into Arabic Language

Researcher translated the questionnaire into Arabic. Following his the researcher identified the individuals from her contact list which were proficient in both Arabic and English. Researcher then sent the English version questionnaire along with the version translated into Arabic to all the selected individuals for their feedback. Modifications were made to the

translated Arabic version based on the feedback. In addition, in the questionnaire survey, the respondents were given the option to view each and every question in Arabic and English- so if the respondent did not understand the question they can view it in other language to seek clarification. The pilot survey included both the Arabic and English versions allowing the researcher to obtain extra feedback on the translation.

3.7.4 Sampling

While deciding the sample size of a questionnaire survey researchers must consider two aspects: size of the population and margin of error. Fisher (2007: 189) defined margin of error as "the measure of uncertainty of how much should be taken as a sample to be considered as the representative of the whole population."

The table below shows the number of completed questionnaires (to be acquired) with regards to the size of the population and margin of error.

	Margin of error			
Population	5%	3%	2%	1%
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1,000	278	516	706	906
2,000	322	696	1,091	1,655
5,000	357	879	1,622	3,288
10,000	370	964	1,936	4,899
100,000	383	1,056	2,345	8,762
1,000,000	384	1,066	2,395	9,513
10,000,000	384	1,067	2,400	9,595

Table3.7: Margin of error Source: Saunders et al. (2002: 156) quoted in Fisher (2007: 190)

Only adults can operate bank accounts in Saudi Arabia and hence Saudi adults were target population for this research. According to the CIA factbook, adult population in Saudi Arabia at the end of 2012 was 10.15 million. Based on the table above, for a population size of 10

million and more and for a 5% margin of error, minimum recommended number of responses is 384.

3.7.5 Conducting the Questionnaires

Survey was conducted online between May 2013 and January 2014 period. Respondents were asked not to close the browser till the completion of the survey as changes were not saved due to security purposes.

After the completion of the survey the results were downloaded in excel format and then exported to SPSS file. Data in SPSS was then saved on a password protected memory drive. This data was then subjected to statistical analysis.

3.8 Qualitative research

Qualitative methods have been applied to various disciplines, fields and subject matters albeit across diverse philosophical and theoretical bases (Denzin and Lincoln, 2000; Flick, 2009; Jupp, 2006). Of notable interest are applications in information systems (Myers, 1999; Myers, 1997) where they were used to explain the impacts of technology and services marketing to service quality concepts developed by Parasuraman and Grewal (2000). The use of qualitative approaches in the development of constructs continues in the present day and is evidenced by recent and relevant studies (see, for example, Lam and Burton 2006; Loonam and O'Loughlin, 2008; Rotchanakitumnual and Speece, 2003).

3.8.1 Data collection method- Focus group

After the formulation of the framework using survey, focus groups were used to validate the model and to gain an in-depth understanding of the reasons behind the responses provided by the respondents. The purpose was to gain some more clarity about the responses of the

respondents. Using focus groups after the questionnaire survey was carefully planned by the researcher so as to restrict the information obtained during focus groups. Perception of risks and adoption of e-banking are very vast topics and it is easily possible for the open ended discussion with in focus groups to drift in directions irrelevant to the research. By using the questionnaire survey prior to the focus group allowed the researcher to restrict the information obtained. The knowledge obtained through questionnaire survey and literature review was very useful in formulating the structure for the focus group including focus group questions. This also shortened the data analysis stage of focus group data as the researcher was already aware of the primary codes that she was looking for through the findings of the questionnaire survey. The purpose of the focus group was to cross validate the questionnaire survey with some flexibility on discovering some new themes that the researcher may not have covered in her conceptual framework.

Focus groups are a qualitative data collection method of video- or audio-taped group interviews stimulated by interactions between participants and moderated by a facilitator (Barbour, 2007; Jupp, 2006). Focus groups are characterised by structure, mode, and data. In contrast to one-to-one interviews, focus groups are conducted in groups of about 6-12 homogenous sets of individuals that are typically strangers to one another with the assistance of a moderator (Miles and Huberman, 1994). The data from participants includes experiences and accounts on and about thoughts, feelings, and behaviours, group dynamics and interactions, and the stimulant role of the moderator (Morgan, 1998). This type of the data (attitudes/experiences and interactions) enables the use of focus groups over other qualitative methods. Focus groups have been used in both academic and non-academic settings. Academic applications of focus groups include the generation of research questions and development of survey items (Moro et al., 2007). However, in this research it has been used for validation of the findings.

According to Morgan (1996: 130), "the strength of individual views can be tested through exposure to alternative perspectives in a natural way, uncovering new insights through the tensions created by group discussion." Thus, the researcher adopted focus group interviews which as second source of data as focus group are like open discussion sessions. Focus group research has been used to "review consumers' hidden needs, wants, attitudes, feelings, behaviours, perceptions, and motives regarding services, products, or practices" (Hair, Bush and Ortinau, 2003, p. 223). Moreover, focus groups have also been used by some researchers

in e-banking research in past. For stance, Lichtenstein and Williamson (2006) used mass media theories through individual and focus group discussion to determine the decision of Internet banking adoption. Clemes, Gan and Du (2012) used a combination of focus groups and questionnaire survey to identify the factors influencing New Zealand customers' adoption of e-banking. Ma and Zhao (2012) used focus group research to assess the e-banking customer satisfaction in China. Santos (2003) used focus group interviews to develop a model for e-service quality while . Zeithaml et al. (2000) used focus groups to develop a framework for evaluation of e-service quality.

Integrating focus group interviews with quantitative methods such as questionnaire surveys is critical for developing and creating reliable measurement scales (Hair et al., 2010). Several researchers have used combination of surveys and focus group for identify attributes in context of e-services. For example, Wolfinbarger and Gilly (2003) used a combination of focus groups and surveys to measure attributes that contribute to satisfaction in e-commerce.

3.8.2 Conducting Focus Group Sessions

Using the initial concepts identified from the questionnaire survey analysis, the focus group phase of this study consisted of five activities – group preparation, collect data, prepare data, analyse data, and draw conclusions.

3.8.2.1 Group Preparation: Prior to the hosting of the group discussions three preparatory activities were conducted – participant pre-selection and group scheduling, question development, and audio equipment testing.

For this research 5 focus group interviews were conducted involving 37 individuals. These individuals were selected from respondents who participated in the questionnaire survey. At the time of the survey, individuals were asked to select a box if they were willing to take part in focus group interviews. Preliminary details of the focus group interviews (as to how long it will be, how long it will last and when and where it might be conducted) were given. Individuals who expressed willingness to participate in the focus group interviews were asked to provide some basic details such as their age, gender, educational qualification location and email address. Email addresses were collected to contact the respondents later for focus group

interviews. In all 63 respondents expressed interest in participating in the focus group interviews. However, when contacted later, only 41 agreed to participate in the interviews. These were then formed in 5 focus groups of eight individuals each with one focus group of 9 individuals.

Individual invitations were sent out to each participant/invitee stating the location and time of the session and to provide some background on the nature of the session. Although focus group sessions typically include about 12 participants, the relative inexperience of the researcher as a moderator resulted in the choice of smaller groups of 6-9 participants each.

The mixture of participants within the groups, designed to maximise participant comfort and disposition to talk (Morgan, 1996) is given in table below. Unlike surveys, the goals of a focus group are to "gain insight and understanding from people in-depth" and participant selection is often based on the purposes of a project (Morgan 1998: 56). Considering this, the question was whether to comprise focus groups based randomly or homogenously. according to Morgan (1998: 56), "Focus groups work best when they generate lively discussion and that may not happen in a random collection of participants." Krueger and Casey (2000) also concluded that randomization may not necessarily form the most engaged focus group. Randomisation was also difficult to achieve in this research due to cultural issues which prevent females to engage in group discussion with unknown males. While forming the group homogeneity of respondents was taken into consideration. Out of the 41 who finally agreed to take part in focus group interviews, only 37 individuals turned up. The distribution of the focus groups was as follows:

Focus group #	Number of participants	Profile of participants
Focus Group #1	8 individuals	Females, Aged 23-41 years
Focus Group #2	6 individuals	Males, Aged 21-34 years
Focus Group #3	7 individuals	Males, Aged 24-40 years
Focus Group #4	7 individuals	Females, Aged 23-36 years
Focus Group #5	9 individuals	Males, Aged 27-38 years

Table 3.8: Focus group composition

As guidelines, the focus group followed the interviewing recommendations of the Focus Group Kit book series, specifically Krueger's Moderating Focus Groups (1998a) and Developing Questions for Focus Groups (1998b). Based on Krueger's recommendations, the focus group session followed an outline that included:

- a brief introduction,
- an open discussion,
- a group and independent activity involving choices and ratings, and
- a summarization and closing question.

Based on Krueger's (1998a) 4-step approach the question sequence started with an opening question aimed at acquainting participants with each other that eased into a simple introductory question about likes of electronic banking, to ease tensions and facilitate participation. The subsequent transition questions sought specific information about perceptions of risk in e-banking, how it affects the perception of individuals about e-banking, their trust in e-banking and whether these perceived risks affect their adoption of e-banking. This also resulted in the acquisition of emotions, etc. Finally, possible solutions to reduce the perception of risk were discussed. In closing, participants were each handed a on which they were asked to list three activities the banks must accomplish in order to reduce perception of risk. Audio equipment tests were conducted in several rooms to assess the recording quality for large groups and in different settings.

3.8.3 Data Collection

In all, five focus group discussion sessions with 37 participants (58% of invitees) were held. With the researcher playing the role of moderator, each session was recorded and appropriate summary notes taken using a reporting form that not only included key points and notable quotes, but also the seating plan of the sessions. To conclude the data collection stage, a debrief session between the researcher and the note-taker was conducted to review the discussion and notes. The output of each of these debriefs was a meta-data summary.

3.8.4 Data Preparation

In preparation for the qualitative data analysis, verbatim transcripts of the group discussions were prepared.

3.8.5 Data Analysis

Analyzing qualitative data is challenge because it could defend on individual's ability to interpret it (Creswell, 2009). In this respect the researcher's ability to interpret the message correctly plays a central role in the quality of qualitative data analysis (Creswell, 2009; Punch, 2005).

One way of analyzing qualitative data is to arrange the data according to recurring themes (Kiessling and Harvey, 2005). In addition, the researcher has to remain aware of to identify new themes which does not exist in the list of predetermined themes (Grinnell and Unrau, 2008). Thus, the conceptual themes which determine the protocol of qualitative data collection and analysis are keys to effective qualitative data analysis (Bernard and Ryan, 2009).

Most common method of analyzing qualitative data is to discover the key classes and themes in the data (King and Horrocks, 2010; Miles and Huberman, 1994). Qualitative research require special skills because the researcher needs to interpret and analyze the data while remaining neutral, that is, without letting his own perceptions influence the data analysis process (Miles and Huberman, 1994).

This research adopts content analysis technique which is one of the most common techniques for qualitative data analysis. Qualitative data can be analysed both qualitatively and quantitatively (Flick, 2009). When quantitatively analyzed researcher will count the number of times a keyword or key theme has been repeated in the data. But it does not provide the required insight as it does not reveal the context in which specific words were spoken (Silverman, 2010). For example, the term financial risk exists in both these sentences but carry different meaning: "I am mainly concerned about financial risk," "financial risks were managed well be e-banking service providers." Qualitatively analyzing qualitative data ensures that the context of the conversation is preserved.

Silverman (2001) recommends presenting selected quotes and using quotes from different respondents to build an argument. For this the researcher will need to arrange different

sentences spoken as per the themes they represent. While conceptual themes are useful but researcher needs to remain open to identifying new themes.

Codes for focus group data were obtained from the questionnaire which gave 11 primary codes representing the 11 primary variables in the framework. Automatic coding was not used because the purpose was to validate the findings of the survey and to obtain in depth knowledge on the variables discussed in the framework. . These codes were used to identify areas of importance, feelings, and general opinions/beliefs on the subject at hand.

3.8.6 Merge and Analyse

Following the independent analysis of the data from each group discussion, the five individual projects were merged into one project representing the entire focus group study. Further coding proceeded with this merged project, consisting of the audio recordings of the discussions, transcripts, nodes, memos, and journal logs linguistic connectors, and process maps were used to identify node relationships. In the course of the analysis, memos documenting ideas and group similarities and characteristics were maintained.

3.8.7 Draw Conclusion

Based on the analysis the relationships between the variables as obtained from the survey were validated. Explanations were provided as per the responses of the focus group participants.
In total focus group data supported all the relationships as mentioned in the survey, as well as on additional relationship between time risk and risk perception.

3.8.8 Limitations of Focus Group Discussions

In spite of the ability of focus group discussions to gather rich data, attitudes, and opinions, they are not without limitations such as participant attendance, discussion control, and pre-planning and time management. Participant attendance is one the greatest inhibitors of focus group discussions where a planned group discussion may end up as an interview. Whilst measures to receive attendance confirmations are taken, no shows still occur; however, this

challenge can be overcome by the offering of incentives for attendance and over inviting. Once participants arrive at group discussions, the control of the discussions and management of speak time is another limitation that requires facilitation expertise to prevent talkative participants from dominating the discussion at the expense of quieter participants. The researcher acting as moderator encouraged the quieter participants to express their views. The final limitation of focus group discussions borders between pre-planning and time management where the discussions can easily be hijacked without a proper guiding script, resulting in discussions either taking too long or not acquiring the depth of experiences required.

3.8.9 Problems encountered during focus group interviews

Language was one of the key issues in data collection process. Researcher speaks both English and Arabic and so were many of the respondents. Many respondents spoke in mixed language and anticipating this, the researcher hired bilingual transcribers. Still researcher faced some problems in translating and interpreting some of the sentences/words spoken in Arabic. In these cases, the researcher ensured that despite translation the context of the argument was preserved.

Also in some cases, the respondents did not understand the technical terms; for example some respondents were confused between time risk and performance risk. In order to save confusion researcher explained what the key terms meant at the beginning of each question and respondents were requested to ask any questions they had before the discussion on the question began. Some of the respondents were quiet during the focus groups and to researcher had to motivate them to speak.

One major problem that researcher faced was to conduct focus group interviews with all male groups as speaking with unknown males is not permitted under Saudi culture. To overcome this researcher sought the help of her brother who conducted the focus group on researcher's behalf. Researcher was monitoring the focus group from the other room- listening to the conversation using an audio-video device and instructing her brother about what questions to ask. Researcher also prepared her brother briefing him about the research and showing her videos of how focus groups are conducted.

3.8.10 Other Considerations

This section discusses the measures taken to enhance data quality, ensure the reliability and validity of the process and manage ethical issues in the conduct of focus group discussions.

- Data Quality: Although opinions and beliefs expressed in words and feelings are more difficult to capture, the reliability of the focus group data was achieved in accordance with Silverman's technique that prescribes the transcription of all aspects of the data (Silverman, 2001). Thus, verbatim transcription of the focus group recordings was conducted taking into consideration pauses, laughter, feelings, voice pitch and elevations, etc.

- Reliability and Validity: The criteria to ascertain reliability and validity in qualitative studies such as methodological coherence and sample sufficiency and adequacy (Morse, 2002), triangulation (Seale, 1999), and presentation of evidence (Whittemore et al., 2001) are also applicable to focus group discussions. Methodological coherence and sample sufficiency were accomplished through multiple group discussions. In the presentation of evidence, all references to the participants have been masked, where names have been replaced by arbitrary reference in the transcripts (for example, F21 represents participant number 1 in focus group number 2) and masked in the referenced quotations.
- Ethical Issues: The various ethical issues taken into account in the conduct of the focus group discussions included participant motivation, introduction and debriefing, confidentiality (Barbour, 2007; Flick, 2007), and privacy (Morgan, 1998). Though motivation for participation in the group discussions was unknown, due care was taken in the incentives offered to group discussants. A simple reception was held at the end of each group discussion where light snacks and tea was offered to the participants. This reception also enabled some more informal discussions amongst participants. Prior to commencing the discussions and tape recording, the introduction section informing participants of the purpose and process of the discussions was also used to guarantee confidentiality and anonymity. Each group discussion concluded with a debriefing summary where an overview of the discussion was presented for agreement and/or disagreement. This debrief enabled the moderator to provide

highlights of the discussion and discussants opportunities to confirm and/or clarify misunderstandings.

However, whilst each session was tape recorded, participant confidentiality was maintained at all stages of the research process. To achieve this, the researcher maintained custody of all audio recordings and conducted all transcriptions. Anonymity of the respondents that was promised during the introduction was maintained throughout the transcripts where all identifying names were altered and replaced as mentioned above. In addition, although details of banking relationships were not sought, all references to electronic banking service providers were also suppressed, maintaining privacy and retaining focus on the study.

3.9 Ethical Approval

Since this study intended to collect data from individuals, prior approval was required from the Brunel University's Ethical Committee. The application and questionnaire were forwarded for ethical approval, and subsequently, such approval to conduct the survey was obtained.

3.10 Summary

This chapter described and discussed the research methods adopted for this study and the reasons for doing so. It began with a discussion of the research philosophy; the choice of epistemological position of pragmatism and ontological position of mixed methods are discussed. The choice is based on the ability of these philosophical standpoints to balance the strengths and weaknesses of either extreme stand points. Since the concept of risk perception has been discussed widely but not in the same comprehensive view, this research used a combination of qualitative and quantitative research methods. The quantitative aspect compiles together the past researches and tests it in context of Saudi Arabian banking sector.

The qualitative, aspect, on the other hand, aims to gain insight into why the problem exists, what is the nature of the problem in Saudi Arabian context and what are the possible solutions. This chapter states the main benefits and challenges of quantitative and qualitative methods and states the benefits of selecting mixed methods strategy for this research.

This chapter explained the reasons for supporting the explanatory research purpose. Past researches have been quite shallow in that they provide arbitrary concepts for increasing adoption of e-banking but do not provide any practical guidance. In order to identify the factors and provide practical and concrete solutions to the problem, the research purpose was explanatory research.

This chapter also contained discussion about the distinction between research methodology and research methods. The choice of quantitative and qualitative methods was discussed and reasons provided for choosing mixed methods approach. References were provided for several other authors who have used mixed methods or have advocated use of mixed methods in studying 'adoption of e-banking.' Finally the chapter was divided in two parts with each part explaining one type of research method adopted. Quantitative part of the research involves use of questionnaire survey. This survey resulted in quantitative data which was analysed quantitatively. The next stage of the research was to discuss, in-depth the underlying issues in focus group interviews. The choice of focus group interviews over other qualitative methods and their relevance to this particular research was discussed. Focus group interviews not only validated the findings of the questionnaire surveys but also allowed the researcher to obtain greater insights into the responses of the respondents and identify possible solutions to the problem studied. In the respective sections the sampling strategy adopted for the questionnaire survey and focus groups was discussed.

4. Data Analysis

4.1 Quantitative data analysis

4.1.1 Missing values

Missing values could be an indicator that the respondent faced some difficulty in understanding and responding to the questions. In some cases, when a questionnaire survey is conducted online, missing values could also be because the respondent may lose connection with the server while filling in the questionnaire online or because the respondents deliberately did not answer the question, for example, when the respondent could not understand the question. In either of the cases, missing values must be rectified because they could lead to errors in analysis of data.

If a questionnaire response has more than 10% missing responses, the whole response should be ignored (Hair *et al.*, 2006). As suggested by Hair *et al.* (2006), 16 questionnaires which had more than 10% missing responses were dropped. For other response sets, the maximum percentage of missing responses was 6% ,which is acceptable and hence these responses were not excluded. Model building requirements requires substitution of these values with the best estimation, such as their mean (Hair *et al.*, 2006). Another strategy could have been to substitute the variable using Expectation-Maximisation method which is useful because it introduces the least bias into structural equation models. The expectation maximization algorithm is commonly used for parameter estimation in probabilistic models with incomplete data. The expectation maximisation method computes probabilities for each possible completion of the missing data using the available parameters. However, in this research it was not considered because of the small number of missing values. Because there were very few of those missing values it was reasonable to replace these values with the mean. Thus, the number of responses (sample size) used for the analysis after excluding 16 responses with more than 10 percent missing values was 1048.

4.1.2 Outliers

Outliers represent cases of extreme responses which can significantly affect the model. These outliers could be because of misinterpretation of the question, because of the data entry error or some other issue. In a likert type scale of values ranging from 1 to 5, it is reasonable to take values which are +/-2 of the mean as outliers (Hair *et al.*, 2006). For example, if the mean response is 3.20 then values below 2 will be considered as outliers while if the mean is 1.20, values above 4 will be considered as outliers. Outliers can skew the distribution of the data resulting in erroneous results. Like missing responses, outliers can be replaced by mean values or by values estimated through Maximum Likelihood Estimation.

The number of outliers identified was 23 but all the outliers were marginally outside the threshold limit. Due to the outliers being marginally outside the threshold of ± 2 researcher believed that the outliers would not have a distorting effect on the overall data. Furthermore, The maximum number of outliers for any question was 7, which is a very small number considering that the total sample size was 1048. Hence, no further tests were conducted and none of the responses were dropped as outliers.

4.1.3 Validation of Measurements

It is important to test for validity and reliability of scales before proceeding with the model testing. Validity of the scale refers to whether two questions are asking the same or opposite questions. If so, then one of these questions could be dropped because it could lead to erroneous results. Confirmatory factor analysis (CFA) is a commonly used method for estimating the validity of the questionnaire. CFA reports the Cronbach's Alpha figure which is an estimation of the reliability of the questionnaire. In CFA the average correlation between different set of responses for each variable is calculated and the higher the correlation more likely is that the questions are similar and repetitive. A very low Cronbach's Alpha is an indicator that the questionnaire is unreliable. However, some researchers such as Lance, Butts and Michels (2006) and Bacon (2004) argue that Cronbach's alpha value of less than 0.7 is acceptable if the sample size large enough.

According to Hair et al. (2006), CFA should be run only for the constructs with at least 3 indicators; in the case of less than 3 indicators there is a problem of under- or just identification. In our model , all the constructs had more than 3 variables and hence CFA was run for all the constructs. Confirmatory Factor Analysis was conducted using SPSS software package with maximum likelihood estimation (MLE).

The primary criterion for the elimination of indicators from a scale is the indicator's statistical significance. However, before any item is eliminated, its importance to the constructs' content validity is carefully assessed.

The table below shows the test results for CFA analysis of the responses:

Variable		**AVE**	**Cronbach's α**
Security risk	SR_1	0.79	0.86
	SR_2		
	SR_3		
	SR_4		
	SR_5		
	SR_6		
	SR_7		
Performance risk	PR_1	0.81	0.91
	PR_2		
	PR_3		
	PR_4		
Social risk	SR_1	0.77	0.81
	SR_2		
	SR_3		
Time risk	TR_1	0.87	0.89
	TR_2		
	TR_3		
Financial risk	FR_1	0.82	0.94
	FR_2		
	FR_3		

Transactional risk	TRR_1	0.88	0.96
	TRR_2		
	TRR_3		
Psychological risk	PsR_1	0.81	0.89
	PsR_2		
	PsR_3		
Culture	C_1	0.68	0.74
	C_2		
	C_3		
	C_4		
	C_5		
	C_6		
	C_7		
Risk Perception	RP_1	0.75	0.79
	RP_2		
	RP_3		
E-banking adoption	EA_1	0.71	0.78
	EA_2		
	EA_3		

Table4.1 :Test results for CFA analysis of the responses

Hair et al. (2006) suggests that a Cronbach's Alpha of more than 0.7 is enough to justify the reliability of the scale. But a Cronbach's Alpha of more than 0.95 is an indicator that two or more questions may be seeking the same information. In table above, Cronbach's alpha exceed 0.95 for one construct; 'transactional risks.' On close inspection of the correlation between the three response sets (comprising the Transactional risk variable) it was found that there was a very high correlation between question TR_1 and TR_3. However, on reading the question the author did not find evidence of the two questions being at al similar and hence despite this high correlation and high Cronbach's Alpha value, author did not find enough ground to eliminate any of the two questions. Furthermore, the Cronbach's Alpha is

marginally more than the upper threshold of 0.95. Considering these arguments the author decided to carry on with the analysis without removing any of the question from 'Transactional risk' set.

4.1.4 Descriptive analysis

Distribution of respondents by the age group indicates a wide distribution of respondents. There was however slightly higher proportion of the young people as compared to the older individuals in the survey. This indicates some degree of bias in the data. It is expected that the older individuals will face higher perception of risk in using e-banking simply due to their lower level of familiarity with technology. However, despite her best efforts the researcher could not obtain a different proportion of respondents. Part of it was also because the researcher is a girl which limits her face to face interaction with females only. This means that the researcher could have got responses from males through indirect channels only and researcher had little control over the composition of the sample.

Respondent distribution by age	
under 18 years of age	0%
18- 30 years of age	17%
31-45 years of age	45%
46-65 years of age	27%
Over 65 years	11%

Table 4.2 Distribution of questionnaire survey respondents by age

Respondent distribution by annual income (in Saudi Riyal)	
50000	10%
50001- 100000	22%
100001- 250000	20%
250001- 1000000	31%
>1000000	17%

Table 4.3 Distribution of questionnaire survey respondents by annual income

Table indicates a wide dispersion of respondents by income. However,, most of the respondents came from the middle income group which is coincidentally also the largest group by income in Saudi Arabia. In this respect the sample represents the true Saudi population. Individuals in higher income group are more likely to use e-banking. While there was some bias towards higher income group but the data is still well distributed.

Respondent distribution by frequency of visits to bank	
Rarely	8%
When required, sometimes	19%
Regularly but not often	37%
Regularly and often	16%
Very frequently	20%

Table 4.4 Distribution of questionnaire survey respondents by frequency of visits to banks

The individuals who need to visit the bank more frequently to complete their business or personal transaction are likely to benefit the most by adopting e-banking. The responses indicated that most of the respondents visited bank "regularly but not often." It was essential to have a balanced perspective of individuals. Individuals who visit banks rarely are likely to benefit little from e-banking or are likely to show low perception of risk. On the other hand, individuals who visit the bank often may exhibit high perception of risk, which could be one of the reasons why they personally visit the bank despite the amount of time it takes in comparison to using e-banking.

Respondent distribution by usage of e-banking	
Never	19%
Rarely but yes	12%
Sometimes.	6%
Yes but not regularly.	46%
Very often and regularly.	17%

Table 4.5 Distribution of questionnaire survey respondents by usage of e-banking

Most of the respondents indicated that they have used e-banking at least some point of time in their lives. It was quite important to get perspective of both those who have used e-banking and those who have not. In this respect it seems that the sample is underrepresented by individuals who have not used e-banking. Given that only 14.3 percent of Saudi Arabians are e-banking users (Eid, 2011; Al-Ghaith et al. 2010), ideal sample would have included a very high proportion of individuals who have never used e-banking. But the sample had only 19 percent individuals who have not used e-banking. This was a self administered survey and researcher did not control the composition of the sample. One of the reasons for higher proportion of e-banking users in the sample could be that the non e-banking users may have chosen to opt out of the survey just because of their lack of understanding of e-banking and terms associated with it. E-banking users may have chosen to participate in the survey because they found it relevant.

Respondent distribution by education	
None- 9th Grade	9%
10th Grade (GCSE)	8%
12th Grade (O level).	19%
Diploma.	16%
Graduate.	41%
Post graduate.	7%

Table 4.6 Distribution of questionnaire survey respondents by education

Table indicates a good distribution of respondents by education group. Generally individuals in higher education levels are likely to show lower perception of risk in e-banking due to their

higher intellectual levels and ability to understand the benefits of technology better than lesser educated individuals.

4.1.5 Regression analysis

Regression analysis tests reveals whether an independent variable have a statistically significant impact on the dependent variable. Different models were formed on the basis of the model that needs to be tested to validate the model.

The first model tested during this research was as follows:

$$\textbf{Risk\_Perception} = \alpha_0 + \alpha_1 * \textbf{Psychological\_risk} + \alpha_2 * \textbf{Transactional\_risk} + \alpha_3 * \textbf{Financial\_risk} + \alpha_4 * \textbf{Time\_\_risk} + \alpha_5 * \textbf{Security\_risk} + \alpha_6 * \textbf{Social\_risk} + \alpha_7 * \textbf{Performance\_risk} + \alpha_8 * \textbf{Cultural\_factors}$$

Where α_0 , α_1 , α_2 , α_3 , α_4 , α_5 , α_6 , α_7 , α_8 are coefficients of regression

Another model was formulated to test the impact of Perception of risk and culture on adoption of e-banking

$$\textbf{eBanking\_adoption} = \alpha_{20} + \alpha_{21} * \textbf{Perception of risk} + \alpha_{22} * \textbf{Cultural\_factors}$$

For both these models the p-value of the coefficients was evaluated to see whether the relationship between the independent and dependent variable is significant. The p-value indicates the probability of error in estimation. The p-value of 0.05 indicates 5% error. Thus ,coefficients with the p-value less than 0.05 indicated that there is less than 5% error in estimation of relationship; in other words, there is above 95% probability that the stated coefficient is true. The p-value more than 0.05 indicates that there is more than 5% probability that the observed coefficient is by chance and there is more than 5% chance that choosing a different sample could result in different findings. Thus, all the variables with the p-value less than 0.05 were accepted and remaining rejected.

The table below gives the Adj R-squared value for the two models. These are further discussed with respective models below

Structural Model	R Squared	Adj R Squared
Model 1	**0.4991**	**0.3737**
Model 2	**0.5317**	**0.4928**

Table 4.7: R squared and Adj R squared of two models

The table below summarises the output of the first regression test:

Dependent variable: Perception of risk		
Explanatory Variable	Coefficient	the p-value
Psychological	0.01933134	0.13989928
Transactional	0.51526355	0.04308543
financial	0.73943648	4.03E-115
Time	0.04027188	0.04821016
security	1.03148618	1.11E-261
Social	0.04275905	0.09970644
Performance	0.33176721	6.56E-09
Culture	0.37999823	0.04787682

Table 4.8 Summary of first regression model

An Adj-R-squared value of 0.3737 indicates that the 8 variables included in the model can explain up to 37.37 percent variance in the perception of risk. One reason why the adj- R-squared is low is that perception of risk is influenced by several factors which may be unique to individuals and hence cannot be captured in a standardised scale. However, it also indicates that several other factors that constitute perception of risk in e-banking have not been included here. These will be investigated further during the focus group interviews.

This researched aimed to look at perception of risk rather than actual occurrence of risk itself because perception of risk is likely to affect the behaviour of individuals. Perception of risk can be influenced by several different kinds of risks, some of which are relevant in the case of e-banking, while some others are not. For example, risks of accident or health risks are not relevant to e-banking while financial risks may be highly relevant.

The results indicate that psychological and social risks may not have a causal impact on the perception of risks in using e-banking while all other forms of risks investigated i.e.

transactional risks, financial risk, time loss risk, security risk, performance risk have a statistically significant impact on perception of risk. In addition, cultural factors were also found to influence perception of risks indicating that individuals' perception of risk in using e-banking is also driven by their cultural environment. This confirms the previous findings that perception of risk has to be contextually studied and researches conducted in Western nations may not be applicable as such in the context of developing nations with different cultural background.

What is also interesting to note is that the risk that is found to have a significant impact on perception of risks are all the risks that can have some measurable or say tangible impact. The tangibility of the risks could itself be linked to cultural aspects. Another interesting thing to note was that all the risks mentioned were those risks which could be somehow linked with the service providers and those, to some extent, are in the control of the service provider. Most of these risks could also be linked with technology and can consequently be improved with advanced technologies.

Looking at the coefficients, it seems that security risk is the most critical risk followed by financial risks. This was somewhat expected as most of the past researchers have confirmed that the security risks and the risk that using e-banking could somehow result in a financial loss are the major concerns of the users. Similarly, the time risk, although significant, had a very low coefficient. This means that while there are concerns about the time risk, the risk itself is not too concerning. This could be because saving time is one of the primary benefits of using e-banking so a time loss risk is not perceived by many to be a significant risk. In other words, respondents may have believed that time risk has a low probability in the context of e-banking and hence they may have responded as such.

Transactional and performance risks are somehow linked- the risk that a transaction may not go through as expected (i.e. transaction risk) may be considered similar to the risk that the e-banking system may not perform as desired (i.e. performance risk). However, the correlation between the two was 0.72 indicating that users do not consider them exactly alike and hence it was not an error to include the two as separate risk factors. Both these are found to have a significant impact on the perceived risk.

The table below summarises the regression output for the second model

Dependent variable: E-banking Adoption		
Independent Variable	Coefficient	the p-value
Perception_of_Risk	- 0.7720189	0.00368373
Culture	0.01638763	0.10863870

Table 4.9 Summary of second regression model

The second model indicates a statically significant relationship between perception of risk and adoption of e-banking while cultural factors were found to have no significant and direct impact on adoption e-banking. This indicates that the cultural factors influence adoption of e-banking by influencing our perception of risk and other factors but do not directly affect adoption of e-banking. It is understandable because Saudi culture does not prohibit use of e-banking in any way. The negative coefficient of perception of risk indicates that with rise in perception of risk adoption of e-banking will decline.

Following the quantitative analysis the research framework has been revised as given in the figure below:

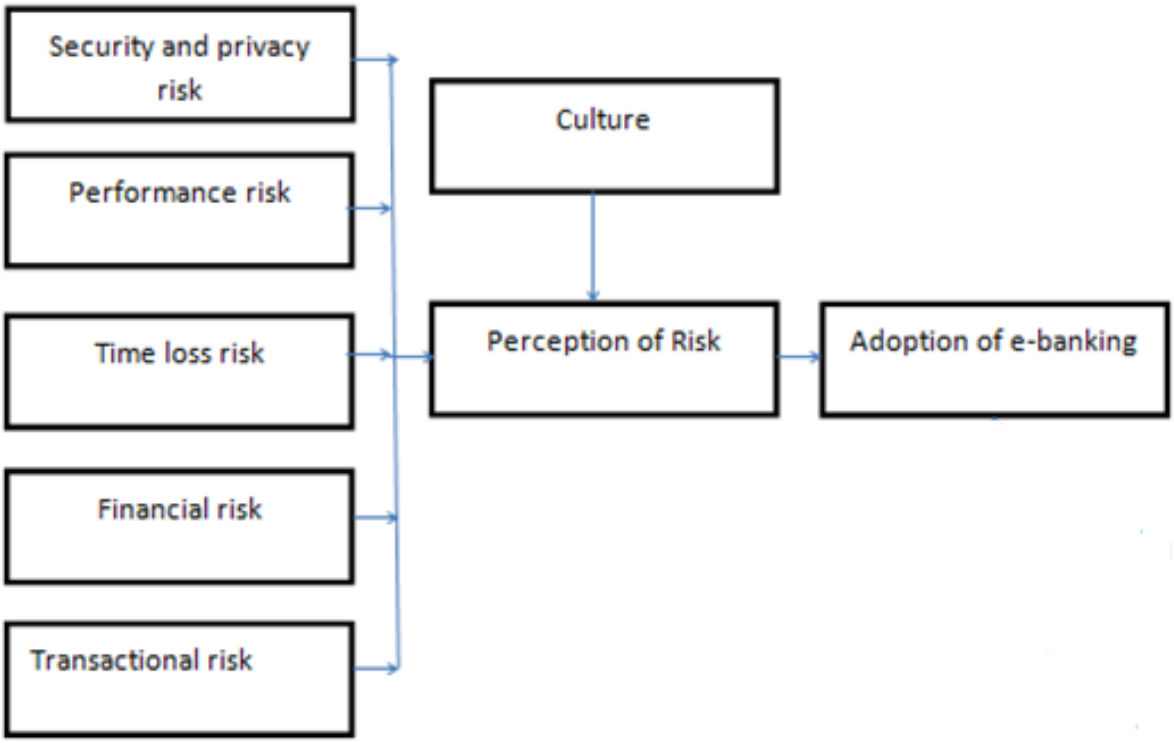

Fig 4.1: The framework was constructed on the basis of the findings of this research.

4.2 Qualitative data analysis

The primary themes for the qualitative data analysis were obtained from the conceptual framework itself. Thus the primary themes used for the analysis of the qualitative data obtained from the focus group interviews were:

- Psychological
- Transactional
- financial
- Time
- security
- Social
- Performance
- Culture
- Perception of risk
- Adoption of e-banking

These themes are discussed individually below:

All of the respondents in the focus groups agreed that e-banking is useful and helpful. They cited various reasons for their response. For example, respondents F11 commented: "I think e banking is very useful. It saves us so much time and gives as so much freedom to do our banking the way we want. Just imagine going to bank branch to transfer money from one account to another." Respondents F12 carried on: "I agree. Transferring money earlier required cheques or banker's draft. It took ages to transfer money and even simplest of transactions got delayed. Now I can transfer money sitting at midnight from the comfort of my home." Another respondent commented "it is also beneficial because I think this has led to development of e-commerce also. It is only because of e-banking online shopping has become so easy. I can now make a payment online, keep an eye on my account. Auto debit is also useful- now I don't have to worry about paying *my bills or anything.*" Similar views were presented by other respondents in other focus groups. Overall the respondents agree to the statement that e-banking is useful. Some respondents also raised some issues. For

example respondents F21 commented: "I think it saves both time and money. But one problem is the limited functionality. We still need to go to the bank for several things like depositing money or for discussing our loans and other things. I remember once I wanted to apply for a car loan and I had to wait 1 month till I returned from my holidays to apply for the loan. It would be nice to have all the facilities *online."* Another respondent (F33) commented "I like e-banking in that it has made life very convenient. But I also feel that banks should provide more balance in their service. What the banks have been doing is moving services online, which is of course cheaper. However, there is no relationship between the bank and its customers. It is all about credit score and all that. In the past when we had branches only then I knew my banker and he would help me the best way possible like getting an overdraft or short term loan. So I think e-banking as an addition to the traditional type of banking is useful but completely replacing the traditional model with e-banking is not wise idea." This indicates that while e-banking has several benefits, there are advantages to the conventional model too such as direct relationship between the customer and the manager. The traditional model allowed the customers to meet their bank managers face to face and resolve several issues which could only be resolved interpersonally. Digitalisation has made it easy to carry out transactions but at the cost of personal engagement with the customers. This could be the reason why several Western banks are moving to a hybrid model where the customers have e-banking services with additional advantage of a bank manager whom they can contact whenever the need arises. Respondents also raised the issue of limited e-banking services. For example, Saudi banks do not allow customers to apply for loans online.

4.2.1 Psychological risk

Psychological risk is the perceived risk of any undue stress that may occur due to use of e-banking. Not too many respondents spoke about psychological risks. This is one of the risks, which like financial risk, is often considered as an outcome of other forms of risk. Almost all of the respondents who commented on the risks did agree that any form of risk in e-banking would concern/worry them and this would lead to psychological risk. However, when asked about psychological risks, respondents provided some more information which indicate that individuals do not consider psychological risks contributing to perception of risks.

Respondent F14 commented: “there is definitely a possibility that I will get worried but that is a normal thing. I mean we get worried about anything wrong.” Respondent F15 supported his views and commented “it is about getting worried about getting worried. Doesn’t make sense. Yes, if you say that I will not be able to take the stress of any risk in e-banking and might get hospitalised because of that then it’s something else. But if you are talking about the risk itself then why?” In other focus groups also, respondents provided similar views. Most of the respondents commented that psychological risk is an effect rather than a cause of risk. According to one of the respondents “who wouldn’t get worried because of risk but you are saying that getting worried is the cause but I think it is an effect. For example, when I face financial loss, I will be worried about the loss rather than about getting worried itself.” Respondent 32 supported his views and commented “there is definitely a cause effect issue. What you call psychological risk is an effect of other forms of risk and perception of risk but is itself not a cause.”

Respondent F24 commented: “risks are everywhere in whatever we do but the problem in e-banking is that we do not have control over these risks. This, for me is the main worry. I mean whenever I do something I make sure that I have done what I am supposed to do but I am still unsure of the outcome and that is a psychological worry.” Respondent F22 agreed and commented “I agree. It is all about uncertainty. E-banking is all good and helpful but there is a great degree of uncertainty and that is a psychological risk for me. For example, I transfer money to my brother who is studying in US and every time I do that I have to enquire several times whether he has received the money or not. There is a psychological risk of this type because I am under stress whether he will receive the money in time or not.” Another respondent recollected one of his incidents: “Yes. I have had other problems with my e-banking system. For example, at times, it did not let me log into my account and I panicked. I thought someone else hacked into my account. It was after working hours and I had to wait next morning to contact my bank and restore my access to my account. That period was very worrying. It was stressful and I was concerned that someone else blocked me. Later on I found out that my bank’s site was undergoing maintenance and that’s why there was no access. But why didn’t they inform their customers about site maintenance.”

Four other respondents also provided similar comments and suggested that they would be concerned about what will happen in case of e-banking because they are not certain. On the other hand the other respondents did not provide much information about psychological risks. This indicates that psychological risks may not have an impact on the perception of risks in e-

banking. If individuals are too stressed about using e-banking or if they perceive that they will have to undergo some form of stress as a consequence of using e-banking they are very less likely to adopt e-banking.

Thus, the respondents agreed that undergoing stress is not pleasant but most of the respondents failed to identify it as a different category of risk. This lends support to the findings of the questionnaire survey that psychological risks may not affect the overall perception of risks in e-banking.

4.2.2 Transactional

Transactional risks were cited as a significant factor affecting adoption of e-banking by most of the respondents. For example, respondent F41 commented that: "the main point is the transaction thing. I want it to go through as I expect it to. I mean if there is anything that the bank is unsure about they should tell me before I undertake the transaction." Same views were expressed by several other respondents; for example respondent F23 commented "as long as I know how everything is going to work, I am okay with it. When I don't know what is happening, that is a problem." Respondent F51 commented "there should be a standard process and everything should follow that process. I spent two years in UK and every time I used e-banking I was sure that this is what going to happen. I mean if I transfer money in someone's account, I know when it would be there. Now with …… bank I don't know transactions would proceed as expected. I am not sure and I have to check."

Respondent F41 presented some evidence: "I remember one such incident. I requested an overseas bank transfer of 10000 Riyals. I assumed that it will go through. 4 days later I came to know that my brother has not received the money. I checked in my account and money was deducted. Called them and they told me that the transaction was declined due to suspicion of fraud. But then why did they deduct the money from my account and why did they not call me to confirm whether it was fraud. I would never have had this kind of problem if I visited the branch personally. I could have asked the manager how long it would take and he would be able to give me a reliable estimate."

Similar views were expected by many other respondents and it indicates that transactional uncertainty is one of the issues that concern the users. This could be somehow liked with the

Saudi culture which ranks highly in uncertainty avoidance. Saudis prefer certainty and refrain to engage in activities with uncertain outcomes. As one of the respondents mentioned "I know several people who prefer to walk into a branch. In fact most of my family members, especially the grownups, have rarely used e-banking even though they have e-banking facility. No one prefers to use e-banking because they know little about it. Going to bank and doing the transaction there gives them a kind of satisfaction that the transaction is completed." Four other respondents also talked about elders in the family always insisting on completing the transaction in person. For example, one of the respondents commented "whenever my father or uncle ask me to transfer the money into someone's account and if I say I'll do online they always say No. They want the assurance that the money was transferred and they always ask me to go to the bank transfer the funds and bring the receipt. I have no choice but with e-banking they feel insecure no matter how much I tell them."

Most of the respondents talked about online money transfers but there were some respondents who also mentioned other transactions. One of the respondents mentioned, "I was offered some house insurance deal once and I bought it. But then after 3 instalments I called the bank once to confirm that whether the insurance covers contents and I was told No. But I clearly remember that the online quote did say that there was some form of content insurance included." Another respondents argued something similar and commented that "I never buy any product online. I have heard so many horror stories. People are almost fooled and the prices are almost always inflated. I am sure if I take a loan in branch it will cost me far less than if I rely on online system. They say that the best deals are available online but I don't agree with this." One more respondent talked about the charges incurred in online banking. According to him: "the charges in online banking are not clear. They have some sort of transaction fee but they never tell you. In branch I would know because I speak face to face with someone. So the fee associated with any transaction is not clear in online banking."

Respondents were almost unanimous that there is comparatively more transactional risk n e-banking compared to in branch banking and many respondents confirmed that this does have an impact on some users' perception of risk in e-banking.

Talking about the solutions respondents provided some interesting suggestions. Respondents F26 commented: "what they can do is provide a timeline on exactly what will happen after the transaction is initiated and how long will it take. So if I transfer funds in someone's account, the system must tell me exactly how long will it take for the money to show in

another person's account? At the moment they give rough estimates which are never correct." Respondent F42 commented: "the idea of e-banking is that it is electronic and as far as we know anything electronic is instant. So if I transfer funds in someone's account, it should immediately reach his account. Why should it take any longer? Now in a branch money will show in other person's account before I leave the building. So electronic –shouldn't it be faster because it is electronic. I don't understand why it is actually slower." Another respondent supported his views: "that's correct. If the money leaves my account immediately, how come money is not in other person's account immediately. It's all electronic so should be faster. Surprising other money transfer channels such as Western Union are faster than e-banking. Why?" Another respondent provided some evidence of poor transaction reliability in e-banking: "once I paid my credit card bill through online banking. Few days later I received a letter that the bank has imposed a penalty because I failed to pay my money on time. I am sure I paid it before the deadline and then when I spoke to the credit card company they told me that if I make payment through e-banking it takes 48 hours to reach their account. Really? I was so surprised because the only reason why I chose e-banking was because I thought it will be faster. But I was wrong,"

According to the respondents, increasing the certainty in e-banking and improving the information availability are useful approaches to reduce transactional risks.

4.2.3 Financial

Financial risk originates from the likelihood of incurring a financial loss as a result of using online banking. In the questionnaire survey this was found to be the second most significant risk affecting the perception of risks.

Most of the respondents agreed that financial risk is a critical risk for e-banking users. When asked about the financial risks, respondent agreed that financial risk does have a significant impact on them. According to F13: "banking is about money and of course anyone will be worried about its money. The thing is that if I have normal banking then you would not hear of horror stories of financial losses but in the case of electronic banking it is so common." Respondent F16 agreed and commented, "I think financial risk is the most important risk. See

other risks also matter because they lead to financial loss so at the end of the day every risk is financial risk." Respondent F33 commented: "financial risk is indeed the root problem. Who enjoys loss of money and the very thought of losing it will make people worried. So I am sure financial risks will rate as one of the primary risks in e-banking." F26 commented: "we use banking to protect our money and if there is any threat to our money then it defeats the purpose of putting the money in the bank. In fact my grandfather still maintains most of his liquid assets in gold and cash and he does not put this in any bank account. He is scared I think."

One of the respondent commented "our relationship with the bank is about protection of our hard earned money. We pay for the bank's services and banks also make money on the money we keep with them. Now, in e-banking there are several possibilities that incurring financial loss. Sometimes directly and sometimes indirectly but it is still a loss of money." Another respondent commented: "financial risk is the most significant risk in e-banking. What if I pay the wrong amount or what if the goods I paid for didn't arrive. In traditional banking I would pay for it in cash and get the goods then and there but there is so much online purchase now there is always a risk. But given the fact that banking is about money, some amount of financial risk is always there" Most of the respondents seemed concerned about making a financial loss due to some problem in e-banking service.

In this vein, one of the respondents provided interesting comments: "I think that financial risk is the only risk in e-banking. I am saying so because at the end of the day whatever other risk there is the end result is financial loss. So whenever we are talking about any other risk we are basically concerned about how it is going to affect me in terms of money." Another respondent supported his comments "See at the end of the day we are all worried about loss of money. But then what other risk is there in e-banking. Banking is about money and we are concerned that we may lose money because of some fraud or some technical error. Whatever the issue but we are concerned about losing money and hence financial risk I believe is the main risk and all other risks are not so important risks." While this statement is correct it is only to a limited extent as one of the respondents clarified "financial risk is not the only risk. I think financial risk is mainly about losing money due to some error such as in making the payment. For example, if I enter a wrong amount while making the payment or if the bank takes money from my account for something which I did not agree to. I have experienced this. I opened a new bank account and after 6 months I noticed that the bank was taking out some amount from my account. When I enquired I was told that this was transaction charges

for paying in cash and cheques. I was surprised but I came to know that in e-banking banks do charge transaction charges for in-branch transactions. That to me is a financial risk." In questionnaire survey most of the respondents suggested financial risk as the most significant risk which influences their decision to use e-banking. Although focus group interviews also suggested financial risk to be a key risk but, focus group interviews also revealed a lack of clarity on how is financial risk from other risks.

The support for financial risk as a critical risk was almost unanimous and this confirms the findings of the questionnaire survey that financial risk is a key risk affecting perception of risk. This also confirms the high significance that financial risk received in the model.

Focus group interviews revealed an interesting insight- financial risk as a risk on its own and financial risk as consequence of other risks. For example, some individuals may fear the financial loss as a result of some other risk. This was clearly visible in the different kinds of responses provided by the respondents. For example, F55 commented "when I am transacting online I am quite worried that if the transaction does not take place as expected I may incur some form of financial loss such as penalty. This is especially true in cases of bill payments as there is no clarity on when the payment will reach the recipient's account after I instruct it to be taken from my account." This statement shows the significant overlap in the risks because according to the respondent he is worried that there could be a transactional and time loss risk which could lead to financial and psychological risk.

In fact from the responses it is clear that financial risk is the most ubiquitous risk in e-banking especially in the context of perception of risk. It overlaps almost all other types of risks.

This insight was also evident in the case of the suggestions provided by the respondents for resolving this. According to them, banks should do their best to minimise the financial risk for customers. It could include some form of insurance that in cases of some error if the customer incurs any financial loss it will be covered by the bank. However, there are several loopholes in this insurance approach. For example F16 commented: "even if the banks agree to repay any financial loss that the customer has because of a bank's error, it will be almost impossible for the customer to prove that it was the bank's fault." Respondent F35 commented: "it is not only about the refund. The loss could be more than money. Think about it – as a businessman when my bank fails to transfer money on time to some of my supplier then I lose my reputation. Now there may not be any immediate financial loss but a long term

loss- may be my supplier will not trust me again, maybe he will ask for upfront payment. So what can the bank cover me for?" Other respondents also agreed that financial losses may not be explicit and may not be immediate and also the customers may find it extremely difficult to prove the losses so this whole compensation thing will not work. However, the respondents agreed that in case something happens despite the bank's best efforts then providing financial compensation equal to the verifiable loss incurred by the customer is the best approach. They however, questioned whether the banks will use a rational and fair approach to the whole claim process.

Thus, respondents confirmed that financial risks do affect their perception of risks and one way of reducing the financial risks is by increasing the certainty in the whole process. Respondents also suggested that any form of insurance will not be sufficient, especially in the case of financial risks arising out of transactional issues. However, respondents did agree that in case of fraud or security issues, banks should compensate the customers and in such cases, insuring the customer of any losses will reduce their perception of risk.

Some respondents also mentioned insurance as a keyword while discussing financial risk. Regarding insurance respondents provided mixed responses. They agreed that insurance helps but raised concerns that it will be difficult to claim. For example, F12 agreed that it would help and commented that "I am sure that would help. But the question is how we prove whose fault it is. For example, if I submitted request for an online transaction and it is not carried out in time and I suffer a loss due to this then how would I prove the loss." Similar concerns were presented by F13: "It would help but the stress that we have to go through due to such cases would be enormous. I am not sure banks would honour their words even- they would try their best to prove that the fault is ours rather than theirs." F15 also agreed with them and commented that "It would be difficult to prove whose fault it is. So if someone gets hold of my banking details and takes out money, how would I prove to the bank that it was not me. It is not that they will simply accept my words. Now if the system is not letting me access my account and I incur a loss, for example in a business deal due to this, how would I prove the loss? Would the bank accept it- I don't think so." Respondent F25 provided more insight: "Not sure. What do you mean by covered for losses. Does it mean all kinds of losses whether it is because of bank's fault or my fault. Ok let's take an example. I requested a bank transfer for some business transaction. Suppose the transaction should have taken place in two days and I made the request accordingly 48 hours in advance. Now the transaction did not complete within stipulated time period and I lost the deal because of that. Now do you

think that the bank can compensate me for the lost deal. No it can't. We don't need the compensation. What we need is that losses are prevented. No fraud, no delay. Simple as that. Yes, in cases of fraud this cover provided by the banks might work but for other aspects of the service definitely not."

4.2.4 Time

Time risk was again mentioned under several categories. For example, in the case of transaction risks, respondents considered any time loss in transaction as transaction risk. Also, respondents linked time risk with financial risk. In other words, it may be possible that if the time loss does not result in any financial loss then time risk is not actually a risk. However, in the questionnaire survey results time risk was found to have a statistically significant impact on the perception of risk.

When asked about time loss risk, some respondents did mention it as a risk that concerns them but their comments overlapped with other types of risks. For example, one of the respondents commented "of course it worries me that if some transaction takes longer than expected then I may lose money. What if I have to pay a penalty? What if I lose an order? In fact, it already happened to me during the last soccer world cup when I was trying to pay for the tickets I booked. There was some problem with my credit card and I decided to pay through bank transfer. It took a very long time and the seller had to cancel the transaction. Now I did not get the ticket and he had my money as well. It took me 19 days to get the money refunded. It was stressful."

Respondents F34 commented: "I am worried that the transactions may not complete on time. I run a business and delay in payments can have a very negative reputation for me and my business. I always have to worry about these transactional delays." Similarly, other respondent commented "I am worried about delays. So many times, the payments I sent were not received on time. Now, I don't have a problem with delays but I expect my bank to be clear on how long the transaction will take so I can give estimate to the other party. Once I sent the payment and supplier received it two days after agreed date. Since then the supplier has changed my terms to advance payment which now is causing me problems in returning faulty goods."

In all, respondents did not mention much about time risk except that they expect transactions to be completed in time and usually faster than in in-branch banking. As one of the respondents noted "the whole idea of using e-banking is to minimise the time loss. Now time loss is not only about the time we spend in going to the bank but also the time that bank may spend in completing the transaction. So the idea is to reduce both."

In terms of the solutions, respondents suggested that because banks are using technology they should be able to complete every instruction instantaneously. In case banks cannot do that then banks should tell the customers how much time will be taken and why.

4.2.5 Security

As expected, security risk was confirmed as the most significant risk affecting the perception of risk in e-banking. Almost all of the respondents agreed that security risk is a concern for them in e-banking and also for the individuals they know. Even the young, tech savvy users confirmed their fear of the security risks in e-banking. As one of the respondents commented: "I love technology and I am a very frequent online user so you cannot say that I do not know about technology. *But even then I am worried about security and privacy."*

Security and risk of fraud were combined together in one category as both referred to unwanted and unsolicited access to the banking details of the consumer. Security risk is the second most significant risk as per the findings of the questionnaire survey. Focus group Respondents also confirmed the findings and suggested that security risk is quite critical. For example, respondent F14 commented that "I am concerned mainly about fraud. There are so many news about fraud with Internet banking that I keep on checking my account to make sure no illegal transactions have been carried out in my account." Respondent F22 commented: "I am also concerned about fraud. I am not so much concerned about my accounts but about my father's accounts because he does not know much about Internet and he may easily become a victim of fraud. I mean if someone sends him email he may give out his security details. So I have told him to consult me whenever he receives a message from his bank. It is worrying. With branch system I was never worried*."* Respondent F24 commented: "Same here. Me and my family are not very technical and it is easy for any hacker to con us. I would like more assurance that bank is trying to protect us from fraud."

Talking about security and privacy respondents F32 commented: "In e-banking everything happens over the Internet and we all know how unsafe Internet is. No matter how much you

protect your computer from viruses, but there are always new viruses attacking our computers. Those (hackers) know more than us so stealing someone's information is a piece of cake for them." Respondents F31 contradicted this point and commented that "I think security depends on how we use e-banking. If we use security features such as firewall and antivirus then we will be fine but if we ignore these things then it can be unsafe. I know a friend of mine who logged into his Internet banking account from an Internet café and within half an hour money was deducted from his account. But it was his fault. If we take care of everything and something still goes wrong then it's the bank's fault and they should refund the money." This shows that there is awareness of both security risks as well as precautions that customers can take in order to protect themselves.

Media stories about online fraud often lead to rise in these risks. For example, one respondent commented "I am always worried about security issues. I hear so many news stories about people taking out money from other people's account by fraud that every time I use online banking I fear that someone will get my details and take out money from my account. Another respondent confirmed that "I have heard about so many people who have lost large part of their money because someone stole their password. These people are so clever so I am not sure average user like me can protect ourselves from them." Several other respondents talked about the sophisticated attacks by the hackers which even the institutions fail to protect themselves against. When media stories emerge about these threats it fuels the negative perception about online banking.

Talking about the solutions to the problem, one of the respondents commented that "educating the people about how to protect themselves can be useful." Another respondent clarified "banks do often issue advertisements about how to protect yourself against online fraud but the instructions are so technical that many individuals do not understand. For example, one time I read a bank's notice that users should ensure to clear their cache. Really? They expect an average user to know what cache is and how to clean it. No wonder people with low level of IT knowledge are scared to use e-banking."

As per the respondents the individuals with poor knowledge of IT are particularly wary of the security threats and according to the respondents security threats are by far the most significant threats that affect individual's negative perception of risk. At the same time, individuals with knowledge of using Internet are concerned about security issues but their concern I about being careful rather than not using online banking. In words of one of the

respondents “I think individuals who know about Internet are more rational when it comes to assessing security risks in e-banking but those do not know much about Internet are very much worried and prefer not to use. There is a reason behind this. Those who know Internet can do the right things and minimise their risks- for example they will log out properly and close their browser etc. But those who do not know Internet can actually increase their vulnerability due to lack of knowledge of Internet and thus the likelihood of security risks occurring for non users of Internet is very high.” This view was supported by another respondent who commented “I agree, I know individuals who have logged into their online account from a cyber café and left without logging off and closing their account access. Now that is an invitation to trouble.”

By far the most significant risk about security threats is unauthorised access to people’s accounts. Some of the respondents questioned the approach of the industry towards protection of consumers. One of the respondents commented: “industry definitely knows better than consumers about what kinds of security risks are there. They have the top level IT executives handling it for them. Why can’t they tackle these risks at their end? Think about the pin entry reader that you must have seen in UK. It is an additional line of defence. But this does not exist here in Saudi.” Other respondents also suggested that banks should do more to protect the customers against these threats as banks are more capable. One respondent went as far as suggesting that banks should train the individuals on how to use online banking. According to him: “because banks benefit more from online banking they should invest in educating the individuals about safety in online banking. For example, in their welcome pack which they give to the consumers they should give a user guide on how to access accounts online and how to protect themselves against these threats. This will be very useful for non users of IT because they can look at the guide and follow it step by step.” Almost all the respondents in that particular focus group supported this suggestion. One of the respondents who had sound knowledge of IT commented “they are so many things that can be done on the server side. For example, if an account is not static for say, 60 seconds, they can automatically log out the customer. Like in ATM they ask if the user wants to carry out another transaction, they can do so online as well. They can have a super password of say 3 digits which can be different from pin which the user can be asked to put in every time he wants to carry out a transaction irrespective of whether he is logged in or not. They already have the details of equipments and IP address which the user uses most commonly. When he uses any other equipment they can have additional measures of security and sessions could be

shortened to say 30 seconds. I mean there are so many things which they can do to protect the customers."

From the responses the following things were clear:

- That the customers are extremely worried about security risks and these are by far the most significant influencing factor of their perception of risks I online banking.
- It affects non users of IT more than the users of IT.
- Banks are expected to do more at the server side to protect the customers.
- Several technical solutions are possible to protect the customers.

4.2.6 Social

Social risks, like psychological risks are not material risks. As a result in the questionnaire survey, respondents did not report it as a significant influencing factor of perception of risk. This trend continued in the focus group as well because hardly any respondent spoke about it. One of the respondents, however, did express some concern: "I do not want people to think that I am stupid. So if I have an issue with e-banking I will not discuss it with anyone. Even the bank people- if I made a small mistake I would probably not talk to the bank people because they might think I am stupid." One more respondent commented: "I will not be worried but I know someone who once was defrauded online and he did not tell anyone. We only came to know later on when his parents told us of the story how he accidentally transferred money to someone else's account and could not claim it back." Another respondent, argued against this and commented that "I would in fact tell more and more people so that they don't make the silly mistake like I did. But yes, there could be some people who do not want to be called stupid. For me I don't mind what people think."Apart from these individuals there were no other responses related to social risk.

4.2.7 Performance

Performance risk is somewhat related to transactional risk. However, performance involves much more than transactions. For example, performance includes alerts, offers, convenience etc. This also involves all the technical aspects such as ease of using the website etc.

Performance risk encapsulates technical risks as well. Questionnaire survey revealed that performance risk is a critical risk in influencing individuals' perception of risk in e-banking. Focus group interviews revealed similar views.

Most of the respondents agreed that performance risk is a key risk especially in terms of satisfaction with e-banking but also with perceived risks. For example one of the respondents commented "several times it has happened to me that I am using e-banking and I am in middle of a transaction and the connection to the website is lost. Now till I can log back into the system, I am not sure if the transaction has gone through or not. This is a problem for me because I have to make several payments every day and I thought e-banking will make it easier for me." The same issue was highlighted by at least two other respondents. One of them commented "once I was using the e-banking site and the plug-in in my web browser crashed. For nearly an hour after that I could not log into my account and I was not sure if the payment has been made. I ended up calling the bank to confirm. Now if I had to use telephone banking why would I be using online banking?"

One respondent spoke about the layout of the website being poor. According to him "I think e-banking websites are poorly designed at least for the individuals who are not used to it. The menu is not clear and if a person holds multiple accounts, the situation gets even more tricky. In fact I think the more options they put the more they complicate it." In fact, one of the main proposition of e-banking has been that most banks are transferring all of their banking services to the online channel. However, without a human interface to explain it the users sometimes get confused. For example, one of the respondents commented that he could fine three different offers for personal loan on a website once and he could not understand which the best option is. So he ended up visiting a branch seeking out more information. Similarly, Respondent F34 commented: "I had similar problems. I mean this technology is so unpredictable and then banks do not have a 24 hour call centre to help. E-banking is 24 hour but not the helpline. Why not?"

This is a cultural issue according to one of the respondents. He suggested that "having the option of speaking to a human is much more valuable because you can extract all the information and make a decision. On the other hand in online system, this interface is missing and Saudis don't really like it. I mean most of us would like some form of human interaction." Several other respondents also agreed that bans must look into providing more and interactive support to the online users.

One respondent complained that his online bank often is out of service for maintenance. The problem is that the customers are not informed in advance. According to him "just imagine if I had to make an important transaction today and I was relying on the online system. I reach home and try to do it and the system is down. And by now the bank is also closed so I have no choice left. Had I known that I would have completed the transfer through the bank during normal hours. This is really frustrating." This is also linked with the level of certainty and hence affects perception of risk. If the user is unsure that the online channel may not be available they would use the brick and mortar branch which again defeats the purpose of having an online channel. Other users complained of their system running too slow when they are accessing e-banking while some users complained of the problem sin loading the website due to some errors such as enabling of scripts or plug ins, use of cookies or disabling of firewalls etc.. These issues affect the non users of Internet he most because they are not used to these terms and often get confused.

Some users spoke about other issues as well. For example, respondent F14 commented: "in terms of performance I would suggest that banks should look at giving the best deals online. What I have found that I can always get a better deal on the loan and other products if I visit a branch and speak to someone rather than applying online." Similarly, respondent F35 commented that "online channel is not the most efficient. You will find that several promotions that the banks run are not available online. Also, if I wish to apply online for something they often ask me to visit a branch. Then what is the point of online channel?"

In terms of performance the main issue raised by the respondents were the technical issues which, like security issues, could be tackled using advanced technology. In addition, informing the users, by other channels such as mobile alert, about transactions when their session has abruptly ended could be a solution. But this is a solution for only one of the several performance risks that the users face. In addition users also complained about discrepancy in online and in-branch channels about the offers and deals.

Talking about the solutions, respondents suggested that advanced safer and lighter technologies should be used. In addition, communicating with the users, for example by sending alerts for their transactions and informing them of scheduled updates could be possible solutions in reducing the performance risks. In addition, the layout should be made as simple and intuitive as possible.

In terms of products, banks must look to harmonise the online and brick and mortar channels so that there is a consistency in user experience in both the channels.

4.2.8 Culture

Culture factors were found to be a significant aspect influencing perception of risks. This research looked at culture from the perspective of five dimensions of national culture proposed by Geert Hofstede. Out of all the dimensions of culture, the one that is likely to affects the perception of the risk the most of is 'uncertainty avoidance.' It refers to the inclination towards avoiding any uncertain situation i.e. risk taking. Saudi Arabia ranks high in uncertainty avoidance meaning Saudis like clarity and prefer low risk i.e. uncertainty.

This is a clear from the responses of the individuals. For example one of the respondents commented: "what I want is certainty. When I instruct the bank to do something I expect it to happen the way I was expecting it. If there is going to be any change, the bank has to inform me in advance so I have a choice." In most of the risk aspects the respondents talked about how uncertainty in carrying out transactions, ability to use online banking etc. can affect their perception of risks.

Focus group respondents also exhibited low tolerance for innovation which is also a characteristic of Saudi national culture as per Geert Hofstede. For example one of the respondents commented that "they change anything nay time without informing us. Today they have one interface, tomorrow something else. Who guides them about what the users prefer because it is certainly not satisfying consumers like me. It takes me ages to get used to an interface and by the time I get used to it they change it." Some other respondents also expressed dissatisfaction with continuous improvement in online banking channel because rather than improvements they would prefer convenience and ease of using. These respondents also commented that they get sued to a kind of interface and changing it actually make them concerned that being used to the old interface they may do something wrong.

The collectivism aspect of Saudi culture a also evident in the responses when commenting on the risk perception, one of the respondents commented "I get worried when I hear about my friends or family members get conned by someone. In fact if I hear of any news for anyone getting duped by some fraudster I get worried." Similarly, respondents 52 commented "Even

the bad experiences of people I know would affect me. I agree that I have never had any security threats online but I have known people who had faced these threats and that makes me worried. I didn't have these issues is no guarantee that I will not have it in future. So when I hear the news that some hackers stole passwords form this bank or that bank the first thing I do is change my password and second thing not to use my account for a few days till my firewall service provider and antivirus protection have updated. I think it always better safe than sorry. The problem however, is that it is happening so often that I am not sure if I should be using online banking at all."

Another respondent commented about Shariah principles which are strictly followed in Saudi society. According to him: "most of the individuals here follow Shariah principles, especially those in middle and old age. These individuals consider Internet as *haram* because it contains so many bad things. Now if they don't use Internet using e-banking is out of question. The things is that there are so many such individuals in Saudi Arabia that you will never get past a certain level of adoption of Internet and e-banking in Saudi Arabia." Few other respondents in the same focus group agreed that this could be a barrier to adoption and this could be linked with perception of risk. However, in this case the perception of risks is related to use of Internet and not use of e-banking specifically.

Talking about the solutions, respondents commented that there is not much that banks can do except reducing uncertainty. Apart from that banks should address security issues so that they receive lesser media attention and hence the customers are a bit satisfied.

4.2.9 Perception of risk

Respondents raised several risk issues during the discussion. Respondents F15 commented: "there are so many risks but I think the main risk is of fraud. I have heard many cases where login details of individuals were stolen and money was transferred from their account. Some people who do not check their accounts regularly have a big problem." Respondents F13 supported "yes, I agree. Risks are there and customers do not even know about these risks. Recently I heard about mobile banking where your phone will act as a wallet. Now I keep few hundred riyals in my pocket and if that gets lost I will not be overly worried. But imagine if I lose all the money in my bank account when I lose my phone. I am not sure what sort of protection will be there but convenience seems to come at a heavy price in e-banking." In fact

33 out of 36 respondents who commented mentioned risk of losing money as the key risk which indicates that respondents are worried about the financial losses incurred as a result of e-banking fraud and security issues.

Some of the respondents seem less concerned about risks in e-banking. For example, Respondents F12 commented: "E-banking is not risky, I think because if something goes wrong it is the responsibility of the bank to help me out. But yes, we need to be careful about small things such as not giving our pin numbers and passwords to anyone and to be careful about our bank cards. These are simple things but overall speaking if we take care of these small things I think e-banking is safe."

Another respondent commented: "I think e-banking is useful but not safe as compared to the physical transactions. When I go to a branch and come out of it I am assured that all transactions have taken place as per my instructions. In e-banking I always have to double check- if the payment has arrived, or has the payment been deducted or anything else. For some reason I am never sure of what is going on with e-banking and I always have to keep on checking my account for fraud or something. In branch I never worried about anything like this." His views were supported by another respondent in other focus group who commented "there is always some sort of uncertainty. It is like I want a human confirmation that everything is as expected. When I had branch banking I would only go to the branch to carry out transactions and I rarely heard of any case of fraud or anything. Now it is likely everyday news story. Every time I hear of stealing of passwords, or any new virus which takes away sensitive information, I panic. I have to upgrade my antivirus and even then I continue to check my account at regular duration or several days." One of the respondents provided anecdotal evidence of risks in e-banking: "once I was away on holidays in Russia and my card got blocked. I was in a restaurant and I could not make the payment. My bank accidentally thought that this is a fraud transaction and blocked my card. I was so embarrassed and I had to ask my friend to make the payment over the phone to the restaurant. From then one I always carry cash along with card to protect myself from such emergencies. But the moral of the story is that risk is not only about losing but also in other ways." Some of the respondents disagreed to this comment and suggested that protection is better than the loss. However, several respondents suggested that uncertainty in e-banking is a kind of risk.

Talking about perception of risks the individuals agreed that perception of risk may have nothing to do with actual risks. According to the one of the respondents: "many Saudis fear

Internet – they think it is haram and contains lot of bad stuff. I know lot of people who are religious who use Internet and not even consider looking at objectionable material. So the whole perception that Internet is haram is perceptual only. In truth it I just a platform for exchange of information."

Some individuals agreed that their perception of risk may not have to do with actual risks but that they cannot help it. The problem lies somewhat in lack of knowledge and awareness of e-banking- how it works and how it makes things convenient for the users.

Users agreed that their perception of risk will have a very significant impact on use of any technology. They thus, confirmed that there is a strong link in perception of risk and adoption of e-banking as was also found in the questionnaire survey.

In terms of the solutions, respondents suggested the following:

- Banks should keep their customers informed
- Banks should invest in educating individuals
- Banks should look to reduce uncertainty at all levels
- Banks should communicate adequately with the customers.
- Banks should provide all necessary support to its online users just like it does to its in branch customers. This means, no more automated support system but rather a human sitting on the other side providing all necessary support.

4.2.10 Adoption of e-banking

Regarding whether they will consider using the e-banking despite the aforementioned risks, respondents commented that they are likely to use it because of the convenience factors. "I think I will use it considering the amount of time it saves. But I will remain worried about the risks. If large transaction is to be carried out I will prefer to visit a branch and sort it out."

Another respondent commented "I will use e-banking for sure. I will take precaution against the risks. Yes, if there are fewer risks I will use it even more but not with the current level of risks." Another respondent commented that his frequency of use is low but he still uses it. "I use it but not very often. I will use it more often if I am sure that there is no risk of fraud.

Even if I know that despite the fraud I will not lose anything then also I will be more willing to use it but not with so much risk of fraud. I am not really a technical person so it is easily to defraud me."

Regarding what banks can do to improve adoption of e-banking customers suggested that reducing security risks and improving transactional certainty could help in improving adoption of e-banking. One of the respondents commented: "predictability. I want to be assured that when I am think this is what is going to happen, that must happen. I do not like surprises. I am a business customer and for businesses, it is very important that all transactions take place as the customers expect. Banks should look to increase certainty and improve security." He was supported by other respondents. One of them commented: "I would agree with…..for predictability and improved security being the two things that they should focus on. I would certainly like the things to work as expected." Another respondent mentioned improving security: "I think security is a big issue. Even in 100 years, there is no way any customer or antivirus companies will be able to stop hackers in accessing someone's bank account. The security has to be implemented at bank's servers. Pin numbers are used for ATMs and I have seen some banks in UK using pin entry readers to protect access. Why can't we do it here?" Other respondents also supported the view the reducing security risk will improve adoption of e-banking. "Improved security would definitely help in motivating me. Also if they can make the e-banking platform more easier to browse. Currently it is easy to find options for simple banking operations but if you have a slightly unusual enquiry it can be quite difficult to find the right option for it. I get somewhat confused at times and there are cases in where I was not even sure if I was selecting the right option. They have to make it easy."

The table below summarise the findings of the focus group interviews

Transactional risk

Number of respondents: 21

- I am concerned that online transactions are not reliable. I mean either they will not be completed on time or would have some extra charges.
- I want the transactions to go through as expected. If there is a problem, bank should tell me so I can take any action that I may need to take.
- There should be a standard process and everything should follow that process.
- The charges in online banking are not clear. They have some sort of transaction fee but they never tell you. In branch I would know because I speak face to face with someone. So the fee associated with any transaction is not clear in online banking.

Findings: Transactional risks do have a significant impact on individual's perception of risks.

Solutions:

- Carrying out transactions in predictable manner.
- In case of any contingencies, users should be informed as early as possible.

Psychological risk

Number of respondents: 9

- If banks communicate properly to their customers it will definitely reduce the anxiety and stress among the customers.
- Whenever there is news about some virus or mass scale password threats bank should issue newsletters to their customers or send them information by post about what the bank is doing to protect the customers. Otherwise customers will get unnecessarily worried. My father is very scared of using his e-banking account because he read all this news.
- It is all about informing the customers and keeping them updated. Many times a simple issue can cause lot of stress to customers if they are not aware of what is going on. I am not sure what is the best way of doing it but this needs to be done.

Findings: Psychological risks do not have a determining impact on individual's perception of risks.

Solutions:

- Better communication with the consumers.
- Assurances that they will not have to undergo similar stress again.

Financial risk

Number of respondents: 32

- Each risk in e-banking is essentially a finance risk
- Financial risk is indeed the root problem. Who enjoys loss of money and the very thought of losing it will make people worried. So I am sure financial risks will rate as one of the primary risks in e-banking.
- E-banking there are several possibilities that incurring financial loss. Sometimes directly and sometimes indirectly but it is still a loss of money.
- I think that financial risk is the only risk in e-banking. I am saying so because at the end of the day whatever other risk is there the end result is financial loss. So whenever we are talking about any other risk we are basically concerned about how it is going to affect me in terms of money.

Findings: Financial risks are a key influencing factor of individual's perception of risks.

Solutions:

- Minimise financial losses to the customers.
- Any financial charges to be incurred should be explained and agreed upon prior to the transaction.
- Provide customers with more certainty in their transactions.

Time loss risk

Number of respondents: 12

- Time loss is critical only if it results in some form of penalty
- Time saving is a key benefit of e-banking and if bank takes time to carry out the transaction then the half benefits of e-banking are gone.
- Carrying out transactions in timely manner is critical for people to trust banks.

Findings: Time loss risks influence individual's perception of risks.

Solutions:

- Minimise time loss in transactions
- In cases there is a time delay, customers should be informed through alerts.
- Giving customers a reasonably accurate time for completion of transaction before the beginning of the transaction can be helpful.

Security and privacy risk

Number of respondents: 36

- Try to reduce fraud. I saw pin entry readers used in UK and it was definitely helpful in reducing fraud. But we don't have such systems here. I think banks should do more to reduce fraud.
- I agree. Fraud is the main concern. If I walk into a branch they can verify me using several means- photos, signs, ID etc. Why can't they have similar verification in online system? Verification is useful and essential.
- I think the main thing is to improve in terms of security. Banks should implement security measures at their end rather than expect the customers to apply it. I mean customers are not skilled enough to safeguard themselves against the kinds of risks that we see today
- There are so many phones and laptops which come with fingerprint sensors. Banks can use this to provide access. I mean customers can chose the level of security options that they would like. This way customers would be in control and banks can provide customers the level of service that they want.

Findings: Security risks are a key influencing factor of individual's perception of risks.

Solutions:

- Minimise security risks by using server side technologies.
- Add additional lines of defence such as transaction passwords which the users need even if they are logged in to the system.
- Make it easier for non-users to remain safe online.
- Provide user guides to the consumers which they can use to using online banking safely.
- Minimise the burden of maintaining security and privacy on consumers through intelligent use of server side technologies

Social risks

Number of respondents: 2

- I do not want people to think that I am stupid. So if I have an issue with e-banking I will not discuss it with anyone. Even the bank people- if I made a small mistake I would probably not talk to the bank people because they might think I am stupid.
- I would in fact tell more and more people so that they don't make the silly mistake like I did. But yes, there could be some people who do not want to be called stupid. For me I don't mind what people think.

Findings: Social risks do not affect individual's perception of risks.

Performance risks

Number of respondents: 29

- Improve standards of service like availability. If you are going to carry out maintenance and system will be unavailable, send message to all the customers at least 24 hours in advance so they can make alternate arrangements. I don't really like it that you go on the website and realise it is undergoing maintenance. What if I had to check an urgent payment or send a payment urgently?
- It's all about predictability. Become more predictable.. Also in terms of transaction, banks should be clear and precise about how and when the transactions will be completed. If I know that my bank transaction will take one day then I will do the transaction a day before I want it in other person's account. For customers it is important to know what will happen.
- Yes. Banks should do what they can to make it easy for the customers. Why should the customers suffer? How the system functions is known to the bank and not to the customers. I remember once I spoke to a cashier at one of the branches. I asked him how much time would the transfer take if I do it online instead of doing it through the branch. He had no idea. I mean who would know if their staff didn't know.
- Technology is out there. If you are going to use technology you should use the best and latest technology. E-banking is about technology and I think it provides as much convenience to the banks as to the customers. So why are banks not willing to be more proactive?

Findings: Performance risks affect individual's perception of risks.

Solutions:

- Increase predictability in performance
- Make it easier for individuals to use e-banking channel
- Take various challenges into consideration such as poor IT infrastructure.
- Efficiently use alerts service

Cultural factors

Number of respondents: 27

- What I want is certainty. When I instruct the bank to do something I expect it to happen the way I was expecting it. If there is going to be any change, the bank has to inform me in advance so I have a choice.
- They change anything nay time without informing us. Today they have one interface, tomorrow something else. Who guides them about what the users prefer because it is certainly not satisfying consumers like me. It takes me ages to get used to an interface and by the time I get used to it they change it.
- I get worried when I hear about my friends or family members get conned by someone. In fact if I hear of any news for anyone getting duped by some fraudster I get worried.
- Most of the individuals here follow Shariah principles, especially those in middle and old age. These individuals consider internet as haram because it contains so many bad things. Now if they don't use internet using e-banking is out of question.

Findings: Cultural factors affect individual's perception of risks.

Solutions:

- Minimise uncertainty
- Reduce negative media coverage
- Minimise alterations to exiting web layouts.
- Keep it simple

Table 4.10: Summary of qualitative data analysis

Chapter 5: Discussion

5.0 Introduction

This research aimed to identify the factors that influence the perception of risks in e-banking and consequently adoption of e-banking. This research finds that security and privacy risks, financial risks, transactional risks, performance risks, time loss risk and cultural factors have a significant and determining impact on the consumers' perception of risk in Saudi banking sector. In addition this research also finds that perception of risk influences consumers' adoption of e-banking.

This chapter discusses the findings of the primary research and compares it with the findings of the literature review. The factors and respective findings are discussed individually.

5.1 Security risk

Past researches highlighted security risk as one of the most significant risks affecting individuals' perception of risk in using online commerce and e-services (Hernandez and Mazzon, 2007; Agboola and Salawu, 2008; Masocha et al. 2011; Auta, 2010; Angelakopoulos and Mihiotis, 2011; Aransiola and Asindemade, 2011; Benjamin and Samson, 2011; Wu *et al*. 2011; Li, 2012; Shah et al, 2014; Ndlovu and Sigola, 2013; Usman and Shah, 2013). This research confirms these findings and indicates that security risk is the most significant risk affecting the perception of individuals. This research finds that individuals have concerns regarding both likelihood and impact of security risks. This research also confirms the findings of Angelakopoulos and Mihiotis (2011) that reducing perceived security risks will lead to a reduction in overall perception of risk and increase in adoption of e-banking.

Researchers highlight how the security risks have evolved with time as the e-service providers step up their efforts to combat this form of risk (Gibson, 2011). This research also confirms that the Saudi e-banking customers fear security risks in e-banking despite the banks investing significantly in eliminating these threats.

This research looked at two security risks: fraud and privacy risks. Both these risks were found to be significant influencing factors of perception of risks. This research confirms the findings of Auta (2010), Li (2012) and Agboola and Salawu (2008) that customers perception of risks rises with the perception that the e-banking provider is not able to protect their privacy and confidential information. Wu *et al*. (2011) looked at the role of government regulations regarding protection of customers' privacy by online banking service providers. Such regulations do not affect customers' perception in the context of Saudi Arabia because of the overall lack of awareness about such regulations among consumers. None of the respondents mentioned government regulations indicating that either such regulations are either not strong enough or that customers are not aware of such regulations. In fact, from the responses of the respondents it is clear that they considered banks as independent entities independent of government regulations. In this respect this research confirms the findings of Huang et al. (2010; 2011) that adoption of e-banking is influenced by customers' lack of awareness and incorrect perceived knowledge about security and privacy.

Most of the respondents highlighted that they were more concerned about the tangible risks which result in loss of money. In the context of security respondents highlighted also that they were concerned that such risks will lead to financial loss. This links security risks with financial risks as highlighted by Huang et al. (2011).

Kolodinsky, Hogarth and Hilgert, (2004) and Hernandez and Mazzon (2007) argued that perceived security risks are influenced by individual factors. However, this research finds that security risks are a common factor among most of the respondents, if not all. Almost all the respondents in both the questionnaire survey and the focus group mentioned their concern regarding security risks.

This research also rejects the findings of Rotchanakitumnuai and Speece (2003) that individuals dealing with large scale banks are less likely to be concerned about e-banking risks. Indeed, in recent times, there have been several media reports about hackers gaining access to the some very reputed organisations. Respondents did exhibit awareness of these media reports and showed a general negative perception of risks in e-banking without referring to a particular organisation. This rejects the findings of Rotchanakitumnuai and Speece (2003) but supports the findings of Shah et al. (2014) who found that media reports have a significant impact on shaping up the consumers' risk perception in e-banking.

Respondents did mention that it was the bank's responsibility to inform its customers about any possible security threats and even guide them on what to do to remain safe. This finding thus lends support to the findings of past researchers (Shah et al. 2014; AbuAli and Abu-Addose, 2010; Ganesan and Vivekanandan 2009; Murdoch and Anderson, 2010; Koskosas 2011) that banks should communicate about the security aspects of their service.

Hernandez and Mazzon (2007) found that customers are more worried about fraud rather than privacy risks because the former results in tangible financial losses. This research supports this view and finds that tangibility of losses has a much considerable impact on risk perception. In the case of privacy, the losses are implicit. Privacy risks are not as common as fraud risks and furthermore, customers generally have adequate protection against privacy risks. Customers did not exhibit any keenness on protecting their identity except when it leads to a direct material loss to them.

Although Choplin et al. (2011) argued that security in e-banking is somewhat related to customers' failure to protect themselves, this research finds that given the widespread lack of knowledge of IT and security in online environment among consumers, the responsibility of making the online environment safe for consumers rests on the service providers. This is particularly true about Saudi Arabia where a large proportion of individuals , especially in the middle and over age group are not Internet savvy and are more exposed to online fraud such as phishing. These unsuspecting customers are an easy target for online fraudsters who have become quite sophisticated and are operating in an organised fashion (CBN Annual Report, 2010; Adams, 2010). The respondents clearly mentioned that server side security should be strengthened and the burden of managing online security on the customers should be minimised.

Although the existing data reveals that industry's efforts to combat security threats are working and the overall risk incidents have decreased significantly in terms of both probability and impact (Chang and Chang 2011) the negative media coverage of online fraud events continues to create perception of increased online security threats (Shah et al. 2014; Aransiola and Asindemade, 2011).

This research supports the findings of researchers who supported using advanced technologies such as biometrics (Amtul, 2011; Bhattacharyya et al, 2009; Walker and Shearer 2009; Akinyemi Ibidapo, 2010), fraud prevention applications (Sharer, 2004), and safe password techniques (Herzberg, 2003; Johnson 2007, Moskovitch, 2009).Accordingly,

respondents in the focus group indicated that using technologies such as one-time-passwords and session restrictions can be very effective server side approaches to ensure that despite compromising the log in details, customers do not suffer financial loss. This confirmed the findings of Moskovitch et al. (2009) and Vandommele (2010) who recommended that service providers should move one step ahead of the usual login and password approach and use multilayer passwords or one-time-passwords. Often the banking service providers do not use advanced techniques such as biometrics due to these being not economically viable (Murdoch and Anderson and Anderson, 2010). However, if the service providers also take into consideration the resulting reduction in perceived risks and consequently increased adoption of e-banking, such technologies may become financially attractive investment. Banks can also use other server side technologies such as data encryption (Shah et al, 2014; Ganesan and Vivekanandan 2009).

5.2 Time risk

This research found that time risk does influence people's perception of risk but not to a great extent. This research thus, partially confirms the findings of Littler and Melanthiou (2006), Hernandez and Mazzon (2007) and Auta (2010) that the risk of the transaction not completing on time in e-banking can affect people's usage behaviour in e-banking.

The respondents did confirm that they are worried about such risks but at the same time some of the respondents suggested that despite whatever delay is occurred, e-banking is likely to be faster than brick and mortar banking on the majority of occasions. Some respondents also suggested that time risk is not always considered; for example, when the respondent wants to bank out of hours or from home then he deliberately takes on the time risk. This research thus confirms the findings of Fischoff et al. (1978), Starr (1979), Slovic, Fischhoff and Lichtenstein (1980), Renn (1992) and Jungermann and Slovic (1993a) that are individual's perception of risk is lower when they voluntarily take risk.

This can also be linked with the uncertainty avoidance characteristics of Saudi culture. according to this index, Saudis prefer to avoid uncertain situations. However, they prefer controllability and when they believe that risk is controllable they will be more willing to

take that risk. If the time risk is within the control of the customer, Saudi customers may be more willing to take this risk and the negative perception may not be high. This is evident from the responses, where respondents suggested that as long as they are aware of possible delays, they will be fine with it, because then it is in their control whether to take the risk or not.

One of the most significant benefits of e-banking is the time saved (Howcroft and Durking, 2000; Hernandez and Mazzon, 2007). Hence it is not surprising that time delays lead to negative perception of the service.

Kolodinsky, Hogarth and Hilgert, (2004) argue that when considering time risk, individuals must consider not only the time taken to complete the transaction but should also consider the time that they saved by not physically visiting a branch. However, this research finds that customers only consider the time taken for the transaction because the time saved by not visiting a branch physically is given and not attributed under uncertainty aspect. The only time duration which is uncertain is the time taken to complete the transaction. This research finds that one way of reducing perception of time risk is by giving them a reasonably accurate estimation of the time taken to complete the transaction, prior to the customer initiating the transaction. This will give the customer control over whether they with are willing to take the risk. This will lead to voluntariness and controllability, both of which are likely to reduce the negative perception of risk.

Howcroft and Durking, (2000) commented that customers are more worried about time risk as long as its impact is quantifiable. This means that customers are only worried about the risk which leads to some form of financial/tangible loss. Indeed, in the responses, the respondents highlighted that they are worried about time risk because it could lead to some financial loss, in the short (as form of penalty for delayed payment) or long term (for example, as loss of credit facility or reputation with a supplier).

This research, thus, confirms that time risk has a significant impact on the Saudi e-banking customers' perception of risks in e-banking. Furthermore, this research finds that increasing certainty can reduce this negative perception. Thus, banks should take steps to ensure that the time risk is voluntary and controllable for the customers.

5.3 Cultural factors

Culture has a significant impact on our perception and behaviour. The findings of past researches (example, Narteh, 2012; Guo et al, 2009; Twati, 2008; Nantel and Glaser, 2008; Tat et al. 2007) are supported by this research that individuals' perception of risk is influenced by their culture. This is a useful and significant finding because this indicates that different individuals will have different perceptions of risk and at societal levels this may be somewhat influenced by the culture. This also means that service providers must take cultural context into consideration while developing solutions for any particular society.

Some authors (example, Guo et al, 2009; Twati, 2008; Nantel and Glaser, 2008) talked about influence of culture in individual's perception of usability of new technologies which influences their perception of risk. The key problem which may Saudis face while using e-banking is lack of English language and usage of computers and internet. This increases their perception of risk associated with sue of e-banking. Language is an aspect of culture shared by whole of society; it is a method of communication. It is thus quite essential that online channel also adopts this language as online channel is a mean for businesses and customers to communicate. Consistency of language is of significance in this case. It is thus essential that e-banking service providers have Arabic versions of their e-banking service especially designed for individuals who have little knowledge of English and use of e-banking service.

According to Tat et al (2007) individuals are likely to adapt to technologies that are compatible with their cultural orientation. There are several ways in which Saudi culture conflicts with e-banking. The uncertainty avoidance aspect of Saudi culture leads to higher perception of risk among Saudi consumers and this affects their adoption of e-banking. Due to high uncertainty avoidance characteristics, individuals tend to deal in cash as much as possible. The uncertainty associated with virtual money transfers leads to high perception of risk among Saudi consumers. For these customers the tangibility of cash transaction provides certainty and hence most Saudis prefer to deal in cash. Similarly, for large transactions handing out cheques is a more common method rather than e-banking. Cheques are a form of virtual money but are still in physical form. This adds certain degree of tangibility to the transaction which is not there in online banking.

Social aspects of Saudi culture makes Saudis collectivists and they think as a group. In this group the individuals tend to look for face o face interaction. In online banking customers

interact with technological interface of the bank. Thus, the lack of human interaction and the satisfaction that the customers derive for this interaction is one of the factors for lower adoption of e-banking. Also this interaction allows reduction in perception of risk by reducing the possibility of errors. Some respondents indicated that they prefer to have relationship with members of the staff who can resolve their queries in a more interactive and compassionate manner. Adapting to e-banking will deprive them of this very valuable relationship. This relationship help Saudi customers in reducing their perception of risk- in case of any issue they have a direct number to call to and the person at the other end has a face that the customer recognises. This gives a great deal of satisfaction to the customers that his/her query will be dealt with in a personalised manner. This is one of the aspect which is significantly lacking in e-banking even in western countries and e-banking users often complain of this. However, in western countries, higher perceived usefulness of e-banking has overridden any perception of risk that the customers had while in case of Saudi Arabia, at least in present situation, perception of risk is overriding perceived usability. This also supports the findings of Aslam et al. (2011) that loss of personal service and one to one relationship with bankers is a key cultural barrier in adoption of e-banking.

In order to overcome this barrier, the banking service providers need to find a hybrid model of e-banking in which the users retain the ability to access e-banking services while having the same level of access to their local bank staff. This means when the users cal within office hours to resolve a query, they should be able to get hold of the member of staff of the bank rather than being directed to a call centre.

In terms of reducing uncertainty banks should try and keep the customers informed of the process and let them make informed decisions. For Saudi customers, having no knowledge can be sometimes worse than having knowledge of something bad. For example, not knowing how long a transaction will take is worse than knowing that it will take double the time for the transaction to process than expected. The certainty associated with knowing even the undesirable aspect is critical for Saudi customers as indicated in their high uncertainty avoidance figure.

Culture changes slightly with time as new technologies emerge there by changing the manner in which we live and behave. For example, with rival of social networking individuals even in individualistic societies are busy developing global social networks. In most cases,

younger generation is likely to be less risk averse as the impact of previous adoptions of technology and their benefits trickles down. Also kids are exposed to technology from younger age lowering their perception of risk with usage of technology. This means perception of risk associated with adoption of new technology is likely to be lower in younger population. This is indeed evident in this research as most of the respondents agreed that younger individuals are more likely to adopt e-banking because they are used to the risks of transacting online. Researchers (Narteh, 2012; Nantel and Glaser, 2008; Tat et al. 2007; Hiller, 2003; Tan and Teo, 2000), argue that cultural compatibility can increase adoption of technology. This research finds that e-banking and online services are compatible with the culture of youth in Saudi Arabia but for most Middle and older age individuals it is still culturally incompatible. It can, however, be made culturally compatible or these age groups as well by adding human interface and real, tangible support such as a direct contact number to the branch.

This research supports Janelli and Yim (1997) and Greif (1994) in their criticism of the western research into adoption of technological innovation as too simplistic, ignoring vita aspects such as culture. This research also supports their view that any theory into adoption of technology should be viewed through cultural lenses.

Social imitation is common especially in collectivist societies like Saudi Arabia (Hofstede, 2015). Individuals in such societies tend to behave in a manner which conforms with the norms of the group. Consequently decision to adopt or delay adoption of new technology is taken collectively at societal level reflecting in either extremely high or extremely lower adoption of new technology. As found by several authors, e-banking is around the lower spectrum of adoption in current situation in Saudi Arabia (AlGhamdi et al., 2012) with only 14.3 percent of banking customers using it (Eid, 2011). On the positive side there is a significant scope of improvement which is likely to provide significant benefits to the providers and the customers.

This research confirms the findings of Alqahtani et al. (2012), Al-Somali et al. (2009), AlGhamdi et al. (2011) and Aleid et al. (2009) that Saudi culture of resistance to change, and lack of trust in technological innovations has affected the use of online services in the Kingdom. One of the aspects that the customers complained about was continuous changes to the e-banking service which disrupts their familiarity with the technology. They tend to get

unsettled with constant change and hence it is essential that changes to the front end of e-banking interface are made only when absolutely necessary.

Alkhaldi et al. (2011) recommended studying the impact of culture at individual level but for mass level services such as e-banking, this research finds that using a collective and generalisation based approach is more suitable. This is particularly relevant for Saudi society which exhibits high level of uniformity in cultural behaviour. This research supports the views of Khasawneh and Ibrahim (2008) that cultural dimensions should be added to all technology acceptance models as cultural context definitely plays a key role in an individual's adoption of new technology.

5.4 Perceived Social risks

The quantitative aspect of this research does not find support for the argument that perceived social risks can have a significant impact on individual's perception of risk. However, in the qualitative focus group interviews, several respondents provided answers which indicate that social risks may be significant. For example, respondents indicated that having heard of stories about friends and family members facing security risks in e-banking has influenced their own behaviour. However, collectivism was included under the cultural risk aspect and was thus, not coded under social risks.

Saudi society is a closely knit society, in which individuals often share their knowledge and experience with their known ones and where individuals opinion is often influenced by this knowledge and information shared by their known ones. In such societies individuals often refuse to accept innovations because their views are shaped by the poor experiences of others around them (Littler and Melanthiou, 2006). In social contexts, people often pay more attention to negative information as compared to positive information.

In this respect one of the problems for e-service providers has been the rising use of the Internet itself. With rising Internet usage and consequently the rise of social media, an increasing number of individuals are exchanging information online and this makes it easier for the negative news to spread. In societies such as Saudi Arabia it is assumed that such

negative news affects the perceptions of all the individuals who come across this news. This research however, does not support this assumption in the context of e-banking and finds that social risks do not affect an individual's perception of risk in e-banking. Social risk does not include learning from other people's experiences but also involves viewing one's own position after encountering some negative experience. Thus, individuals who are conscious of their public image are less likely to engage in an activity which is likely to cause them any form of embarrassment or negative image in view of the other individuals in the circle. This research does not support this view either.

The findings of this research lends support to the findings of Littler and Melanthiou (2006) and Aslam et al. (2011) that the lack of human interaction is a built in deterrent in e-services. The lack of direct interaction with the bank staff is a key risk in case of Saudi banking sector. However, this risk was categorised under cultural risk. There is thus, some contradiction in the findings of the qualitative and quantitative aspects and that could be because of the significant overlap of cultural and social risks. This means that findings could have been different if social and cultural aspects were combined together under one aspect termed as socio-cultural factors. This view, that the social and cultural factors cannot be studied in isolation with each other was also confirmed by Hernandez and Mazzon, (2007), Howcroft and Durking (2000), Rotchanakitumnuai and Speece (2003) and Kolodinsky et al. (2004).

Moreover, according to Li (2013) and Kolodinsky *et al*. (2004), individuals with certain lifestyle are more likely to adopt new technologies than others. E-banking has been adopted by certain number of individuals in Saudi society and these individuals can be considered as early adapters who are tech savvy (IDC, 2002; McFadden and Train, 1996). However, the e-banking society has not penetrated the Saudi society as predicted by the rational decisions approach indicating that mere acceptance of this technology is not sufficient to get other users interested in adoption of e-banking.

This research thus confirms that social risks alone do not influence the perception of risks in e-banking. However, socio-cultural factors influence perception of risks in e-banking. Hence this research confirms that socio-cultural factors affect the individual's perception of risk.

5.5 Performance risks

These refer to the technical and other risks which influence the performance of the e-banking system as a whole. This research confirms that performance risks have a significant impact on the overall perception of risk in e-banking. This research thus confirms the findings of Nicolaou et al. (2013) that customers' perception that the e-service may fail to meet their expectations, could affect customers' adoption of that particular product/service.

This research accordingly confirms the performance risks identified by Littler and Melanthiou (2006) as critical but in addition identified several other forms of performance risks, both technical and non-technical. For example, one of the new performance risks identified in this research is inconsistency in products/services offered in branch and online as customers revealed that they got better offers on their loans and other products while speaking to someone in branch rather than online. This confirms the relationship management aspect of in-branch banking, as identified under cultural factors, which increases the perception of risk in e-banking. Consistency in the online and brick and mortar channel has been highlighted in several e-commerce researches but in most of these researches the phenomenon observed is the other way round i.e. online channel being cheaper than brick and mortar channel due to higher overhead costs. On the other hand, it is found that in the Saudi e-banking sector online offers are more expensive than in branch offers where the customers benefit from the long term relationship with the banks to avail lower priced offers.

This research confirms the findings of Littler and Melanthiou (2006) that lack of personal interaction in online environment leaders to a rise in perception of risk in online environment.

This research also confirms that the expectation of poor technical performance or expectation of facing technological issues leads to higher perception of risk. In this respect, the poor performance of the infrastructure, as also identified by Masocha et al. (2011) and Kolodinsky et al. (2004) was found to be quite a significant performance risk affecting perception of risk. In this research the respondents highlighted several technical risks such as server being out midway through the transaction or without adequate intimation as key risks affecting people's perception of risk in e-banking. Suganthi et al. (2001) commented that if any product/service

fails to do what the client expects it to do then customer's perception of that product/service is that of poorly performing.

Rotchanakitumnuai and Speece, (2003) commented that in e-services, the individuals' ability to interact with the product service affects their perception of the performance of the product/service. This research confirms this finding in context of e-banking. Several respondents commented that difficulty in interacting with the e-banking interface due to technical issues or due to inadequate layout leads to a high perception of performance risk and consequently high perception of overall risk. This is particularly relevant in the context of Saudi Arabia where a large proportion of the population is not proficient in Internet usage. This also confirms the findings of Taylor and Todd (1995) who commented that individual's perception of information technology based products will depend on their ability to use these products/services. according to Hernandez and Mazzon (2007), performance, in the context of e-banking, refers to the ability to carry out transaction smoothly. However, this research finds that performance in e-banking is not only about carrying out transactions but individual may use the e-banking channel for several purposes including carrying out money transactions; for example, users may use it to obtain further information about bank's a products, offers etc.

This research agrees with the views of Kolodinsky et al. (2004) that the responsibility of improving customer's online banking experience rests on the banking service providers. Thus, service providers must look to use sophisticated techniques to ensure smooth customer experience. In particular, banks should remain carefully about poor IT infrastructure. In addition, banks should refrain from changing aspects of its service too frequently. Instead banks should look to alter only those aspects which are clearly leading to negative customer experience.

5.6 Psychological risk

In this research, psychological risks refer to the cognitive risks, such as anxiety and stress, that users of e-banking may face (Lim, 2003). This research did not find evidence of psychological risks influencing individuals' perception of risk in e-banking. This research

thus rejects the findings of Aslam et al. (2011) and Rockwell and Singleton (2002) that psychological risks can lead to rise in perception of risk.

These findings are somewhat contradictory to the views expressed by respondents in other sections. For example, in performance risk related questions respondents clearly expressed dissatisfaction with continuous changing of e-banking interface and there were hints of anxiety in using e-banking, especially among middle and higher age groups. However, when asked explicitly about such anxiety or stress, most of the respondents disagreed that they experience any such anxiety or stress. Past researches suggested that individuals who feel such stress or anxiety are less likely to use the Internet itself and this is confirmed in this research; respondents noted that several individuals, who are not tech savvy, are apprehensive of using Internet and e-banking.

Apprehension about using Internet is quite prevalent in Saudi society due to the religious beliefs also. Several conservative Muslims believe that the Internet is not right for the society as it contains information that is against the principles of Islam. This leads to a general negative perception among a large group of individuals. This negative perception trickles down somewhat to other sections of society as well. The technology push model would not work in Saudi society because a large group of individuals would resist any such move by the banks. The centralisation of power in the Kingdom would make it impossible for banks to make radical decisions like that without facing regulatory consequences.

As found by Adams et al.(2005) in the context of the UK, this research confirms that certain psychological barriers affect older customers more than the younger customers. This indicates that the psychological barriers are mainly related to knowledge of using the Internet. Indeed, this research finds that key psychological risks include Internet efficacy, perceived complexity of navigation and perceived complexity of terminology. However, Kolodinsky et al. (2004) postulated that psychological barriers are influenced by individuals' environment and it is thus possible that with the rise in usage of e-banking in the rest of the population, the marginalised section, such as the older individuals' segment, will also adopt this. This, however, has proved challenging in Saudi Arabia where only 14.3 percent customers adopted to e-banking, even after a decade since it was introduced in the Kingdom (Eid, 2011; Al-Ghaith et al. 2010).

Based on the qualitative and quantitative analysis this research rejects the hypothesis that psychological risks affect perception of risks in e-banking.

5.7 Financial risk

This research confirms that financial risks are one of the most significant risks that affect an individual's perception of risk in e-banking. Researchers have unanimously agreed that financial risks, along with social risks, are the most significant influencing factors of perception of risk in e-banking (Masocha et al. 2011; Benjamin and Samson. 2011; Aransiola and Asindemade, 2011; Shah et al. 2014) and this research agrees with these researchers.

Financial risks are critical in e-banking because e-banking is about money transactions. In fact, the financial risk overlaps most of the risks in e-banking; thus financial risk is a standalone risk, as well as a consequence of other risks. This research also finds that the perception of risk is increased with rise in element of financial risks. For example, customers are not as concerned about the psychological barriers such as poor knowledge of using e-banking but what actually leads to a negative perception is the perceived financial risk associated with these risks. This confirms the findings of Masocha et al. (2011), Benjamin and Samson (2011), Aransiola and Asindemade (2011) and Shah et al. (2014) that perceived financial risks can increase the perception of risk in case of other risks also.

This research also finds that what really matters in case the of financial risk is the subjectivity and not objectivity. Respondents did not talk about the amount of loss they could suffer the in case of financial risk but the mere existence of financial risk was a sufficient deterrent as per the respondents. Findings indicate that perception of financial risk is high and has the maximum impact on overall perception of risk in e-banking. This confirms the findings of Polatoglu and Ekin (2001) that customers perceive financial risk as a whole, under an umbrella theme of loss. In such cases, even if the bank replaces the money it only has a partial improvement in the negative perception. Also, the negative perception of financial risk is high irrespective of the size of loss that a customer might experience. Thus, pre-emptive efforts to minimise any financial risk is critical for improving adoption for e-banking.

This research also confirms the findings of Littler and Melanthiou (2006), who found that perceived financial risk is high in the case of security risks. The major concern that the customers have in the case of security risk is the financial loss that they might incur.

Probability of financial risks leads to an overall negative perception of the usage of technology itself (Hernandez and Mazzon, 2007). This research thus finds that customers with less experience of using technology are not only more susceptible to financial risks they also hold a general negative view of new technology.

5.8 Transactional risks

Transactional risks in e-banking refer to the risk that the transaction undertaken by the customer does not place as expected by the client (Ruiz-Mafe *et al*., 2009). All customers, when they instruct the bank to undertake a transaction on their money, expect the transaction to proceed in a specific manner. This is their view of how the system performs. They are not concerned about the technology and protocols operating in the background. Due to their insensitivity towards the process they hold the whole service responsible, should something go wrong.

In the case of online banking customers are largely unaware of how the transaction takes place because unlike in a brick and mortar branches they do not have the ability to physically see the transaction taking place. According to Reichheld and Schefter (2000) such an inability to view the transaction physically leads to emotions such as uncontrollability and apprehension. Furthermore, customers have to share too much information while carrying out the transaction online, information which can be used by other individuals to impersonate and defraud (Yoon, 2002). On the other hand, in brick and mortar branch, customer has to share minimum amount of information and that too with the individuals they trust i.e. the bank employees. There is little risk of someone else getting access to client's personal information fraudulently in brick and mortar channel. Being aware of this, the customers find transaction undertaken in branch to be more trustworthy.

In the case of transactional risks, this research finds that increasing the certainty about the transaction or providing users the control of the process is likely to have a positive impact on the user experience and hence lowering of perception of risk. For example, banks can estimate the variables of the transaction such as time taken, fee etc., and inform the customer at the decision making stage. If the client is willing to accept these risks he/she can initiate

the transaction. This means that customer is taking the risk willingly which is likely to lead to a decline in the perception of risk.

5.9 Conclusion

The findings of the questionnaire survey and focus group indicate that security and financial risks influence the perception of risk the most in the Saudi e-banking sector. In addition, other risks such as transaction risk, time risk, performance risks also have statistically significant influence on perception of risk along with the cultural factors. There is a possibility that uncertainty avoidance dimension of the culture may be the most significant cultural dimension influencing perception of risk in Saudi e-banking sector. Based on the findings, it seems that high level of uncertainty in e-transactions and high level of risk combined with lower perceived ability to use e-banking cause higher perception of risk. Several practical solutions are identified with the two most significant being increasing certainty and awareness and preserving some of the attributes of the brick and mortar channel which are valued high by Saudi customers such as one-to-one interaction.

Chapter 6 Conclusion

6.1 Research summary and key findings

This research aimed to identify the different risks factors that affect the perception of risk in e-banking in Saudi Arabia and investigate the impact of perception of risk and cultural factors on the adoption of e-banking in Saudi Arabia. This research primarily aimed to understand the following:

- The usefulness of looking at perception of risk in greater detail especially the factors that influence perception of risk in the context of the Saudi banking sector. Identifying the factors that comprise perception of risk in the Saudi banking sector was essential in order to develop a practical strategy to address the issue of perception of risk. Most of the past research has ignored the practicality of their findings as they merely look at the risk factors as a whole, while this research clearly indicates that perception of risk is a very complex aspect that requires in depth analysis. This research thus, looked at different components of the perception of risk and proposed a practical model which can help e-banking service providers in developing a strategy to reduce perception of risk and increase adoption of e-banking.
- Highlight the need to look at inhibitors in addition to facilitators for adoption of e-banking. In certain societies, usefulness of a technology may not be sufficient motivation for customers to adopt it and in order to increase adoption providers have to overcome the barriers inhibiting the adoption. These risk averse societies put a greater emphasis on risk and barriers and hence these barriers should be paid equal attention as the facilitators.
- Highlight the need to take cultural aspects into consideration. Most of the past researches on adoption of e-banking has been conducted in developed nations but as this research finds, the cultural factors have a significant impact on the perception of risk and consequently on adoption of e-banking. This means that findings from similar researches in other countries, with different cultural context, may not be applicable in context of Saudi Arabia.

This thesis is presented in six chapters. The first chapter provides an overview of the research problem. It provides the reasoning why it is essential to investigate this phenomenon and the contribution of the research was discussed. It was clarified that most of the past researches have provided a limited insight into the factors driving and inhibiting adoption of e-banking and there is a clear need for looking at the facilitators and inhibitor sin greater detail. In this respect, thesis paper looks at the primary inhibitors inhibiting adoption of e-banking in Saudi Arabia in greater detail. Chapter 1 also contained the aim and objectives of this research along with the research questions that this research aims to answer.

Chapter 2 presented a thorough literature review on the subject of risk and perception of risk. This chapter began with a discussion of the concept of perception and why it matters. Perception as cognition of mind and how it influences our behaviour was discussed. This was followed by a discussion of the concept of perception of risk and why it is more damaging than the risk itself. The manner in which perception of risk can influence human behaviour was discussed. In this context, the psychometric paradigm of perception of risk was also discussed. Risk perception has been looked at from different perspectives: in terms of its dimensions and in terms of its components. While this focuses on the components of perception of risk but references were made to dimensions of perception of risk as well. The next section looked at the characteristics of the perception of risk. A quick overview of the existing theories and models on adoption of new technology was presented. Following this, the literature on factors influencing adoption of new technology is reviewed. One of the biggest drawbacks of past research in this respect is the lack of consideration for the cultural factors. This research looks at how cultural factors can influence adoption of innovations and links it with adoption of e-banking. This is followed by a brief discussion of Saudi Arabian culture along the five dimensions of national culture proposed by Hofstede. Implications of Saudi national cultural attributes on adoption of e-banking by Saudi Arabians are discussed as well. Finally, this chapter reviews existing literature on different types of risks in e-banking and how this may influence overall perception of risk in e-banking. Overall this research extends the work done by some key authors such as Farzianpour et al. (2014), Hong and Yi (2012), Beheshti et al. (2012), Li (2012), Huang et al. (2010; 2011), Wu et al. (2011), Eid (2011), Farzianpour et al. (2011a, 2011b), Al-Ghaith et al. (2010), Ruiz-Mafe et al. (2009), Al-Somali (2009). At the end of the chapter a conceptual framework is presented

summarizing the findings of the literature review. This conceptual framework was used to form the questionnaire and was the basis of data collection and analysis.

Chapter 3 presents an overview of the research methodology and data collection procedures adopted. This research was completed in three stages. It began with a discussion of the research philosophy; the choice of epistemological position of pragmatism and ontological position of mixed methods are discussed. The second stage of the research involved a self administered structured questionnaire survey. The survey was designed to test the conceptual framework in context of Saudi Arabia. It investigated the impact of culture and different types of risks in e-banking on overall perception of risk as well as the impact of overall perception of risk and cultural factors on adoption of e-banking in Saudi Arabia. In total 1064 responses were received out of which 16 were dropped due to issues with missing responses. The findings of the questionnaire survey analysis were used to refine the conceptual framework. In the third stage of the research, the researcher conducted five focus groups involving a total of 37 participants. Focus groups were aimed at obtaining greater insight into the findings of the questionnaire survey and to identify possible solutions to the risk perception problem. This chapter discusses the benefits of using pragmatist philosophy and mixed methods for this research. Data collection procedures, sampling and limitations of survey and focus group methods are discussed in detail. In addition, the validity and reliability of the data collection methods adopted in this research are discussed.

Chapter 4 of the thesis presented findings of the data analysis. This chapter is divided in two parts. The first part presented the statistical analysis of the questionnaire survey. Regression results are presented and a brief discussion is provided. Section two of this chapter presented analysis of the focus group data. Data for the focus group is analysed according to the themes identified according to the conceptual framework. Results indicated that social and psychological risks do not have a significant impact on the perception of risk in e-banking in Saudi Arabia while financial, security, transactional; time and performance risks have a significant impact on the perception of risk. Results also indicated that cultural factors have a significant impact on the perception of risk in e-banking in Saudi Arabia. In addition, this research confirms the past findings that perception of risk has a determining impact on the adoption of e-banking in Saudi Arabia. The findings of the focus group were somewhat more revealing and indicated that contrary to what the questionnaire survey revealed, social factors may have a significant impact on the perception of risk. Findings of the focus groups also

revealed a significant overlap between social and cultural factors. Thus, the findings of focus groups indicate that social and cultural factors can be combined under one variable- socio-cultural factor. The findings also hinted that some of the psychological risks may be relevant in the context of perception of risk while some others may not be as significant. Thus, discarding the psychological risk construct as a whole may not be the right approach. In particular, the focus group data reveals that technology apprehension may be a significant factor for individuals in certain demographic segments such as older individuals and those with less educational qualifications are more apprehensive of the new technology.

Past research revealed that new technology can be pushed by targeting opinion leaders. This may seem useful for Saudi society with its high power distance score. However, in reality the opinion leaders have failed to push the technology to other segments; even after a decade of its introduction the adoption of e-banking among Saudi customers remains abysmally low despite high Internet penetration. This indicates that fear of technology is not a factor affecting people's adoption of e-banking in Saudi Arabia. Instead there are factors relevant to e-banking such as risk of financial loss and security threats which could result in financial loss which are key factors inhibiting adoption of e-banking. The cultural factors such as high uncertainty avoidance seem to be playing a bigger role in influencing people's behaviour in this regard. This also indicates that increasing reliability of the system could be an effective strategy in reducing the perception of risk and increasing adoption of e-banking among Saudi consumers.

The findings of the focus group and questionnaire survey are the combined to present a framework. The 'cultural factors' variable considered in the conceptual framework is replaced by 'socio-cultural factors' construct. This means only psychological risk was found to be irrelevant in the context of perception of risk in e-banking. However, the focus group data indicates that psychological risks may be relevant to certain customer segments such as for older individuals who do not have sufficient knowledge of using e-banking service and are therefore, apprehensive of using e-banking service.

The table below summaries the key achievements of this research

Achievement 1	One of the most significant contributions of this research is looking at the impact of perception of risk in greater detail. Past research has considered the impact of some of the risks such as security and financial risks on adoption of e-banking but none of the past research has looked at the impact of different categories of the risks on perception of risks in e-banking and consequently on adoption of e-banking. This research provides a good overview of the risks existing in the e-banking context and can be a useful resource for researchers looking to study risks or perception of risks in e-banking.
Achievement 2	This research highlights the significance of including cultural context in studies involving adoption of e-services. This research highlights that people's perception and behavior in the context of e-services can be significantly influenced by the cultural values/ beliefs that the individuals hold to the extent that they may not be willing to engage in activities with explicit and direct benefits. Impact of cultural factors also indicate that technology adoption frameworks tested in Western countries may not be applicable in countries like Saudi Arabia which are culturally very different than Western nations. This research highlights that cultural values such as uncertainty avoidance provide useful cues for service providers to improve their service offerings.
Achievement 3	This research focused on perception of risk as inhibitor of adoption of e-banking. Most of the past research has looked at potential facilitators facilitating adoption of e-banking. However, this research highlights that while investigating the adoption of new technologies, it is essential to focus not only on facilitators but also inhibitors because in certain cases the inhibitors may be simply too strong to overrule any facilitating factors.
Achievement 4	This research also highlights the significance of using mixed methods research. The positivist philosophical paradigm adopted

	by most of the past researchers has been somewhat limited by the usefulness of the past researches. While the questionnaire survey revealed that social and psychological risks may not have a significant impact on perception of risk, focus group data revealed that social risks overlap significantly with cultural factors and the two together can have an impact on the perception of risk. The use of focus groups allowed the researcher to critically validate and enhance the theoretical framework. Furthermore, focus group data allowed the researcher to reflect on the findings of the questionnaire providing validation as well as useful insight for readers to understand the framework in more detail. Finally, the focus group interviews allowed the researcher to provide practical guidance for reducing perception of risk and increasing adoption of e-banking in Saudi Arabia. This research thus recommends using a pragmatic philosophical position and mixed methods approach to investigate adoption of new technologies

Table6.1 summaries the key achievement of this research

6.2 An overview of findings of the research

The table below shows which of the hypothesis were accepted and which ones were rejected:

Hypothesis	Outcome
Hypothesis 1 (H_1): Perception of risk has a significant and negative impact on Adoption of e-banking in Saudi banking sector.	Accepted
Hypothesis 2 (H_2): Security and privacy risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted
Hypothesis 3 (H_3): Performance risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted
Hypothesis 4 (H_4): Social risk has a significant and positive impact	Rejected

on Perception of risk in e-banking in Saudi banking sector.	
Hypothesis 5 (H_5): Time loss risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted
Hypothesis 6 (H_6): Financial risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted
Hypothesis 7 (H_7): Transactional risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted
Hypothesis 8 (H_8): Psychological risk has a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Rejected
Hypothesis 9 (H_9): Cultural factors risk has a significant and positive impact on adoption of e-banking in Saudi banking sector.	Rejected
Hypothesis 10 (H_{10}): Cultural factors have a significant and positive impact on Perception of risk in e-banking in Saudi banking sector.	Accepted

Table 6.2: Summary of results on hypothesis tests

6.2.1 Security risk

This research confirms that security risks have a significant impact on the perception of risks in e-banking. This research confirms the findings of past research (Farzianpour et al. 2014; Ndlovu and Sigola, 2013; Usman and Shah, 2013; Li, 2012; Shah et al, 2014) that e-banking service providers can reduce perception of risks by reducing security risks.

While the e-banking service providers have continued to enhance security of their systems, security risks have continued to evolve as well (Gibson, 2011). This evolution of security threats is evident from the media reports about stealing of passwords on global scale. As commented by Shah et al. (2014), this research finds that media reports about security risks influence individuals' perception of security risks. This research confirms that the Saudi e-banking customers fear the organised cyber crime syndicates which are often highlighted in media reports.

This research looked at two security risks: fraud and privacy risks. Both these risks were found to be significant influencing factors of perception of risks. However, the risk was found to be more relevant to fraud risk than privacy risk. Focus group data indicates that customers

are worried about privacy in that it could lead to fraud and consequently financial loss. In this respect, tangibility of the threat is a significant determinant of the risk perception of Saudi customers. Security risks (and in fact most of the risks) are considered linked to financial risk in that the customers are worried that these risks may lead to some sort of financial loss. This is in accordance with the findings of Huang et al. (2011) who found a direct link between security risk and financial risk.

This research could not find support for the views of certain researchers that perceived security risks could be influenced by individual factors (Hernandez and Mazzon, 2007). The consensus among the respondents over security threats indicates that the security risk affects the perception of risk among all the respondents albeit to different extents. Some researchers have argued that most of the security threats originate as a result of the actions of the customers (Choplin et al., 2011) but this research finds that customers want banks to take the responsibility for enhancing security of the overall e-banking system. This includes not only implementing high level of security systems such as biometrics and multi level passwords but also training the individuals on how to use the system. Communication between the banking service providers and customers was found to be a useful approach towards reducing security threats as well as perception of such threats. In the context of Saudi Arabia, poor knowledge of IT systems is a barrier in individuals managing security threats at their end. Customers in Saudi Arabia are thus, more exposed to threats such as phishing and banks and must take this into consideration while implementing their security systems.

Using techniques such as biometrics may sound uneconomical in direct cost-benefit analysis (Murdoch and Anderson and Anderson, 2010) but considering the benefits it will generate by increasing adoption of e-banking, there is a clear case for considering these advanced security systems. Furthermore, implementation of techniques such as multi-level passwords is not that costly and would provide significant benefits by reducing security threats (Vandommele, 2010). In addition, this research finds that implementing server side technologies such as encryption could also help the banking service providers in reducing security risks (Shah et al, 2014).

6.2.2 Time risk

Time risk was found to be a significant influencing factor of perception of risk; however, the impact is expected to be low. This could be because time taken for transaction as well as time saved by completing the transaction online, are two key benefits of e-banking. Thus, the respondents may not have considered time risk to be a high probability risk in e-banking. However, the findings support the previous ones of Hernandez and Mazzon (2007) and Auta (2010) that time risk can affect people's perception of risk in e-banking.

This research explains that the reason for statistically significant yet lower impact of time risk could be because time risk in e-banking is often a voluntary and controllable risk. People often have lower perception of risk in case the risk is voluntary and controllable (Slovic, 2007). This research also finds that time risk is important if the impact is known and quantifiable; for example, when the individuals incur a direct and tangible loss due to time risk.

This research thus recommends that banks should try to minimise time risk and should also look to improve voluntariness and controllability by informing the customers about the estimated time for transaction prior to the initiation of transaction.

6.2.3 Cultural factors

This research confirms the findings of past researchers (Narteh, 2012; Guo et al, 2009; Twati, 2008; Nantel and Glaser, 2008; Tat et al. 2007) that culture has a significant influence on the perception of risk. This finding is one of the most significant contributions of this research as this is the first research which has empirically investigated the impact of culture on perception of risk in e-banking in Saudi Arabian context. The Cultural context of Saudi customers has a significant influence on their perception towards other risks as well. In this respect, culture not only has a direct influence on perception of risk but also affects other risk factors, which, in turn, affect perception of risk. For example, the uncertainty avoidance dimension of Saudi Arabian culture is evident in Saudi customer's view about most risk factors as they tend to avoid most of the uncertain situations. This also means that increasing certainty could be a useful approach in reducing perception of risk and improving adoption of e-banking.

This research finds that while cultural factors have an impact on perception of risk but they do not have a direct impact on the adoption of e-banking in Saudi Arabia. Most of the e-banking terminology is adopted verbatim from English, which a large proportion of Saudi population do not understand. In this respect, the service has not been adequately contextualised for Saudi society and this seems to be a barrier in wide adoption of e-banking in Saudi Arabia.

Also e-banking is more uncertain in several ways as compared to in-branch banking and Saudi society which ranks extremely high in uncertainty avoidance tends to prefer the latter over the former. In this respect there is a clash between the cultural values of Saudi society and the aspects of e-banking. Conflicts like this can negatively influence people's perception of innovations (Tat et al., 2007).

Individuals' preference of dealing in tangible cash is also another factor which takes precedence over virtual transactions taking place online. While banks can do little about this aspect, one of the aspects that banks can certainly address is direct interaction. This research finds that lack of direct support and face to face interaction is another barrier which drives many Saudis to in-branch banking. These findings are similar to those of Aslam et al. (2011) who found that loss of personal service and one to one relationship with bankers is a key cultural barrier in adoption of e-banking. Saudis prefer interpersonal interaction over technology based Internet interaction. In addition, in-branch banking allows them to seek more information directly and reliably but they are not so confident seeking the same advice and support online. This indicates that banks can improve adoption of e-banking by providing direct online support and provide the same relationship management benefits that the customers would enjoy in branch banking.

This research also recommends that service providers, through efficient and intelligent use of technology, can potentially improve the adoption of e-banking. Social imitation is common especially in collectivist societies such as Saudi Arabia (Hofstede, 2013). This has both positive and negative implications as adoption is likely to be either too high or too low. At the current level of 14.3 percent it is on the lower side (Eid, 2011). While adoption of e-banking has been on the slower side in the Kingdom (AlGhamdi et al., 2012; Eid, 2011) there is a huge potential to grow as the young generation get exposed to such innovations through their exposure to social media and Internet. Saudi culture is one which does not embrace

innovation and change easily (Alqahtani et al. 2012; AlGhamdi et al. 2011; Al-Somali et al. 2009; Aleid et al. 2009) and hence persistence is essential.

This research also recommends including cultural dimensions in technology/ innovation acceptance models.

6.2.4 Perceived Social risks

Social risks were not found to be a significant influencing factor of perception of risk in Saudi e-banking sector. There was somewhat different explanation provided by the focus group respondents which indicated that there is significant overlap between social and cultural factors and hence it was decided that cultural factors will be modified to include social factors as well leading a new construct: socio-cultural factors.

The rising use of the Internet is leading to both an ease of exchanging information as well as news about positive and negative impacts of usage of the Internet. As Shah et al. (2014) noted, media plays a significant role in shaping perception of risk. This was found true in the context of Saudi Arabia indicating that e-banking service providers must remain cautious of media coverage about e-banking service. Furthermore, efficient complaint handling and customer relationship management would mean that customers would reduce the likelihood of customers having negative emotions about e-banking service and consequently the lowering of social risk.

6.2.5 Performance risks

This research confirms the findings of Nicolaou et al. (2013) that performance risks have a significant impact on the perception of risk in e-banking. One of the performance risks uncovered by this research, and not discussed in past researches, is the channel conflict. Many respondents suggested that due to their relationship with the bank staff they are able to get the best deals in branch rather than online. Such channel conflicts always affect adoption of one channel over other. This research thus recommends that banks should either ensure consistency in the online and brick and mortar channel or should ensure that customers can

seek the same interactive relationship with their relationship manager in the online channel as they can do in branch.

Poor technical performance is also a performance risk which plays a role in increasing perception of risk in Saudi banking sector. Respondents complained about the service being out of order too often and without prior intimation as well as session terminating mid-way through a transaction. These problems can be resolved through two means- firstly, ensuring the reliability and availability of the system by adopting superior technology (Masocha et al. 2011). Secondly, by complementing the e-banking service with mobile alerts which would update the customers about upcoming server issues and also about their transactions when their session ends abruptly. This will improve customer's trust in the system and is likely to reduce their perception of risk about e-banking.

E-banking service providers must also ensure that the web interface of their service should be easy and intuitive. This will reduce technology apprehension that often reduces adoption of e-banking. Certain customer segments of Saudi society are not proficient in using Internet and efforts should be made to make the experience as easy as possible for them. For example, online money transfer pages could be designed exactly like the one used in branch so that even those customers who are not proficient in using Internet can fill it. Minimising the effort on the part of the customers and increasing reliability and certainty within the system could help reduce perceived performance risk and consequently reduce overall perception of risk in e-banking.

6.2.6 Psychological risk

This research did not find evidence of psychological risk being a significant influencing factor of perception of risk. Thus the findings of Aslam et al. (2011) about the impact of psychological risks are rejected. While psychological risks were rejected as significant in the quantitative survey, the qualitative focus groups presented a different picture. It was revealed during focus group interviews that there are certain segments of Saudi society which are apprehensive about technology and hence may face psychological risks leading to rise in overall perception of risk towards e-banking. However, these were the views of some respondents only and may not be applicable to whole Saudi population.

There was evidence that individuals who are strict puritans and those in the higher age group are more susceptible to anxiety towards use of Internet and Internet based services. Based on the qualitative and quantitative analysis this research rejects the hypothesis that psychological risks affect the perception of risks in e-banking.

6.2.7 Financial risk

As found by past researchers (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Masocha et al. 2011; Benjamin and Samson. 2011; Aransiola and Asindemade, 2011; Shah et al. 2014) financial risks were found to be one of the most significant risks affecting perception of risk in e-banking in Saudi Arabia. Financial risks do not only affect the perception of risk directly but customers also expressed concerns of financial risks originating from other risks- for example, security risk leading to financial risk.

This research finds that individuals often overestimate financial risk probably because it is directly related to a monetary loss. Thus, customers are not worried about the impact (as they perceive maximum impact) of financial risk but the likelihood itself is enough to cause concern. Banks often provide insurance against losses caused due to fraudulent activities but this insurance does not provide adequate protection against perception of financial risk. Thus, elimination of other form of risks which may result in financial risk is key to reducing overall perception of risk in e-banking.

Focus group interviews indicate that customers have a particularly negative perception of those risks which could result in financial risk- for example security risk ranks high just because it leads to a direct, tangible and high level of financial risk.

6.2.8 Transactional risks

This research confirms the findings of Ruiz-Mafe et al. (2009) that transactional risks have a significant impact on the perception of risks in e-banking. The general perception is that technology is more reliable as it is free from human errors. However, this view is not

confirmed in the context of e-banking in Saudi Arabia where customers tend to rely more on face to face interaction in brick and mortar branches.

It could be thus concluded that customers' trust on technology depends on the maximum possible impact on the welfare of the customer. Thus, customers are less likely to rely on technology when it concerns their health/life or money.

This research finds that lack of controllability and voluntariness could lead to a higher degree of negative perception about transactional risks and consequently overall perception of risk. Also anticipated transactional risks are weighed lower than unanticipated transactional risks probably because of lack of controllability and voluntariness in latter case.

Increasing reliability of the system as well complementing e-banking system with a mobile alert service, as proposed under performance risk mitigation strategies, could be a useful approach to reduce transaction costs.

6.2.9 Adoption of e-banking

This research confirms that perception of risk has a significant and negative impact on adoption of e-banking. This research thus confirms the findings of past researchers (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Farzianpour et al. 2011a, 2011b; Ruiz-Mafe et al., 2009). There are two reasons why perception of risk affects the adoption of e-banking. Firstly, because perceived risks can cause direct, tangible and monetary loss to the customer. Since the welfare of the individual is directly associated with his wealth, any threat to individual's wealth is considered as a direct threat to his welfare. Furthermore, perception of risk is generally higher than actual risk, especially in case of e-banking. Secondly, the availability of the alternate channel, the brick and mortar channel, allows the individuals to carry on with their business without suffering too much loss except time and convenience. It seems that customers value time and convenience losses lower than the monetary losses and hence customers seem to be more reluctant to switch to online banking channel. Furthermore, the-banking channel is available for the customers to use whenever they wish, so adoption not is really an issue.

6.3 Contributions of the research

6.3.1 Theoretical contributions

This study identified several issues that e-banking service providers must address in order to increase adoption of e-banking in Saudi Arabia which has remained abysmally low despite a decade of existence (Eid, 2011). This study has thus contributed significantly towards research on adoption of new technology in general and e-banking in particular. This research also indicates that in certain societies, the inhibitors of technology adoption such as Perceived risks are too significant and can influence adoption of new technology. Past research has excessively focused on facilitators of new technology, while paying little attention to these inhibitors. This research highlights the need to consider the role of inhibitors in adoption of new technology.

Accordingly, it has empirically established culture as a key variable in improving adoption of e-banking. In addition it has highlighted the need to expand the existing technology adoption frameworks in order to make them practically relevant for the policy makers.

This research also identifies that certain cultural values such as uncertainty avoidance play a vital role in shaping people's perception of risk in e-banking. This research also identified some easy solutions that the e-banking industry can adopt in order to reduce the overall perception for risks in e-banking.

This research presents a novel conceptual framework which expands the Perceived risk factor which has been discussed many times in research on adoption of e-banking (Farzianpour et al. 2014; Okeke, 2014; Hong and Yi, 2012; Beheshti et al., 2012; Li, 2012; Huang et al., 2011; Wu et al. 2011; Eid, 2011; Farzianpour et al. 2011a, 2011b; Ruiz-Mafe et al., 2009). This not only helps understand the Perceived Risk construct but also provides useful

guidance on how other aspects of the technology adoption frameworks must be expanded in order to make them more relevant and practical.

6.3.2 Methodological Contributions

This research marks a significant shift from the traditional positivist paradigm which has dominated the research on technology adoption. Adopting a pragmatist paradigm and mixed methods strategy, this research signifies the need to move beyond simple identification of factors affecting adoption of e-banking. This research thus highlights that mixed method approaches should be adopted in order to understand the conceptualized frameworks better and to ensure that the research generates useful practical value.

Consumers are at the center of decision making of whether to adopt a new technology or not and the best that banks can do is market their services better. In this respect, the voice and decision of the customers is the most dominant one in this context and hence it is essential to listen to this voice and understand customers' mind. Adopting an interpretivist paradigm, this research highlights the need to understand the behaviour of the individuals in their social context and environment. The notion of giving voice to the usually unrepresented is academically important. Positivist research helps in generalisation but provides very limited insight into the views of those who are at the core of the issue. As this research has found, some of the things may not be as they seem to be in positivist research and hence obtaining greater insight using interpretivist research can help the researcher critically evaluate his / her own work.

This research also identified that a combination of focus groups and questionnaire surveys is quite useful in research on e-services. However, unlike other researches, which have used these two instruments for data collection, this research adopts questionnaire survey prior to focus groups and not vice versa. In this respect, this research acknowledges focus groups as usefulness qualitative tools for obtaining insight into e-service customers' views. This research thus also supports the use of multiple data collection methods to provide cross validation of findings.

This research is useful for researchers looking to investigate the factors affecting adoption of e-banking services. Using the conceptual framework presented in this research, researchers can identify the critical risks that will affect adoption of e-banking in a particular country. Identified risks can then be used the technology adoption frameworks to come up with a more holistic solution to the factors affecting adoption of e-banking services in that country.

Structural Equation Modeling is "very general, chiefly linear, chiefly cross-sectional statistical modeling technique" (GSU, no date). It is more confirmatory and less exploratory in nature. In other words, it merely tests whether a model is valid but does not provide the most suitable model by itself. It is quite useful when the researcher needs to use latent constructs such as human perception and behavior.

A structural equation model implies a structure of the covariance matrix of the measures. It is therefore also known as "analysis of covariance structures". It begins with estimation of parameters the resulting covariance matrix is compared with the covariance matrix created through the data. The consistency of the data based and parameter based matrices establishes if there is a statistical relationship between the measures. Structural equation model benefits from explicit modeling of measurement error and in this sense provide unbiased estimation of relationship between the constructs. (GSU, no date)

Future researchers can use this approach rather than regression modelling as it is more suitable for latent constructs such as perception of risk

6.4 Recommendations for decision makers

The quantitative aspect of his research provided general view of what society thinks of different kinds of risks and how it affects their perception of risk in e-banking and consequently adoption of e-banking. At the same time qualitative research provided valuable insight into the underlying factors as to why certain factors may be relevant i.e. the context of the findings. Based on the combination of the findings of the quantitative and qualitative parts of this research certain practical recommendations are proposed for e-banking service providers. Accordingly, the research findings identify implications for managers and policy makers in following ways:

- **User server side technologies to boost security before face of the system**. This research finds that most of the Saudis fear the security risks and one of the reasons for

this is their lack of understanding of security aspects in internet. For this reason they tend to use internet only for those activities which are unlikely to cause any harm or loss to them. Despite the rising penetration of Internet in Saudi Arabia, a large proportion of customers remain unaware of the Internet based services, particularly e-banking. Thus, expecting these customers to protect themselves will be a detrimental approach. Till the customers start using the service and get accustomed to this, it is essential for e-banking service providers to provide all adequate support to them, and implementing server side online security techniques is just one step in this direction. Security approaches such as multi-level passwords are some very basic safety approaches that banks can adopt without increasing cost burden on itself and effort burden on the customers.

- **Increasing certainty in every aspect of e-banking is critical**. This research finds that customers are mainly concerned about the uncertainty associated with e-banking transactions. This could be because of the high uncertainty avoidance culture of Saudi Arabia. E-banking service providers must improve communication with the customer, keeping them informed especially in circumstances when things do not work as anticipated. Adding this additional communication channel will provide one more layer of information exchange which will help eliminate any uncertainty related concerns that customers may have. For example, SMS alerts could be provided to the customers for whatever transactions they choose. Thus, instead of forming expectations, customers would learn to rely on SMS alert service for information.
- **One of the aspects that prevent Saudi customers from adopting e-banking service is lack of personal interaction in e-banking.** This research finds that Saudi customers want the certainty of being able to interact with a human being in order to resolve their concerns one to one. This is again linked with uncertainty avoidance aspects of Saudi culture. By providing the same relationship management benefits in e-banking channel, e-banking service providers can eliminate the threat of losing this relationship. This is not beneficial only to the customers but also to the banks and is a feature of brick and mortar banking which should be maintained at any cost.
- **Providing adequate online support round the clock is essentia**l. Customers often face transactional and informational challenges and it is not undue on their part to expect the banks to provide them with adequate support whenever they face these difficulties. E-banking is round the clock banking and hence any support associated

with e-banking should be round the clock as well. The online support system should be real time and should be as efficient as walking into a bank branch.

- **Banks should look to develop a very easy and intuitive web interface for e-banking**. It can adopt the same interface as its existing forms so even new e-banking users can use it without many issues. This will increase consistency in online and in-branch channels.
- **Banks should avoid changing the web interface too frequently** as it increase effort costs for the customers who have to learn and get used to the new interface. Banks should attempt to minimise these effort costs for the banks.

6.5 Limitations

This study has some limitations and addressing these limitations can lead to interesting opportunities for further research. First, most of the respondents who responded to the survey did it online, probably because of lower effort costs. This means that the sample contained a high proportion of Internet users who may be more comfortable in using e-banking service. An ideal sample would have included 50 percent Internet users and 50 percent non Internet users. But this sample composition could not be achieved despite the researcher's best efforts. Thus, given that most of the Saudis do not use the Internet even today, he sample may not be a true and accurate representation of the population. This could have affected the findings. However, during the focus groups, the researcher encouraged the participants to reflect not only on their own experiences but also the experiences of others around them. This was aimed at gathering a wider base of information. Indeed several respondents commented using evidence from the experiences of others they know, thereby allowing the researcher to overcome this issue to certain degree.

This research did not investigate the overlapping of certain risks – for example time risk and transaction risk. Efforts need to be made to clearly identify the risk categories which influence perception of risk in e-banking.

This research did not take into consideration the perspective of the e-banking service providers. It acknowledges that adoption is mostly customer driven and hence greater emphasis is placed on customers' views. However, getting service providers' views could have helped clarify some of the issues raised by the customers. For example, service

providers could reveal the various sophisticated security technologies adopted by them to protect the customers and this means that customers' perception of poor security management is more due to poor marketing communication by the banks rather than due to poor service management by banks.

Despite these shortcomings this research has some notable contributions with the most significant being empirically validating the significance of cultural factors in perception of risk. This would help service providers develop culturally informed models of e-banking which are more likely to succeed than the one-size-fits-all models that are being implemented now.

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Appendix 1: Questionnaire

Demographic information

- Age Group

☐under 18 years of age

☐18- 30 years of age

☐31-45 years of age

☐46-65 years of age

☐Over 65 years

- Your household annual income (in Saudi Riyal)?

☐ 50000

☐ 50001- 100000

☐100001- 250000

☐ 250001- 1000000

☐>1000000

- How often do you visit a bank?

☐ Rarely

☐ When required, sometimes

☐Regularly but not often

☐ Regularly and often

☐Very frequently

- Have you ever used internet for banking?

☐ Never

☐ Rarely but yes

☐Sometimes.

☐ Yes but not regularly.

☐Very often and regularly.

- Your education level?

☐ None- 9th Grade

☐ 10th Grade (GCSE)

☐12th Grade (O level).

☐Diploma.

☐ Graduate.

☐Post graduate.

Security and privacy risk

- I am afraid that if I use e-banking my personal details will be stolen.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am worried that someone may access my bank account without my permission.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am concerned that if I enter incorrect details I may not be able to change it.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- Sometimes I feel suspicious about the reliability of my e-banking provider.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- The news about e-banking fraud worries me that it may happen to me also.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am worried that my e-banking transactions may not be secure?

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am concerned about how my bank uses my private information.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Performance/technical risk

- I am apprehensive that my e-banking service provider may not deliver the expected standard of service.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- Sometimes I feel worried that I may be denied access to my account due to some fault at my e-banking service provider.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- Sometimes I am worried that I may not be able to complete my transaction due to some problem at the e-banking service provider's end?

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I have sometimes found problems in accessing my e-banking account due to problems such as server unavailability, poor connection etc.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Social risk

- I think that I may lose the support of my friends/family members if Iincur a loss by using e-banking.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I think that I will lose the valuable relationship with the bank staff (including the manager) if I use e-banking.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I think that I will not be able to ask anyone for help if I fail to use e-banking properly.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Transactional risk

- I am unsure that e-banking transactions will take place as expected.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I fear that e-banking technology is not reliable.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am concerned that in e-banking I cannot verify if the transaction has been actually completed.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Time loss risk

- I am worried that e-banking transactions may take more time that physically visiting a bank.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am sometimes worried that my e-banking transactions may take longer to proceed

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am worried that I will be unsure about how long the e-banking transaction will take.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Financial risk

- I am afraid that using e-banking may cause me some financial loss.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I find it risky to do large money transfers online.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I think that e-banking may cost me additional charges.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Cultural influence

- I am not worried about lack of human interaction in e-banking.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am concerned that e-banking is not according to my religious beliefs.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am unsure about the benefits of e-banking.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I prefer seeing things happening with my own eyes rather than electronically.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I prefer to be sure that whatever I have asked my bank to do has been done.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I fear that e-banking does not allow me to control my banking activity like the branches do.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am not comfortable using cards over cash.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Psychological risk

- I am worried that I may undergo stress if something goes wrong with my e-banking account.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am concerned about the stress that I might undergo if I cannot access my e-banking account.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I think using e-banking would lead to stress and/or anxiety.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Risk perception

- I think that using e-banking system will be risky.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I would be concerned about using e-banking.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I feel safe and secure using e-banking system.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

Adoption of e-banking:

- I think that using e-banking is wise.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I am very likely to use-banking in near future.

Strongly agree	Agree	Cannot say	Disagree	Strongly disagree
☐	☐	☐	☐	☐

- I would recommend others to use e-banking.

Definitely not	No	Cannot say	Yes	Definitely
☐	☐	☐	☐	☐

Appendix 2: Focus group questions

1. What are your opinions about e-banking is it useful or not?
2. What are your main concerns regarding e-banking? I mean is there any particular risk that worries you regarding using e-banking?
3. Do you feel concerned about security and privacy in e-banking?
4. Do you feel any concerns that e-banking service may not work as expected?
5. Do you think you will have to face embarrassment if something goes wrong while using e-banking service?
6. If someone tells you about their bad experience of using e-banking will it affect your views of e-banking?
7. How about delays in e-banking service? Do you feel worried about that?
8. Have you ever felt that using e-banking might cause some financial loss to you? What kind of loss do you think can it incur?
9. Do you ever fear that if you use e-banking it might lead to tension or stress?
10. Would you consider using e-banking despite the risks?