

*The influence of perceived risk in the uptake of self-service technologies
within the retail banking sector: a study of customers using the
Industrial and Commercial Bank of China in JiLin*

**A mini-thesis submitted in partial fulfillment of the requirements for a Masters
Degree in Technology in the field of Business Administration at the Cape Peninsula
University of Technology.**

Submitted by: Yan Liang (B.Com; JiLin Institute of Technology, China)

Student No.: 203175425

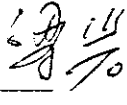
Supervisor: Bernard Pick (B.Com; Hons. B.Com; M.Tech *cum laude*; CPA (SA))

Bellville, Cape Metropole, South Africa

*BEL THE 332.17 LA
(B100)*

DECLARATION

I, Yan Liang, hereby declare that this mini-thesis is my own work, that all sources have been accurately reported and acknowledged and that this document has not previously been submitted in its entirety, partially or at any tertiary institution in order to obtain an academic qualification.

Signed: Liang Yan 

Date: 17/5 - 2005

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to:

- **Mr. Bernard Pick**, my supervisor, for guidance, inspiration, hours of inspection, patience and his pleasant disposition in assisting with the research.
- **All of the fieldworkers**, especially my brother Chuen Liang, for the collection of data. I am extremely grateful to them.
- **Mrs. Marcel Campbell and Mrs. Ella Belcher** for helping with the editing of the final document.
- **My parents**, for their continual encouragement, motivation and support.
- **Bei Zhou**, my fiancée, for her endless patience, encouragement and love.

TABLE OF CONTENTS

	Page
DECLARATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	vi
LIST OF FIGURES & TABLES	vii
ABBREVIATIONS & ACRONYMS	viii
CHAPTER 1: INTRODUCTION	1
1.1 Background	1
1.2 Research Purposes	3
CHAPTER 2: LITERATURE REVIEW	4
2.1 Perception, Risk and Perceived Risk in service	4
2.1.1 Risks in Goods versus Services	7
2.1.2 Service Type Risks	7
2.1.3 Perceived Risk and Self-Service Technology (SST)	8
2.2 Technology Infusion in Service and Self-Service	10
2.2.1 Self-Service Technology (SST)	10
2.2.2 Service Production Continuum	15
2.2.3 The Infusion of Technology	18
2.3 Consumer Behaviour and Attitude to Service Encounters	20
2.3.1 The Concept of Service Encounter	21
2.3.2 Customer Attitude to Personnel Service Encounters	22
2.3.3 Customer Attitude to SST Encounters	23
2.3.3.1 The Technology Paradox of Customers	24
2.3.3.2 Studies on SST Encounters	25
2.3.4 The Technology Readiness Index	30
2.4 Something about China	32
CHAPTER 3: METHODOLOGY	33
3.1 Process	33
3.2 Definition of Variables	34

3.2.1 Independent Variable: Customer's Technology Readiness	34
3.2.2 Dependent Variable: Customer's Propensity to Choose Service Provider	34
3.3 Definition of Operational Variables	35
3.3.1 Technology Readiness and TRI	35
3.3.2 Self Service Technology	36
3.3.3 Perceived Risk	37
3.4 Conceptual Framework	38
3.5 Research Questions and Hypotheses Development	39
3.5.1 Hypotheses: Technology Readiness and propensity to use SSTs	40
3.5.2 The Perceived Risk Components	41
3.6 Questionnaire Design	41
3.6.1 Part One: Technology Readiness	42
3.6.2 Part Two: Customer's Banking Risk Perception	43
3.6.3 Part Three: Technology Readiness Summary	43
3.6.4 Part Four: Personal Information	44
3.7 Data Collection	44
3.8 Analysis of Data	45
3.9 Sample Analysis	45
3.9.1. Demographic Variable Analysis	46
CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS	51
4.1 Bank Service Alternative Use Analysis	51
4.2 Correlation Analysis	52
4.3 Testing the Hypothesis	54
4.3.1 The Main Perceived Risk Component Analysis	58
CHAPTER 5: DISCUSSION	60
5.1 Conclusion	60
5.2 Managerial Implication	63
5.3 Limitations and Future Research Directions	65
6. REFERENCES	67
7. APPENDICES	
Appendix 1: Questionnaire (English)	73
Appendix 2: Questionnaire (Chinese)	78
Appendix 3: The Abbreviated Technology Readiness Scale	83
Appendix 4: Letter of permission from Industrial and Commercial Bank of China in JiLin	85

ABSTRACT

This study aims to explore the impact of self-service technologies (SSTs) on the behaviour of Chinese banking customers. The research has two purposes: (1) To determine how perceived risk impacts on the use of SSTs for customers with a high and a low technology readiness index (TRI) and (2) To understand the types of perceived risks within the banking industry and which component of risk dominates customer's propensity to use SSTs. The research focuses on the retail bank SSTs services for the reason that the banking industry has the longest development history in SSTs. The research was conducted using a questionnaire containing two service scenarios (bank information search, fund/money transfer) and was distributed to 372 bank customers, of which a valid sample of 307 respondents was analyzed.

The test results indicate the effect of perceived risk does exist. High perceived risk influences high TRI customers to lower their propensity to use the SSTs in the funds transfer and money transfer service scenario, whereas customers with low TRI will tend to lower their propensity to use SSTs in the funds transfer, money transfer and other services. Psychological risk was also identified as the dominant influential risk factor among the respondents. The results support the research hypotheses and highlight the importance for companies to manage perceived risk in this technological era.

LIST OF FIGURES & TABLES

	Page
<u>Figures</u>	
Figure 1: The Service Marketing Pyramid	19
Figure 2: Overall Effect Model	27
Figure 3: Attribute-Based Model	27
Figure 4: Drivers of Technology Readiness	31
Figure 5: Parasuraman's TRI	32
Figure 6: Conceptual Framework	38
Figure 7.1: Gender Distributions	46
Figure 7.2: Age Distributions	47
Figure 7.3: Occupation Distributions	47
Figure 7.4: Income Distributions (Per Month)	48
Figure 7.5: Education Distributions	48
Figure 7.6: Frequency/Per Week	49
Figure 8: The Effect in Money Transfer Service	57
Figure 9: The Effect in Funds Transaction service	57
<u>Tables</u>	
Table 1: Categories and examples of SSTs in use	14
Table 2: Eight Central Paradoxes of Technological Products	25
Table 3: Demographic Variables Distribution	50
Table 4: Bank Service Alternative Using Distributions	51
Table 5: Correlations Analysis	53
Table 6: Regression Analysis for the Perceived Risk (S1)	55
Table 7: Regression Analysis for the Perceived Risk (S2)	56
Table 8: Analysis of Perceived Risk Component S1	58
Table 9: Analysis of Perceived Risk Component S2	59
Table 10: The Summary of Hypotheses Results	61
Table 11: Dominant Risk Component in Two Services	62

ABBREVIATIONS & ACRONYMS

ATM: Automatic Teller Machine

CIT: Critical Incident Technique

IT: Information Technology

NTRS: National Technology Readiness Survey

SPSS: Statistical Package for the Social Sciences

SST: Self Service Technology

TRI: Technology Readiness Index

S1: Scenario 1 (Bank information search)

S2: Scenario 2 (Funds/money transfer)

S2A: Bank information search service

S2B1: Funds transaction service

S2B2: Transfer money service

M1: Multiple regression analysis 1

M2: Multiple regression analysis 2

M3: Multiple regression analysis 3

US: United States of America

CHAPTER 1

INTRODUCTION

1.1 Background

Post World War 2, and particularly since the 1960s, the pace of change and individual growth has been hastened through the increasing use of automation, robotics, artificial intelligence and information technology. As change continues unabated, so does the development of technology. Technology is also fast becoming the first interface between customers and businesses instead of the last. A growing number of customers would like to use technology to receive services instead of face-to-face interaction with service providers. Today, customers have a higher chance of receiving services from machines than 10 years ago.

Under the pressure of targets determined by key performance indicators (KPIs), service companies always look for ways to reduce the costs of providing their services, namely process efficiencies. Lovelock and Young (1979: 168-178) have indicated that the key to improving profitability is to work longer hours with greater efficiency. Bateson (1985: 49-76) mentioned that self-service options are important for long-term productivity. Bitner, Ostrom, and Meuter (2002: 96-109) argue that technologies in the self-service industry help companies in reducing costs, fulfilling customers' demands, increasing customer satisfaction and developing new distribution channels. In this regard, it seems that self-service technologies are quite useful and beneficial to companies (see D'Souza & Menon (1995) for further research on technology in

service encounters). The most critical question is whether customers will utilise this self-service technology. If customers do not adapt to using technologies for business transactions, their introduction would become a wasteful investment.

Although a number of SSTs have been developed, the respective technology is not always attractive to customers. Some customers participate in the self-service process much more freely than others, and some customers do not like to interact with machines at all. Even though there are many advantages of using SSTs, there are several factors that influence a customer's willingness to use SSTs. Customers' willingness to use SSTs such as Automatic Teller Machines (ATMs) can be affected by factors such as their perception that the technology is difficult to use, or that they could lose their money in the process. Empirical research has focused on factors which influence customers' satisfaction concerning SSTs, and their attitudes toward using SSTs. This research indicated that both positive factors (for example, efficiency) and negative factors (for example, lack of control, hard to use, and bad design) are important determinants of SST usage. However, very little research has examined the impact of perceived risks in customer propensity to use SSTs. This study focuses on the impact of perceived risk upon the use of SSTs in businesses within the banking sector in China.

1.2 Research Purposes

It is evident from the limited sector of the population that utilises SSTs that the Chinese population has not embraced the self-service culture. It is also known that the integration of technology enhances the speed of the transaction and brings about savings to the financial institution. Therefore it is imperative to decipher the risks perceived by cardholders.

The objective of the research is to test the impact of SSTs on Chinese banking customers' behaviour in choosing between SSTs and personnel. The research has two purposes. Firstly, it aims to determine how perceived risk influences the use of SSTs, looking both at customers with high and low TRI (Technology Readiness Index). Secondly, it aims to understand the types of perceived risks within the banking industry, specifically the Industrial and Commercial Bank of China; clarifying the relationship between risk and the customer's propensity to use SSTs.

All the concepts will be explained in the next chapter.

CHAPTER 2

LITERATURE REVIEW

The literature review focuses on an understanding of risks, especially perceived risk with regard to self-service technology.

2.1 Perception, Risk and Perceived Risk in Service

As customers face choices daily, they are forced to deal with the possibility of making a wrong decision. Since the outcome of a choice can only be known after using a product or service, the consumer is forced to deal with uncertainty, or risk (Mitchell, 1999:163-196). Due to its importance in consumer behaviour research, the concept of perceived risk has been studied for more than 40 years. Risk refers to the uncertainty faced by consumers when they are required to choose between consumption options. A consumer has to weigh up the risk associated with choosing to purchase a particular product. Sjobery (1980: 301-321) suggests that the concept of risk has two facets: one is “chance” where the focus is on probability, and the other is “danger” where the emphasis is on severity of negative consequence.

Bauer (1960: 389-98) first introduced the concept of perceived risk to the academic community. He indicates that *risk* is a part of consumer behaviour and that customers cannot predict the outcome of their actions or decisions, which may have unpleasant consequences for them.

In subsequent consumer behaviour literature, perceived risk has been defined in various ways. Weber and Bottom (1989: 113-131) propose a definition using similar components. Their two facets of perceived risk are described as the amount that would be lost as a consequence of an act and the individual's subjective feeling of uncertainty of the consequences. It has also been suggested that perceived risk is a function of the importance or magnitude of the goals to be attained, the seriousness of the penalties that might be imposed for non-attainment, and the number of resources committed to achieving the goals (Wu, Holmes & Alexander, 1984: 12-17). Definitions generally focus on normative expectancy value orientation and often view risk as the "probability multiplied by the expected pay-off" (Stone & Winter, 1987: 261-265). In a psychologically-driven focus, risk is defined as an expectation of loss.

In another conceptualisation, perceived risk is treated as a multi-dimensional construct (Jacoby & Kaplan, 1972: 382-393; Roselius, 1971: 56-61), and not as a cumulative effect of uncertainty and consequence. Bettman (1975: 381-385) supports this with empirical evidence. He proposes that the relative importance of each dimension will be different in different situations or in different products. Some risk dimensions (such as performance risk, psychological risk, social risk, physical risk, time risk and financial risk listed below) play more important roles in dominating the overall perceived risk in certain situations. Several studies have also proved that the dimensions of perceived risk can account for a substantial proportion of overall perceived risk (Stone & Gronhaug, 1993: 39-50).

Perceived risk involves five types of risk, namely performance, psychological, social, financial, and physical risk (Jacoby & Kaplan, 1972: 382-393). Roselius (1971: 56-61) identifies a sixth important risk dimension, namely convenience risk that involves the possible loss of convenience or time associated with purchasing.

In the further discussion of perceived risk, all six dimensions will be utilised. The six dimensions of perceived risk can be described in the following way:

social risk: risk that involves the negative reaction of friends and family members;

performance risk: risk that concerns a buyer's doubts about how a service will perform or be performed;

physical risk: risk that the service will harm the buyer;

time risk: risk that a decision will cost too much time;

psychological risk: risk that a service will lower a consumer's self-image; and

financial risk: risk that the outcome will harm the customer financially.

For the purposes of this thesis, risks relating to goods and services in self-service technology will be discussed and a distinction will be made between the different types of services.

2.1.1 Risks in Goods Versus Services

In its early days, research on risk focused on the marketing of goods. Nowadays, according to Shostack (1987: 34-43), progressively more research focuses on how risk has a different influence on services as than on goods (products). Conceptual work by Davis, Guilan and Jones (1979), as well as empirical studies by Guseman (1981) and Murray and Schlacter(1990), shows that risk associated with services is perceived as being greater than risk associated with goods. In other words, a high level of risk for services is associated with higher levels of heterogeneity and variability typically found in services. According to Turley and Lebanc (1993: 11-18), types of risk found in services indicate that there are only four dimensions, namely risk, pleasure value, sign value and expression of self-comprising perceived risk, apart from time risk and psychological risk, when evaluating services.

Murray (1991: 10-25) states that customers generally demand more information as perceived risk increases. His research also indicates that customers will take longer to make a decision about services than about goods. Furthermore, they will seek more information when purchasing a service than when purchasing goods.

2.1.2 Service Type Risks

Customers seem to have different perceived risks for different services. Mitchell and Greatorex (1993: 179-200) tested five types of services (hairdressing salons, hotels, banks, restaurants and

fast-food outlets) to investigate the most influential types of risk from a customer's point of view. The authors investigated four types of loss to measure perceived risk. These were financial loss, time loss, physical loss, and psychological loss. The results indicated that financial loss is the most important factor influencing consumers' perceived risk of services such as banks, hotels, and restaurant meal services. The risk of time loss in banking was also rated as a very important factor.

Another study by Mitra, Reiss and Capella (1999: 208-228) investigated perceived risks among service types by using the widely adopted classification method in service marketing. This method classifies services into three categories, namely search-based, experience-based and credence-based. Their research results indicated that perceived risk increases along the continuum from search to credence service. There is a further risk and perceived risk when introducing SST within these services.

2.1.3 Perceived Risk and Self-Service Technology (SST)

The important role of perceived risk in consumer behaviour has been highlighted in research by Mitra et al. (1999: 208-228), Mitchell and Grotorex (1993: 179-200), Turley and LeBlanc (1993: 11-18) and Murray (1991: 10-25). However, risk-related research in the self-service technology field is still lacking. Bateson (1985: 49-76) emphasises that in the field of services marketing, perceived risk is one of the important dimensions for the propensity to perform self-service. Globerson and Maggard (1991:33-43) also mention that risk would be an important factor that

influences people's preference for self-service. Dabholkar (1996:29-51) notes that the "expected reliability concept", which is similar to performance risk, might influence people's expectations of quality in SST service delivery. Lee and Allaway (2002: 553-572) discuss personal control (including predictability, controllability, and outcome desirability), perceived risk, and intention to use SSTs. They argue that the perceived risk in using SSTs will become lower only when three of those control components exist.

Until now, the research regarding services and technology of Eastin (2002) and Miyazaki and Fernandez (2001) has focused on e-commerce and the Internet. Miyazaki and Fernandez (2001:27-44) tested the relationship between perceived risk and the online purchasing rate. Their results indicated that perceived risk towards online shopping is negatively related to the online purchasing rate. In other words, as people gain more experience in using the Internet, so their perceived risk of online activity will decrease, meaning that the more online shopping they perform, the less their perceived risk.

Eastin (2002: 251-267) investigated the factors which influence the adoption of the four available e-commerce activities, namely online-shopping, online banking, online investing, and electronic payment for services. In this study, perceived convenience and perceived risk were the two overall strongest predictors of customers' adoption of e-commerce.

Bobbitt and Dabholkar (2001: 423-450) propose that perceived risk is one of the main factors influencing people's use of technology. They identify the types of risks that have the stronger

influence on people's attitudes towards technology. They suggest that people face higher financial risk, psychological risk, performance risk, or time risk when doing Internet shopping compared to traditional shopping in retail stores, because of negative attitudes towards using the Internet. They identify psychological risk as the strongest risk factor that influences customers' choice of technology. There are, however, more kinds of self-service technologies than only the on-line (Internet) ones.

2.2 Technology Infusion in Service and Self-Service

In this section self-service technology, the service continuum and the infusion of technology are discussed.

2.2.1 Self-Service Technology (SST)

Technology refers to the technical means used by people to improve their lifestyle and surroundings. This also includes the knowledge people use in utilising tools and machines.

Technology is used to control aspects of the world we live in. For example, people use technology to work and communicate more efficiently. Technology allows people to work less in order to achieve more. An example in the banking sector is the use of computers to track and record customers' transaction information.

The world today is increasingly becoming characterised by technology-facilitated transactions. Growing numbers of customers interact with technology to create service outcomes instead of engaging in face-to-face interaction with service providers. Self-service technologies (SSTs) are technology-based interfaces that enable customers to produce a service independent of direct employee involvement. Examples of SSTs include automatic service such as automated teller machines (ATMs), automated hotel checkout systems, banking by telephone, and services on the Internet such as making flight bookings and buying air tickets, online shopping, Federal Express package tracking and online brokerage services (Meuter, Ostrom, Roundtree & Bitner, 2000: 50-64).

Making use of SST is a growing trend in everyday service encounters. In the service delivery system customers not only interact with the personnel but with the environment and other customers. A major consequence of the growing role of technology is that customers now may expect to interact with technology-based systems rather than with service personnel (Bitner, Brown & Meuter, 2000: 138-149; Meuter, Ostrom, Roundtree & Bitner, 2000: 50-64; Dabholkar, 1996: 29-51).

The developments in technology have provided customers with more choices when they receive a service. For example, consumers can shop online for books that they cannot find in their country or city. This implies that there is not necessarily any interaction with service personnel any longer. It appears that SSTs can provide customers with more convenience and efficiency than face-to-face interaction with personnel can (Lovelock 2001: 78-95; Meuter et al., 2000:

50-64 & Dabholkar, 1996: 29-51).

The introduction of SST and the corresponding decrease in direct interaction with customers can increase a firm's efficiency and productivity (Chase, 1978: 137-142). Lovelock and Young (1979: 168-178) note that changing the ways in which consumers interact with service producers could improve the productivity of service industries. They also mention that a customer's role is extremely important in a service delivery process, as service industries are always labour-intensive and a service industry's product tends to be time-bound as it cannot be stored.

It is clear from these early studies that Langeard, Bateson, Lovelock and Eiglier (1981: 81-104) and Bateson (1985: 49-76) make no distinction between technology-based self-service scenarios and more labour-intensive self-service situations. Only two of the six self-service scenarios used were technology-based (that is, using ATMs and purchasing travellers' cheques from an automated machine). It is likely that the technology aspect of many recent self-service options has a unique influence on consumer perceptions of these self-service encounters. Researchers such as Dabholkar (1996: 29-51) and Parasuraman, Zeithaml and Berry (1985: 41-50) continue to be interested in how attitudes toward technology may influence the extent to which consumers interact with technology-based products and services.

In their research, Dabholkar, Bagozzi and Washaw (1992: 1109-1130) explore how attitudes toward computerised products and a need for interaction with service employees affect attitudes of consumers. They find that both factors influence consumer attitudes toward using

computerised fast-food ordering services. A more recent study by Dabholkar and Bagozzi (2002) examines client evaluations of SST service quality. This study compared an “attribute model” based on the expectations of customers from the fast-food SST (for example, expected speed of delivery, ease of use, reliability, enjoyment and control), and an “overall effect model” (see Figure 4) based on beliefs about the use of technology and the need for interaction with service employees. Their findings show the attribute model to be superior in prediction evaluations, and that enjoyment and control are the two most influential attributes influencing attitudes of consumers.

Other researchers such as Bateson (1985: 49-76) and Lovelock and Young (1979: 168-178) discuss the topics of self-service and technology but do not define the application of technology.

Dabholkar (1996: 29-51) introduced the terminology of “technology-based self-service” but did not supply clear explanations or definitions. Meuter, Ostrom, Roundtree and Bitner (2000: 50-64) defined self-service technologies as the technological interfaces that enable customers to produce a service independent of direct employee involvement. This definition explains the characteristics of self-service and treats technologies as an enabler of service delivery apart from service personnel interactions.

Meuter et al. (2000: 50-64) proposed a classification of self-service technologies based on a broad range of SST applications. They offered a fairly comprehensive framework that includes a range of different SSTs, some of which are widely used and some still in their infancy, illustrated

in Table 1.

Table 1: Categories and examples of SSTs in use

		Interface uses			
		Technology/Interactive Voice Response	Online/Internet	Interactive Kiosk	Video/CD
Purpose	Customer Service	Telephone banking Flight information order status	Package tracking Account information	ATMs Hotel checkout	
	Transactions	Telephone banking Prescription refills	Retail purchasing Financial transaction	Pay at the pump Hotel checkout Car rental	
	Self-Help	Telephone Information Lines	Internet information search Distance learning	Blood pressure machines Tourist information	Tax presentation software Television/CD-based training

Source: Meuter et al. (2000: 50-64)

The information in the columns of the table represents the type of technology interface in self-service encounters. The information in the rows depicts what the customers can accomplish by using the technology.

Two examples of SST applications are the self-checkout system and on-line service.

In the USA, Home Depot Inc. introduced customer self-checkout counters in its stores, allowing

customers to move through the checkout process faster. The systems included graphic software for cashier training (Hayes, 2002: 1-2). Cisco System Inc. built a model for customer service using the Internet. This company took a high-tech approach to the “do-it-yourself” concept by creating technical support websites that allow customers to diagnose and fix their own computer problems over the Internet. The system, which is called Cisco Connection Online, functions using an open forum, a troubleshooting engine, a bug toolkit, a software library, service order and contract agents. All of these on-line services are self-service and the problem-solving rate is up to 90% (Thorman, 1997: 95-115).

2.2.2 Service Production Continuum

Technology allows services to be produced by the personnel/business itself, by its customers, or through the joint effort of the service firm and its customers. Bateson (1985: 49-76) proposed the self-service construct, but most service studies neglect the customer self-service concept and focus more on customer participation and firm production in the service delivery process. One exception to this is discussed in Meuter and Bitner (1998: 12-19). These authors propose a service production continuum from the different service participation levels between customers and firms. Customer participation has been defined as “the degree to which the customer is involved in producing and delivering the service” (Dabholkar 1990: 483-487). The production of a service can thus be classified into three different types, namely firm production, joint production and customer production.

Firm Production

Firm production is defined as a method of service delivery where a service is produced entirely by firms. Customers may be present during the service process but do not participate in the creation of the service. Firm production of a service permits more control over service outcomes with higher efficiency (Chase, 1978: 137-142), but the provider may not facilitate the kind of customisation desired by the customers of a firm.

Joint Production

Joint production is a method of service delivery where both employees and the customer participate in the production of the service. It is a blend of technology and human capacity and effort to accomplish the service output.

Customer Production (Self-Service)

Customer production is the method of service delivery where a customer performs all the tasks underlying a specific service encounter transaction. In its extreme form, self-service production does not involve any assistance from service firm employees.

A service may be classified at different points on the continuum. For example, withdrawing money can be done from the ATM (customer production) or by completing paperwork and submitting it to the bank staff (joint production) or from the bank staff directly (firm production).

Meuter and Bitner (1998: 12-19) note the importance of this concept: When the same service is being produced, there is merely a shift between who is actually performing the function to

produce the service. All of the points on the continuum have the same level of service itself and the only difference is in who is actually performing the service. The additions of SSTs within a service push the service firm towards more of a customer production orientation.

Service transactions may be defined as a continuum of buyer/organizational interactions bound by two end points, namely full-service transactions and self-service transactions.

Full-service transactions are those where the customer specifies the purchase, with all the required activities performed by the server. Thus, a server performs a portion of the activities together with the customer, and the remaining activities are performed in the back office.

Self-service transactions occur when the customer carries out a portion of the transaction. The percentage of time that the customer is solely involved in performing transaction-related activities is defined as the self-service intensity. It may range from a small percentage up to nearly 100% but will never reach 100%, since there are always preparations that should be performed by the server. For example, the use of automatic teller machines (ATMs) for different cash transactions is perceived as a self- service activity. However, the machine is also serviced by the bank employees. Therefore, only the activities performed on the ATM machines should not be considered as self-service.

2.2.3 The Infusion of Technology

For many customers, their most impressive service experiences are still those that contain “the personal touch” that comes from one-on-one interaction with a service provider. However, more and more importance is being placed on the technology to support a service delivery.

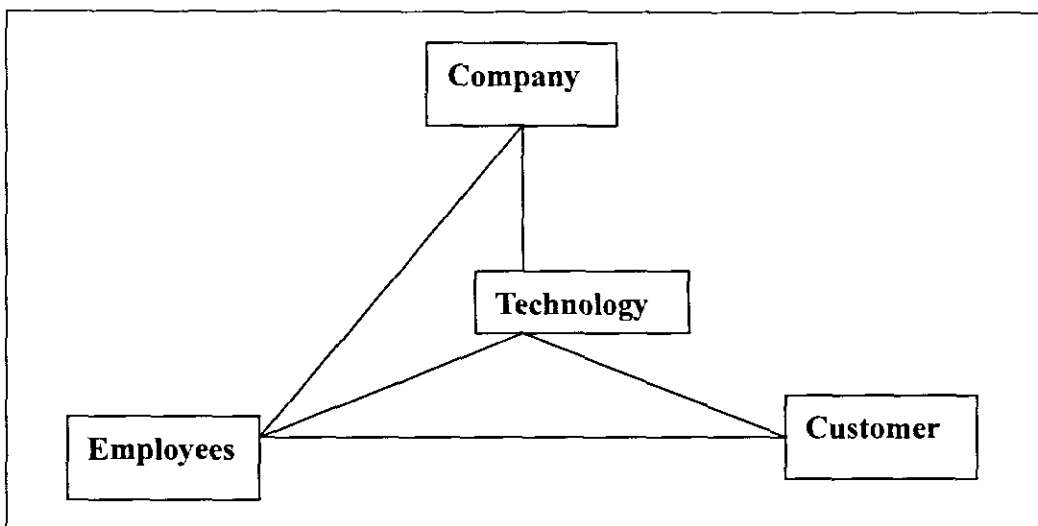
Traditionally, services are seen as “high touch, low tech” (Meuter et al. 2000: 50-64). Given the heterogeneous nature of services provided by different employees, some service firms strive to incorporate more technology within the service delivery process to improve efficiency. Levitt (1976: 63-74) notes that the service must be defined by three kinds of technologies: hard technologies (e.g. equipment, tools or tangible artifacts), soft technologies (e.g. the design of a service system), and hybrid technologies (e.g. combining hard equipment with a carefully designed system). Chase (1978: 137-142) also notes from an efficiency point of view that the less direct contact the customer has with the service system, the greater the likelihood that the service system will operate at peak efficiency. With the dramatic improvement in technologies, especially Information Technology (IT), the infusion of technology is prompting many service providers to switch from a “low-tech” to a “high-tech” orientation.

The market space becomes a virtual realm where products and services exist as digital information and can be delivered through information-based channels which permit market transactions with lower transaction costs, more convenience, and 24×7×365 hours (all hours) interaction. Rayport and Sviokla (1994: 141-150) suggested that the “market space” transaction replace the traditional “market place” transaction as the Internet usage for transactions was

growing by 10% per month. However, almost 10 years later, the market space still remains a relatively small segment of all market transactions.

In response to a number of these technological changes, Parasuraman (1996: 49-67) proposed a service marketing pyramid model (Figure 1).

Figure 1: The Service Marketing Pyramid



Source: Parasuraman (1996)

The traditional service-marketing triangle has only three end points without technology. The addition of technology implies that the service encounter becomes a more dynamic interaction. It is the outcome of service interactions between customers, employees and technology. The pyramid suggests that firms have the responsibility to facilitate not only the delivery of a service through personnel, but also through technology. Given that no personnel are directly involved in the service, the customers will need the necessary skills and knowledge to interact with service technologies. This research focuses on the relationship between service technology, service

employees and customers.

2.3 Consumer Behaviour and Attitude to Service Encounters

Given the proliferation of SSTs and the wide variety of types and purposes they fulfil, it is critical to understand how customers feel about them, how they use them, and to determine whether they will use them in the future. This research functions as a first step in the process of exploring customer experiences across a broad range of SSTs available in the marketplace. The primary focuses of the study are the sources of satisfaction and dissatisfaction underlying SST experiences. It is well established that customer satisfaction can affect customer retention and business profitability (Anderson & Fornell, 1994: 241-268; Mano & Oliver, 1993: 451-466; Oliver, 1997: 418-430; Price, Arnould & Tierney, 1995: 83-97; Reichheld & Sasser, 1990: 105-111). Thus, understanding the underlying factors that trigger customer satisfaction and dissatisfaction in using SSTs has important managerial implications for customer-firm relationships.

This research will also explore customer attributes with respect to SST outcomes. Research has shown that customer evaluations are influenced by attributes for success and failure in interpersonal service situations (Bitner, 1990: 69-82; Folkes, Koletsky, & Graham, 1987: 534-539). With SSTs, customers create the service for themselves, so it is possible that they will accept more of the responsibility for the outcome (Mills, Chase & Margulies, 1983: 301-310; Zeithaml, 1981: 186-89). If customers accept partial responsibility in dissatisfying situations,

they may be more likely to use the SST in the future. Again, this could have important managerial implications as companies develop new SSTs and struggle with service encounter failures.

2.3.1 The Concept of Service Encounter

The definition of the service encounter, which has been referred to as “the moment of truth” (Carlzon, 1987: 52-78), is not complex, but it is dynamic. It is commonly regarded as that period of time during which customers interact with the service provider or the firm (Bitner, 1990: 69-82; Shostack, 1985: 243-54). There are two general perspectives, or orientations, on understanding a service encounter Solomon, Suprenant, Czepiel and Gutman (1985: 99-111) define the service encounter as “the dyadic interaction between a customer and a service provider”. Their perspective holds that the encounter is first and foremost a people-based, social interaction. According to this perspective, both customers and service providers have certain roles to perform during the service encounter. Hence a “service encounter” is the “interpersonal” contact of service firm with customer. In contrast, Shostack (1985: 243-54) defines the service encounter from a more functional perspective. Shostack argues that it is “a period of time during which a consumer directly interacts with a service”. According to this perspective, the service encounter not only includes the interpersonal interactions between customers and service providers, but also the non-personal contact interactions. These perspectives have broadened with the conceptual development of the service encounter. More recently, Bitner, Brown and Meuter (2000: 138-149) highlight the salience of face-to-face interactions during an actual

service setting over interactions via the phone, postal mail, or even the Internet. For the purpose of this research, Shostack's (1985: 254-54) definition of a service encounter is adopted.

The service encounter itself occupies an important place in service marketing. It impacts on service differentiation, quality control, delivery system, and customer satisfaction (Bitner, Brown & Meuter, 2000: 138-149; Bitner, 1990: 69-82; Suprenant & Solomon, 1987: 86-96; Solomon et al., 1985: 99-111). When customers interact with a service firm for the first time, the encounter plays a very important role in the customers' impression of a company. Even though customers have additional encounters with the firm, the customers will hold a lasting impression of the first contact interaction. Therefore, the design and management of the service delivery system is an important issue for firms.

2.3.2 Customer Attitude to Personnel Service Encounters

In traditional service delivery, employees play the major role in providing a service. Service employees are the "front-line" of interaction with a firm's customers. Therefore, the way in which customers and employees interact during the service encounter would be very important when evaluating the service. Bitner, Booms and Tetreault (1990: 71-84) investigated interactions between employees and customers during service delivery. They used the Critical Incident Technique (CIT) method to discover the underlying sources of satisfaction and dissatisfaction in service encounters. The results were separated into three groups:

In Group 1, dissatisfaction was related directly to failures in the core service. The findings showed that the ways in which employees handle service failures ultimately determine satisfaction or dissatisfaction. As such, results depend on employees' attitudes and abilities to respond to the failure.

In Group 2, dissatisfaction was the result of the service providers' lack of "customisation" to the customers' preferences. The incidents in Group 2 have the highest proportion (15.6%) of dissatisfying service encounters.

In Group 3, dissatisfaction was the result of some events and employee behaviours that were not expected. The determining factor is not the core service but employees' verbal and nonverbal responses to unexpected events. An employee's actions in the service delivery process play a more important role than the service itself in determining how the customers feel about the service.

2.3.3 Customer Attitudes to SST Encounters

This section reviews the Technology Paradox proposed by Mick and Fournier (1998: 123-143) as well as studies on SST encounters. The research that focuses on perceptions of quality of SSTs is specifically examined. Importantly, Parasuraman's (2000: 307-320) Technology Readiness Index (TRI) is explicated.

2.3.3.1 The Technology Paradox of Customers

Although it is impossible to avoid various forms of technology in modern life, people have often to deal with paradoxical situations – technology improves the speed and convenience of many things but it can also create difficulties for and anxiety in consumers. Technology will trigger both positive and negative feelings at the same time, which may lead to anxiety and stress. Mick and Fournier (1998: 123-143) proposed a framework linking the technology paradox and consumer coping strategies. They identified eight paradoxes related to technological products. These are listed and a description of them is given in Table 2 (see next page). The ambivalence of these paradoxes provokes anxiety and stress, resulting in people using coping strategies that can be classified as either avoidance or confrontation (Mick & Fournier, 1998:123-143). People's coping behaviours could relate to all eight paradoxes, whereas others may relate to only a few or one paradox.

Table 2: Eight Central Paradoxes of Technological Products

Paradox	Description
Control/chaos	Technology can facilitate regulation or order, but technology can also lead to upheaval or disorder.
Freedom/restriction	Technology can facilitate independence or fewer restrictions, and technology can also lead to dependence or more restrictions.
New/obsolete	New technology provides the user with the most recently developed benefits of scientific knowledge, but new technology is already or soon to be outmoded as it reaches the marketplace.
Competence/incompetence	Technology can facilitate a feeling of intelligence or efficacy, but technology can also lead to feelings of ignorance or ineptitude.
Efficiency/inefficiency	Technology can result in less effort or time spent on certain activities, but technology can also lead to more effort or time spent on other activities.
Fulfilling/unfulfilling	Technology can facilitate the fulfilment of needs or desires, but technology can also lead to the development or awareness of needs or desires previously unrealised.
Engaging/disengaging	Technology can facilitate involvement, flow, or activity, but technology can also lead to disconnection, disruption, or passivity.

Source: Mick and Fournier (1998)

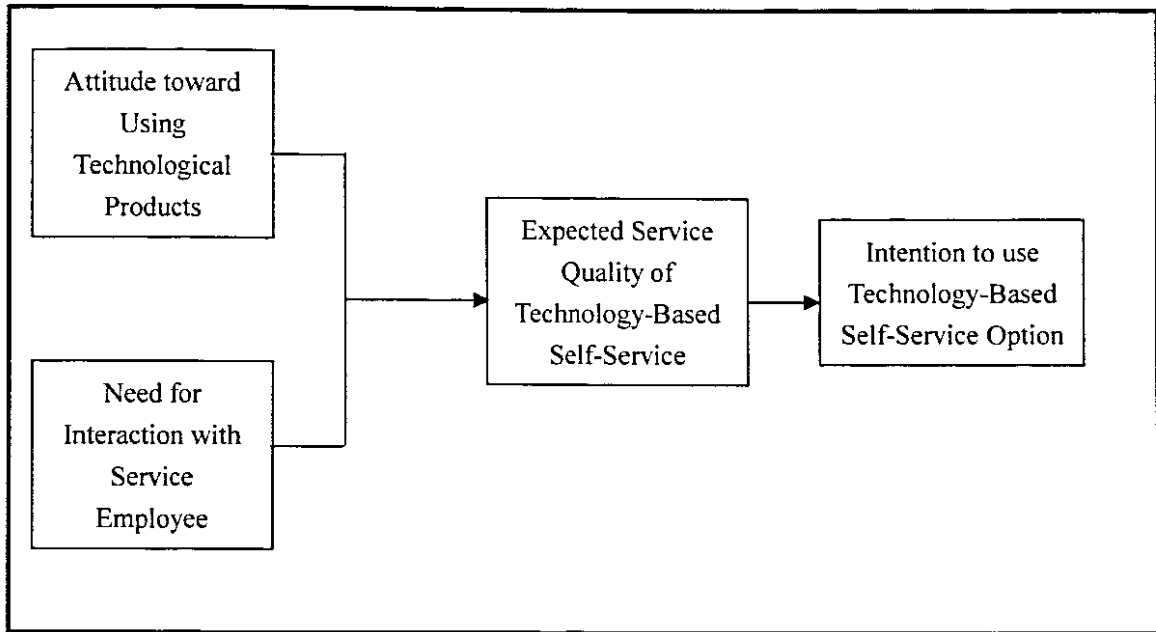
2.3.3.2 Studies on SST Encounters

As this research focuses on customers' reactions to SST encounters, the review here will be limited to the customers' points of view about using SSTs. Bateson (1985: 49-76) presented the results of a study into a consumer's choice process when faced with the choice between a

do-it-yourself option and a more traditional service delivery system. In this study, an empirical test was conducted after the exploratory research. The exploratory research revealed a series of dimensions used by consumers, including time, control, effort, dependence, efficiency, human contact, and risk. The result of this research indicated that the “propensity to do it themselves” may carry over from one service to another. The study also found that “time” and “control” are both very important with several kinds of services.

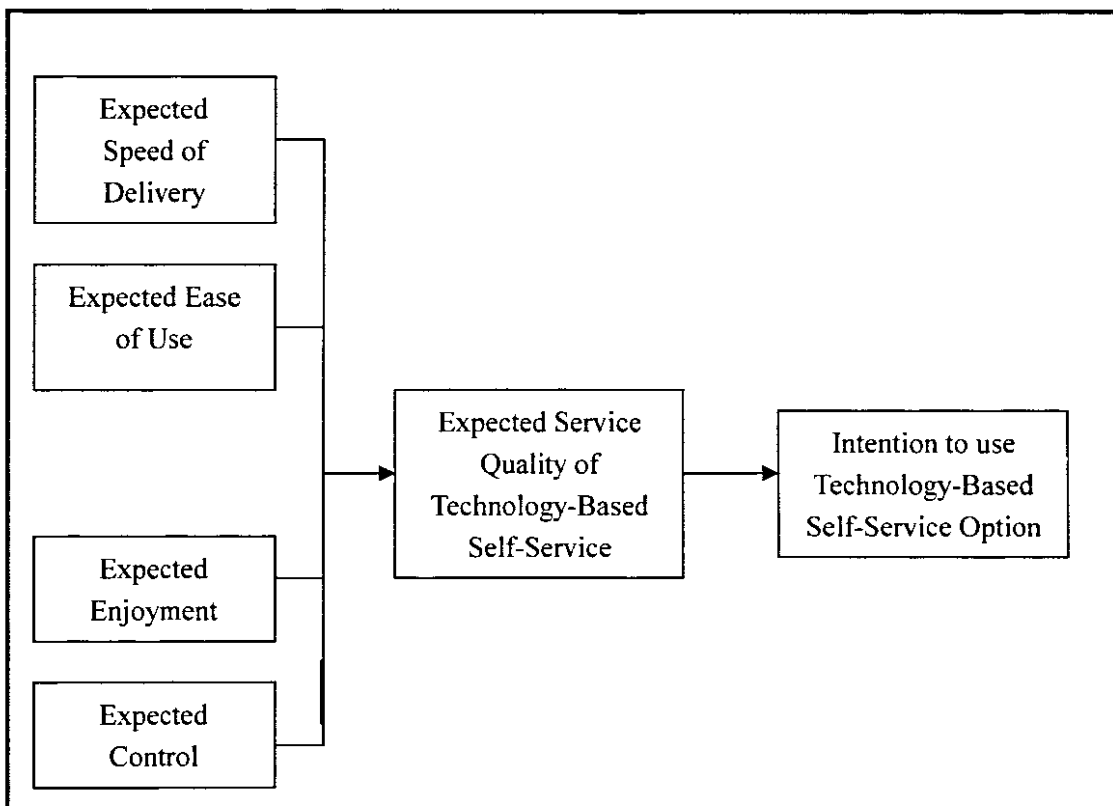
Dabholkar (1996:29-51) proposes two alternative models of service quality based on an “attribute” versus an “overall effect” approach, (see Figure 2, see next page) and examines customers’ preferred approach for decision-making. The attributes model (see Figure 3, see next page) is based specifically on what consumers would expect from such options. The attributes of this model are expected speed of delivery, expected ease of use, expected reliability, expected enjoyment, and expected control. The “overall effect” model was based on the consumers’ feelings, which included “attitude toward using technological products” and “the need for interaction with service employees”. The results show that consumers appear to favour the attribute-based model in forming an evaluation of service quality for technology-based self-service options. The results indicate that enjoyment, control, and ease of use are important components of service quality. Nevertheless, the speed of delivery and reliability did not influence the evaluation of the service quality in this study.

Figure 2: Overall Effect Model



Source: Dabholkar (1996)

Figure 3: Attribute-Based Model



Source: Dabholkar (1996)

Furthermore, Meuter et al (2000: 50-64) used qualitative research to investigate the factors that influence customers' satisfaction with technology-based service encounters. They used the CIT method based on more than 800 incidents to identify the sources of satisfaction and dissatisfaction with SSTs. The satisfactory incidents are separated into three categories, namely:

- **Solve intensified need:** These are defined as situations in which external environmental factors add a sense of urgency to the transaction.
- **Better than alternatives:** It means that customers perceive that the SST was a better alternative than the interpersonal method of service delivery. In this group, the largest proportion of CIT produced the highest satisfactory incidents.
- **Did its job:** This means the SSTs complete the service just as customers expect the SST to do. Customers will be satisfied while the SSTs do what they are supposed to do.

In contrast, the dissatisfactory incidents were classified into four groups:

- **Technology failure:** This occurs when the technology does not perform under normal operating conditions. It is the largest group of dissatisfied incidents (43%), which includes technology failures due to the technology not working as intended.
- **Process failure:** These failures are related to the process underlying an SST. If an SST functions as it was designed to, there will be no process failures as customers interact with the equipment.
- **Poor design:** It is a service system aspect which customers experience during a service

encounter. The problem can be further classified into a technology design problem or a service design problem. The former is the hardware part of the service and the latter is the process, namely, the software. Both of them will make customers uncomfortable if there is a failure in the ultimate service delivery.

- Customer-driven failure: Some customers will attribute the dissatisfactory factors to themselves. They will acknowledge that the failure happened during the service due to their actions during the encounter.

On comparing these results with Bitner et al. (1990: 71-84) one discovers that there are some fundamental differences between these two kinds of service encounters. According to Meuter et al. (2000: 50-64), the three main sources of interpersonal service encounters can be broadly defined as excellent service recovery, customisation and flexibility, and spontaneous delight. In an interpersonal service encounter, the failure of service can be a source of satisfaction and or dissatisfaction in the customer, but in the SST encounter it is not. In SST encounters, failure is located in all dissatisfaction factors. Unlike traditional service encounters, when an SST failure occurs, it basically means that there are no chances of immediate recovery because of immature facilitation systems. In addition to service recovery, customisation in an interpersonal service encounter is important to dissatisfaction and satisfaction. Similar results can be found in the SST encounters where customers can get the service anywhere, anytime. The service design can also be treated as the failure of customisation and can make customers feel dissatisfied. The third driver of satisfaction and dissatisfaction in interpersonal encounters involves unsolicited actions by employees. When customers experience unexpectedly pleasing service, they will be highly

satisfied; if not, customers will be highly dissatisfied. When the SST unexpectedly does its job the result is spontaneous delight. The opposite also applies; for example when there is an unexpected service failure, customers will be highly dissatisfied with the equipment. The result shows that human and SST service providers share very similar drivers except for issues related with service failure recovery.

2.3.4 The Technology Readiness Index

Parasuraman (2000: 307-320) developed a multiple-item scale called the Technology Readiness Index (TRI) to assess people's readiness to interact with technology. The index refers to people's overall propensity to embrace and use new technology for accomplishing personal and work-related goals. It can be as an overall state of mind resulting from a gestalt of mental enablers and inhibitors that collectively determine a person's predisposition to use new technology. In prior research, studies only considered factors that will influence customers' behaviour or attitude to SSTs, but ignored the fact that the customers' willingness may arise due to several factors operating at the same time. Therefore, the scale would be more objective if it measured the customer's state of mind while he or she is facing technologies (Parasuraman, 2000:307-320).

Parasuraman (2000: 307-320) condensed the scale of the National Technology Readiness Survey (NTRS) from 58 items to 36 items. The TRI has four major categories of measurement, namely:

Optimism: A measurement of the positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives

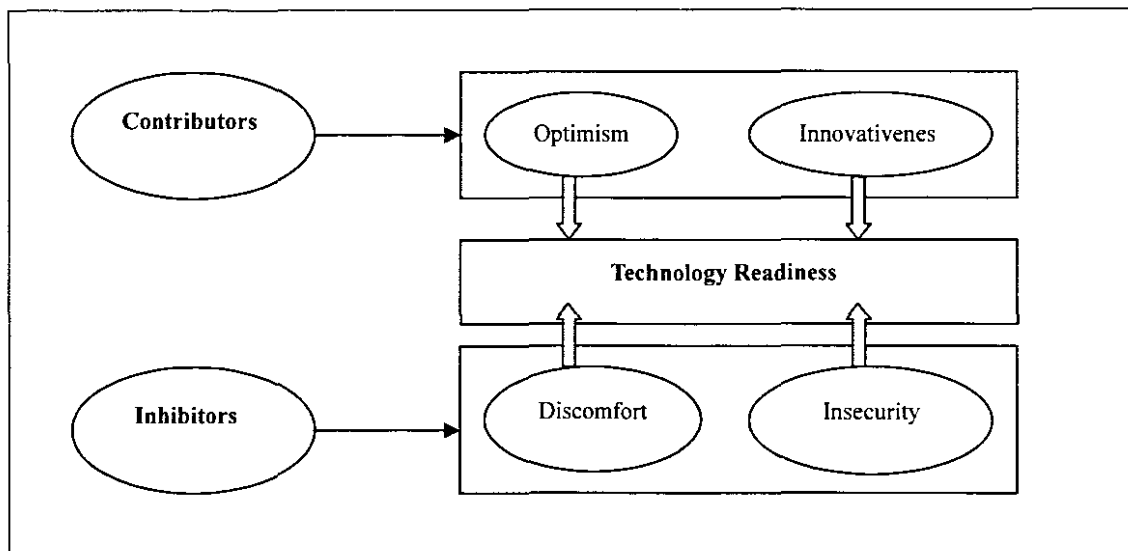
Innovativeness: A measurement of the desire to be a technology pioneer and thought leader

Discomfort: A measurement of the perceived lack of control over technology and a feeling of being overwhelmed by it

Insecurity: A measurement of the distrust of technology and scepticism about its ability to work properly.

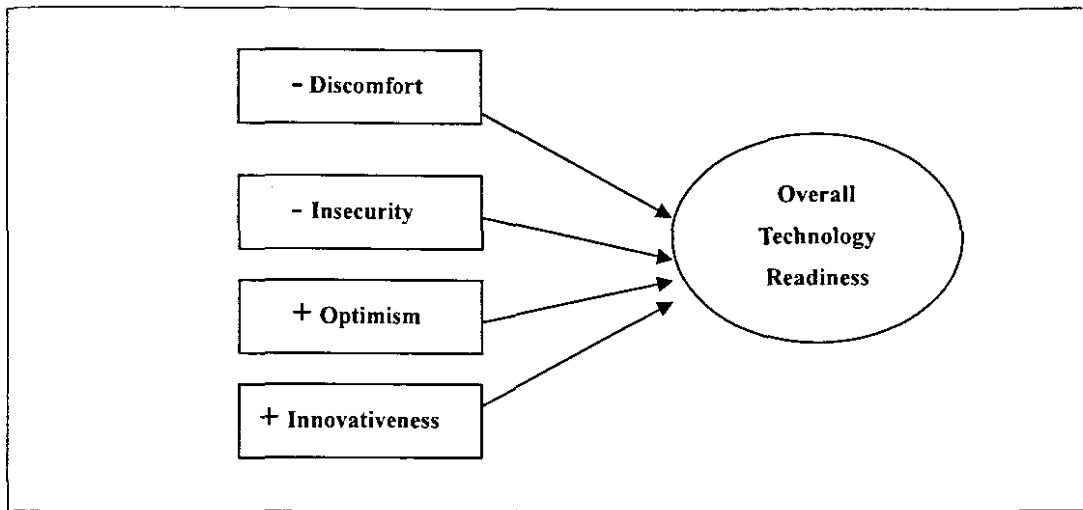
In these four dimensions, optimism and innovativeness are drivers of technology readiness; whereas discomfort and insecurity are inhibitors. These are illustrated in Figures 4 and 5 (see next page). Accordingly, the respondents can be classified into different groups based on their TRI level. TRI is held to be a good predictor of technology-related behaviour.

Figure 4: Drivers of Technology Readiness



Source: Parasuraman and Colby (2001)

Figure: 5. Parasuraman's TRI.



Source: Parasuraman (2000)

2.4 Something about China

In China, ATMs have only been in operation for 13 years. The first ATM was launched in 1992 in Beijing (Shen Jun, 2004). In America, the concept of the modern ATM began in 1968 and the first working ATM was installed based at Chemical Bank in New York in 1973 (Bellis, 2004). In the USA, there are 1 300 ATMs per 1 million people, whereas there are 40 ATMs in use per 1 million people in China (Shen Jun, 2004). Moreover, according to Jun-Jiang Shi (2004), in China, only 38% of the population have banking cards, whereas 89% of the American population and 96% of the Japanese population have banking cards.

CHAPTER 3

METHODOLOGY

Permission was obtained to survey customers from the Industrial and Commercial Bank of China in JiLin (see appendix 4). The research was limited to the Industrial and Commercial Bank of China because this bank represents the largest banking customer base in JiLin. Its total saving balance is ¥13.6 billion in 2003, almost half of the total saving balance in all the banks in JiLin (<http://www.icbajjl.com>). Furthermore, it is the author's hometown and therefore the student's has relevance to his community.

3.1 Process

Data was collected by means of a survey questionnaire (see Appendices 2 and 3) which was completed by 307 bank customers who utilised three banking services, namely, bank inquiries, money transfers, and fund transactions. The bank industry has the longest development history in self-service technologies (SSTs) and therefore the focus is on the banking services.

3.2 Definition of variables

In the section below independent variables and dependent variables will be defined.

3.2.1 Independent variable: Customer technology readiness

To measure the degree of a customer's familiarity to SSTs, the research introduced the Technology Readiness Index (TRI) of Parasuraman (2000), as discussed in section 2.3.4. In using this index, the survey attempted to measure the respondents' overall, general propensity to embrace and use new technology for accomplishing personal and banking-related activities. The TRI included four dimensions: optimism, innovativeness, discomfort and insecurity.

3.2.2 Dependent variable: Customer propensity to choose a service provider

Service transactions can be defined as a continuum of customer and organisational interactions bounded by two end points, namely *full service transaction* and *self service transaction* (Globerson & Maggard, 1991:33-43). *Full service transaction* implies those services that require interaction with personnel, while *self-service transactions* are those conducted using SSTs. The customer's propensity to choose an option on the continuum between the two extreme alternatives is defined as the *dependent* variable. This variable indicates the customer's willingness and intention in using SSTs.

3.3 Definition of Operational variables

3.3.1 Technology readiness and TRI

As technology becomes an increasingly greater part of our personal and professional lives, business and world leaders are attempting to keep up with the dramatic changes. Technology readiness is aimed at probing consumers' psychological characteristics for technology systems, determining their propensity to use new technologies. Technology readiness also predicts the adoption rate of new technologies based on the notion that customers hold underlying positive or negative beliefs about technology. Parasuraman (2000) defines *technology readiness* as "... people's propensity to embrace and use new technology for accomplishing goals in home life and at work". Technology readiness reflects a combination of technology-related beliefs that determine an individual's predisposition to interact with technology-based products and services.

Parasuraman (2000) has reported a very promising scale for use with general consumer populations, which he called the Technology Readiness Index. The index is based on four dimensions, as has already been mentioned. Parasuraman envisions optimism and innovativeness as positive drivers of technology readiness, whereas discomfort and security would serve as inhibitors.

3.3.2 Self-service technology

Technology is used to control aspects of the world we live in. For example, people use technology to work and communicate more efficiently. Growing numbers of customers interact with technology to create service outcomes instead of face-to-face interaction with service providers. Dabholkar (1996:29-51) introduced the term *technology-based self-service* but did not provide clear explanations or definitions. Meuter et al. (2000:50-64) defined self-service technologies (SSTs) as the technological interfaces that enable customers to produce a service independent of direct employee involvement. Examples of SSTs include automated teller machines (ATMs), automated hotel checkout systems, banking by telephone, automated airline ticketing machines, automated car rental machines, package tracking automated investment transactions, auto-banking, such as withdrawing and transferring money or funds that can be done without the bank staff. This definition explains the characteristics of self-service and treats technologies as an enabler of service delivery without service personnel interactions. Service transactions are defined as “... a continuum of customer and organisational interactions bounded by two end points, namely full service transaction and self service transaction ...” (Globerson & Maggard, 1991:33-43). *Full service transaction* implies those services that require interaction with personnel, while *self-service transactions* are those conducted using SSTs.

For the purpose of this study, SST will focus on aspects of the banking industry, such as automated teller machines (ATMs), auto-banking machines, banking by telephone, and banking general information services over the Internet.

3.3.3 Perceived risk

Perceived risk is treated as a multi-dimensional construct (Jacoby & Kaplan, 1972:382-393; Roselius, 1971:56-61), and not as a cumulative effect of uncertainty and consequence. Bettman (1975:381-385) supported this with empirical evidence. He proposed that the relative importance of each dimension would be different in different situations or in different products. Some risk dimensions (such as performance risk, psychological risk, social risk, physical risk, time risk and financial risk, listed below) play important roles in dominating the overall perceived risk in certain situations. Several studies have also proved that the dimensions of perceived risk can account for a substantial proportion of overall perceived risk (Stone & Gronhaug, 1993:39-50).

Perceived risk involves five types of risk, namely, performance, psychological, social, financial, and physical risk (Jacoby & Kaplan, 1972:382-393). Roselius (1971:56-61) identified a sixth important risk dimension, namely convenience risk, that involves the possible loss of convenience or time associated with purchasing.

For the purpose of this study, perceived risk will include all six dimensions, namely –

social risk, which involves the negative reaction of friends and family members;

performance risk, which concerns a buyer's doubts about how a service will perform or be performed;

physical risk, which entails risk that the service will harm the buyer;

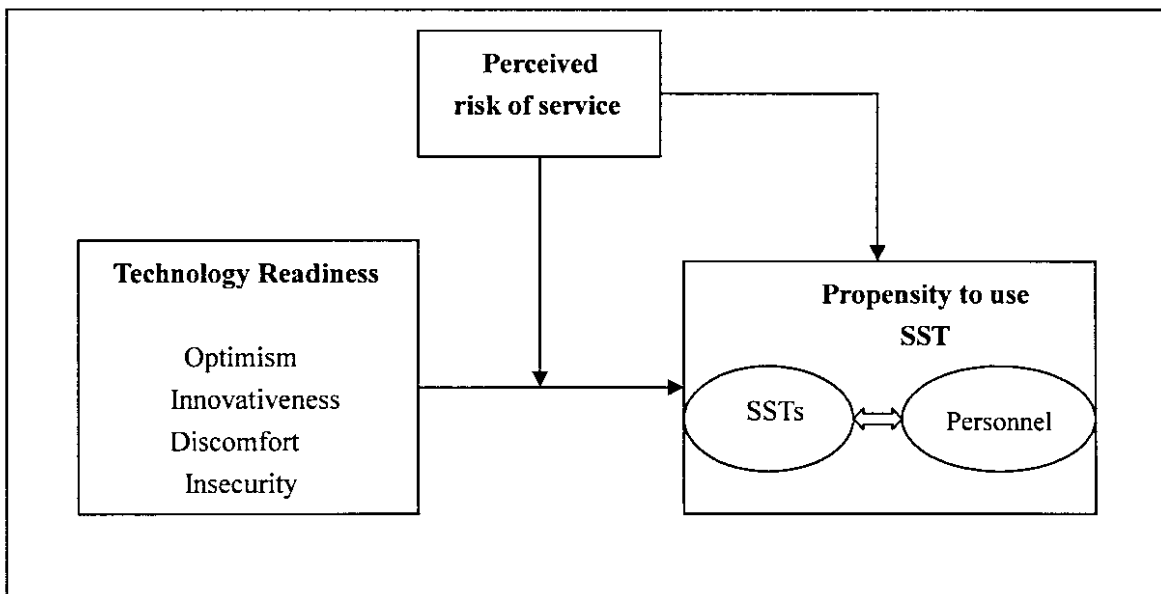
time risk, which is the risk that a decision will take up too much time,

psychological risk, which is the risk that a service will lower a consumer’s self-image; and **financial risk**, which is the risk that the outcome will harm the customer financially.

3.4 Conceptual framework

According to the original research questions and results of the research, this study intends to investigate how perceived risk impacts on customer choice when facing alternatives in service creation in banking service – personnel assistance, some personnel assistance, some SSTs, SSTs only. The framework is depicted in Figure 6 to derive the hypotheses and research methods design.

Figure 6: Conceptual framework



The aim of this research is to ascertain how different levels of perceived risk will influence customers' decision in service selection. Furthermore, types of perceived risk that extensively influence customer behaviour will be explicated through empirical scrutiny.

The independent variable of the model is the degree of a customer's technology readiness. The level of technology readiness is measured by a four dimensions index, proposed by Parasuraman (2000:307-320), as referred to in Section 2.3.4. The survey respondents were evaluated in the four dimensions of optimism, innovativeness, discomfort and insecurity, providing an indication of each respondent's TRI.

The dependent variable in this model is the customers' propensity to use either SSTs or personnel to obtain services. Because services nowadays are provided not only by human beings but also by the SSTs (Lovelock, 2001:78-95; Meuter & Bitner, 1998:12-19), customers have more process choices in obtaining services. Furthermore, the moderating effect in this model is the customer's perception of risk in these services. The whole model is examined by means of an empirical method.

3.5 Research questions and hypothesis development

As mentioned in 2.4, it is clear that the Chinese population has not embraced the self-service culture. It is also known that the integration of technology enhances the speed of the transactions, and that it brings about savings to the financial institution. It is therefore imperative to

understand the risks perceived by banking customers.

3.5.1 Hypotheses: Technology readiness and propensity to use SSTs

Perceived risk has been proved to have a negative effect on customers' behaviour when they are involved in new technologies, such as e-business (on-line transactions), adoption (embrace technology-based services), and the purchasing rate (frequency of online transactions) (Eastin, 2002:251-267; Miyazaki & Fernandez (2001:27-44). It follows that when customers perceive that a high risk exists in certain SST services, they will consider using alternative services offered through face-to-face contact with personnel. Should the perceived risk be too high, it would be possible for customers to forfeit the advantages that SSTs generate. That is to say, when customers perceive the existence of risk, they might not want to use SSTs, no matter how high their level of technology readiness. The following hypothesis is therefore proposed:

- ▶ When customers with high technology readiness or low technology readiness perceive the service as high risk, the relationship between technology readiness and propensity to utilise the service will weaken.

3.5.2 The perceived risk components

From the literature review, it became clear that the relationship between the perceived risk and SSTs is still largely undetermined. Research in this topic has been conducted and some research has mentioned the importance of the risk in using SSTs. In their studies, Bateson (1985:49-76) and Sneath, Kennett and Megehee (2002:56-67) mention the importance of the psychological risk of influencing a customer's self-service Propensity. The argument of this research is that the psychological risk will dominate customers' willingness to use the SSTs, resulting in it being the dominant risk factor influencing customers when choosing the SSTs to perform services.

3.6 Questionnaire design

The data collection tool used was a questionnaire (See Appendix 1). Part One has been adapted from Parasuraman's Technology Readiness Index (Parasuraman, 2000:307-320). The index includes a total of 12 items that are categorised into the four dimensions of optimism, innovativeness, discomfort and insecurity. Part Two consists of a perceived risk scale with seven items. Because perceived risk and choosing behaviour are situation-driven (Bateson, 1985:49-76), three bank services are chosen to make the questions easier to answer. This is in line with the three purposes of SSTs in use proposed by Meuter et al. (2000:50-64), namely customer service, transaction and self-help. Part Three measures customers' intentions regarding the use of SSTs. It includes an evaluation of their attitudes towards and their willingness in using SSTs to obtain the services (Forman, and Strian, 1991:226-243). The concept of self-service technology was

explained to the participants before the completion of the questionnaires. The final section, Part Four, is set to capture the participants' demographic information.

3.6.1 Part One: Technology Readiness

The research questionnaire directly utilised some items from Parasuraman's (2000:307-320) Technology Readiness Index. This includes the four dimensions, namely optimism (four items); innovativeness (two items); discomfort (two items) and insecurity (four items). The responses were solicited using a five-point Likert scale, namely *strongly agree*, *mostly agree*, *neutral*, *mostly disagree* and *strongly disagree*.

A five-point Likert scale was chosen to reduce the ambiguity of ordinality of response categories. In other words, it limits the respondents to the five options in order to provide a measurable strength of agreement for the researcher. It also allows the development of an index of scoring for the responses of respondents. A three-point scale would have been too general and inexact for measuring responses. Five points provides a reasonable range of responses.

At the end of Part One, the overall propensity of the respondent was measured in one item. This question used a graphic rating scale (namely *strongly prefer personnel* → *strongly prefer SSTs*) to measure the respondent's propensity in general to choose between personnel and SSTs service providers.

3.6.2 Part Two: Customer's Banking Risk Perception

In Part Two, the respondents' banking risk perceptions were evaluated. As previously stated, perceived risk and choosing behaviour are situation-driven; therefore three bank services were chosen to contextualise the questions, making it easier for bank customers to answer the questions. These services are

- bank information search;
- funds transaction; and
- money transfer.

They are based on the three purposes of SSTs in use proposed by Meuter et al., (2000:50-64), namely customer service, transaction, and self-help.

Each scenario contains eight items that comprise six items of the perceived risk associated with a service, and two items to measure their propensity to choose between the personnel and the SSTs. A perceived risk scale with five items was adopted, and responses were solicited using a scale ranging from *extremely high* to *high risk, moderate risk, low risk* and *no risk*.

3.6.3 Part Three: Propensity to use SSTs

There are three items in Part Three, which measure the respondents' intentions regarding using SSTs. In order to make the measurement of propensity to use SSTs more exact, this survey introduced two more evaluations of the likelihood of using SSTs. These two evaluations for each

scenario attempted to evaluate the attitude of the respondents towards the SSTs and their willingness to use the SSTs to receive obtain a service. There are a total of three evaluations per item to measure the customer's propensity to use the SSTs for each situation, as well as generally. Respondents were required to indicate their propensity on a five-point scale.

3.6.4 Part Four: Personal information

The last part of the questionnaire was set in order to obtain a demographic profile of respondents. This included the respondent's gender, age, occupation, income per month, education, and frequency of bank usages per week and month.

The questionnaire was translated into the Chinese language. In order to ensure equivalence of meaning between the translated versions, the *double-build method* (Mouton, 1996:221-239) was applied. This was done by first translating the questionnaire into Chinese and then getting a second translator to translate it back into English. Semantic errors that occurred were then corrected.

3.7 Data collection

Survey work was conducted from October 28, 2004 to November 10, 2004. Due to the confidential nature of customers' banking records, as well as the logistical difficulty of distributing questionnaires to selected banking customers and returning them, it was decided to

use an availability sample, comprising customers present in five branches of the Industrial and Commercial Bank of China in JiLin during the above-mentioned period.

3.8 Analysis of data

The statistical technique used to predict the variance in dependent variables by regressing the independent variables against it, was the multiple regression analysis. Once the data had been captured, it was analysed using the Statistical Package for the Social Sciences (SPSS). Multiple regression analysis is a statistical technique used to predict the variance in the dependent variable by regressing the independent variables against it (Sekaran, 2003:392-410). It is useful for testing hypotheses about the relationship between a dependent variable and two or more independent variables. In this case, these variables are technology readiness and perceived risk.

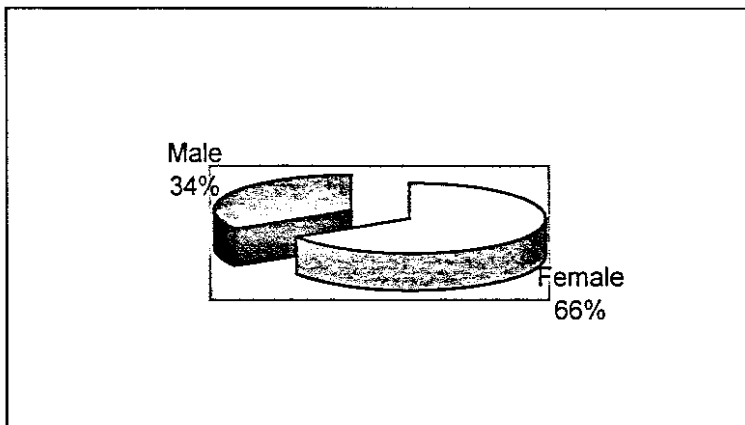
3.9 Sample analysis

A total of 336 anonymous questionnaires were completed during the data collection period of which 29 were unusable due to incomplete data. Respondents were obtained from five branches. Most of the respondents were from the main branch. Each branch had 200 to 400 customers passing through the bank every day. All these respondents were located in JiLin City in northeast China. From the first branch, 70 questionnaires were analysed, 60 each from the second, third and fourth branches, and 57 questionnaires from the fifth branch. Thus, a sample of 307 surveys was collected and used in the data analysis.

Firstly, the demographic information of the sample was analysed, and secondly the interface preferences of each situation were summarised.

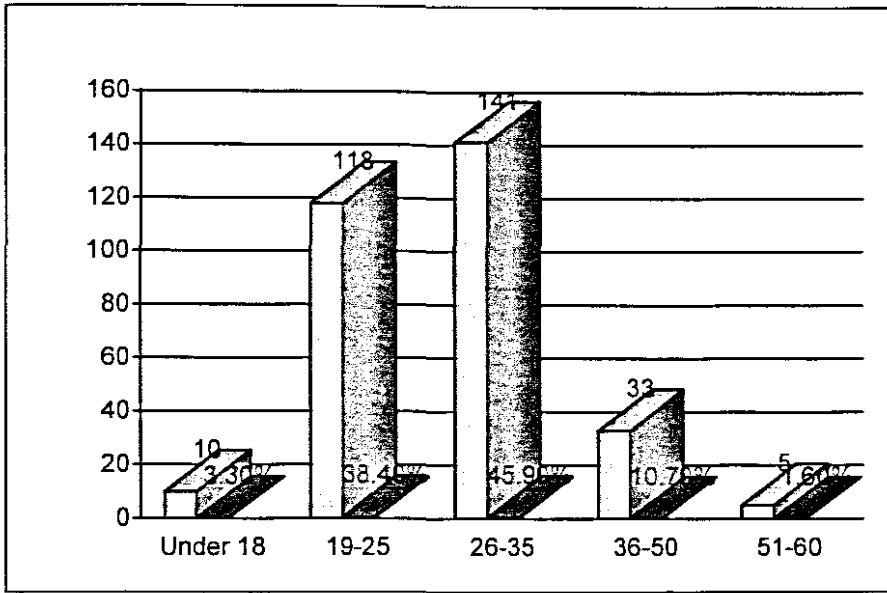
3.9.1 Demographic variable analysis

Figure 7.1: Gender distributions



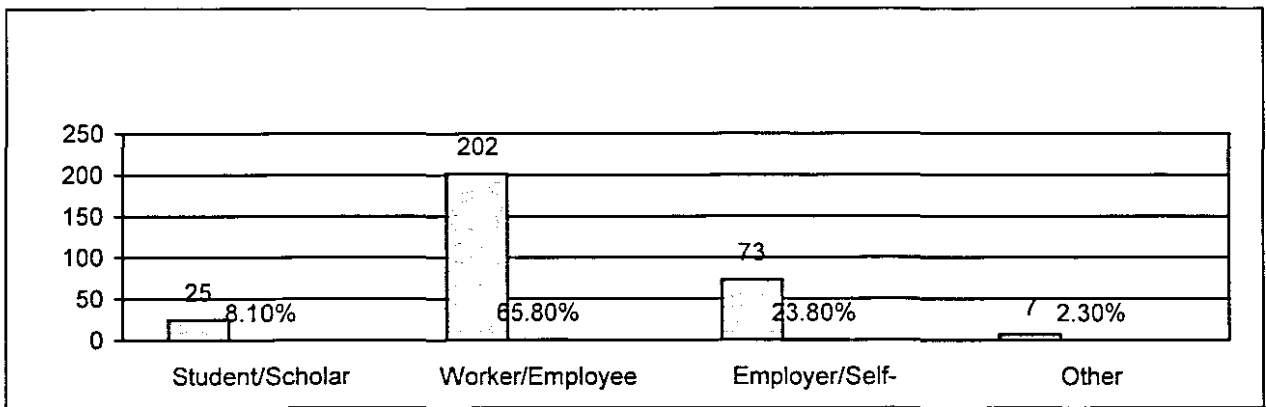
Of the respondents, 66.1% were female, as depicted in Figure 7.1. This two-thirds majority of female respondents may seem unusual in view of the Chinese population with its population of 52% males and 48% females, according to the 2000 census (www.stats.gov.cn). However, Zhang and Lui (1998:118-136) reported the bank customer demographic in China as 59.2% female and 40.8% male. This could be due to the fact that more women than men do the finance work of business in China.

Figure 7.2: Age distributions



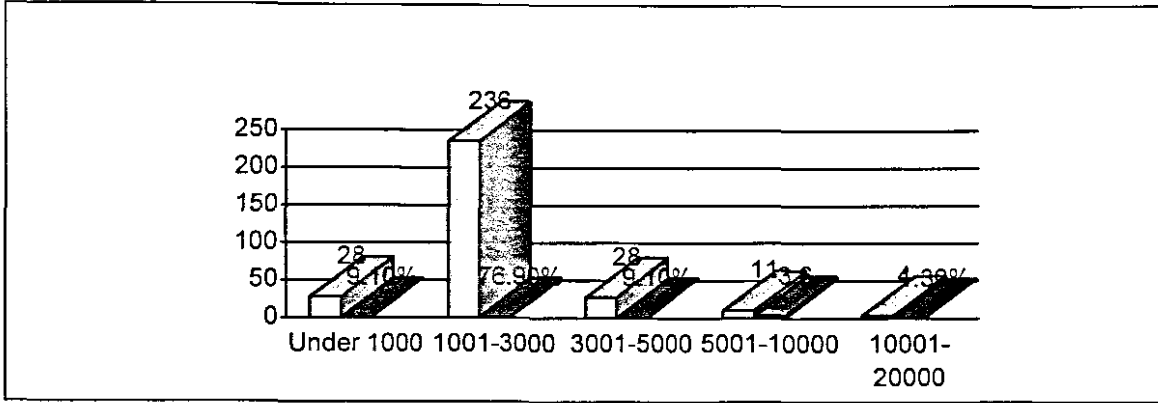
The most common age ranges were 19-25 and 26-35, with percentages of 38.4 % and 45.9% respectively. This indicates that the majority of respondents (84.3%) were between the ages of 19 and 35 years of age (see Figure 7.2).

Figure 7.3: Occupation distributions



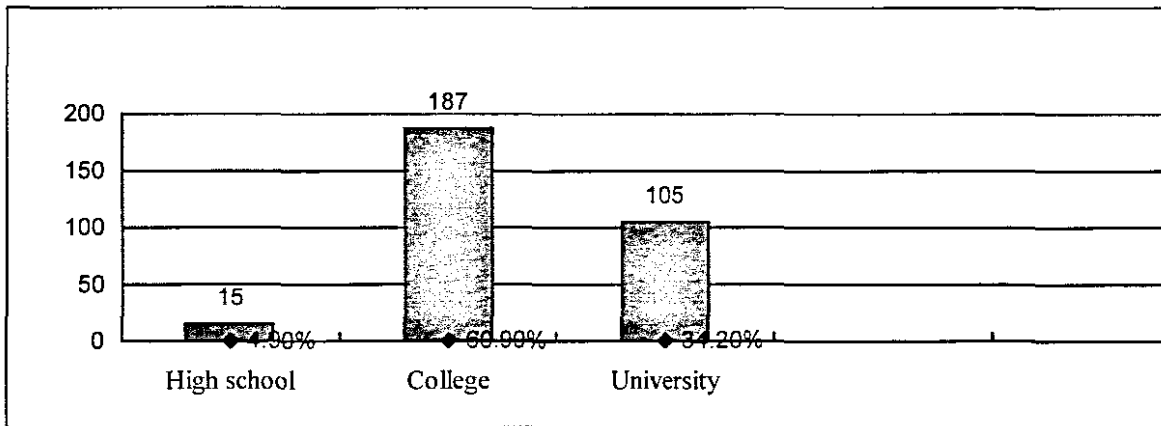
The largest occupation category was *worker/employee* with a value of 65.8%, followed by *employer/self-employed* with 23.8% (see Figure 7.3).

Figure 7.4: Income distributions (per month)



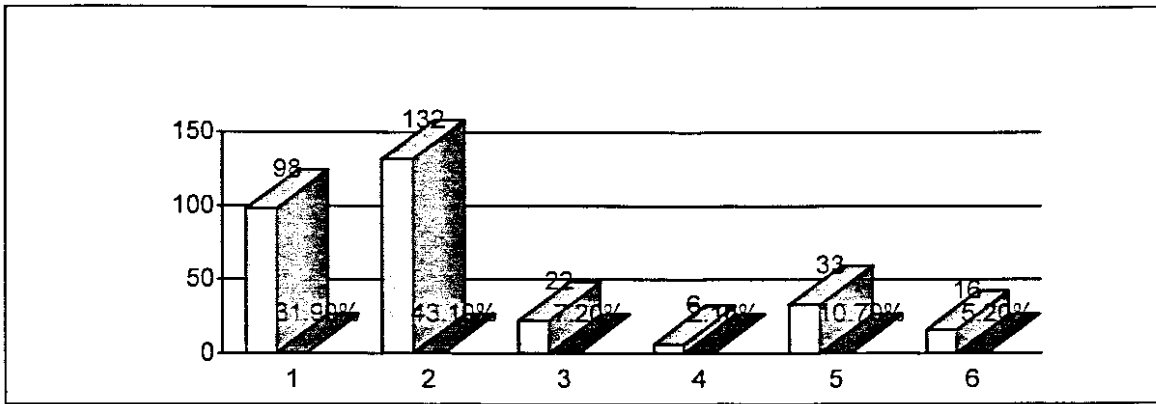
The majority of respondents (76.9%) indicated an income range of ¥ 1 001–¥ 3 000 per month, which is equivalent to US\$121–\$363. (US\$ 1 = ¥ 8.27, on 1, Dec. 2004), and equivalent to ZAR758–R2272, (ZAR1= ¥ 1.32, on 1, Dec. 2004) (see Figure 7.4).

Figure 7.5: Education distributions



With regard to education level, most of the respondents indicated that they had received college (60.9%) or university (34.2%) education, as depicted in Figure 7.5. College education in China is equivalent to a three-year university course in South Africa, while a university education in China would be equivalent to a four-year or post-graduate course in South Africa.

Figure 7.6: Frequency/per week



The majority of the respondents indicated that they frequented the bank once (31.9%) or twice (43.1%) per week (see Figure 7.6)

Table 3 (see next page) summarises all the data gathered about the demographic variables of respondents.

Table 3: Demographic variables distribution (N=307)

	ITEM	Count	Percentage
1	Gender		
	Male	104	33.9%
	Female	203	66.1%
	Total	307	100%
2	Age		
	Under 18	10	3.3%
	19-25	118	38.4%
	26-35	141	45.9%
	36-50	33	10.7%
	51-60	5	1.6%
	Total	307	100%
3	Occupation		
	Student/Scholar	25	8.1%
	Worker/Employee	202	65.8%
	Employer/Self-employed	73	23.8%
	Other	7	2.3%
	Total	307	100%
4	Income (Per month)		
	Under ¥ 1 000	28	9.1%
	¥1 001-¥3 000	236	76.9%
	¥3 001-¥5 000	28	9.1%
	¥5 001-¥10 000	11	3.6%
	¥10 001-¥20 000	4	1.3%
	Total	307	100%
5	Education		
	High school	15	4.9%
	College	187	60.9%
	University	105	34.2%
	Total	307	100%
6	Frequency/Week		
	1	98	31.9%
	2	132	43.1%
	3	22	7.2%
	4	6	2.1%
	5	33	10.7%
	6	16	5.2%
	Total	307	100%

CHAPTER 4

RESEARCH FINDINGS AND RESULTS

4.1 Bank Service Alternative Use Analysis

In the survey, respondents were required to indicate their preference when choosing between various forms of services (personnel contact, internet, ATM and mobile phone bank service) in various banking situations. The results are summarised in Table 4 below.

Table 4: Bank Service Alternative Using Distributions

Bank Information Inquiries			Funds Transactions			Money Transfers		
Alternative	Count	Percent	Alternative	Count	Percent	Alternative	Count	Percent
Personnel assistance only	125	40.7%	Personnel assistance only	36	11.7%	Personnel assistance only	24	7.8%
Some personnel assistance	64	20.8%	Some personnel assistance	128	41.7%	Some personnel assistance	60	19.5%
Indifferent	75	24.4%	Indifferent	72	23.5%	Indifferent	53	17.3%
SSTs only	32	10.4%	SSTs only	24	7.8%	SSTs only	58	18.9%
Some SSTs	11	3.6%	Some SSTs	47	15.3%	Some SSTs	112	36.5%
Total	307		Total	307		Total	307	

When asking for (1) banking information, the preferred alternative among the respondents was for *personnel assistance only* (40.7%). *Indifferent* (24.4%) and *some personnel assistance*

(20.8%) were the second alternatives that the respondents selected for this situation. The combined percentage of these two SST-based alternatives (SSTs only and some SSTs) is lower (14%) than that of asking personnel.

In the (2) funds transaction situation, the *some personnel assistance* service alternative was preferred by 41.7% of respondents. In the (3) money transfer situation, the most popular choice was SSTs with the category of *some SSTs* being selected by 36.5% of the respondents.

4.2 Correlation Analysis

In this section, the analysis focuses on the correlation between the three main variables (TRI, propensity and perceived risk). The correlation coefficients of all main variables are listed in Table 5(see next page).

Table 5: Correlations Analysis

Variables	TRI	Propensity S1	Propensity S2	Propensity to use SSTs	Risk S1	Risk S2
TRI						
Propensity S1	0.300**					
Propensity S2	0.307	0.330**				
General Propensity	0.430**	0.516**	0.348**			
Risk S1	-0.237**	-0.233**	-0.082	-0.227**		
Risk S2	-0.278**	-0.121*	-0.179**	-0.070	0.433**	

** . Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

S1: Scenario 1 (bank information search)

S2: Scenario 2 (funds/money transfer)

Firstly, the independent variable, the TRI, was analysed .The correlation coefficients between the TRI and those propensity variables, namely the propensity to use SSTs in the bank information inquiry ($r=0.300$), the propensity to use SSTs in the funds or money transfers ($r=0.307$) and general propensity to use SSTs ($r=0.430$), are all significant. Each of these variables is significantly positively related ($p<0.01$) to the TRI. Between the TRI and the perceived risk, the results are also significant. The correlation coefficients in the two scenarios are -0.237 ($p<0.01$), and -0.278 ($p<0.05$).

The second analysis focuses on the relatedness between the perceived risk and the propensity in two scenarios. In each scenario, the perceived risk and usage propensity are negatively significantly correlated (S1 bank information search: $r=-0.233$, $p<0.01$, S2 funds/money transfer, $r=-0.179$, $p<0.05$).

4.3 Testing the Hypothesis

The analysis was conducted on each scenario and checked for evidence of the propensity to use SSTs. To determine whether the hypothesis is significant, the original regression with the TRI and perceived risk variables have to be estimated in order to estimate the value of their relationship. If the R square change is statistically significant, evidence for the effect can be said to exist (Hair, Joseph, Rolph, Ronald & William, 1998:55-92). The R square is the percent of the total sum of squares that is explained. The R square returns the square of the Pearson product moment correlation coefficient, which consists of a dimensionless index that ranges from -1 to 1 and reflects the extent of a linear relationship between two data sets:

$$R_i = \frac{n \sum_{j=1}^n (T_j P_{(i)}) - \left(\sum_{j=1}^n T_j \right) \left(\sum_{j=1}^n P_{(i)} \right)}{\sqrt{\left[n \sum_{j=1}^n T_j^2 - \left(\sum_{j=1}^n T_j \right)^2 \right] \left[n \sum_{j=1}^n P_{(i)}^2 - \left(\sum_{j=1}^n P_{(i)} \right)^2 \right]}}$$

The dependent variables in three regressions are the usage propensities in corresponding bank services (S1: bank information search, S2: funds/money transfer and propensity to use SSTs). The analysis is conducted in several stages. Firstly, the TRI variable is added to the regressions and the results support the hypothesis. In all the scenarios, TRI is not a good predictor with significant R squares to the usage propensity, although all of them are significant (see Multiple regression analysis 1 (M1) of Table 6 & 7). Secondly, the perceived risk variable is added to each regression. Perceived risk has a significant negative beta coefficient in each scenario. In all scenarios, the addition of the perceived risk variable may lower a customer's propensities to use

the SSTs with negative coefficients. Adding the perceived risk variable also makes the R square improve significantly.

The final step is the multiplication of the perceived risk and the TRI value added as the third variable. If the R square changes have improved significantly, the effect exists. In the S1, the R square changes do not improve significantly (see Table 6, below). That means that the effect does not exist in the bank information search scenario. However, the R square change in S2 improves significantly (see Table 7, see next page). From the rule of effect in the multiple regressions analysis mentioned above, the hypothesis is true for the funds/money transfer scenario.

Table 6: Regression Analysis for Perceived Risk (Scenario 1)

	M 1	M 2	M 3
TRI	0.085***	0.073***	0.135**
Risk (S1)		-0.136**	0.276
TRI × Risk (S1)			-0.004
R square	0.099	0.134	0.140
R square change	0.099***	0.034**	0.006

Table 7: Regression Analysis for Perceived Risk (Scenario 2)

	M 1	M 2	M 3
TRI	0.093***	0.084***	0.051
Risk (S2)		-0.082**	-0.766*
TRI × Risk (S2)			0.007*
R square	0.089	0.102	0.118
R square change	0.089***	0.013*	0.016*

***.p<0.001; **.p<0.01;*.p<0.05

Tables 6 and 7 are used to demonstrate the effect analysis and to clarify the relationship between perceived risk, TRI, and customers' propensities. The perceived risk variable in two scenarios is separated into high and low groups from the highest 25% risk scores and the lowest 25% risk scores. The high TRI customers and low TRI customers are separated by the mean and median (TRI=36). A moderate risk score for each response would be 3. As there are 12 items, the average moderate risk score would be 36. If the TRI is 36 or higher, the customer is said to have a high technology readiness.

In the transfer of money service scenario, a customer with a high technology readiness perceives high risk in the transfer of money service. Their propensity to use SSTs will be lower than that of customers with low risk perception (Figure 8, see next page). However, in the funds transaction service, the situation differs from the transfer money service (Figure 9, see next page). When customers' TRI are higher than approximately 45, their propensities in the low perceived risk are lower than those with high risk perceptions. When a customer is experienced in doing transactions, the perceived risk may not have much influence.

It appears that customers with experience and a high TRI have a higher propensity to use SSTs to conduct funds transactions when facing high risk than customers with a low TRI. After further analysing the funds transaction service, the effect in the funds transaction service is supported. The analysis of all results of customers with high technology readiness, as well as those with low technology readiness, indicate that their propensities will be lower while facing high risk (see Figures 8 and 9).

Figure 8: The effect in Money Transfer service

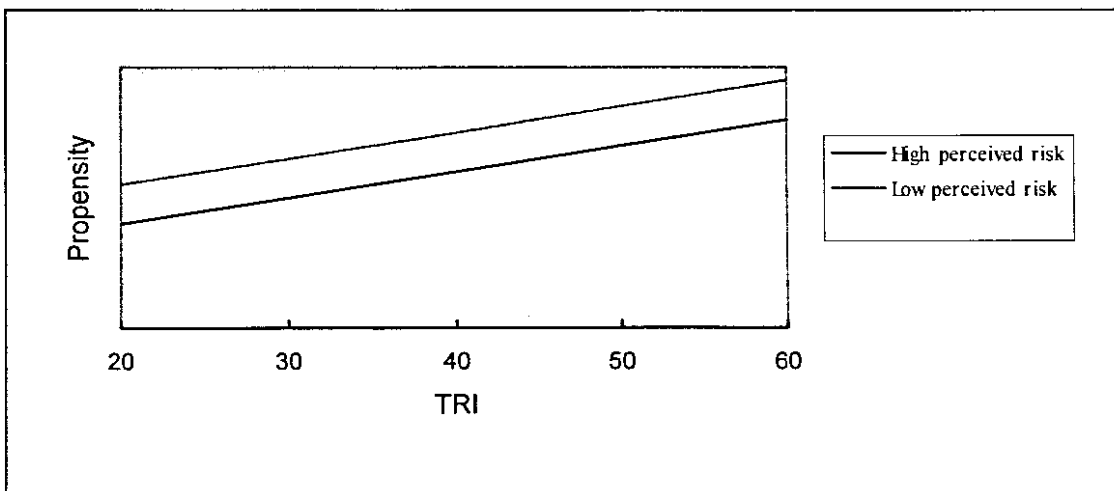
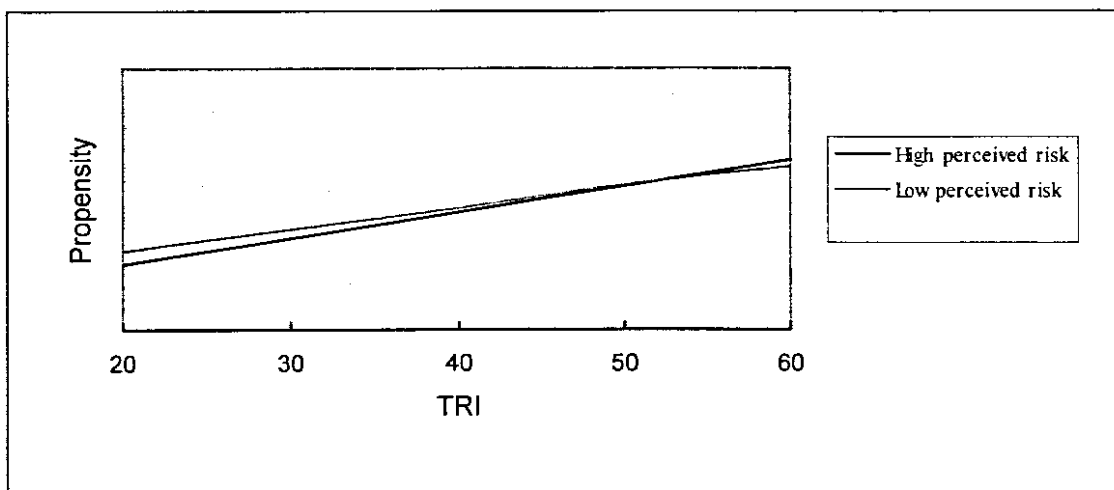


Figure 9: The effect in Funds Transaction service



4.3.1 The Main Perceived Risk Component Analysis

This section aims to test the critically influenced risk component for customers' propensity to use SSTs. The two regressions use the enter method and put all seven risk components into the regression equation at the same time. The R squares in two scenarios are all significant (S1: R square=0.083, $p < 0.001$; S2: R square=0.289, $p < 0.001$). The results are represented in tabular format with the significance of beta coefficients and the standardised beta coefficients (see Tables 8 and 9).

Table 8: Analysis of Perceived Risk Component (Scenario 1)

Risk Component	β Coefficient	Standardised β Coefficient	T value
Social risk	-0.189	-0.053	-0.778
Performance risk	-0.321	-0.086	-1.210
Physical risk	-0.628	-0.142	-2.255*
Time risk	0.135	0.045	0.649
Psychological risk	-0.475	-0.143	-2.126*
Finance risk	-0.078	-0.029	-3.371

*. $P < 0.05$

In the S1 (bank information search), both physical risk and psychological risk have significant beta coefficients (see Table 8). To ascertain their relative importance, the comparison is based on their standardised beta coefficients. A comparison of their values shows that the psychological risk has higher relative importance. This means psychological risk is the dominant risk component to the propensity to use SSTs in bank information search services.

In the S2 (funds/money transfer), the psychological risk and finance risk are significant (see Table 9 below). A comparison of their standardised beta coefficients shows that psychological risk is the dominant risk component.

Table 9: Analysis of Perceived Risk Component (Scenario 2)

Risk Component	β Coefficient	Standardised β Coefficient	T value
Social risk	0.414	0.103	1.099
Performance risk	-0.128	-0.031	-0.473
Physical risk	-0.218	-0.039	-0.652
Time risk	-0.186	-0.104	-1.777
Psychological risk	-0.569	-0.154	-2.388*
Finance risk	-0.401	-0.117	-1.794

*. $P < 0.05$

After analysing two service scenarios, a conclusion supporting Hypothesis Two can be drawn. The psychological risk in scenario 1 and scenario 2 are significantly important. Psychological risk can become the dominant risk component in a customer's propensity to choose a specific service alternative in specific situations.

CHAPTER 5

DISCUSSION

In this section, a brief summary of the research is provided. In fulfilment of the research purposes, management implications of the results are addressed to provide some useful recommendations for the banking industry. Future research directions and limitations are also discussed.

5.1 Conclusion

A primary outcome of this research is to demonstrate that perceived risk plays an important role in influencing customers' use of SSTs. The research purposes were:

- (1) to test how the perceived risk impacts on the use of SSTs, looking at customers with both high and low TRIs, and
- (2) to understand the types of perceived risks within the banking industry and to determine which risk component dominates customer propensity to use SSTs.

The following section will summarise the research findings and explanations.

The hypothesis is directed to test the predictability of the technology readiness index in customers' propensity towards using SSTs. The regression analysis provides evidence that the TRI is not a good predictor of customer' propensity, neither generally nor in a particular service. That is, the TRI is only a guideline for a company to understand their customers, not a specific measure.

Table 10: Summary of the results of the hypotheses

Hypothesis	General (TRI)	S1 (Bank Information Search)	S2 (Funds/Money Transfer)
When customers with a high technology readiness perceive the service as having a high risk, the relationship between technology readiness and propensity to utilise the service will weaken.	MS	NS	CS
When customers with a low technology readiness perceive the service as having a high risk, the relationship between technology readiness and propensity to utilise the service will weaken.	MS	NS	CS
Psychological risk is the dominant risk factor influencing customers when choosing the SSTs to perform services.	MS	CS	CS

CS: Completely Supported

MS: Mostly Supported

NS: Not Supported

Hypothesis One is the key hypothesis of the research. It examines the main effects of the perceived risk in the bank services and explores the way in which it influences customers with high or low TRI to use the SSTs. The main effect was demonstrated in funds/money transfer service. The results indicate that high perceived risks will make high TRI customers lower their propensity to use the SSTs only in the funds/money transfer service whereas customers with low TRI will lower their propensity in the funds, money transfer and other services. It seems that the perception of high risk will strengthen high TRI customers' propensity to use the SSTs to conduct the transactions. It seems the high TRI customer may be more influenced by the situational context than the low TRI customers.

In the area in which dominant risk influences customers to choose SSTs to acquire the service, the purpose was to test whether psychological risk is the dominant risk component influencing the customers' propensity to use SSTs. The results indicate that psychological risk is the dominant risk component in customers' propensity to make use of the services (see Tables 10 and 11).

Table 11: Dominant Risk Component in Two Scenarios

Dominant Risks	S1 (Bank Information search)	S2 (Funds/money transfer)
1 st	Psychological Risk	Psychological Risk
2 nd	Physical Risk	Financial Risk

5.2 Managerial Implications

Some managerial implications emerged from the results. The purpose of this research was to prove the important role of customers' perception of risk and to clarify its influence in the choice of service alternatives. Research results indicate that the perceived risk will weaken customers' propensities to use certain services. Therefore, the derived managerial implications can be separated into two main parts: how to manage the perceived risk itself, and how to use the TRI to manage marketing segmentation.

The bank usually has several alternatives to provide the same services. For example, customers can ask bank personnel about the bank information or use the Internet to obtain the information that they need. The bank must declare that no matter what alternatives the customers choose, they will receive 100% the same services. Further, the bank has to highlight the advantages there will be for the customers when they use the SSTs to access the services. The integrated marketing communication is essentially important to convey this information to all possible alternative channels. From the results of the research, it is obvious that customers are more likely to use the personnel in information inquiry and transactions. Therefore, it is important for a bank to utilise every channel at its disposal to reach its customers. For example, when customers go to a bank to transfer money, the bank personnel can provide additional information explaining that using ATMs and the on-line bank is also reliable and more convenient. Well-trained personnel have the responsibility to promote and educate their customers. Further, banks should build user-friendly interfaces in order to reduce the psychological concern about the bank services and

to motivate customers to use the SSTs.

With regard to market segmentation, it must be borne in mind that TRI is a useful tool for management in determining the customers' degree of technology readiness. Parasuraman and Colby (2001: 83-97) provide an abbreviated technology readiness scale (see Appendix 3) which companies can use to ascertain what their customers think about embracing new SSTs.

Practitioners can utilise this as a useful and simple tool to know more about customers' responses to new technologies and to make segmentation decisions regarding SSTs preferences. If customers fall into the lower technology readiness segment, it would be better to provide as much information as possible to reassure them that the SST alternatives are safe and to educate them in the use of SSTs. On the other hand, as shown by the research results, if customers have a high technology readiness, the perceived risk only weakens their propensities in certain services. From the bank's perspective, the perceived risk will only influence the high TRI customers in the money transfer service. In this segment, the bank needs no more than the usual promotional activities to provide customers with high technology information. Regarding the transaction services, it is difficult for the banks to guarantee that their customers will never lose any money. But they can promise that they will make it easy for their customers to use the SST interface so that the customers can utilise their strategies in the critical time and financial safety field. In conclusion, it is to be emphasised that if banks want their customers to make wide use of ATM facilities, they still need some time to promote this service and to educate the public.

5.3 Limitations and Future Research Directions

This research had some limitations. Firstly, some difficulty was experienced in the sample collection. Due to the questionnaire length (more than 45 items) some respondents did not complete it fully and accurately. Therefore, it would be better for future research to design a shorter or easier to answer questionnaire.

Secondly, this research focuses on the bank industry only, because it has a longer history in developing SSTs, but it ignores other industries that intend to adopt the SSTs to provide services. Therefore, these research results are specific to the banking industry. To increase the context settings and generalisation accuracy of the results, future research should explore similar phenomena in other industries.

Thirdly, the dependent variable in this research is the propensity of use of SSTs or personnel. However, the term propensity is not precisely defined in customer behaviour research. Future research may find it more accurate and productive to further separate the term into aspects of attitude and intention to increase depth and scope.

In conclusion, the test results obtained in this study indicate that the effect of perceived risk does exist, and affects propensity of customers with high TRI and customers with low TRI to use SSTs in different ways. Specifically, it was noted that customers with high TRI were affected mainly in funds and money transfer scenarios and customers with low TRI were affected in a wider range

of scenarios. Psychological risk was pinpointed as the dominant risk factor among customers surveyed, highlighting the need for the banking industry to focus on an education and promotion campaign, in order to manage the perceived risk in the usage of SSTs in this technological era.

REFERENCES

- Anderson, E.W. and Fornell, C. (1994), "A Customer Satisfaction Research Prospectus," in R. T. Rust and R. L. Oliver, eds. Service Quality. New Directions in Theory and Practice, Thousand Oaks, CA: Sage Publications, 241-268.
- Bateson, J.E.G. (1985), "Self-Service Consumer: An Exploratory Study." Journal of Retailing Vol. 61, No. 3, pp. 49-76.
- Bauer, R. A. (1960), "Consumer Behavior as Risk Raking," in hancock, R.S. (Ed.), Dynamic Marketing For a Changing World. Proceedings of the 43rd Conference of American Marketing Association, pp. 389-98
- Bellis, M. (2004), "Inventors Automatic Teller Machines (ATM)",
<http://inventors.about.com/library/inventors/blatm.htm> (date accessed: 12-6-2004)
- Bettman, J. R. (1975), "Information Integration in Consumer Perception: A Comparison of Two Models of Components Conceptualization." Journal of Applied Psychology, Vol. 60, July, pp. 381-385
- Bitner, M.J. (1990), "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses." Journal of Marketing, Vol. 54, April, pp. 69-82
- Bitner, M.J., Booms B.H. and Tetreault, M.S. (1990), "The Service Encounter: Diagnosing Favourable and Unfavourable Incidents." Journal of Marketing, Vol. 54, January, pp. 71-84.
- Bitner, S., Ostrom A.L. and Meuter M.L. (2002), "Implementing Successful Self-service Technologies." Academy of Management Executive, Vol. 16, No. 4, pp. 96-109.
- Bitner, S., Brown W. and Meuter M.L. (2000), "Technology Infusion in Service Encounters." Journal of the Academy of Marketing Science, Vol. 28, No. 1, pp. 138-149.
- Bobbitt, L.M. and Dabholkar P.A.. (2001), "Integrating Attitudinal Theories to Understand and Predict Use of Technology-Based Self-Service." International Journal of Service Industry Management, Vol. 12, No. 5, pp. 423-450.
- Carlzon, J. (1987), Moments of Truth, Cambridge, MA: Ballinger Publishing Co. pp. 52-78.
- Chase, R.B. (1978), "Where Does the Customer Fit in a Service Operation?" Harvard Business Review. Nov/Dec, pp. 137-142
- <Http://www.icbajjl.com>, ICBC System, www.icbcjll.com/dzyh/index.htm (date accessed: 18-10-2004)

- Http://www.stats.gov.cn "China population",
http://www.stats.gov.cn/tjgb/rkpcgb/qgrkpcgb/t20020331_15434.htm (date accessed: 11-5-2004)
- Dabholkar, P.A. (1990), "How to Improve Perceived Service Quality by Increasing Customer Participation," in Developments in Marketing Science, Dunlap B. J. ed., Cullowhee, N.C.: Academy of Marketing Science, vol. XIII, 483-487.
- Dabholkar, P.A. (1996), "Consumer Evaluation of New technology-Based Self-Service Options: An Investigation of Alternative Models of Service Quality." International Journal of Research in Marketing, No. 13, pp. 29-51
- Dabholkar, P.A, Bagozzi R. P. and Washaw P. R. (1992), "Extrinsic and Intrinsic Motivation to use Computers in the Workplace." Journal of Applied Social Psychology, 22 (14): pp. 1109-1130.
- Dabholkar, P., and Bagozzi, R.P. (2002), "An Attitudinal Model of Technology-Based Self-Service: Moderating Effects of Consumer Traits and Situational Factors." Journal of the Academy of Marketing Science Vol. 30, No. 3, pp. 184-201
- Davis, D.L., Guiltan J.P. and Jones W.H. (1979), "Service Characteristics, Consumer Search, and the Classification of Retail Service." Journal of Retailing, Vol. 3, pp. 3-23
- D'Souza, D.E. and Menon A. (1995), "Toward A Framework for Technology in Service Encounters." Journal of Managerial Issues, Vol. 7 No. 4 Winter pp. 481-496.
- Eastin, M.S. (2002), "Diffusion of E-commerce: An Analysis of the Adoption of Four E-commerce Activities." Telematics and Information, No. 19 pp. 251-267
- Folkes, V.S., Koletsky S. and Graham J.L. (1987), "A Field Study of Causal Inferences and Consumer Reaction: The View from the Airport," Journal of Consumer Research, 13 (March), 534-539.
- Forman, A.M. and Striam V. (1991), "The Depersonalization of Retailing: Its Impact on the 'Lonely' Consumer." Journal of Retailing, summer, pp. 226-243
- Globerson, S. and Maggard M.J. (1991), "A Conceptual Model of Self-Service." International Journal of Operations & Production Management, Vol. 11, No. 4, pp. 33-43
- Guseman, D. S. (1981), "Risk Perception and Risk Reduction in Services." In Donnelly, J. H. and George, W. R. (Eds.), Marketing of Services, American Marketing Association, Chicago, pp. 200-204
- Hair, J.F., Anderson R.L., Tatham R.L. and William C.B. (1998), Multivariate Data Analysis, Prentice Hall. pp. 55-92

- Hayes, M. (2002), "Checkouts Go Self-Service—Home Depot' Latest Initiative Improves Service." Information Week, Dec. 9, 2002, pp. 1-2
- Jacoby, J., and Kaplan L. B. (1972), "The Components of Perceived Risk." In Venkatesan, M. (Ed.), Third Annual Conference of the Association for Consumer Research, Association for Consumer Research, College Park, pp. 382-393
- Jun-Jiang Shi (2004), "The future of Self-service bank in China"
<http://www.chinapostnews.com.cn/203/ztd07.htm> (data accessed: 16-11-2004)
- Langeard, E. J., Bateson E. G., Lovelock C. H. and Eiglier P. (1981), Marketing of Services: New insights from consumers and managers, Report No. 81-104 (Marketing Science Institute, Cambridge, MA)
- Lee, J. and Allaway A. (2002), "Effects of Personal Control on Adoption of Self-Service Technology Innovation." Journal of Service Marketing, Vol. 16, No. 6 pp. 553-572
- Levitt, T. (1976), "The Industrialization of Service." Harvard Business Review, Sep. /Oct., pp. 63-74
- Lovelock, C.H. (2001), Service Marketing: People, Technology, Strategy, 4th Ed., p. 54, Prentice Hall International Editions. pp. 78-95.
- Lovelock, C.H and Young R.F. (1979), "Look to consumers to Increase Productivity." Harvard Business Review, May/June, pp. 168-178
- Mano, H. and Oliver R.L. (1993), "Assessing the Dimensionality and Structure of Consumption Experience Evaluation, Feeling, and Satisfaction," Journal of Consumer Research, 20 (December), 451-466.
- Meuter, M.L, and Bitner M.J. (1998), "Self-Service Technologies: Extending Service Frameworks and Identifying Issues for Research." in AMA Winter Educator's Conference Proceedings: Marketing Theory and Applications, Vol.9, Dhruv Grewal and Connie Pechmann, Eds. Chicago. American Marketing Association, pp. 12-19
- Meuter, M.L., Ostrom A.L., Roundtree, and Bitner M.J. (2000), "Self-Service Technology; Understanding Customer Satisfaction with Technology-Based Service Encounters." Journal of Marketing, Vol. 64 July, pp. 50-64.
- Mick, D.G, and Fournier S. (1998), "Paradoxes of Technology: Consumer Cognizance, Emotions, and Coping Strategies." Journal of Consumer Research, Vol. 25, Sep. pp. 123-143.
- Mills, P.K., Chase R., and Margulies N. (1983), "Motivating the Client/Employee System as a Service Production Strategy," Academy of management Review, 8(2), 301-310.

- Mitchell, V.W., and Greatorex, M. (1993), "Risk perception and reduction in the purchase of consumer services", The Service Industries Journal, Vol. 13 No. 4, October, pp.179-200.
- Mitchell, V.W. (1999), "Consumer perceived risk: Conceptualisations and models." European Journal of Marketing, Vol. 33 Issue 2, pp. 163-196.
- Mitra, K., Reiss M.C. and Capella L.M. (1999), "An Examination of Perceived Risk, Information Search, and Behavioral Intentions in Search, Experience and Credence Services." Journal of Service Marketing, Vol. 13, No. 3, pp. 208-228
- Miyazaki, A.D., and Fernandez A. (2001), "Consumer Perception of Privacy and Security Risk for Online Shopping." The Journal of Consumer Affairs, Vol. 35, No. 1 pp. 27-44
- Mouton, J. (1996), Understanding Social Research. Pretoria: J.L. van Schaik Publishers. pp.227-239
- Murray, K.B (1991), "A Test of Services Marketing Theory: Consumer Information Acquisition Activities." Journal of Marketing, Vol. 55, Jan. pp. 10-25
- Murray, K.B., and Schlacter J.L. (1990), "The Impact of Service versus Goods on Consumers' Assessment of Perceived Risk and Variability." Journal of the Academy of Marketing Science, Vol. 18, No. 1, pp. 51-65
- Oliver, R.L. (1993), "Cognitive, Affective, and Attribute Bases of the Satisfaction Response," Journal of Consumer Research, 20 December, pp. 418-430.
- Parasuraman, A., Zeithaml V. A. and Berry L. L. (1985). "A Conceptual Model of Service Quality and Its Implications for Future Research." Journal of Marketing, Vol. 49, fall, pp. 41-50
- Parasuraman, A., (1996), "Understanding and Leverage the Role of Customer Service in External, Interactive, and Internal Marketing." Frontiers in Service Conference, Nashville, TN. October 5. pp. 49-67
- Parasuraman, A. (2000), "Technology Readiness Index (TRI): A Multiple-item Scale to Measure Readiness to Embrace New Technology." Journal of Service Research, Vol. 2, No. 4, May, pp. 307-320.
- Parasuraman, A, and Colby C.L. (2001), "Techno-Ready Marketing." The Free Press Published
- Price, L.L., Arnould E.J. and Tierney P. (1995), "Going to Extremes: managing Service Encounters and Assessing Provider Performance," Journal of marketing, 59 (April), 83-97.
- Rayport, J.F. and Sviokla J.J. (1994), "Managing in the Marketplace." Harvard Business Review, Nov/Dec, 1994, pp. 141-150

- Reichheld, F.F. and W E. Sasser Jr (1990), "Zero Defections: Quality Comes to Services." Harvard Business Review, 68 (September/October), 105-111.
- Roselius, T. (1971), "Consumer Rankings of Risk Reduction Methods." Journal of Marketing, Vol. 35 Jan. pp. 56-61
- Sekaran, U. (2003), "Research Methods for Business" John Wiley & Sons, Inc. Fourth Edition, pp.392-410
- Shen, J. (2004), "ATM today in China", Chinaatm System,
<http://www.chinaatm.com/news/news.asp?newsID=253> (data accessed: 18-11-2004)
- Shostack, L.G (1985), "Planning the Service Encounter" in The Service Encounter, Czepiel J. A., Solomon M. R., and Suprenant C. F., eds. Lexington, MA: Lexington Books, pp. 243-54
- Shostack, L.G (1987), "Service Positioning Through Structural Change." Journal of Marketing, Vol. 51, Jan pp. 34-43
- Sjoberg, L. (1980), "The Risks and Risk Analysis." Acta Psychologica, Vol. 45, August, pp.301-321
- Sneath, J.Z., Kennett P.A., and Megehee C.M. (2002), "The Self-Versus Full-service Decision: Gender-based Differences in Assessment of Risk." Journal of Targeting, Measurement and Analysis for Marketing, Vol. 11, Iss. 1, pp. 56-67
- Solomon, M.R., Suprenant C., Czepiel J.A. and. Gutman E.G (1985) "A Role Theory Perspective on Dyadic Interactions: The Service Encounter." Journal of Marketing, Vol. 49 winter, pp. 99-111
- Stone, R.N., and Winter F. W. (1987), "Risk: Is It Still Uncertainty times Consequence?" in Belk, et al. (Eds.), Proceedings of the American Marketing Association, Winter Educators Conference, Chicago, IL, pp. 261-265.
- Stone, R.N., and Gronhaug K. (1993), "Perceived Risk: Further Considerations for the Marketing Discipline." European Journal of Marketing, Vol. 27 No. 3 pp. 39-50
- Suprenant, C.F., Solomon M.R. (1987), "Predictability and Personalization in the Service Encounter." Journal of Marketing, Vol. 51, April, pp. 86-96
- Thorman, E. (1997), "The Globally Network Business," presentation at the Activation Your Film's Service Culture symposium, Arizona State University, Nov 1997, pp. 95-115
- Turley L. W. and LeBlanc R.P. (1993), "An Exploratory Investigation of Consumer Decision Making in the Service Sector." Journal of Service Marketing, Vol. 7, No. 4 pp. 11-18.
- Weber, E.V. and Bottom, W.P. (1989), "Axiomatic measures of perceived risk: some tests and extensions."

Journal of Behavior Decision Making, Vol. 2, pp. 113-131

Wu, B.W., Holmes, J.M. and Alexander, J.L. (1984), "Risk Taking: its effect on selection of branded and generic grocery items." Akron Business & Economic Review, Vol. 15, No. 3, Fall, pp.12-17

Zhang, N., Lui, Y.F. (1998), "China banking customer report." Journal of Chinese Banker, Vol. 2, pp. 118-136

Zeithaml, V. (1981), "How Consumer Evaluation processes Differ Between Goods and Services," in Marketing Service, Donnelly J.H. and George W. R., eds. Chicago: American Marketing Association, 186-89.

Appendix 1: Questionnaire (English)

Valued Respondent,

I, Yan Liang, am presently completing my M-degree studies at the PENINSULA TECHNIKON (soon to be the CAPE PENINSULA UNIVERSITY OF TECHNOLOGY) of South Africa. My mini-thesis involves a study of the willingness of customers to use self-service machines for different purposes. This is a request for you to partake in this study. The information supplied will be treated in the strictest confidence and will not be used for any other purposes. Thank you for your cooperation.

PENINSULA TECHNIKON South Africa

Yan Liang

E-mail: liangyan197602@yahoo.com

Supervisor: Mr. Bernard Pick

Please respond to the following statements by circling (O) the most appropriate response.

---EXAMPLE---

- (a) If you strongly disagree with the statement, then circle one ①.
- (b) If you mostly disagree with the statement, then circle two ②.
- (c) If you are neutral with the statement, then circle three ③.
- (d) If you mostly agree with the statement, then circle four ④.
- (e) If you strongly agree with the statement, then circle five ⑤.

		Strongly Disagree	Mostly Disagree	Neutral	Mostly Agree	Strongly Agree
1	Technology gives people more control over their daily lives.	①	2	3	4	5
2	Technology gives people more control over their daily lives.	1	②	3	4	5
3	Technology gives people more control over their daily lives.	1	2	③	4	5
4	Technology gives people more control over their daily lives.	1	2	3	④	5
5	Technology gives people more control over their daily lives.	1	2	3	4	⑤

Part 1: Technology Readiness

		Strongly Disagree	Mostly Disagree	Neutral	Mostly Agree	Strongly Agree
1	Technology gives people more control over their daily lives.	1	2	3	4	5
2	Products and services that use the newest technologies are much more convenient.	1	2	3	4	5
3	I like computer programs that allow me to tailor things to fit my own need.	1	2	3	4	5
4	I find new technologies to be mentally stimulating.	1	2	3	4	5
5	It seems as if my friends are learning more about the newest technologies than me.	1	2	3	4	5
6	I enjoy the challenge of figuring out high-tech gadgets.	1	2	3	4	5
7	Sometimes I think that technology systems are not designed for use by ordinary people.	1	2	3	4	5
8	There's no such thing as a manual for a high-tech product or service that's written in plain language.	1	2	3	4	5
9	I do not consider it safe giving out a credit card number over a computer.	1	2	3	4	5
10	I do not feel confident doing business with a place that can only be reached online.	1	2	3	4	5
11	The human touch is very important when doing business with a company.	1	2	3	4	5
12	When I call a business, I prefer talk to a person rather than a machine.	1	2	3	4	5

13. There are several alternatives for you to complete the service you want. For some of them you need to use the service equipment and finish the service by yourself. With some of them the only things you need to do is sit there and wait for someone to do it for you. Between these two extreme alternatives, what do you prefer in general?

- | | | | |
|---------------------------|--------------------------|-----------|--------------------------|
| Personnel assistance only | <input type="checkbox"/> | SSTs only | <input type="checkbox"/> |
| Some Personnel assistance | <input type="checkbox"/> | Some SSTs | <input type="checkbox"/> |
| Indifferent | <input type="checkbox"/> | | |

Part 2 A: Customer's Banking Risk Perception

Scenario 1: Bank Information Search

Today you need to find some information about your bank. It is a normal week and banks are open at regular hours. Please answer the following questions based on the services in a bank that allows you to pay a bill.

- | | | | |
|---------------------------|--------------------------|-----------|--------------------------|
| Personnel assistance only | <input type="checkbox"/> | SSTs only | <input type="checkbox"/> |
| Some Personnel assistance | <input type="checkbox"/> | Some SSTs | <input type="checkbox"/> |
| Indifferent | <input type="checkbox"/> | | |

15. What method do you often use to find bank information?

- | | | |
|--|---------------------------------------|---|
| <input type="checkbox"/> Ask bank personnel | <input type="checkbox"/> Internet | <input type="checkbox"/> Auto-Banking machine |
| <input type="checkbox"/> Mobile phone bank service | <input type="checkbox"/> Others _____ | |

Regarding the search for bank information:		No Risk	Low Risk	Moderate Risk	High Risk	Extremely High
16	Do you think there is much of a Social Risk ? (i.e. choosing this service provider will cause a negative reaction in your social network)	1	2	3	4	5
17	Do you think there is much of a Performance Risk ? (i.e. the outcome of service provider does not work as well as you expect)	1	2	3	4	5
18	Do you think there is much of a Physical Risk ? (i.e. the service will harm your health)	1	2	3	4	5
19	Do you think there is much of a Time Risk ? (i.e. the service will spend a lot of time on it)	1	2	3	4	5
20	Do you think there is much of a Psychological Risk ? (i.e. feel anxiety or uncomfortable)	1	2	3	4	5
21	Do you think there is much of a Financial Risk ? (i.e. loss of money)	1	2	3	4	5

Part 2 B: Customer's Banking Risk Perception

Scenario 2: Fund and money transfer Transaction.

22. Generally, when I do **funds transactions**, I prefer to effect the transaction through:

- | | | | |
|---------------------------|--------------------------|-----------|--------------------------|
| Personnel assistance only | <input type="checkbox"/> | SSTs only | <input type="checkbox"/> |
| Some Personnel assistance | <input type="checkbox"/> | Some SSTs | <input type="checkbox"/> |
| Indifferent | <input type="checkbox"/> | | |

23. Generally, when **transferring money**, I prefer to effect the transaction through:

- | | | | |
|---------------------------|--------------------------|-----------|--------------------------|
| Personnel assistance only | <input type="checkbox"/> | SSTs only | <input type="checkbox"/> |
| Some Personnel assistance | <input type="checkbox"/> | Some SSTs | <input type="checkbox"/> |
| Indifferent | <input type="checkbox"/> | | |

Regarding this funds transaction (including money transfer):		No Risk	Low Risk	Moderate Risk	High Risk	Extremely high
24	Do you think there is a Social Risk ? (i.e. choosing this service provider will cause a negative reaction in your social network)	1	2	3	4	5
25	Do you think there is much of a Performance Risk ? (i.e. the outcome of service provider does not work as well as you expect)	1	2	3	4	5
26	Do you think there is much of a Physical Risk ? (i.e. the service will harm your health)	1	2	3	4	5
27	Do you think there is much of a Time Risk ? (i.e. the service will spend a lot of time on it)	1	2	3	4	5
28	Do you think there is much of a Psychological Risk ? (i.e. feel anxiety or uncomfortable)	1	2	3	4	5
29	Do you think there is much of a Financial Risk ? (i.e. loss of money)	1	2	3	4	5

Part 3: Propensity to use SSTs

S1 In general, it is _____ that I will use a Self-Service Technology.

- 30 Highly Likely Highly Unlikely
 31 Highly Possible Highly Impossible
 32 Highly Certain Highly Uncertain

S2A Regarding bank information search, I am _____ to use a Self-service technologies.

- 33 Highly Likely Highly Unlikely
 34 Highly Possible Highly Impossible
 35 Highly Certain Highly Uncertain

S2B1 When conducting a funds transaction, it is _____ that I will use Self-Service Technologies.

- 36 Highly Likely Highly Unlikely
 37 Highly Possible Highly Impossible
 38 Highly Certain Highly Uncertain

S2B2 When I transfer money, it is _____ that I will use Self-Service Technologies.

- 39 Highly Likely Highly Unlikely
 40 Highly Possible Highly Impossible
 41 Highly Certain Highly Uncertain

Part 4: Personal Information

1. Gender Male Female Other
2. Age Under 18 19-25 26-35 36-50 51-60 61 and Above
3. Occupation Student / Scholar Worker / Employee Employer / Self-employed
 Other
4. Income ¥ (Per Month) Under ¥ 1 000 ¥ 1 001-3 000 ¥ 3 001-5 000
 ¥ 5 001-10 000 ¥ 10 001-20 000 ¥ 20 001 Above
5. Education No schooling Elementary school High school
 College University

6. How many times will you go to a bank per Week / Month on average?

Per Week:

0	1	2	3	4	5	6	7	8	9	10	Over 10
---	---	---	---	---	---	---	---	---	---	----	---------

Per Month:

0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21-30	Over 30
---	---	---	---	---	---	---	---	---	---	----	-------	-------	-------	---------

Appendix 2: Questionnaire (Chinese)

先生/小姐 您好:

本问卷是基于目前非人员服务的日渐普及,而发展出来的研究. 我们对于您在不同银行服务中,选择人员或者是自助式服务的意愿相当有兴趣. 您的热心参与,将对本研究及银行服务品质的提升有莫大帮助. 谢谢您的协助与指教.

(本研究所得的任何信息,只作为本研究分析使用,请您放心填答)

南非开普半岛理工科技大学 商学院

梁岩

E-mail: liangyan197602@yahoo.com

指导老师: 博纳德 皮克 先生

Mr. Bernard Pick

请您针对下列问题,依照程度圈选 (1-5) 或在括号中打(O)选出适当的答案

举例说明:

		非常不同意	有点不同意	无意见	有点同意	非常同意
(a)	假如你非常不同意,请在数字 1 打圈 ①.					
(b)	假如你有点不同意,请在数字 2 打圈 ②.					
(c)	假如你无意见,请在数字 3 打圈 ③.					
(d)	假如你有点同意,请在数字 4 打圈 ④.					
(e)	假如你非常同意,请在数字 5 打圈 ⑤.					
1	科技让人们更加容易掌握生活.	①	2	3	4	5
2	科技让人们更加容易掌握生活.	1	②	3	4	5
3	科技让人们更加容易掌握生活.	1	2	③	4	5
4	科技让人们更加容易掌握生活.	1	2	3	④	5
5	科技让人们更加容易掌握生活.	1	2	3	4	⑤

第一部分：科技成熟程度

		非常不同意	有点不同意	无意见	有点同意	非常同意
1	科技让人们更容易控制生活.	1	2	3	4	5
2	具有最新科技的产品或服务,使用起来更加便利.	1	2	3	4	5
3	我喜欢使用电脑程式满足个人化的需求.	1	2	3	4	5
4	我认为新科技有助于激发出新的想法.	1	2	3	4	5
5	我朋友知道的新科技知识比我知道的还多.	1	2	3	4	5
6	我对于辨认高科技零件的挑战,相当乐在其中.	1	2	3	4	5
7	我会觉得那些高科技设备并不是针对一般人使用来设计的.	1	2	3	4	5
8	高科技产品或是服务的说明书,大多用高深难懂的专业术语写成.					
9	科技总在最关键的时刻失灵.					
10	我对于只提供网络交易的商家感到不放心.					
11	与公司进行交易时,人员的接触是很重要的.					
12	当我打电话给一间公司时,我会比较希望是人员而非机器接听.					

13. 一般而言,相同的服务可以由多种方式来完成,而在人员提供与自助式服务科技提供这两种服务提供方式之间,您比较偏好选择哪一种方式?

- 非常偏好 人员 一般偏好 自助服务科技
 一般偏好 人员 非常偏好 自助服务科技
 无所谓

第二部分 A: 顾客的银行使用经验

情境 一： 银行信息查询/询问

你想要了解一下您的银行有哪些业务以及金融信息,藉此提供自己更多的理财以及了解银行能为你做什么事.

14. 当您要查询银行信息时,您比较偏好由人员或是藉由自助式服务科技来完成?

- 非常偏好 人员 一般偏好 自助服务科技
 一般偏好 人员 非常偏好 自助服务科技
 无所谓

15. 我常使用何种方式支付账单?

- 询问银行人员 网络 自动语音系统
 移动电话银行服务 其它 _____

您认为银行信息查询/询问:		没有风险	低风险	正常风险	高风险	非常市风险
16	这项服务具有社会风险吗? (举例: 选择这个服务提供者, 会认您的社会地位因此而受到影响)	1	2	3	4	5
17	这项服务具有绩效风险吗? (举例: 服务产生的结果, 和您之前的期望不同)	1	2	3	4	5
18	这项服务具有身体风险吗? (举例: 这项服务会损害你的健康)	1	2	3	4	5
19	这项服务具有时间风险吗? (举例: 这个服务会花您相当多的时间)	1	2	3	4	5
20	这项服务具有心理风险吗? (举例: 这个服务会让您觉得紧张或是不舒服)	1	2	3	4	5
21	这项服务具有财务风险吗?	1	2	3	4	5

第二部分 B: 顾客的银行使用经验

情境 二: 投资股票

22. 一般而言, 当您投资股票/基金时, 您比较偏好人员或是自助式服务科技完成服务:

- 非常偏好 人员 一般偏好 自助服务科技
 一般偏好 人员 非常偏好 自助服务科技
 无所谓

23. 当您要转账时, 您比较偏好人员或是自助式服务科技完成服务:

- 非常偏好 人员 一般偏好 自助服务科技
 一般偏好 人员 非常偏好 自助服务科技
 无所谓

您认为投资这项服务:		没有风险	低风险	正常风险	高风险	非常市风险
24	具有社会风险? (举例: 选择这个服务提供者, 会让您的社会地位因此而受到影响)	1	2	3	4	5
25	具有绩效风险? (举例: 服务产生的结果, 和您之前的期望不同)	1	2	3	4	5
26	具有身体风险? (举例: 这项服务会损害您的健康)	1	2	3	4	5
27	具有时间风险? (举例: 这服务会花您相当多的时间)	1	2	3	4	5
28	具有心理风险? (举例: 这个服务会让您觉得紧张或不舒服)	1	2	3	4	5
29	具有财务风险? (举例: 这项服务会让您对钱财有安全之虑)	1	2	3	4	5

第三部分：使用倾向 (请根据各服务,选择您对自助式科技的看法及使用可能性)

S1 对我来说,使用自助式服务科技来完成我所需要的服务是:

- | | | | | | | | |
|----|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| 43 | 可能性很低 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 可能性很高 |
| 44 | 非常不适合 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常适合 |
| 45 | 非常不可靠 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常可靠 |

S2A 对我来说,使用自助式服务科技银行信息查询/询问是:

- | | | | | | | | |
|----|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| 46 | 可能性很低 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 可能性很高 |
| 47 | 非常不适合 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常适合 |
| 48 | 非常不可靠 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常可靠 |

S2B1 对我来说,使用自助式服务科技进行资金转账是:

- | | | | | | | | |
|----|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| 49 | 可能性很低 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 可能性很高 |
| 50 | 非常不适合 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常适合 |
| 51 | 非常不可靠 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常可靠 |

S2B2 对我来说,使用自助式服务科技进行基金/股票交易是:

- | | | | | | | | |
|----|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|
| 52 | 可能性很低 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 可能性很高 |
| 53 | 非常不适合 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常适合 |
| 54 | 非常不可靠 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 非常可靠 |

第四部分：个人基本资料

- 性别 男性 女性 其它
- 年龄 18岁以下 19-25 26-35 36-50 51-60 60或以上
- 职业 学生/学者 工人/职员 雇主/个体经营
- 每月收入 (人民币) 低于1 000 1 001-3 000 3 001-5,000
 5 001-10 000 10 001-20 000 20 001 以上
- 教育程度 无学历 小学 高中
 大专 大学

6. 你一个月/周 平均去银行几次?

月:

0	1	2	3	4	5	6	7	8	9	10	超过 10
---	---	---	---	---	---	---	---	---	---	----	-------

周:

0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21-30	超过 30
---	---	---	---	---	---	---	---	---	---	----	-------	-------	-------	-------

Appendix 3: The Abbreviated Technology Readiness Scale

The Abbreviated Technology Readiness Scale

Directions: indicate whether you strongly agree, somewhat agree, are neutral, somewhat Disagree, or strongly disagree with the following statements.		Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
a	I can usually ignore out new hi-tech products and services without helps from others.	1	2	3	4	5
b	New technology is often too complicated to be useful.	1	2	3	4	5
c	I like the idea of doing business via computers because you are not limited to regular Business hours.	1	2	3	4	5
d	When I get technical support from a provider of a high-tech product or service, I Somewhat feel as if I'm being taken advantages of by someone who knows more that I do.	1	2	3	4	5
e	Technology gives people more control over their daily lives.	1	2	3	4	5
f	I do not feel confident it safe giving out a credit card number over a computer.	1	2	3	4	5
G	In general, I am among the first in my circle of friends to acquire new technology when it appears	1	2	3	4	5
H	I do not feel confident doing business with a place that can only be reached on line.	1	2	3	4	5
I	Technology makes me more efficient in my occupation.	1	2	3	4	5
j	If you provide information to a machine or over the internet, you can never be sure if It really gets to the right place.	1	2	3	4	5

Appendix 4: Letter of permission from the Industrial and Commercial
Bank of China in JiLin