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A Study on Impact of Perceived Risk and Online Trust on Attitude towards Internet Banking Usage in India

ABSTRACT:

Purpose: The purpose of this paper is to analyse how online trust and perceived risk influences attitude toward internet banking usage. This study seeks to investigate the role of online trust and perceived risk in the context of internet banking.

Design/Methodology/Approach: Psychometric properties for each perceived risks of adopting internet banking were measured using Cronbach alpha and first order confirmatory factor analysis (CFA). Next, second order CFA was performed to measure the relative importance of each risk facets. Further structure equation modeling using AMOS software was performed to understand the impact of perceived risk and online trust on attitude toward internet banking usage. The sample consists of 200 internet banking adopters and nonadopters.

Findings: Five facets of risk involved in internet banking were identified and these facets were: security risk, financial risk, privacy risk, time loss risk and performance risk and it was also

found that respondents did not perceive social risk in internet banking adoption. The results confirm that perceived risk has negative impact while online trust has positive impact on attitude towards internet banking adoption.

Practical implimentation: Indian banking industry needs some advertisement campaign to increse online trust and reduce perceived risk related to internet banking adoption. It is important for bank managers to understand how to create online trust for internet banking. Main influencing risks to internet banking adoption are financial risk and time loss risk. Bank managers should communicate with their target audience that internet banking is financially safe and it will save your time.

Keywords: Internet Banking, Online Trust, Perceived Risk, Attitude towards Internet Banking Usage, First Order CFA, Second Order CFA, Structure Equation Modeling.

INTRODUCTION:

With globalization trends world over, it is difficult for a nation big or small, developed or developing, to remain isolated from what is happening around the world. For a country like India, which is one of the most promising emerging markets, such isolation is merely impossible, particularly in the area of Information Technology (IT). IT has shrunk the world, as a result of this; time and distance have become non-entities. It has enveloped every aspect of life. In this changing scenario, banking sector is not an exception. Technological developments and financial liberalization are viewed as the main forces influencing the financial sector's development (Edey & Grey, 1996; Gardner et al, 1999).

In banking industry new technological innovation is internet banking. Internet banking has revolutionized the ways banks handle, operate and deliver banking transactions in recent years. Using internet banking customer can perform banking transactions like viewing account balance and transaction histories, paying bills, transferring funds between accounts, ordering new cheque book, managing investments and stock trading over the internet through their personal computer or laptop at a time convenient to them, without having to be restricted to regular branch operating hours. Internet banking has experienced phenomenal growth and has become one of the main channels for banks to deliver their products and services in India. According to a report by global management consultancy McKinsey & Company, as many as 7% of account holders in the country are using the Internet for banking transactions in 2011 and it is 7 fold jump since 2007.¹ Internet banking has changed the ways in which banks manage their businesses and consumer conducts their everyday banking activities (Eriksson et al., 2008; Sayer and Wolfe, 2007). Internet banking is becoming the indispensable part of modern day banking services and can create competitive advantages for banks.

Problem Statements:

In India, internet banking is still in its early stages. Although almost all major banks provide online banking service in India, there are large group of bank customers who are reluctant and indecisive to accept and use the service. Kuisma et al (2007) concluded that customers refuse to adopt internet banking due to uncertainty and security concerns. Understanding this reluctance of users to accept the internet banking system is particularly important issue for the banking industry. Perceived risk is prominent barrier to consumer acceptance of internet banking (Lee, 2008). Second factor, online trust, is of crucial importance in adoption of internet banking. Lack of trust is considered to be one of the main reasons why consumers are reluctant to adopt internet banking (Luarn and Lin, 2005; Mukherjee and Nath, 2003). Therefore, there is a need for research to study these issues in Indian Banking Industry. The objective of this research has two fold. First, customers' perception of risks in internet banking was studied. In this research,

¹ Business Standard, July 20, 2011.

perceived risk has been divided in to six categories and investigated which facets are more important in this field. Second, an attempt was made to study the impact of perceived risk and online trust on attitude towards internet banking usage.

Research Questions:

The following research questions are framed on the basis of problem statements:

- 1) What are the important risk facets for internet banking usage?
- 2) Is there any impact of customers' perceived risk related to internet banking usage on customers' attitude towards internet banking?
- 3) Is there any impact of customers' online trust on customers' attitude towards internet banking?

Objectives:

The following research objectives are framed on the basis of research questions:

- 1) To find out important risk facets related to internet banking usage.
- 2) To study the impact of customers' perceived risk related to internet banking usage on customers' attitude towards internet banking usage.
- 3) To study the impact of customers' online trust on their attitude towards internet banking usage.

This research paper is divided into three major sections. First, the review of literature on perceived risk and online trust in internet banking were presented. This gives the theoretical foundation for the development of hypotheses related to the impact of perceived risk and online trust on attitude towards internet banking usage. Second, the research methodology to test the

hypothesis was presented. The final section discusses the study's findings and managerial implications.

LITERATURE REVIEW:

Perceived Risk in Internet Banking

Perceived risk has been defined in many ways in consumer behavior literature. Five decade ago, Bauer (1960) introduced the concept of perceived risk. He proposed that consumer behavior was a risk taking activity since the actions of consumers could produce unanticipated consequences, some of which were likely to be unpleasant. He defined perceived risk as a combination of uncertainty plus seriousness of outcome involved. Perceived risk is commonly thought of as felt uncertainty regarding possible negative consequences of using a product or service (Featherman and Pavlou, 2003). Cunningham (1967) defined risk as the amount that would be lost if the consequences of an act were not favorable, and the individual's subjective feeling of certainty that the consequences will be unfavorable. Risk can be understood as the variation in the distribution of possible outcomes, their likelihoods and their subjective values (Mitchell, 1999).

A consumer's perceived risk has been found to influence his or her online purchase decisions (Antony et al., 2006). The degrees of risk that consumers perceive and their risk tolerance are attitudinal factors that affect their usage (Chan et al., 2004). Lee (2008) defined perceived risk in internet banking as the subjectively determined expectation of loss by an internet banking user in contemplating a particular online transaction. Consumer perceptions of the risk of adopting internet banking have been studied by many researchers (Tan and Teo, 2000; Yousafzai et al., 2003). Perceived risk is multidimensional construct and the dimensions of perceived risk may vary according to the product class (Featherman and Pavlou, 2003). Different researcher

categorized perceived risk in different ways. Cunningham (1967) gave six dimensions of perceived risk — performance, financial, opportunity/time, safety, social and psychological loss. Roselius (1971) categorized the risk that might be encountered by consumers due to a purchase decision as time loss, hazard loss, ego loss, money loss and time loss. Jacoby & Kaplan (1972) gave risk dimensions into six groups: financial, performance, psychological, physical, social, and time. Lovelock et al., (1999) suggested seven risk types in service sector: financial, functional, time, social, physical, psychological and sensorial (cf. Demirdogen, 2010). Hassan et al., (2006) suggested seven types of risk in online shopping: financial, performance, time loss, social, physical, source and privacy. Littler and Melanthiou (2006) mentioned six types of risks perceived by customers of internet banking: financial, performance, time, social, psychological and security (cf. Demirdogen, 2010). In this research, perceived risk in internet banking is hypothesized having six facets: financial risk, security risk, privacy risk, performance risk, social risk and time loss risk. Overall risk in internet banking may include all six of these risk types or any combination of them.

Financial Risk: Financial risk refers to the possibility that the outcome of an action could harm the consumer financially through the loss of money or other resources. Many customers are afraid of losing money while performing transactions or transferring money over the internet (Kuisma et al., 2007). Lee (2008) defined financial risk in internet banking as the potential for monetary loss due to transaction error or bank account misuse. Sometime consumers also lose money due to mistakes such as wrong input of account number and amount of money during transferring money using internet banking (Featherman and Pavlou, 2003) and they also have

difficulty in asking for compensation when transaction error occurs. Financial risk also includes the recurring potential for financial loss due to fraud (Featherman and Pavlou, 2003).

Security Risk: Security risk is main obstacle in using internet banking (Potaloglu and Ekin, 2001). Security risk is defined as a potential loss due to fraud or a hacker compromising the security of an online bank user (Lee, 2008). Customers do not use internet banking if they feel that their confidential data are not secured (Demirdogen, 2010). It has been suggested that improved security in protecting personal information can increase the preference for using internet banking (Yousafzai et al., 2003).

Privacy Risk: Perceived privacy risk in internet banking refers to concern over the loss of personal, sensitive and proprietary information (Hassan et al, 2006). As per Featherman and Pavlou (2003) perceived privacy risk in e-services related to potential loss of control over personal information, such as when information about consumer is used without his or her knowledge or permission. The extreme case in privacy risk is when criminal uses identity of internet banking user to perform fraudulent transactions (Featherman and Pavlou, 2003).

Performance Risk Performance risk refers to the possibility that a product or service will not perform as expected. Performance risk is refers to losses incurred by deficiencies or malfunctions of internet banking websites (Lee, 2008). As per Littler and Melanthiou (2006) performance risk arises when either money is not transformed on time, or customers have difficulties in accessing the web page or not having enough new web-based services requested by customer.

Social Risk: Social risk refers to the possibility that the purchase of a product or service may not meet the standard of important to others, resulting in social embarrassment. (Murray and Schlacter, 1990) defined social risk as the possibility of derogate from his/her friends' dignity and interest. This refers to the possibility that using online banking may result in disapproval of one's friend circles or family. Family members' and other people's constructive and negative thoughts about internet banking create an impact on the attitude towards internet banking usage. Missing face-to-face communication with bank personal also can worried internet banking users.

Time Loss Risk: Time risk refers to the possibility that time spent making the purchase decision may be wasted if the result is not as expected. In internet banking, time loss risk may define as the loss of the time and inconvenience incurred due to the delays of receiving the payments, difficulty of navigation, slow website, transaction errors or learning how to operate online banking website (Lee, 2009). Bellman et al (1999) reported on the importance of time loss risk consideration and found time loss risk as an important predictor to online buying behavior. Time conscious consumers less likely to adopt the e-services that they consider it have high switching, setup and maintenance costs (Featherman and Pavlou, 2003).

In this study, an attempt is made to study the impact of perceived risk on attitude toward internet banking usage. Grabner-Krauter & Faullant (2008) defined attitude toward internet banking usage as an individual's overall affective reaction to using the internet for his/her banking activities. In several studies a significant negative impact of risk perception on the attitude towards online shopping or likelihood to purchase online shopping was found (Jarvenpaa et al., 2000; Laforet and Li, 2005; Teo and Liu, 2007). Consumers who place importance on the

perceived risk of internet shopping are less likely to purchase online. Perceived risk of internet banking is negatively related to the consumer's attitude toward internet banking usage (Grabner-Krauter and Faullant, 2008). Based on this following hypothesis is proposed to test:

H1: Perceived risk is negatively related to customers' attitude toward internet banking usage.

Online Trust:

Trust is essential in situations where risk, uncertainty and interdependence exist (Mayer et al., 1995), and the online environment is facing all these factors. Customer trust is particularly important in the online context because customers increasingly rely on the internet for information and purchases (Shankar et al., 2002). Online trust is defined as a belief or expectation about the web site, the web vendor and/or (less frequently) the internet as the trusted party or object of trust or as a behavioral intention or willingness to depend or rely on the trusted party (McKnight et al., 2002; McKnight and Chervany, 2002). The majority of information systems research has focused on the importance of trust and trust building as a prerequisite to e-commerce transactions and development of business relationships. If online trust can be understood and enhanced by reputable online merchants, then the number of people who engage in e-commerce should increase substantially (Wang and Emurian, 2005).

Online trust plays a very important role in determining consumers' initial and continued use of the internet banking service (Lichtenstein and Williamson, 2006). Gan et al. (2006) mentions that trust gap is a barrier to growth in the adoption of internet banking services. Trust affects the consumer's attitude which in turn influences the willingness to use e-services (Jarvenpaa et al., 2000). Pan et al. (2002) find that online trust has a positive impact on consumer attitude towards

e-services. Vatanasombut et al. (2008) suggest that the formation of trust create an impact on customers' attitude towards internet banking usage and will help convert non-adopters into internet banking adopters. Based on this discussion, following hypothesis is proposed in this study.

H2: Online trust is positively related to customers' attitude toward internet banking usage.

Proposed Research Model:

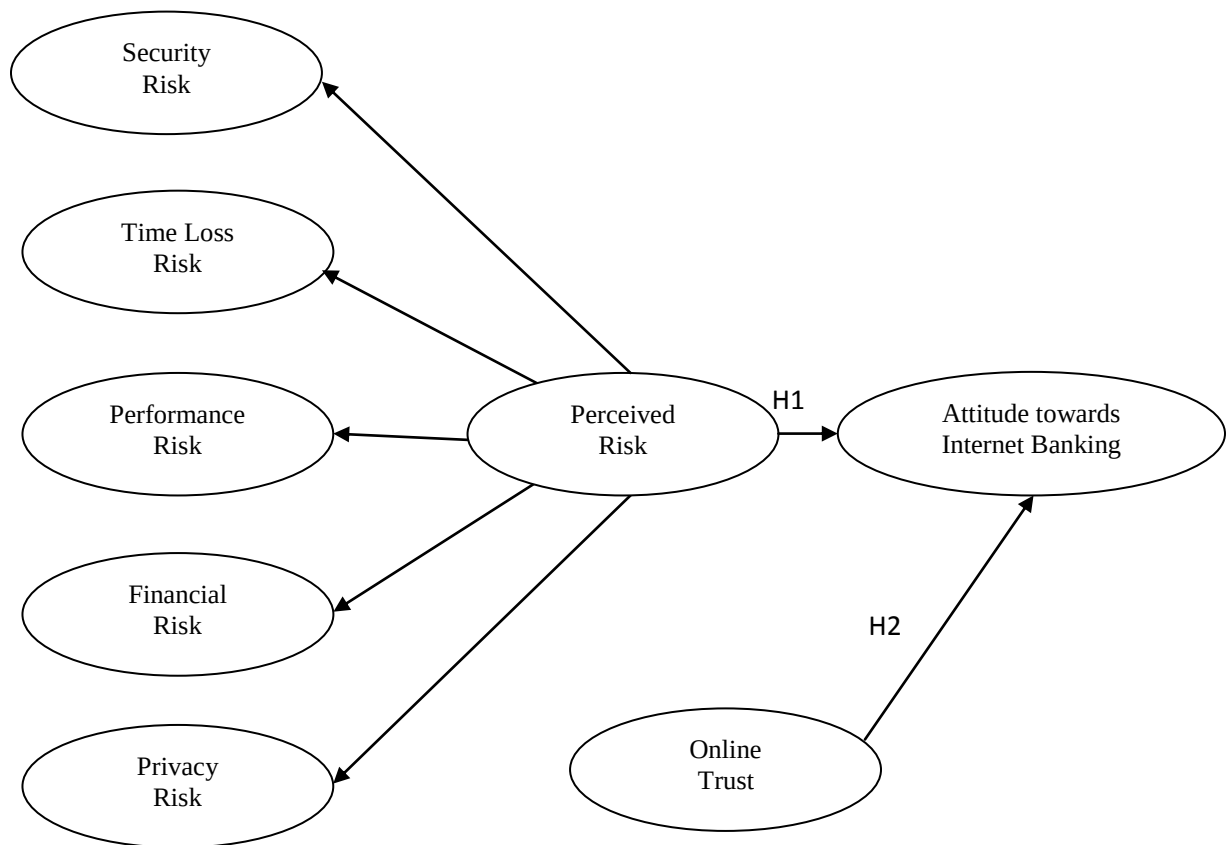


Figure 1: Proposed Research Model

RESEARCH METHODOLOGY:

Instrument:

A structured questionnaire was developed to test the proposed hypothesis in this research. The questionnaire included 40 statements - measuring risk facets (31 statements), online trust (4 statements) and attitude towards internet banking (5 statements). All these statements were adopted from previous research and measures on five point likert scale (1=highly disagree to 5=highly agree). In the last, questionnaire also has questions assessing demographic information (e.g. age, gender, income and education).

The scales used in this study were adopted from previous research and modified as per the requirement. Some of the statements were developed by the researchers. The scale measuring the risks facets consists in internet banking were adopted from the studies of Hassan et al.(2006); Featherman & Pavlou (2003), Cheung and Lee (2001); Flavin and Guinaliu (2006); Janda et al. (2002); Litter and Melanthious (2006); Aldas-Manzano (2008) and consisted of 31 statements. Second, the online trust scale consisted of four statements and it is adopted from the studies of Grabner-Krauter & Faullant (2008). The attitude towards e-banking scale was adopted from the studies of Chang et al. (2005) and Grabner-Krauter & Faullant (2008) and consists of five statements.

Sample:

To test the proposed relationships, data from customers from different Indian banks who also are internet users (both adopters and non-adopters of internet banking) were collected. The questionnaire was administered 200 people living in Ahmedabad, Gandhinagar and Vadodara cities of Gujarat, India in the month of March 2012. Out of these 200 respondents 100

respondents were adopters of internet banking and 100 were non-adopters of internet banking. The demographic characteristics of the sample were shown in Table I.

Table I: Demographic Characteristics of the Sample

Variables		Frequency	%
Gender	Male	145	72.5
	Female	55	27.5
Age	Less than 20 Yrs	2	1.00
	21-30 Yrs	126	63.0
	31-40 Yrs	45	22.5
	41-50 Yrs	21	10.5
	Above 50 Yrs	6	3.00
Education	Non-Graduate	17	8.50
	Graduate	125	62.5
	Post Graduate	58	29.0
Monthly Family Income	Less than Rs.30,000	102	51.0
	Rs.30,000 – 60,000	73	36.5
	Rs. 60,000 – 90,000	17	8.50
	More than Rs. 90,000	8	4.00

Data Analysis:

Data Analysis were conducted in following steps: Psychometric properties for each perceived risks of adopting internet banking usage were measured using Cronbach alpha and first order confirmatory factor analysis (CFA). Next, second order CFA was performed to measure the relative importance of each risk facets. Further structure equation modeling using AMOS

software was performed to understand the impact of perceived risk and internet trust on respondents' attitude toward internet banking usage.

The CFA model exhibited excellent maximum likelihood estimated fit indices with CMIN/df = 2.213, GFI=0.848, AGFI=0.811, CFI=0.855 and RMSEA=0.077. These indices indicated that only 7.7% of the variance in the data was unexplained by the risk facets. Internal reliability of the scale was measured by computing Cronbach's coefficient alpha for each multi item scales. Table II shows the values of Cronbach alpha for scales of all six kind of perceived risks, online trust and attitude towards internet banking. Hair et al. (2003) recommended that 0.6 Cronbach alpha value is deemed the lower limit of acceptability. Cronbach's alpha scores shown in Table II indicated each scales used in this study exhibited strong internal reliability.

Table II: Reliability Analysis: Calculation of Cronbach Alpha

Scale	Cronbach Alpha
Perceived Risk	
Social Risk	0.685
Security Risk	0.660
Financial Risk	0.751
Privacy Risk	0.787
Time Loss Risk	0.715
Performance Risk	0.695
Online Trust	0.696
Attitude towards internet banking	0.863

A first order CFA was performed to validate the theorized six risk factors in internet banking. The first order CFA model indicated a couple of items having low factor loadings in each factors. Deleting these low factor loading items, CFA was performed again. In this process, the social factor is deleted from further analysis. The final result of the CFA is reported in Table III.

Anderson and Gerbing (1988) asserted that convergent validity is established when factor loadings are quite high (above 0.5) and significant. Table shows that factor loadings of each item are above 0.5. The t-values for each item are greater than 1.65 and significant at 0.05 level indicating that all factor loadings are significant (Sudhahar et al., 2006). This evidence support the convergent validity of the scales of risk factors measured.

Hair et al. (2003) says that convergent validity can also be determined by calculating the average variance extracted (AVE) value of the construct. AVE should be above 0.5 to indicate convergent validity. Table shows that all AVE values of all risk factors are above 0.5 indicating strong convergent validity.

Table III: First Order CFA to Validate the Facets of Perceived Risk in Internet Banking

Scale	Factor loading	AVE	Composite Reliability
Security Risk SR2: I worry about giving my credit card number or login to internet banking websites. SR3: When I send data to internet banking websites, I am worried that they will be intercepted and modified by unauthorized third parties like hackers.	0.676 0.637	0.657	0.603
Financial Risk FR2: I think that I could not get compensation from banks in the situation of transaction error. FR3: I think that use of internet banking services would create financial loss for me FR4: I am afraid that I would lose money due to careless mistakes such as wrong input of account number and wrong input of the amount of money during transferring money using internet banking.	0.592 0.750 0.669	0.670	0.711
Privacy Risk PR3: I think that internet banking website could provide my personal information to other companies without my consent. PR5: I think that use of internet banking services endanger my privacy by using my personal information without my permission. PR6: I think that I would not feel totally safe providing personal privacy information over the internet banking website.	0.740 0.641 0.755	0.712	0.756

Time Loss Risk TLR1:I would have to spend much time if I want to use internet banking services. TLR3:It would take me lots of time to learn how to use internet banking services. TLR4:Using internet banking services would lead to a loss of convenience of me because I would have to waste a lot of time fixing payments error.	0.775 0.638 0.576	0.663	0.704
Performance Risk PR1: The internet banking website may not perform well and create problems with my credit. PR5: I am concerned that the banking operation does not provide the financial advantages listed on the internet banking websites.	0.747 0.660	0.704	0.663

Accordingly to Fornell and Larcker (1981) discriminant validity is established if the AVE is larger than the squared of correlation coefficient of each constructs. From the table IV it can be concluded that all the scale of risk factors supported discriminant validity.

Table IV: Discriminant Analysis of Risk Facets in Internet Banking

Risk Facets	I	II	III	IV	V
I. Security Risk	0.657				
II. Financial Risk	0.289	0.670			
III. Privacy Risk	0.494	0.585	0.712		
IV. Time Loss Risk	0.135	0.520	0.360	0.663	
V. Performance Risk	0.105	0.750	0.546	0.245	0.704

Next, the second order CFA model was analyzed to identify the strongest underlying facets of perceived risk. It has been theorized that perceived risks in internet banking comprising of six facets. The items of social risk factor did not meet the required factor loadings so social risk factor was dropped in the first order CFA. Remaining risk factors were undergone for second order CFA. The table V summarizes the result of second order CFA.

Table V: Result of Second Order CFA

Internet banking risk facets	Std . path weight	Percentage of variance explained in perceived risk
Security Risk	0.932	86.9%
Financial Risk	0.866	75.0%
Privacy Risk	0.937	87.8%
Time Loss Risk	0.807	65.2%
Performance Risk	0.890	79.1%

This study aimed to investigate the impact of perceived risk and online trust on attitude towards internet banking. In the next section of paper, research hypothesis were tested using Structure Equation Modeling (SEM). Results pertaining to structural path estimates are shown in Table VI.

Table VI: Hypothesis Testing

Hypothesized Path	Standardized Coefficient	t Value
Perceived Risk – Attitude towards internet banking	-0.290	-3.659
Online Trust – Attitude towards internet banking	0.891	6.629

As we can see from Table VI, the path from perceived risk to attitude toward internet banking usage and path from online trust toward attitude toward internet banking usage were significant. In addition, the standardize coefficient between perceived risk and attitude toward internet banking was negative, while the standardize coefficient between internet trust and attitude toward internet banking was positive. It can be concluded that perceived risk has negative impact on attitude toward internet banking usage while online trust has positive impact on attitude toward internet banking usage.

CONCLUSIONS AND DISCUSSIONS:

First, the facets of risk involved in internet banking were measured and validated using first order and second order CFA. Five facets of risk involved in internet banking were identified and these facets were: security risk, financial risk, privacy risk, time loss risk and performance risk. Respondents did not perceive social risk in internet banking usage.

Second, SEM was conducted to measure the impact of perceived risk and online trust on attitude towards internet banking usage. It was found that perceived risk has negative impact while online trust has positive impact on attitude towards internet banking usage. It is found in this paper that consumer's perceived risk has been influencing his or her decisions to use internet banking. Privacy risk and security risk are highly influencing their decisions for internet banking. Here, it is also found that online trust plays a very important role in adoption of internet banking services. Therefore, it is important for bank managers to understand how to create online trust for internet banking. Next, influencing risks in internet banking are financial risk and time loss risk. Bank managers should communicate with their target audience that internet banking is financially safe. They should also communicate that internet banking will save your time. Indian banking industry also needs some advertisement campaign to increase online trust and reduce perceived risk related to internet banking usage.

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