

**An Exploration of Perceived Risk  
In Young Chinese Consumers'  
Internet Banking Services Decision Making**

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## **Abstract**

This thesis explores how perceived risk, which has been primarily developed in Western contexts, may help understand consumers' action in relation to the Chinese Internet banking services market. This market is new and acknowledged as having great potential, but there is insufficient information regarding potential consumers and their perceptions or decision-making. The theory of perceived risk is a key construct influencing Western consumers' decision making; whether it is applicable in the current context is unknown. A wider customer perspective is therefore important to improve both our understanding of perceived risk theory and its usefulness in the Chinese Internet banking services market.

The thesis reviews the major research perspectives on perceived risk within consumer behaviour literature. It provides a comprehensive understanding of the concept itself, to identify research gaps, and also develops a research model to evaluate consumers' risk perception within the context of Chinese Internet banking services.

This research is conducted through the application of a critical realist approach, utilizing mixed methods. This approach enables the research to address a main controversy in the perceived risk field by evaluating the two common measurement models. It also develops an understanding of Chinese consumers' risk perceptions and how consumers' perceptions are formed and influenced by considering a range of contextual issues. This approach highlights the importance of obtaining social and cultural meanings to understand the measurement of risk perception – this is seldom addressed in the majority of perceived risk research.

Results are thoroughly analysed, compared and contrasted to relevant Western research. Perceived risk, as a construct, is meaningful in helping to understand potential Chinese Internet banking services users. The principle risk dimensions identified in this research are consistent with those detailed in Western studies. However, the underlying relationships between the risk variables are different. Such differences can be attributed to the specific

social and cultural context.

The measurement of risk is best operationalised through the application of one of the commonly used models – the multiplicative. This model produces results that are more consistent with the qualitative patterns derived from the application of mixed methods research. Whilst this research advocates the use of the multiplicative model, it also contends that future researchers should evaluate both common models – as the impact of context needs to be addressed sensitively, and this would also be consistent with the application of a critical realist perspective.

Further, when considering perceived risk measurement, this research has found that the application of multiple variables is useful to test validity and reliability. These two issues are seldom considered or evaluated in previous perceived risk studies. This application also lends itself to the development of greater depth in data analysis, and therefore provides a more specific perspective to understand risk perceptions through detailed measurement.

Future research in perceived risk should also address risk evaluation by considering the purchase stages, as consumers risk perceptions may be influenced and subject to change at different stages. Without such an approach results generated may be misleading, and may not provide an adequate basis for understanding consumers and developing appropriate marketing strategies to meet these concerns.

## Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of the University of Gloucestershire and is original except where indicated by specific reference in the text. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other education institution in the United Kingdom or overseas.

Any views expressed in the thesis are those of the author and in no way represent those of the University.

Signed: ..

.....Date: .....30/04/2007.....

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I would like to acknowledge a few people for their great help, support and guidance in the formulation of this Ph.D study, by using a metaphor:

“Three years ago I set out on a small rowing boat with a compass, a vague chart and a fuzzy idea of how to navigate the seas to find my ‘Personal Rock’. After leaving the port, the boat moved slowly for some time. I struggled and wanted to speed it up. The boat was spinning, unexpectedly. It was not easy to keep the boat sailing in the right direction. Somehow, I reached a land where I met two important and great people who gave me tremendous help to install a tailored navigation system to the boat. With the assistance of the system, the boat set off again. During the journey, I met more helpers who kindly shared their thoughts, ideas, opinions, advice, suggestions, supports and encouragement with me. An engine was then installed with which my boat started to fly towards its destination with a motor at its back.”

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## List of Symbol and Abbreviations

$\Sigma$	To add up
CFA	Confirmatory Factor Analysis
CNNIC	China Internet Network Information Centre
DA	Discriminant Analysis
EC	Electronic Commerce
EFA	Exploratory Factor Analysis
EFTPoS	Electronic Fund Transfer at Point-of-Sale
EMV	Expected Monetary Value
FA	Factor Analysis
FG	Female Group
GDP	Gross Domestic Product
IBS	Internet Banking Services
ICBC	Industrial & Commercial Bank of China
KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
MANOVA	The Multivariate Analysis of Variance
MG	Male Group
OPR	Overall Perceived Risk
PAF	Principal Axis Factoring
PCA	Principal Components Analysis
PR	Perceived Risk
RMS	Risk Management Strategies
RRS	Risk Reduction Strategies
SEM	Structure Equation Modelling
SEU	Subjective Expected Utility
Sig.	Significance
Spearman's RHO	Spearman's Rank Order Correlation
SPSS	Statistical Package for Social Science
WTO	The World Trade Organisation



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# **Chapter 1 – Introduction**

Risk is a key construct in consumer decision making (Gabbott, 1991; Mitchell, 1998b; Oglethorpe & Monroe, 1987). Consumers observe risk individually, handle risk differently, and respond accordingly (Ingen & Hughes, 1985). Much consumer decision making involves risks at different stages, e.g. before, during, or after purchase (Cunningham, Gerlach, Harper & Young, 2005b). The introduction of the perceived risk (PR) concept about forty years ago by Bauer (1960), has stimulated considerable research interest in consumer behaviour. The concept was mainly extended from the fields of economics, finance, psychology and decision making, to marketing (Ingen & Hughes, 1985). It is now deeply embedded in the consumer behaviour literature as a central concept that greatly influences consumer decision making. Studying consumer behaviour from a risk perspective not only helps understand consumer behaviour, but also has marketing implications, e.g. to develop better marketing strategies. These elements demonstrate the importance of PR in consumer behaviour research.

PR is a complex, multifaceted, and dynamic concept. It varies with a number of common elements – products, purchase situations, and people (e.g. Conchar, Zinkhan, Peters & Olavarrieta, 2004; Dowling, 1986; Ingen & Hughes, 1985; Mitchell, 1999; Ross, 1975). Within the body of extensive literature on PR, some controversies and divergent opinions also exist. These are ranged from fundamental to applied considerations; for example, what is PR? Why ‘perceived’? How could PR be measured and handled? What implications does PR reveal to marketers? Many researchers have made efforts to respond to these conceptual issues – but the literature is full of inconsistencies including whether PR should be measured multiplicatively or additively. This helps to illustrate that the PR concept is still underdeveloped.

PR theory has emerged from research conducted in Western contexts, particularly with American and European consumers. Whether PR is applicable in other cultural contexts has seldom been considered. For example, it is interesting to establish whether PR would be helpful in understanding consumers’ decision making from non-Western cultures, or how consumers from non-Western cultures would respond to a particular risk-related situation. These areas were identified as major theoretical gaps by Hoover, Green, and Saegert in 1978. Since then, attention has been given to these issues during early studies, though this was limited. More recently, research has been conducted to understand consumers in Eastern markets, for example consumers in Taiwan (Chen, Chang & Chang, 2005; Lu, Liu, Jing & Huang, 2005), Hong Kong (Chen & He, 2003; Ho & Ng, 1994), Singapore (Tan, 1999) and Israel (Liebermann & Stashevsky, 2002). Additionally, some studies have adopted a cross-cultural comparison as an approach, such as Korean

vs. American consumers (Choi & Lee, 2003; Park & Jun, 2003). This indicates that the application and knowledge of PR in various cultural contexts is increasing. But there is still scope for clarification and development on a number of levels. PR theory still needs to expand its theoretical basis in less understood but growing markets, such as China.

The discussion above briefly identifies the conceptual gap in the PR literature which is explored more fully in the next chapter. This research seeks to address a range of issues by considering: whether PR theory is applicable to understand Chinese consumers' decision making. The section below helps set the context by reviewing China from a broad market perspective.

### **1.1 China as a New and Important Market**

China is an important strategic market for many international organisations; in terms of its continuous economic growth, massive market size, the potential of the Chinese market and increasing consumption power (Walters & Samiee, 2003). Since its open-door economic policy was introduced in 1978, China's economy has developed rapidly but at a stable pace: GDP (Gross Domestic Product) growth has been by approximately 10% every year (Lu et al., 2005). Also, the large size of the market and its potential attracts extensive fund investment. This rapid growth and stable development imply great opportunities for international market expansion, making it a strategically important market in relation to many products.

The country has received even greater global attention after the announcement of its accession to the World Trade Organisation (WTO) in November 2001; researchers estimated that foreign direct investment in China would be likely to increase (Agarwal & Wu, 2004; Wong, Yen & Fang, 2004). This is because, according to China's commitment to WTO, the country needs to ensure a trading system of "uniformity, transparency and judicial reviewability" (WTO, 2002; cited in Agarwal & Wu, 2004: p280). This indicates that many entry barriers established previously to protect Chinese organisations in various industries/sectors must be lifted within differing periods of time.

The lifting of entry barriers is undertaken through a transformation of China's previous economic model – from a planned economy towards a market-driven model. Gradually, local, regional, and national barriers will go. This highlights that not only opportunities but also competition from external and internal companies would emerge during the process of transformation (Yolles, Iles & Guo, 2006).

In addition, different industries are undertaking different transformation processes. Some of the markets that are experiencing early transformation are associated with services, including the financial services market (Worthington, 2005); Internet-related sectors such as telecommunication; Internet development, and Electronic Commerce (EC) (Agarwal & Wu, 2004). Among these markets, the Chinese financial market is expected to be available for trading to foreign banks by 2007 (Yu, 2006). It is also noted that the banking industry is the weakest in terms of managing external competition due to the strong and long-standing government protection (Worthington, 2003). However, researchers have pointed out that although the country is committed to lower its entry barriers to various industries in the long term, there are intervals to reach the status of free competition in the short term (e.g. Worthington, 2005). This reinforces the importance of the market during this transitional period and offers unique opportunities for examining consumers' decision making in terms of PR.

However, there are elements which make research in this market difficult and these need to be addressed (Walters & Samiee, 2003). Despite the positive elements of the Chinese market mentioned above, it is not easy to operate effectively and compete in this country. In addition to the magnitude and diversity of the country, the business environment in China increases the challenge since the country is in a process of dynamics change. Compared with internal Chinese companies, it is especially critical for external organisations to better understand Chinese consumers. This is because during the transformation, economic change impacts on Chinese society, which is undergoing massive social and cultural changes (Yolles et al., 2006).

Given the dynamic nature and rapid change that the country is experiencing, researchers suggest that it is difficult to understand this market fully (Walters & Samiee, 2003). For example, Chinese consumers respond differently to external changes; in particular, the underlying culture could either encourage or discourage the adoption of innovation. When dealing with the rapid changes in various industries at different times, some Chinese consumers will respond much faster than others. This research considers the development of a dynamic area of Chinese consumer behaviour during a critical time for the country's economic transformation. This draws attention to understanding the significance of culture in the process of adoption.

The fast changing environment increases the difficulty of obtaining a clear and current understanding of Chinese consumers (Zhang, 1996). Without sound knowledge of these consumers, it would perhaps be oversimplistic to overlay information regarding Western

consumers' behaviour to the Chinese context. Equally, employing marketing strategies developed within the West, without addressing the special features of the Chinese context, such as its cultural diversity, might be problematic.

Consumer knowledge therefore becomes vital, especially when an essential understanding about local customers in relation to a product is often lacking. This also highlights that understanding and identifying early adopters within a Chinese particular market may be helpful to encourage other consumers.

## **1.2 Limited Research in Relation to IBS Adoption in China**

The banking industry in China is considered to have huge potential, but is not well understood (Worthington, 2005). To better compete in this market, it is suggested that Internet banking services (IBS) may be an effective strategic response (Lu et al., 2005). This is mainly because under the former economic model, as well as strong government protection, financial services are densely networked by Chinese banks, especially the four former state-owned domestic banks (Lu et al., 2005; Worthington, 2005). This raises a number of issues. Since the Chinese banking industry contains a strong network of physical branches, it is common that in cities, major banks not only compete in business centres but also in residential areas. This suggests that it would be challenging for foreign banks to enter the banking market and compete effectively through physical branches (Worthington, 2003). This begins to support the idea of entering the Chinese banking market through a non-traditional distribution channel.

IBS also presents Chinese banks with a number of opportunities for a range of reasons. Firstly, IBS has often been associated with cost reduction in the West (Bradley & Stewart, 2002). Many Chinese domestic banks are aware of the high cost and inefficiency of running physical branches, and therefore, are beginning to offer new banking approaches, including the use of the Internet as a new channel (Lu et al., 2005). Chinese banks also recognise the potential savings because of the implementation of information technology as has been the case in the West (Karjaluoto, Mattila & Pento, 2002a; Lockett & Littler, 1997). Secondly, to prevent extensive competition from external banking service providers, IBS is also considered as a useful strategy for Chinese domestic banks to continue their advantages (Lu et al., 2005).

However, unlike many Western markets where IBS is better understood by customers, banks, and researchers, in China, it is relatively new and little about the market is known (Laforet & Li, 2005). Early work within Western marketing theories was primarily

conducted among organisational customers (e.g. Athanassopoulos & Labroukos, 1999; Bradley & Stewart, 2002; Daniel, 1999). Later studies were based on individual consumers from countries such as the U.S.A., U.K., Finland and Australia (e.g. Black, Lockett, Winklhofer & Ennew, 2001; Devin & Yeung, 2003; Karjaluoto, Mattila & Pento, 2002b; Kolodinsky, Hogarth & Hilgert, 2004; Sathye, 1999). The theories commonly applied when studying individual consumers' perspective are the technology acceptance model; the diffusion of innovation, attitudes and motivations towards IBS adoption. However, the majority of the research when examining both Western and Chinese markets, does not take a PR perspective. This supports the thesis that research to fill this gap is important.

### **1.3 The Importance of the Chinese IBS Market**

The Chinese IBS market is considered important for several reasons. First, the Chinese Internet banking market is reported to have tremendous potential for growth. For example, according to the Ministry of Commerce of the People's Republic of China ([MOFCOM], 2002), Industrial & Commercial Bank of China (ICBC) – one of the former 'big-four' state-owned banks – announced that by the end of July 2002, it had 11000 corporate IBS users and 1.132 million individual customers. Also, its total online banking trade was approximately 551.6 billion USA dollars and this exceeded the total trade amount generated in 2001. Two years later, it was reported that by November 2004, ICBC had processed more than 600 million US dollars on the Internet; 110000 corporate IBS users and 10 million individual users (People's Daily Online, 2004). These two reports illustrate that the Chinese IBS market displays great attractiveness to marketers. The positive expectation of IBS is somewhat similar to EC development in China.

Researchers have noted that the development of EC in China is important (Trappey & Trappey, 2001). The number of Internet users in China increases dramatically every year. However, penetration is very low compared with developed countries (Yu, 2006). A recent report on Internet development in China provided by China Internet Network Information Centre ([CNNIC], Jan. 2007) illustrates that there were 137 million Internet users in China by the end of 2006. The figure is impressive, but only accounts for 10.5% of China's population; fewer people (only 10.5% of the Internet users) used the Internet for banking and stock trading.

In line with CNNIC's report, recent studies have shown that the IBS adoption is low in China (Laforet & Li, 2005). This suggests that the IBS market is not mature and needs to

be better understood. In general, the understanding of IBS in China is deficient. It is noted that IBS is 'too new' for many Chinese consumers to adopt; this low adoption phenomenon could be related to consumers' risk perception (Laforet & Li, 2005). Research in this market is thus of importance.

Moreover, researchers suggest that it is important to specify inter-group difference within IBS non-users (Lee, Kwon & Schumann, 2005). This was also considered by the current research. Lee et al. (2005) pointed out that many studies broadly categorise consumers into IBS users and non-users, such as Akinci, Aksoy and Atilgan (2004). However, within the non-user group, it is likely that sub-groups exist. If researchers failed to identify, differentiate or overlook the differences, problems could occur. For example, the market could be inadequately understood and ineffective or untailored strategies could be established.

Furthermore, early work reported that there were gender differences in terms of IBS adoption in Finland – males are more likely to adopt than females (Karjaluoto et al., 2002b). Recent research investigating the IBS market in Hong Kong has found that this gender difference may be gradually decreasing (Wan, Luk & Chow, 2005). It is therefore important to explore whether this phenomenon might emerge in the IBS market in mainland China.

In addition, the development of EC can affect IBS adoption. It is suggested that some difference may potentially exist in relation to EC development between Western and non-Western markets. The common aspects are associated with different technological abilities, business ethics, relevant Internet regulations and customer profiles within individual markets (Gurau, 2002). Since IBS is a product operated on the Internet, it is likely that these differences might also emerge in the IBS context. This implies that IBS marketing strategies developed in the Western context might not be fully appropriate and effective in non-Western markets, such as China. This highlights the importance that marketers should respond accordingly within different contexts. To address this issue, this research also thoroughly investigates the Chinese IBS market to consider the potential implications for marketing.

Therefore, the current study seeks to reflect this inquiry, its general research questions are:

1. How can PR theory help understand young Chinese consumers' decision of whether to use IBS?



2. Are PR measurement approaches appropriate in a non-Western context?
3. What are the gender differences in relation to risk perception and usage intention?

It is expected that the current research will bring new results for comparison with the findings from the Western IBS markets. Also, the research will give IBS providers insights into the Chinese IBS market and therefore provide more tailored marketing strategies to grow this market.

Having generated the general research questions, a contextual background to the current research is provided.

#### **1.4 Research Background**

This brief section helps provide a context and identifies elements that are different from Western banking services which supports need for further research.

##### **The Overview of Internet Banking Market in China**

IBS was introduced to Western consumers in the 1990s, in 1995 in the U.S.A. (Wan et al., 2005), in 1997 in the U.K. (Bradley & Stewart, 2002), and in Finland in 1996 (Karjaluoto et al., 2002b). In China, IBS was launched in February 2000 by ICBC ([www.icbc.com.cn](http://www.icbc.com.cn)). By 2002, the number of IBS Chinese providers had increased to eight large and medium-sized banks (Lu et al., 2005). IResearch (2006a & 2006b) assessed that ICBC had the largest market share in terms of organisational and personal IBS users in 2005 (59.2% and 28.2% respectively).

In many developed countries, the common electronic banking channels include telephone, television, the Internet and mobile (mobile phones or personal handheld digital assistant) (Daniel, 1999; Devin & Yeung, 2003). These channels are sometimes considered as 'stand-alone' or additional approaches to provide banking services and financial product information. Within these channels, the Internet is a relatively new form that banks encourage account holders to use.

Unlike some IBS providers in the West, IBS in China is mainly an additional channel attached to physical banks (Laforet & Li, 2005) and no 'stand-alone' IBS operators exist in the market so far. The government still has a strong impact on the banking industry within China, such as control of interest rates (Worthington, 2005). There is no difference in terms of interest rates between normal banks and Internet banks. Usually,

banks in developed countries would offer higher interest rates to encourage customers to use online banking. When Chinese consumers decide to use banking services on the Internet, they are always linked to an existing bank. This shows some degree of difference between the Chinese IBS market and the Western IBS markets.

Moreover, before the entry barriers are entirely removed in 2007, Chinese consumers are restricted to using personal banking services provided by domestic banks. Also, foreign banks were limited in offering foreign currency-related services to the Chinese market (Worthington, 2003). This could imply that foreign banks might be less familiar to Chinese consumers, compared with domestic banking brands.

Also, account holders are given a 'savings book' to detail account transactions, which consumers can consult for transaction records. The book is similar to a bank statement, commonly used in many Western markets. For example, if an account holder had four different accounts with one bank, four books would be issued. This type of book may raise some concerns. From the perspective of the bank, operation costs seem high. From the account holder's point of view, this may help check the details of one's account; however, it could also be problematic with regards to account management (e.g. too many books for management). Recently, banks have begun to use fewer books, for example, accounts that share similar features (such as saving in one currency) are combined into one.

Such information demonstrates the differences that exist between Western and Chinese banking processes and further supports the need to carry out research to more fully understand the Chinese consumer – the role of this thesis.

### **1.5 Thesis Structure**

The next chapter critically reviews the literature concerning PR theory. This considers how PR is treated in the consumer behaviour literature, including how it is understood and what major findings may be drawn from it. A critical review on these aspects helped the researcher to identify research gaps in greater detail and specify the research questions.

The philosophical position and details of methodology are presented in the third chapter. More specifically, the rationale for adopting the appropriate philosophical perspective among alternatives is discussed. Guided by this position, a specific research procedure was developed. This has implications for the subsequent research design, data collection

methods, analysis techniques, reporting approaches and limitations. Each of these is detailed individually.

The fourth chapter reports the major findings generated at the different research stages. The chapter contains two broad sections to more clearly present the results to the reader.

The discussion chapter compares findings with the existing literature; similarities and differences in relation to consumers' perception are discussed. In addition, the chapter integrates the different findings from this research to provide a thorough understanding of the current research context.

Finally, the concluding chapter briefly reviews the research process, identifies the contributions to theory and addresses implications for marketing from the major findings as well as suggesting key areas for further research

Having discussed the importance of PR in consumer behaviour and the emerging market of IBS in China, the following chapter seeks to review in detail the literature in relation to the PR concept.

## **Chapter 2 – Literature Review**

## **2.1 Introduction and Objectives**

In the consumer behaviour literature, the concept of PR is acknowledged as having a crucial role in the consumer decision-making process. This is well-documented in numerous papers some of which have provided critical reviews of the concept (e.g. Conchar et al., 2004; Dowling, 1986; Ingene & Hughes, 1985; Mitchell, 1999; Ross, 1975; Stone & Gronhaug, 1993). These articles have explicitly stated that PR is an essential concept in understanding consumer behaviour.

This chapter critically reviews the concept of PR from the 1960s to the 2000s in terms of consumer behaviour. The chapter aims to provide a comprehensive understanding of the concept itself, and to develop a coherent research model to evaluate the risk inherent in IBS for the current study. It addresses the following questions:

- how PR is defined in the consumer behaviour literature?
- what is the nature of the concept?
- how can PR be measured?
- what risk factors influence various consumer decision-making?
- how do consumers handle PR?
- what are the major managerial implications for marketers?
- what are the implications for the current study?

Thus, the chapter objectives are:

- to critically review PR in the consumer behaviour literature;
- to identify major issues concerning PR;
- to develop understanding of the concept within consumer Internet purchase contexts;
- to outline possible research areas for this particular study, and
- to establish a coherent PR model for risk examination in the current context.

To achieve these objectives, a chronological approach is applied to review the first studies in the PR area. Gradually, specific research questions on PR within the current context are built through a process of elimination. Therefore, this chapter is structured as follows: the chapter firstly outlines the research scope of PR in the consumer behaviour discipline. This provides a boundary for the scope of this research. Secondly, extant literature is critically evaluated by comparing and contrasting the various points of view encountered in PR theory. More specifically, major arguments concerning the suggested definitions, operational definitions, and implications of PR in previous studies are discussed. Thirdly, unexplored research areas are identified so that research questions

for the present study can be developed. The critical review starts with an overview of the concept in the early literature.

## **2.2 A Brief Overview of Perceived Risk in Consumer Behaviour Literature**

Risk is an important and complex concept in human decision-making processes (Dowling, 1986). It critically affects consumer decision-making, yet, as Bauer noticed in 1960, the understanding of consumer behaviour from a risk perspective was then deficient. He therefore introduced the concept of PR to consumer behaviour theories. The researcher proposes:

“Consumer behaviour involves risk in the sense that any action of a consumer will produce consequences which he cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant.”  
(Bauer 1960, in Cox 1967a: p24)

Moreover, Bauer (1960) explicitly encourages scholars to employ PR, as a psychological and hypothetical construct, in consumer behaviour research. He believes that the concept would facilitate both scholars and practitioners to achieve a better understanding of consumer behaviour.

Over the past four decades, the theory of PR has evolved and been embedded in the consumer behaviour literature (Mitchell, 1999; Ross, 1975). Indeed, the theory has become an essential concept within the literature (Stone & Gronhaug, 1993). PR has been applied, examined and advanced in a variety of areas. Important contributions were made to enhance the knowledge of consumer behaviour via a risk perspective at its early development stage (see Cox, 1967a). Especially during the 1970s, research on PR appears to reach a peak (Stone & Gronhaug, 1993). Later, during the 1990s, some researchers (e.g. Mitchell, 1999) noticed a slight decline in this area. Table 1 (see next page) indicates the major research areas concerning PR's conceptual development, including PR components, various risk dimensions, alternative measurement models and risk reduction behaviour.

**Table 1. Major Research Areas of Perceived Risk (among earlier work, references chronologically order)**

Research Topics	Primary Studies
The components of PR	Cunningham (1967), Bettman (1973), Peter and Ryan (1976), Stone and Gronhaug (1993), Dowling and Staelin (1994)
The Risk Dimensions	Roselius (1971), Jacoby and Kaplan (1972), McCorkle (1990)
PR Measurement Models	Cunningham (1967), Spence, Engle, and Blackwell (1970), Bettman (1973), Jacoby and Kaplan (1972), Horton (1976), Peter and Ryan (1976), Stone and Winter (1987), Dowling and Staelin (1994)
Risk Reduction Behaviour	Arndt (1967), Sheth and Venkatesan (1968), Roselius (1971), Derbaix (1983), Garner and Thompson (1985), Boze (1988), Coleman, Warren, and Huston (1994), Mitchell and McGoldrick (1996)

More recently, however, research interest in employing this concept has grown again. This is evident in research which employs PR in EC contexts (e.g., Corbitt, Thanasankit & Yi, 2003; Huang, Schrank & Dubinsky, 2004; Lim, 2003; Liu & Wei, 2003). This also has indicated a new research direction. Since the theory has been widely applied into different contexts, it is important to identify the change of research focus. Accordingly, Table 2 below groups the most frequently cited studies diachronically.

**Table 2. Representative Publishing Paper on Perceived Risk (1967 – To date)**

Authors	Year	Product features	Product Categories
Cunningham	1967	Frequently purchased, routine supermarket products	Headache remedies, fabric softeners, and dry spaghetti
Popielarz	1967	New product adoption and risk acceptance: intending behaviour	Camera, dress shoe, headache remedy, automobile tire, instant coffee, and deodorant
Sheth and Venkatesan	1968	Frequently purchased item	Hair spray
Spence et al.	1970	Mail orders versus in-store shopping (channel-focused)	20 products* <sup>1</sup>
Jacoby and Kaplan	1972	Two cross-validated studies: 3 relatively expensive products, 3 apparel items, 3 low price products, and 3 drug products	Sports car, life insurance, 23" table colour TV, suits, winter coats, dress shoes, deodorants, playing cards, razor blades, vitamins, aspirin, and toothpaste
Kaplan, Szybillo and Jacoby	1974		
Schiffman	1972	New product trial, actual purchase behaviour	A salt substitute
Bettman	1973	Grocery products purchased in an imaginary store	Paper towels, dry spaghetti, furniture polish, toothpaste, beer, instant coffee, aspirin, margarine, and fabric softener
Peter and Tarpey	1975	Durable items	Compact cars and intermediate cars
Horton	1976	7 frequently purchased products	Toothpaste, aspirin, table salt, etc.

Lewis	1976	Products vs. services	* <sup>1</sup>
Guseman	1981	10 randomly selected services versus 10 goods	* <sup>1</sup>
Garner and Thompson	1985	Services	Physician services
George, Weinberger, and Kelly	1985	4 goods with 4 paired services	Colour TV, carpeting, quartz watch, eyeglasses; 4 paired services
Sanders	1985	Service	Tattoo purchase/consumption
Boze	1988	Service	Legal services
Huang	1993	Food safety concerns	Residue-free produce
Mitchell and Boustani	1993	Routine products	Breakfast cereals
Mitchell and Greatorex	1993	6 shopping goods and 6 services	Portable TV, coat, tennis racquet, jeans track suit, casual shirt/blouse, hairdresser, hotel, bank, restaurant meal, sports centre, fast-food meal
Stone and Gronhaug	1993	Relatively expensive product, purchase intention	Personal computer
Coleman et al.	1994	Traditional services versus non-traditional services	Dental services
Dowling and Staelin	1994	Intended purchase behaviour	New dresses
Jasper and Ouellette	1994	Catalogue shopping	Apparel
Mitchell, Yamin and Pichene	1996	Music disks	Compact discs
Van den Poel and Leunis	1996	Mail orders versus store shopping and RRS* <sup>2</sup> ; 6 non-food product categories	Low value: books, table-clothes, clothing; high value: refrigerators, stereo-equipment and sofas
Tan	1999	RRS with Internet shopping	Inkjet printer, watch, and blank video-cassette tape
Black et al.	2001	Risk in Internet banking adoption	Internet banking adoption
Barkworth, Hibbert, Horne and Tagg	2002	Risk in blood donation	Blood donation
Cases	2002	Risk in Internet shopping and RRS	Clothes (buying a jacket online)
Garbarino and Strahilevitz	2004	Risk in Internet shopping and 1 RRS (site recommendation)	1 <sup>st</sup> study: N/A; 2 <sup>nd</sup> study: an airline ticket, a CD, a jacket and a text book
Liebermann and Stashevsky	2002	Risk in (general) Internet shopping	N/A, a general level, no specific products
Bhatnagar and Ghose	2004	Risk in product classes and Internet shopping	Software, hardware, books, electronics, flowers, magazines, music, video
Chen and He	2003	Internet shopping adoption – brand focused	4 online retailers
Forsythe and Shi	2003	Internet shopping adoption in general, no specific products examined	
Lim	2003	Risk sources and outcomes in Internet shopping	N/A

Note: \*<sup>1</sup> Please refer to the original reference for product categories.



\*<sup>2</sup> RRS: risk reduction strategies.

It should be noted that Table 2 is not exhaustive; rather, it provides a general idea of what products or services have been frequently investigated in the PR field.

Overall, research attention in terms of product categories has experienced three major changes. Firstly, after the concept was initially introduced, most research in the 1970s focused on the examination of tangible goods. Later, during the 1980s, more emphasis was given to services. With the rapid development of EC in the late 1990s, risk in Internet contexts emerge a new research paradigm. Table 2 indicates that the literature on PR is dominated by findings on low value or low-risk physical goods whereas literature on services or high-risk situations is relatively limited.

The following sections elaborate the nature of the concept and examine it more closely. The discussion begins with a review of how PR is conceptualised and the key concepts relevant to PR.

### **2.3 The Conceptualisation of Perceived Risk in Consumer Behaviour**

PR is considered a central theory by marketing researchers (Ingene & Hughes, 1985; Oglethorpe & Monroe, 1987), as detailed earlier. It is derived from the normative theory of risk and is a hypothetical construct used to explain and/or to predict consumer behaviour (Kollat, Engel & Blackwell, 1970).

Bauer's (1960) suggestion about considering consumer behaviour from a risk-handling perspective has triggered a broad range of research, and considerable arguments on the concept have emerged. The common debates centre on the core issues of risk, uncertainty, subjective vs. objective risk, probability and consequences. Although these debates sometimes share similarities, in many cases they also differ. Inevitably, the relationship among inter-concepts is complicated and sometimes vague. Therefore, it is important to review critically these debates as interpreted by various authors and to clarify these inter-relationships before turning to the PR theory.

#### **2.3.1 Risk and Perceived Risk**

Risk is a complicated concept and it is hard to establish a 'universal' definition in various contexts as clearly indicated by "People disagree more about what risk is than about how large it is" (Fischhoff, 1985: p89; cited in Yates & Stone, 1994: p1). Indeed, the theory of risk is a complicated area understood differently across research areas. In

the fields of economics, psychology, statistical decision and games, risk is frequently interpreted by decision theorists as the situation where one has the knowledge of potential positive and negative outcomes, and the probability of occurrence in an event not happened (Dowling, 1986; Stone & Gronhaug, 1993). Many researchers agree with this interpretation. Smith, Dickhaut, McCabe and Pardo (2002), for example, see risk as the ability to know fully all possible outcomes before an event occurs. Tulloch and Lupton (2003) take a similar point and suggest that risk should be related to alternatives.

In consumer behaviour, Kogan and Wallach (1964, cited by Cunningham, 1967) propose that risk has two aspects: chance and danger. 'Chance' is sometimes referred to as 'probability' or the chance of occurrence while 'danger' concerns negative outcomes (Ayer, 1980). It is suggested (Bem, 1980: p3) that possible outcomes in a given risky-situation can be calculated by a mathematical formula, which multiplies objective probability of each outcome (concerning possible gain or loss) that may occur along with each alternative, and then adds the results together later. Such a formula is known as the 'Expected Value' model or sometimes the 'Expected Monetary Value' model (EMV, Morris, 2003: p158):

$$\text{EMV} = \Sigma (\text{probability of outcome} \times \text{financial result of outcome})$$

With the certainty of objective probability, it should be possible to obtain all outcomes (Bazerman, 1986). For instance, a ten pounds bet on the toss of a coin, has a fifty-fifty chance of winning or losing. By using the EMV model, the objective expected value in this example would be 0 pounds:

$$\text{EMV} = 50\% \times \text{£}10 + 50\% \times \text{£}(-10) = 0 \text{ pounds.}$$

This is a simple example. It can be seen that the set of possible outcomes can be easily calculated and identified when the full knowledge of possible outcomes is available. Thus, the knowledge of namely, whether the chance to gain or lose is known or not becomes key for outcome calculation (Stone & Gronhaug, 1993). The calculation, can however become complicated if the situation involves more alternatives (Bem, 1980). Regarding the above example, the chance of gain or loss changes as the number of choices to bet changes. As a result, the expected value will change.

However, the mathematical formula of expected value is not always applicable in all sorts of complicated phenomena such as human behaviour (Bem, 1980). When human

factors, that involve psychological concepts or monetary return, are integrated into risk-taking behaviour, the risk construct understood in marketing and psychology differs from the one interpreted in behavioural decision science research such as gambling (Cunningham, 1967; Stone & Gronhaug, 1993). Then it becomes difficult to estimate the possible results in advance.

The expected value theory is the basis of the 'Expected Utility' model in the psychology field where expected subjective value does not function as objective value does (Bem, 1980). This implies that the utility value is associated with individuals' subjective evaluation which could include inaccurate judgment (e.g. different preference towards outcomes) and outweigh the objective expected value which might trigger one's decision-making (Bem, 1980). However, as Bazerman (1986) argues, people do not always follow what the objective expected value suggests: even when people see a strong risk of a negative outcome, they may still take the risk. Individuals have different estimates of subjective probability within a particular situation. Individuals may underestimate or overestimate real/actual probability (Sjoberg, 1980). One reason is that the situation can affect individuals at different levels. Some psychological variables such as expected utility can have significant impacts on individuals' decision-making processes. Subsequently, the subjective probability can cause different individual risk-taking behaviour.

For this reason, the concept of PR in consumer behaviour theories was introduced. In essence, this relabelled concept is about an individual's subjective risk perception and it only focuses on negative consequences. These two aspects are fundamental principles that distinguish PR in consumer behaviour theories from the risk theory studied in other disciplines.

Bauer's (1960) proposition of PR quoted earlier (p13), clearly indicates that consumption decision-making can engender risk for buyers as generally the purchase outcomes are not known in advance, some may be unfavourable.

The above discussion leads to a question of whether a distinction in terms of known and unknown probability between risk and PR should be made in consumer behaviour theories. This question is vital to subsequent discussions as probability is related to possible outcome evaluation. The next section addresses this question and begins with the examination of the probability construct.

### 2.3.2 Known and Unknown Probability

“The probability concept conveys the likelihood that any particular outcome will occur in a statistical sense” (Bazerman, 1986: p46). This implies that the calculation with certainty of all possible outcomes in a given event by using statistical methods becomes possible. It should be noted that the calculation of priori probability here is referred to as objective outcomes (Bazerman, 1986; Bem, 1980; Morris, 2003). Bazerman (1986) goes on to argue that when objective outcomes are evaluated with subjective judgement involving psychological factors or individual preference, such an evaluation becomes complicated. This view is commonly shared by marketing scholars (e.g. Stone & Gronhaug, 1993).

Moreover, Cunningham (1967: p83-84, footnote 2) explicitly states that there is little difference between:

“whether the consumer ‘knows’ that there is an 80% chance that she will get a bad fish or whether she just thinks she just ‘might’ get a bad fish. In addition, one would argue intuitively that known probabilities are extremely rare in purchase behaviour and that even when they are available, the consumer is not likely to think in terms of them”.

This statement allows two interpretations. Firstly, the consumer holds his/her own expectation of subjective probability estimate towards a purchase decision. Such a probability estimate is based on his/her ability or knowledge but is perhaps not fully related to objective value. It is reasonable to assume that such a subjective probability estimate can exceed objective probability. Secondly, the assessment of subjective probability is significantly associated with the consumer’s knowledge, i.e. whether the consumer exactly knows the existence of objective probability and how much he/she knows about it. With respect to limited time and cost, consumers sometimes may be unaware of or unwilling to identify risky situations even when they are engaged in them (Cox, 1967b). There are suggestions that this is mainly because consumers generally seek to avoid mistakes rather than maximising purchase benefits (Mitchell, 1999).

Hence, Cox (1967b: p37) elaborates on the concept of PR as:

- (1) “the amount that would be lost (i.e., that which is at stake) if the consequences of the act were not favourable, and
- (2) the individual’s subjective feeling or degree of certainty that the consequences will be unfavourable”.

The above suggests that PR is about the perceived amount of loss (i.e. perceived negative outcomes) and the subjective probability (i.e. subjective estimate of unpleasant outcome occurrence) of getting the unexpected outcomes. Cox’s (1967a) interpretation

is in line with Bauer's (1960) suggestion made earlier. These scholars note that the concept of PR is about subjective and not objective risk. This opinion further raises a key argument in the PR literature: should the concept in the consumer behaviour literature concern objective or subjective risk? The debate is presented below.

### **2.3.3 Objective and Subjective Risk**

The debate as to whether PR in consumer behaviour should be objective or subjective has continued for a long time. The PR literature has not reached a consensus on this issue. Unlike other fields such as economics and finance where the primary focus is on objective risk evaluation, many consumer behaviour researchers argue that PR considers consumers' subjective risk assessment (Boze, 1988; Conchar et al., 2004; Oglethorpe & Monroe, 1987).

It is evident from the quotations in 2.3.2 that PR is a concept about subjective risk. Subsequent research has shown evidence supporting Oglethorpe and Monroe's (1987) view. In fact, risk involved in consumer decision-making is a complex theory to grasp. If risk as it suggested exist in the real world (in other words, objective risk) is not perceived or noticed by consumers, then it is not objective risk influencing consumers' decision making (Bauer, 1960). Additionally, Schiffman and Kanuk (2004) express a similar viewpoint when considering PR in a subjective manner. PR is about consumers' subjective estimation of purchase outcomes, based on many inputs. This means that only consumers themselves may be influenced by their subjective perception of risk and correspondingly respond to the risk individually.

Moreover, Bauer (1960) explains that it is difficult for consumers to know precisely all possible outcomes that may occur within a purchase decision. Often, the possibility of knowing all consequences in advance is rather unlikely, although consumers might be able to predict a few. This suggestion is shared by many marketing scholars (e.g. Cox, 1967a; Cunningham, 1967).

Further, Mitchell (1999) proposes that the different philosophical perspectives held by researchers help explain the argument. Mitchell's opinion supports Kaplan and Garrick (1981), who have suggested that researchers from different philosophical backgrounds (i.e. objectivists and subjectivists) interpret probability differently; unfortunately, as they use the same word for different ideas, this becomes a major source of confusion. In Mitchell's view, realists would only accept objective risk and seek evidence to measure 'real' risk; whereas researchers guided by relativism would disagree on objective risk

and argue that risk depends on individuals and particular situations. Subjective risk is therefore changeable according to the context.

In addition to the above, Mitchell (1999) argues that theoretically, objective risk exists but the difficulty is measuring it accurately. This issue was raised by Bauer (1960) when he introduced the concept. Mitchell (1999) proposes that perhaps risk related to money or financial outcome is relatively easy to evaluate; but measurement of other outcomes, such as psychological and social aspects involving more complicated elements, can create great complexity. In practice, it is difficult to measure consumers' risk perception accurately and appropriately. However, both Bauer (1960) and Mitchell (1999) have stressed that although it is not easy to obtain an effective method for adequate assessment of consumer risk perception, the development of such a practicable method is by no means impossible.

The above arguments seek to define PR as a subjective concept rather than an objective one. Considerable evidence has shown that many researchers define PR as a subjective construct (e.g. Lewis, 1976; more evidence is detailed in the subsequent discussion). The discussion of previous evidence will continue throughout this chapter.

### 2.3.4 Risk and Uncertainty

There is a close relationship between risk and uncertainty, which are often discussed in tandem. In early works, it is noted that the uncertainty component was given more research attention than the consequence component (Ingene & Hughes, 1985; Stone & Winter, 1987). There is an argument on whether a distinction between risk and uncertainty should be made (Knight, 1921). This argument may be derived from the field of economics. Knight points out that risk is related to known probability while uncertainty is actually referred to as unknown probability. The major distinctions are shown in Table 3.

**Table 3. The Distinction between Risk and Uncertainty**

Relevant Aspects	Risk	Uncertainty
Probability Judgement	Objective	Subjective
Probability Measurement	Measurable 'uncertainty'; can be calculated	Unmeasurable 'uncertainty'; cannot be calculated
Outcome Distribution	Known; can be fully listed	Unknown; cannot be fully listed
Outcome Features	Unfavourable contingency or loss	Favourable outcome or gain
Involved Situation	Knowledgeable, experienced	Inexperienced; unique

	before; be familiar with certain circumstances	situation, uncertain about outcomes
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Source: summarised from Knight (1921: p233).

As shown in Table 3, risk can be known (e.g. unfavourable outcomes). When a given situation has been dealt with before, the probability of risk can be measured based on objective estimate. Also, outcomes can be listed by 'a priori' probability. With reference to uncertainty, however, it is difficult to list all actual outcomes within experienced situations. The probability merely depends on subjective opinions, beliefs, or judgement from past experience; thus, actual probability measurement in the case of uncertainty is very difficult.

In general, there are three approaches to probability judgement. The first one refers to the judgement of 'a priori' probability. 'A priori' probability means that "we are able to assess the probability of the event prior to its actual occurrence simply by using our knowledge of the situation" (Morris, 2003: p148). According to Morris, the chances of possible outcomes are equal.

It should be noted that prior knowledge is an antecedent condition here, essential to calculate probability using 'a priori' method (Morris, 2003). Unfortunately, there are many such situations (e.g. decision makings in consumer behaviour), which make 'a priori' method impossible. Under this circumstance, the second method – the judgement of statistical probability (Ayer, 1980) or the experimental approach to probability (Morris, 2003) – is appropriate. This is a probability estimation based on empirical event or experiment rather than defining events beforehand; this method estimates probability by using statistics such as frequency in practice (Knight, 1921).

The third method is the judgement of credibility or confidence. This method heavily depends on individual judgement (Ayer, 1980) or intuitive assessment (Morris, 2003). This is widely used in business studies as Knight (1921) proposes. Mitchell (1999) agrees that business situations usually involve great complexity and it is therefore difficult to calculate probability adequately (e.g. with perfect knowledge). Also, Cunningham (1967) points out that consumer behaviour is not influenced by so-called 'true', 'actual', or 'objective' probability; rather, it is the consumers' subjective judgement or perception from past experience or practice that impacts on individual decisions. Moreover, Mitchell (1999) questions whether, if a consumer holds a subjective belief on probability in a given situation, the probability distribution should

be considered as 'known' outcomes. In this situation, clearly, the probability estimate is not based on objective but individual subjective evaluation. In fact, many consumer behaviour studies have shown that there is a close relationship between risk and uncertainty perhaps due to the practical separation (Stone & Gronhaug, 1993).

As it is difficult to distinguish risk and uncertainty, thus some marketing researchers use these terms loosely. Over time, Oglethorpe and Monroe (1987) among others (e.g. Stone & Gronhaug, 1993) note that risk and uncertainty are used synonymously by many marketing researchers. In a review of Cox's (1967) edited book, Nicosia (1969: p162) suggests, "Dealing with information implies the handling of uncertainty, ambiguity, and the like – in a word, it means to handle "risk" or, more precisely, to handle "perceived risk"". Taylor (1974) also does not make the distinction between risk and uncertainty in his study. He uses these two terms interchangeably and interprets, "The central problem of consumer behaviour is choice. Since the outcome of a choice can only be known in the future, the consumer is forced to deal with uncertainty, or risk" (1974: p54).

The above apparently illustrates the importance of choice. Perhaps because of it, when making purchase decisions under risk, consumers frequently feel uncertain about their purchase goal, purchase alternatives evaluation, or purchase satisfaction. As noted, these factors can considerably affect consumers' risk perceptions. Moreover, what Taylor argues is that it would be relatively rare that a consumer has experienced all brands available in a product range due to the number of brands or products; in many instances, consumers are familiar with some brands but perhaps not all of them; consequently, consumers usually do not know the actual outcome of choosing an unknown or unfamiliar brand.

In addition to choice, consumers have to cope with a large amount of information. As Conchar et al. (2004: p423) remark, "In most consumption situations, information about an objective (inherent) value for the riskiness of a choice is lacking". This statement further demonstrates that in most purchase cases, consumers' ability to know all information about objective, inherent or actual outcomes against a purchase choice will be low. This view is also shared by other researchers (e.g. Mitchell, 1999).

Taylor's argument on choice and perfect knowledge is consistent with Bauer (1960) and Cunningham (1967) who have explicitly stated that PR in consumer behaviour research only concerns subjective risk. In these researchers' view, it is less practical to distinguish whether the buyer is dealing with purchase uncertainty or risk. Those who support risk



as being equivalent to uncertainty, such as Cox (1967b), believe that as the subjective probability of loss increases, uncertainty and subjective risk perception would increase; conversely, as the probability of loss decreases, uncertainty and subjective risk perception would decrease.

However, this viewpoint is challenged by other researchers (e.g. Peter & Ryan, 1976) who specify that PR should not be equated with uncertainty. Stone and Winter (1987) also state that PR must be separated from uncertainty. Peter and Ryan (1976) emphasise that in PR theory, evaluating outcomes of an event from the downside of utility (i.e. viewing risk as negative outcomes) is a primary focus; this differs from the normative theory of risk – in that consideration is taken on both upside (i.e. positive) and downside utility (i.e. negative values). The emphasis on negative consequences in the PR literature can be attributed to the argument surrounding objective and subjective risk (Stone & Winter, 1987). As discussed previously, in a situation in which the knowledge of judging actual outcomes is unavailable, the probability calculation by 'a priori' means becomes impossible and consumers are encountering uncertainty or risk. Even though objective risk existed, if the risk does not have an effect on consumers' decision-making (e.g. the risk is too little to attract their attention or they feel no concerns about objective risk), usually consumers will rely on their own beliefs for an individual evaluation in relation to purchase outcome. Obviously, it is subjective risk that concerns consumers.

Therefore, Peter and Ryan (1976) define PR as importance of loss and probability of loss. Stone and Winter (1987: p261) clarify the definition as expectation of loss. They believe that the more certain one is about the loss expectation, the more risk is perceived by the consumer, and the less uncertainty should be perceived in the situation. Finally, these researchers point out that in the consumer research domain, which it is heavily driven by individual psychological factors, PR as expectation of loss is justified.

The above discussion indicates that the risk theory understood in marketing and other disciplines (e.g. economics, mathematics) shares common roots but then develops different perspectives. Ingene and Hughes (1985) have identified that PR is not clearly defined in the consumer behaviour literature. PR and uncertainty are close constructs but do not mean exactly the same. As discussed earlier, risk should be separated from uncertainty: what the term 'risk' describes is someone's ability to know all objective outcomes before an event occurs (i.e. having the knowledge to indicate all possible outcomes in a situation). Knowledge enables one to calculate outcome occurrence (i.e. occurrence probability, the measure of expected value is based on objective estimate): it

should be labelled as 'risk'. Contrary to risk, when consumers' knowledge is unavailable to predict objective outcomes, theoretically, the situation should not be viewed as 'risk': the knowledge for estimating all possible outcomes is lacking so that the subsequent probability calculation would not be adequate due to this unavailability. However, since consumer behaviour is complex and usually involves various aspects, most consumers' knowledge would not be good enough to meet the criteria (i.e., being able to know all outcomes in advance). It is almost impossible for consumers to have a perfect knowledge about the purchase especially when encountering new brands or products; furthermore, such knowledge may become unrealistic or meaningless in some situations such as impulse purchases. Consequently, the lack of knowledge regarding a purchase decision is common in consumer behaviour literature.

Briefly, the above shows that uncertainty, while referring to a lack of knowledge of an event's outcomes, could be a justified construct to measure consumers' risk perception. In fact, supportive evidence can be found in the extant PR literature. Thus, this study will examine uncertainty as one appropriate component of PR. Further arguments on this point will be provided by reviewing previous studies in depth.

In the following three sections, the components of PR, the dimensions of PR as well as the operational definitions examined in previous studies are discussed. These sections aim to provide a better understanding of the concept to assist the current study in investigating the models of PR measurement.

### **2.3.5 The Components of Perceived Risk**

PR was initially perceived as a function of two components: uncertainty and consequences (Cunningham, 1967), which share similar issues with the components of risk – the chance and danger aspects. When a consumer perceives risk in a purchase, he/she is often uncertain about the range of purchase outcomes to be gained from the purchase alternatives and so is uncertain about the exact consequences.

There are other uncertainty sources including purchase need recognition, purchase goal uncertainty, purchase alternatives evaluation, and purchase satisfaction against the purchase goal (Mitchell, 1998a). Thus, PR is defined as a function of both perceived uncertainty and consequences resulting from a wrong purchase decision (Mitchell & McGoldrick, 1996).

Consumer purchase behaviour is often proposed as goal orientation (Cox, 1967b) or purposeful action (Stone & Gronhaug, 1993). Major sources of uncertainty have been identified (Table 4).

**Table 4. The Major Sources of Uncertainty**

<b>Authors</b>	<b>Uncertainty Sources</b>	<b>Interpretation</b>
Cox (1967b)	Need recognition uncertainty	Uncertain about purchase need or problem
	Purchase goals	Uncertain about purchase objectives
	Purchase acceptable levels	The gap between expectation and actual outcomes
	Purchase goal importance	
Mitchell (1998a)	Knowledge regarding alternatives	Not knowing the whole range of alternatives
	Product attribution	Not knowing what product A offers
	Brand evaluation	Uncertain about whether brand A is better than brand B, etc.
	Predictive validity	Not sure about the estimate of product performance
	Inadequate outcome judgement	May relate to individual confidence
	Expected outcome	The gap between the expected and actual perceived outcomes
	Opinions evaluation	Uncertain about whether or how much to take others' opinions, advice, experience, etc., especially when dealing with new products

Summarised from Cox (1967b) and Mitchell (1998a).

It is noted that uncertainty can intervene between consumers' decision making stages (Mitchell & Boustani, 1994). Two primary types of uncertainty are identified in pre-purchase information search: knowledge uncertainty and choice uncertainty. The former refers to uncertainty that consumers may feel about choices (i.e. alternative products) before purchase and during product information search whereas the latter is consumers' uncertainty about which product (e.g. alternative, brand) to choose. As discussed earlier, one major determinant causing uncertainty is that consumers usually have many purchase alternatives to consider (Taylor, 1974). Theoretically, the more choices consumers have, the greater uncertainty they will encounter. A possible explanation of this assumption is that purchase outcomes will only be known by the consumer after the purchase is made (Roselius, 1971). In addition, Mitchell (1998a) suggests that whilst consumers feel uncertain about purchase goals or needs, they might also be uncertain about alternative evaluation due to their limited knowledge. When considering buying a meal in a restaurant, one may be not sure about the actual outcomes before consuming the meal (here outcomes can include the food quality, staff service quality, the

restaurant's decoration etc.). Also, according to Mitchell (1998a), the customer may feel uncertain about which restaurant or meal he/she should choose. Therefore, it is not surprising that consumers' decision makings vary so much.

In addition to these uncertainty sources, individuals hold different levels of uncertainty in terms of risk judgement (Yates & Stone, 1994). People are ambiguous about risk judgement regarding potential loss and outcome occurrence: individuals ignore some loss categories for various reasons; sometimes individuals' loss estimation might be close to objective risk. Nonetheless, the chance for individuals to achieve prescience appears low.

The other component of PR is consequences, Cox (1967b) proposes that any consumer decision can lead to possible outcomes, and sometimes the outcomes are unfavourable or negative. It should be noted that in marketing research, the component of consequences is referred to as negative outcomes. The downside of expected value (i.e. losses) dominates the literature. Negative interpretation such as 'negative outcome' and 'danger' (Cunningham, 1967), 'expectation of loss' (Stone & Gronhaug, 1993), and 'adverse consequence' (Dowling & Staelin, 1994) are frequently applied in prior research. This has been identified as another conceptual difference between risk and PR: other research, for example, into gambling, considers both positive and negative outcomes.

"Risk itself is seldom just a single consequence" (Oglethorpe & Monroe, 1987: p255). This suggests that risk is a multi-dimensional construct which may evoke more than one unpleasant consequence for decision makers.

### **2.3.6 The Dimensions of Perceived Risk**

The PR theory suggests, in general, that consequences consist of six principle dimensions from a 'loss' perspective. Cox (1967a) briefly mentions performance and psychosocial dimensions. Others have subsequently further developed these two dimensions. Jacoby and Kaplan (1972) identify five dimensions: financial, performance, physical, psychological, and social loss; and Roselius (1971) adds time/convenience loss as the sixth risk. These six dimensions of risk are proposed to 'capture' consumers' overall perceived risk (OPR) or overall risk (e.g. Mitchell & Greatorex, 1993; Stone & Gronhaug, 1993). No conceptual distinction is made between these terms in the literature. The former is more commonly used and may refer to either a mathematically calculated measure (e.g. Barkworth et al., 2002) or a self-evaluated measure (e.g. Jacoby

& Kaplan, 1972). This can cause confusion. For consistency, OPR is used within this research to represent 'overall risk perception'. However, whether OPR is a calculated or self-evaluated measure is made explicit as the need arises.

### **2.3.6.1 The Principle Perceived Risk Dimensions within Traditional Purchase Situations**

The six principle dimensions of consequences are widely agreed in the consumer behaviour literature. Consequences are usually interpreted in terms of loss.

1. **Financial loss** – the concern about any financial loss that can result from a poor or bad purchase (Cases, 2002). Sometimes this risk is also called money loss (Roselius, 1971) or economic risk (Lim, 2003). For example, when considering a trial of a new brand, if the consumer worries that the actual product performance cannot match his/her expected value (e.g. the actual performance is not as good as expected), a monetary loss is probably perceived by the buyer (Jacoby & Kaplan, 1972). Another possible monetary loss may be due to an improper function of a product; as a result, the consumer has to spend extra money or cost on product replacement or repair (Roselius, 1971). In these two cases, financial loss is caused by a perceived performance loss.
2. **Performance loss** – refers to buyers' fear about a product or service that fails to work as well as expected, or fails to perform as well as often brands (McCorkle, 1990). This type of loss is related to production performance or function so that it is also labelled as functional loss (Schiffman & Kanuk, 2004) or usefulness of the product (Lim, 2003). If the consumer worries that the product will possibly function for a short time, then performance risk is perceived. The greater the uncertainty about a product's performance, the greater the loss perceived by the consumer. In addition, Assael (1995) notes that the features of a product can also affect consumers' perception of performance risk: if the product is technically complex to handle or to use, consumers perceive risk. Finally, Mitchell (1998b) adds that this loss could be attributed to the seller or shops.
3. **Physical loss** – is also known as safety risk or hazard loss (Roselius, 1971). This kind of loss relates to whether a product is unsafe or harmful to health and safety (Yates & Stone, 1994). It is a subjective perception of risk or threat that the probability of a failed product or service will result in a danger or harm to the consumer (Mitchell, 1992).

4. *Psychological loss* – is the degree of risk to which the chosen product or brand will cause any negative effect on an individual's self-image (Assael, 1995; Jacoby & Kaplan, 1972). For example, consumers feel uncertain about whether the product will damage his/her self-perception in front of reference group members (Mitchell, 1992). If a poor purchase outcome is found, consumers will feel frustrated or disappointed.
5. *Social loss* – reflects an individual's concern about how others (such as friends and family members) will evaluate on his/her purchase (Lim, 2003; McCorkle, 1990). The evaluation of others of a purchase decision can adversely affect the buyer by, for example, social embarrassment. If a consumer worries that his/her purchase decision will likely lead to negative social impacts from friends, then the consumer perceives social risk. Some products that relate closely to consumers' self-image or social esteem such as clothes and haircut might be perceived to have a greater possibility of social risk by consumers.
6. *Time loss* – is associated with the probability that a failed or bad purchase is a waste of someone's time (Roselius, 1971). A waste in product information search can be regarded as a time risk. In addition to time loss, the loss of convenience or effort can also be considered time risk (McCorkle, 1990).

Researchers (e.g. Assael, 1995; Engle, Blackwell & Miniard, 1995; Stone & Winter, 1987) note that the early PR work reveals that the uncertainty component receives more research interest than the consequence component. After the risk dimensions were proposed, research shifts from the uncertainty-focus to a consequence-focus. Details are provided in this chapter later.

The above principle dimensions of PR are commonly applied especially in the traditional purchase context while some of the dimensions are extended and modified in non-store shopping purchase contexts such as the Internet.

#### **2.3.6.2 The Dimensions of Perceived Risk within Internet Contexts**

In essence, consumers are cautious when considering online shopping. Researchers suggest that PR is a predominant factor in the low adoption rate of Internet shopping (Forsythe & Shi, 2003; Lim, 2003). Like other in-home purchase channels, the Internet can generate extra risk (e.g. Cases, 2002) or create greater uncertainty for consumers

(e.g. Bhatnagar & Ghose, 2004; Kim & Prabhakar, 2000). This indicates that the Internet is considered riskier than in-store shopping. This also implies that the channel may possibly share similar resources of risk with other shopping mechanisms such as mail-order.

Considerable efforts have been made to identify risk aspects in the online purchase context: the principle risk dimensions as well as additional risk aspects have also been reported. The following Table compares risk classifications and descriptions demonstrated in two important studies (Cases, 2002; Lim, 2003) that have embodied risk comprehension (see Table 5).

**Table 5. Risk Dimensions within Internet Shopping Contexts**

<b>Risk Dimensions and Descriptions</b>			
<b>(Cases, 2002: p379)</b>		<b>(Lim, 2003: p219)</b>	
Financial	Money loss caused by a bad purchase, additional charges due to product shipping or exchange	Financial (or economic risk)	Monetary loss owing to unsatisfactory products, delayed or no delivery, extra spending due to repair, or credit card details being stolen during transactions
Performance	Product performance	Performance	Product usefulness or functionality
Physical	Excluded, N/A in the study	Physical	Products harmful to health or of disappointing appearance
Psychological	N/A in the study	Psychological	Mental stress, frustration due to unsuccessful purchase
Social	Others' (e.g. friends and family) reaction concerning one's Internet shopping adoption	Social	Other people's response (e.g. accepted or not) to one's Internet shopping adoption
Time	Time wasted in searching or purchasing the product	Time	Time loss, including shopping time and/or waiting time for receipt of products and returning unsatisfactory products
Delivery Risk	Fear of not receiving the product on time, long delivery time – this risk is in fact a source of generating possible time loss. It may be more appropriate to be considered as a sub-dimension of time loss.		Not subdivided from time loss by Lim

Privacy	Invasion of one's private life, loss of anonymity on the Internet	Privacy	Inappropriate use of personal data collected online, disclose of one's shopping habits
Payment Risk	Financial consequences occurred by offering one's credit card information online – this risk actually may be considered as financial loss which possibly is caused by security issues.	Personal Risk	Individuals may be harmed due to purchasing online (e.g. suffer from credit card being stolen) – it is similarly related to security risk and financial loss.
Source Risk	Concerns about the extent of credibility and reliability of the website (e.g. seller)	Source Risk	The reliability of the seller

As illustrated in the Table, the principle PR dimensions are extended to consumer Internet shopping research. Many PR dimensions are applicable in online contexts and a few new or modified risks are introduced, such as privacy concerns, security issues, and source risk. These risks, 'acting' differently/individually, are cited as producing greater risk perception which can ultimately create considerable barriers to prevent consumers from buying online (Bhatnagar & Ghose, 2004).

However, it is noted that these new or modified risk dimensions are equivocal in the literature: opinion is divided on the issue of defining particular risk aspects within an online context. Some researchers (Cases, 2002), as outlined in Table 5, suggest defining delivery risk as individuals' fear of not getting the product on time (e.g. delivery delay, etc.). Arguably, this definition appears to be fragmented as it can also be referred to time/convenience loss due to website/seller credibility. Hence, the effort in separating delivery and time risk remains ambiguous.

Payment risk is defined as any financial negative consequences due to the provision of credit card information online (Cases, 2002). Payment risk may be linked to financial risk: if an account is misused, the consumer may encounter unexpected consequences. In this case, monetary loss from the account may be a major consequence. In short, the definition of payment risk seems so unclear that it is not especially useful to subdivide it from financial risk.

The above demonstrates that some dimensions overlap under scrutiny. An observation emerges straightaway – the integration of PR (principle dimensions) in Internet shopping research also shows a lack of consensus in the dimensions. Clearly, these overlapping



dimensions can engender conflicting results or even magnify the confusion in the literature. Such inconsistent findings are becoming more and more obvious as the discussion moves forward. The following seeks to address this problem by presenting findings from previous research.

As noted earlier, empirical studies show that Internet users are aware of the benefits of shopping online. But there is solid evidence indicating that consumers still hesitate to buy online. Some risk aspects are considered more significant than others in online shopping (Bhatnagar & Ghose, 2004). Monetary loss, privacy concerns, and security issues are three key factors preventing potential online consumers from buying (Forsythe & Shi, 2003).

Privacy concerns and security issues are commonly discussed. Privacy is usually a predominant obstacle to online shopping. Huang et al. (2004) suggest that consumers realise that their personal information such as address, telephone number, age, income, education, purchasing habits and spending behaviour are important to marketers. These researchers report that not only Internet non-users but also users show an unwillingness to supply their personal information: these consumers are concerned that personal information will be abused or used without consent. Likewise, it is argued that consumers do not view their personal data in the same way as marketers (Hoffman, Novak & Peralta, 1999), who tend to think of the data as an economic exchange, while consumers take an entirely different view. Hoffman et al. (1999) point out that consumers consider it important to maintain individuals' ability to control the access to their personal information. According to these researchers, in online purchases, privacy concerns contain two broad dimensions:

- environmental control – this is mainly related to the actions of an online seller or website within a transaction. This control, such as offering credit information, significantly reflects on the security or safety of an Internet shopping system.
- secondary use of information control – this is related to how personal information will be handled by third parties who are unknown or not involved during the transaction. Consumers worry their data will be manipulated without their consent or knowledge, e.g. whether the seller will sell data to third parties for other purposes.

A potential unexpected outcome emerges here when people discuss privacy; media reports about data abuse over the Internet may reflect and increase consumer concern about online transaction security (Bhatnagar & Ghose, 2004). Consumers often fear that

their accounts can be hacked into by third parties, or they perceive threats about losing control of their data.

It is the lack of control on personal data that dissuades many Internet users from online purchase. Gierl and Hammer (2003) have found the following risks due to fear – financial loss, risk of being observed (i.e. via providing personal data such as age, spending habits), social loss, perceived lack of data integrity and authenticity (i.e. security issues), legal sanctions, inconvenience and manipulation (i.e. control of personal data).

Gierl and Hammer (2003) suggest that consumers react by trying to retain control and protection of their data against such risks:

- some spend time carefully reading terms and conditions of transaction policies;
- some do not provide adequate data or give false data to create confusion, or
- some decide to limit their Internet usage in order to avoid possible loss – not accepting the Internet as a purchase medium.

The last decision can be the worst scenario for marketers. Clearly, how personal information will be handled is crucial to customers – this raises the issue of security. According to Hoffman et al. (1999), the online market has witnessed an explosive increase of technologies that were introduced to secure transactions, including encryption technology, digital signatures, certificates and authentication, secure protocols, secure credit and debit card payment systems, and digital currency (e.g. e-purse). The idea of technology application regarding payment is not new; payment online by credit/debit card may be similar to an in-store shopping payment, namely EFTPoS (Electronic Fund Transfer at Point-of-Sale) – both methods require buyers to pass their card details onto a third party.

Liebermann and Stashevsky (2002) suggest that supplying personal information has adverse effects on existing and potential users of the Internet. This supports Ho and Ng (1994). Risk perception in relation to personal information could be too great to manage, so some consumers were not ready or willing to use new channels to buy. This suggests that the consumers' perception in relation to security must be addressed.

Consumers are also aware that credit card information may be stolen (Liebermann & Stashevsky, 2002). Should this happen, it can result in monetary loss to consumers (Bhatnagar & Ghose, 2004). The above discussion reveals that there is a complex

relationship between financial risk, privacy concerns, and security issues, further complicated when other significant risks such as performance are perceived.

Product performance risk is another significant obstacle to Internet shopping, mainly caused by the inability of pre-purchase product inspection (Bhatnagar & Ghose, 2004). This inability can lead to an increase of subjective loss expectation. Bhatnagar and Ghose (2004) point out that consumers' risk perception will change according to product categories, buyers' age, and experience. It is argued that as consumers' knowledge of a specific product grows, their perception of performance risk can be minimised.

Furthermore, the inability of physical inspection limits the type of products sold over the Internet. Phau and Poon's (2000) study suggests that intangible or service-related products and also low-price products frequently purchased (e.g. consumable or routine products) should be easier to sell online. However, an opposite perspective is raised by Featherman and Pavlou (2003), who consider that e-service adoption (e.g. online banking, online travel booking etc.) can be more complex than buying a physical item over the Internet. The study explains that this is mainly due to a long-term relationship that is required between the consumer and the service provider. And more importantly, a person who buys a physical item online eventually will receive a tangible product – something that the buyer can touch, hold, etc. As to e-services, consumers are only provided with the accessibility to the online “functions”. This helps to explain why Featherman and Pavlou (2003) consider e-service adoption a riskier activity than the online purchase of physical goods. It is obvious that conflicting ideas on e-service adoption exist in the literature.

Apart from security issues, privacy concerns, financial and performance risks, other principle risks (e.g. social risk) are of less concern and sometimes excluded from Internet shopping research; for example, Cases (2002), Featherman and Pavlou (2003) have not examined physical risk in their studies.

Having discussed the principle risk dimensions and additional dimensions in Internet contexts, a number of issues are summarised below.

- **Section Summary**

The above discussion indicates that the concept of PR is open to various interpretations in the consumer behaviour literature. Three issues are summarised (Yates & Stone, 1994).

First, risk is a complex concept: a fundamental issue being that scholars view and interpret risk in various ways. The problem could stem from the different assumptions across disciplines or schools of thought (Mitchell, 1999). Apparently, while scholars may discuss risk, their interpretations are so different that care is needed when interpreting or evaluating results across studies.

Secondly, PR in consumer behaviour research is a “*changeable*” construct with multi-dimensions. This is mainly because dimensions occurring in one situation do not necessarily emerge in the next. However, findings from one context are often misinterpreted because risk manifests itself differently in individual contexts.

Thirdly, PR is subjective and perceived variously by individuals. This feature implies that it is difficult to evaluate accurately individual subjective, risk perception.

Based on the above arguments, the current study supports the majority of other marketing researchers (e.g. Bauer, 1960; Cox, 1967b etc.) who have postulated:

- in the consumer behaviour domain, PR should deal with subjective risk but not objective risk and only negative consequences of purchase are considered. As discussed, PR is meaningless when separated from consumers;
- PR is a multi-dimensional construct which can change according to the situation. By understanding the context, significant risk dimensions can be identified so that a corresponding solution could be developed for risk reduction; and
- PR can only be related to individuals who judge the contexts, and, hence, respond to the situation involved. PR will only be significant when it intervenes in consumers’ decision making.

Having discussed the related notions, the definition and major components of PR, it is important to review how consumers’ risk perception may be assessed and this is the focus of the next section.

## **2.4 The Measurement of Perceived Risk**

Researchers suggest that consumers’ risk perception may be measured in a number of ways (e.g. Cunningham, 1967). The discussion broadly includes how to operate the PR concept and what approaches are suggested for measurement. The first issue is addressed below.

### **2.4.1 The Operational Definitions of Perceived Risk**

The PR literature indicates that researchers define and measure PR differently. Ross (1975) notes that PR has been only vaguely defined by operational definitions: this in turn, brings about measurement issues. Although the concept has been developed for over four decades, it still remains problematic (Conchar et al., 2004; Mitchell, 1998a; Oglethorpe & Monroe, 1987; Ross, 1975). For example, some researchers define risk as ‘uncertainty’ (Bauer, 1960; Taylor, 1974); but some scholars disagree (Oglethorpe & Monroe, 1987; Peter & Ryan, 1976). The different conceptualisation, therefore, creates confusion. As a result, when the concept is examined in different contexts, there is no consistency in operating or measuring it (e.g., different operational definitions among studies). Such inconsistency further creates difficulties for researchers when comparing results across studies (Oglethorpe & Monroe, 1987). Therefore, a critical review of the available operational definitions is crucial.

It is noted that there is an important relationship between conceptualisation, operationalisation, and measurement of a concept (Diamantopoulos & Schlegelmilch, 2000). This is because it is vital to specify a conceptual definition which helps to operationalise the construct. This is closely linked to subsequent concept measurement. It is suggested that multiple operational definitions should be applied when researchers seek to capture a thorough understanding of a concept, especially complex ones (Diamantopoulos & Schlegelmilch, 2000).

Three major measurement approaches are commonly applied to operationalise PR (Dowling, 1986):

- the two-component model – define PR as ‘uncertainty and consequences’, initially suggested by Cunningham (1967);
- the multiple-dimension model – measures PR by examining different types of loss/risks (e.g. Jacoby & Kaplan, 1972), and
- a “unidimensional measure” – PR is evaluated on a single scale (e.g. “how risky it is...” to rate the riskiness of a product, e.g. Spence et al., 1970).

Each of these is detailed individually.

#### **2.4.1.1 The Initial Two-Component Model: Uncertainty and Consequences**

Cunningham (1967) is one of those who measured PR in consumer behaviour research. The researcher initially suggests that consumer risk perception could be examined by

two components – uncertainty and consequences. Two indirect questions were applied to measure these two components;

- uncertainty – is related to brand attribution; to what extent consumers are certain whether a new brand would work as well as their present brand, and
- consequence – is considered as dangerous outcomes of a poor purchase decision; how dangerous the purchase outcome would be if they tried a new brand.

This model has limitations and has been challenged in subsequent studies. As Cunningham (1967) himself notes, the model is arbitrary in terms of the measurement of the PR index. The three-point scale generates limited analytical usefulness (Stem, Lamb & MacLauchlan, 1977). Also, Guseman (1981) argues that the distance between two ordinal value values does not necessarily lead to the same distance on the scale.

Likewise, earlier review articles (e.g. Bettman, 1973; Ross, 1975; Stem, et al., 1977) revealed that little consensus in PR measurement had been reached. In addition to Cunningham (1967), no universal model is proposed for PR measurement. Hence problems about how PR should be examined emerge. For example, Sheth and Venkatesan (1968) have not separated PR into two components. This measurement approach is described as ‘indirectly measured PR by manipulating risk inducing stimuli’ (Gemünden, 1985).

Nonetheless, it is acknowledged that Cunningham’s model has important contribution in terms of risk measurement at an early stage of concept development. This model should be considered as a preliminary investigation of PR measurement with limitations.

#### **2.4.1.2 Inherent Risk and Handled Risk**

The work by Bettman (1973) advanced the components of PR (Dowling, 1986). Bettman (1973: p184) redefines the concept into two different constructs: inherent risk and handled risk,

“Inherent risk is the latent risk a product class holds for a consumer – the innate degree of conflict the product class is able to arouse; handled risk is the amount of conflict the product class is able to arouse when the buyer chooses a brand from a product class in his usual buying situation”.

Further, Bettman (1973) suggests that inherent risk regarding a product class varies with:

- product quality, including the perceived quality and the average quality level of the product class;
- brand choices in a product category, and

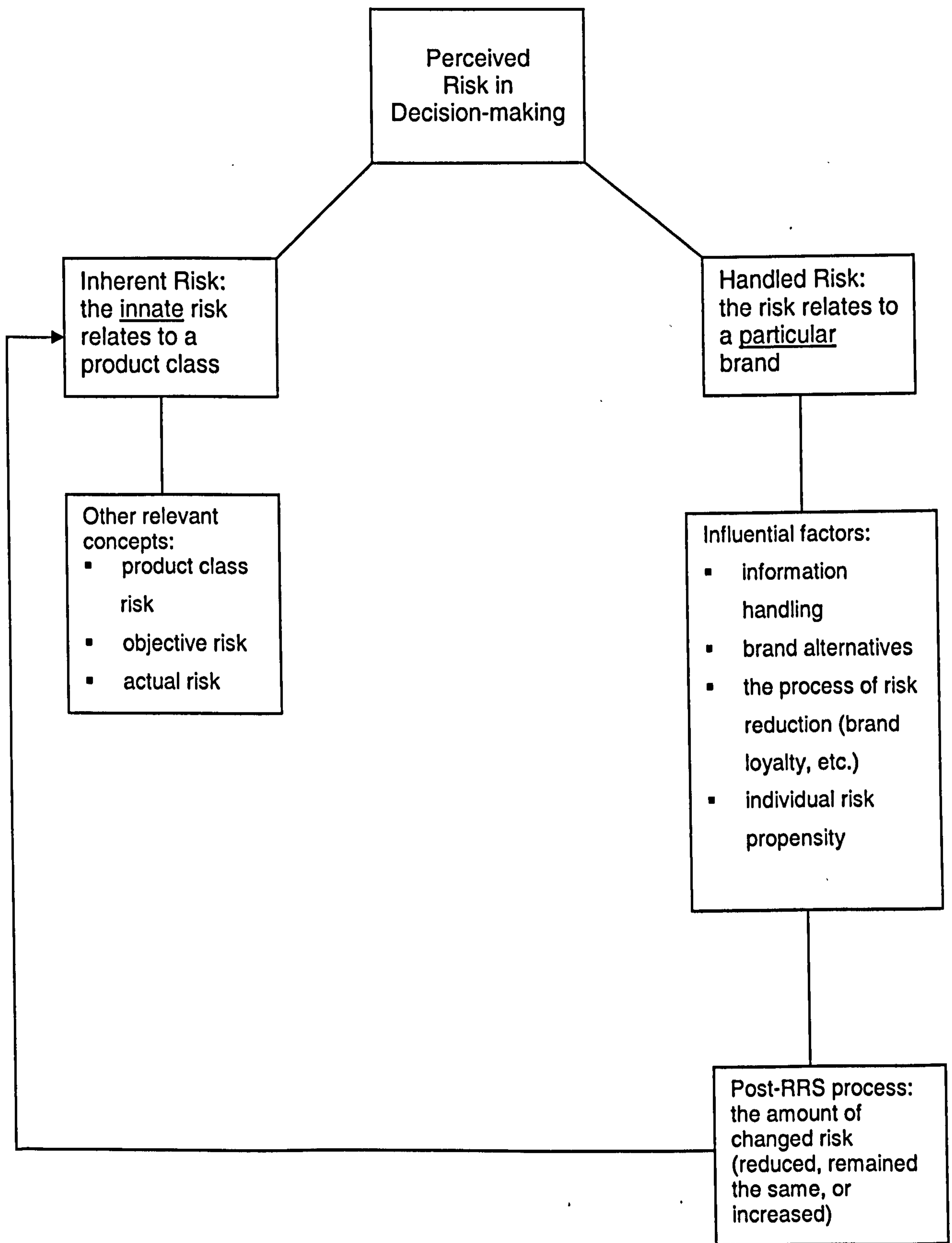
- the perceived price of the product.

Bettman's (1973) suggestions imply that inherent risk may be closely related to choice uncertainty or choice importance. Theoretically, the more choices a consumer has, the more inherent risk he/she faces. Therefore, some major elements – quality, price, brand – may greatly affect consumers' purchase decisions. Quality is usually related to a product's performance, e.g. whether the quality can meet consumers' expectation; if the expectation is not met by the quality, consumers might feel that they had wasted their money.

Also, some elements can considerably reflect on handled risk, including the amount and usefulness of product information, the consumer confidence in the information, or the average familiarity with specific brands.

The interrelationship between inherent and handled risk is complex. This is perhaps because inherent risk is an abstract construct which may appear to be broad to consumers; while handled risk is more specific as it can be applied to contexts and related to individuals. This is again highlighted that for consumers, it is easier to think in concrete terms rather than in the abstract. Evidence from Bettman's (1973) research lends support for this proposition. Therefore, many subsequent studies examine consumers' subjective or handled risk. The interrelationship between inherent and handled risk is illustrated in Figure 1 (see next page).

**Figure 1. The Relationship between Inherent Risk and Handled Risk**





Bettman (1973) reports that inherent risk is a key variable in predicting consumers' risk perception and handled risk is closely associated with information. More specifically, importance is a predominant variable in explaining product inherent risk while the importance of brand choices has a great effect on consumers' risk perception. In addition, Bettman has not found support to prove that price influences product inherent risk significantly. Finally, information, as expected, has an impact on handled risk perception. These findings are explained by several possible elements. The products examined are primary groceries that usually contain and deliver a low level of uncertainty to consumers. It is not surprising therefore the importance element has dominated consumers' perception of risk. Moreover, consumers were familiar with the product categories included in Bettman's study, and therefore experienced limited amounts of handled risks. Apart from these, price plays a role. It may be related to two variables – product package size and perceived quality. These can in turn impact on inherent risk individually.

Ross (1975) also notes that both inherent and handled risks play different roles in affecting consumers' risk perception, observing that it is not surprising that importance attracts most notice from consumers. Yet, some studies (e.g. Cunningham, 1967) argue that uncertainty and consequences should have the equal weight in different contexts. Clearly, Bettman's (1973) proposition of viewing PR as inherent and handled risks is different from Cunningham's "equal weight treatment". Moreover, Bettman's study starts to show that consumers possibly 'treat' the components differently.

As discussed, to define PR in terms of inherent and handled risks provides a different approach to examining consumers' risk perception. Evidence is gained from Bettman's (1973) study which raises a question in relation to PR measurement – whether the PR components should be treated independently or not. The model is subsequently extended and redeveloped into a couple of new models (e.g. Ingene & Hughes, 1985).

### **The Application of The Two-Component Model**

In subsequent studies especially during the early 1970s, considerable effort was given to examine PR measurement, attempting to remove some of the associated problems. It is noted that Cunningham's (1967) initial model of considering PR as uncertainty and consequence is more commonly applied in varying contexts. Three main research streams are identified:

- some researchers examined one component of PR, either uncertainty (e.g. Sheth & Venkatesan, 1968), or the chance component of each loss (e.g. Jacoby & Kaplan, 1972; Lewis, 1976);
- some examined two components at the same time and separate consumers' overall risk perception into specific risk dimensions (e.g. Boze, 1988; Coleman, et al., 1994), and
- some examined the riskiness of a risk dimension (i.e. PR is not measured by two components), e.g. 'how risky would you say in a purchase of ...' (Horton, 1976; Spence et al., 1970).

As the PR concept develops, the original model has been further expanded: subsequent researchers began expanding new operational terms. For example, Schiffman (1972) measured 'health' and 'taste' risks in terms of 'uncertainty and consequences'. Boze (1988) also employed the uncertainty and consequence model and defined uncertainty as 'consumers' confidence of the selected attorney service', and consequence as 'the severity of consequences'. The consequence component is detailed in five principle dimensions of risk, excluding performance risk. A four-point scale is used and this generates a PR matrix with 36 cells. Reverse coding is used; thus, the higher the score, the greater the PR.

Applying Boze's (1988) approach, Coleman et al. (1994) also conducted a study investigating PR in the context of dental services. The researchers define PR as a function of uncertainty and importance. These researchers develop a slightly 'new' approach to measure the uncertainty component – the measures between pre-purchase and post-purchase were compared (Coleman et al, 1994: p148).

Importance is measured by five types of loss, including social risk (i.e. harm to appearance), financial loss, time/convenience loss, physical discomfort or pain, harm to health and safety, psychological loss (i.e. personal embarrassment). Similar to Boze's (1988) study, performance risk is not addressed by Coleman et al. (1994: p149). Although explicit reason for the exclusion was not given by the researchers, it could be caused by the potential difficulty in evaluating service performance. The consequence component is examined by "if the (dental) services are not performed properly on your initial visit to a new dentist, which of the following is likely to occur?"

Coleman et al. (1994) propose that their 'two-point' approach is an improvement in risk certainty measurement: it enables the uncertainty measurement over two different

purchase times, pre-purchase and post-purchase. However, this approach may arguably generate measurement error as it is based on consumers' memory before and after purchase. Also, this approach to uncertainty measurement does not entirely follow the main research direction of PR measurement. Clearly, it can lead to a low comparability of results across studies. Perhaps for this reason, the approach is seldom examined by other researchers.

Furthermore, Coleman et al. (1994) report that consumers perceive different kinds of risk according to different dental treatment situations. When consumers use dental treatment from non-traditional dental service providers (e.g. retail dental centres in a department store or shopping mall), consumers are concerned about some possible risks related to pain or harm to appearance. However, when receiving dental services from traditional dental service providers, consumers perceive additional risks such as financial and time/convenience dimensions. Among the six types of risk, in general, consumers worry most about inconvenience or wasting time, physical discomfort or pain as well as financial loss.

#### **The Unidimensional Risk Model – A Measure of Overall Risk Perception**

A few early studies indicate another approach to PR evaluation: a single scale applied to measure the riskiness of a particular risk dimension (e.g. Spence et al., 1970). Clearly, as researchers (e.g. Lewis, 1976) have noticed, this scale relies on respondents combining the components of PR (e.g. uncertainty and consequences, the importance of loss and probability of loss) when they assess their risk perceptions. Dowling (1986: p200) refers to this as "a unidimensional measure". To align with other work in conceptualising PR, consumers directly assess the amount of risk they feel in buying a product (Spence et al., 1970).

It is noted that within early research, not every subsequent researcher has drawn on Cunningham's model to measure PR (Ross, 1975). For example, Stone and Winter (1987) challenge the original PR model and argue against the consideration of risk as a function of probability and consequences, and disagree with measuring risk by 'uncertainty times consequences' in consumer behaviour research.

Stone and Winter (1987) note that the mathematics and economics literature suggests that risk is produced by multiplying probability and pay-off. The researchers consider this as a traditional and normative approach derived from the expected value model. Yet, in the field of consumer behaviour research which often contains psychological factors,

an approach following the traditional understanding of risk in economics or mathematics literature seems inappropriate, as both positive and negative outcomes are considered. Therefore, the researchers propose PR as expectation of loss in consumer behaviour research. Their empirical study shows a strong relationship between consumers' attitudes and intentions. It suggests that the higher the certainty of loss, the lower the probability of purchase.

As demonstrated, this model examines PR broadly rather than in depth (e.g. specific risk dimensions or components). Later on, more conceptual development is proposed – risk separated into various dimensions (Jacoby & Kaplan, 1972; Roselius, 1971). This is detailed in the following.

#### **2.4.1.3 OPR Measurement: Consequence Dimension Focused**

With the specific risk dimensions, researchers report that consumers' overall risk perception could be better assessed (e.g. Horton, 1976; Jacoby & Kaplan, 1972; Stone & Gronhaug, 1993). Research also indicates that the amount and dimensions of risk change with products, situation, and individuals. In some cases perhaps some consequences are viewed as more important by decision-makers; but in other situations, these consequences may have little or no effect at all on consumers' decisions. For example, performance risk is found as the most predictive variable in Kaplan et al.'s (1974) study among the products examined but not in Stone and Gronhaug's (1993) study of buying a personal computer.

Initially, Jacoby and Kaplan (1972: p11) apply a single measurement approach to examine the riskiness of a particular dimension: each risk is evaluated by the chance/likelihood of its occurrence within a product category; while OPR is measured by “on the whole, considering all sorts of factors combined, about how risky would you say it was to buy an unfamiliar brand of ...?”. It is apparent that these measures focus on the occurrence or probability component, the importance of a specific risk dimension is not measured by this approach.

Jacoby and Kaplan (1972) suggest that it is likely that products with common features will 'share' similar types of potential loss. Moreover, significant interrelationships are found between the types of loss and OPR. For instance, performance and financial risks have the highest correlation, followed by social and psychological risks. As the twelve products examined are mainly groceries goods, arguably, these are likely to be highly related consumer concern on product performance. Therefore, as the uncertainty about a

product's performance risk increases, the perceived financial risk increases. These findings are further validated by Kaplan et al. (1974).

Clearly, both studies give credence and the idea that the five risk dimensions help researchers to understand consumers' OPR. These dimensions (or losses, in the researchers' term) together with time risk are seen as six principle dimensions of risk and are frequently examined in subsequent studies. For example, Garner and Thompson (1985) evaluate the usefulness of the six risks in the physician service context, finding found that physical risk is considered as a most significant outcome, following by time/convenience loss and financial loss.

The services involved may help explain the above findings. Theoretically, physician services should be highly correlated with users' physical/safety concern. This finding again demonstrates that the dimensions and amount of risk perceived by consumers depend on products, as outlined previously.

In addition to this finding, performance and financial risks are found to have significant relationships with the usefulness of information sources; not however physical, social, time/convenience, and psychological risks. Several factors may help explain this. Garner and Thompson (1985) propose that the "intangibility" factor of services can increase consumers' financial risk. The literature also indicates that it is difficult to standardise services. If the service goes wrong, consumers could hardly 'return' or get a 'refund' from the service provider. Services are also difficult to evaluate. In terms of the significant relationships found between some but not all risks (e.g. performance and financial risks) and information sources, one possible explanation is that the information sources indicated in the study may be ineffective in reducing risk perception in the purchase of physical services; alternatively, consumers' preferable risk reduction methods are not included in the study. Therefore, marketers should take these characteristics of services into consideration when they plan to provide consumers with possible methods to reduce risk perception.

Horton (1976) also measures the consequences component ("how risky it is to select an unfamiliar brand...") among seven grocery items. The researcher has found that the negative consequences component is more important in explaining consumers' risk perception than the probability occurrence component. Mitchell (1998b) argues that this finding may be ascribed to the features of the products examined: many of the products are considered to contain low risk. This could result in that consumers are less concerned

about the chance of unfavourable outcome occurrence. Therefore, they worry more about the variety risk aspects that they would encounter rather than the chance of having the low probability of negative consequences.

This again reflects on one assumption previously made. Much evidence suggests that the consequence component is more concrete to consumers than the probability component when they evaluate PR. This assumption could help explain findings presented in another empirical study of Mitchell and Boustani (1993). They investigate how PR influences purchasers and non-purchasers and examine sixteen possible ways of reducing PR in trying a new brand of breakfast cereals. The consequence component is measured as importance and the usefulness of risk reduction strategies is examined on a five-point scale. While the reasons for not involving uncertainty are not provided in the report, in line with Mitchell's (1998b) argument shown above, clearly that the products examined is a stable foods, having low cost and is frequently purchased. As the function of uncertainty in consumers' risk perception becomes limited or too small to notice, consumers' attention may be diverted to the purchase consequence. This implies that in some purchase situations, it could be appropriate to exclude the uncertainty measure.

In addition, Guseman (1981) applies Cunningham's approach by examining ten goods and ten services. Guseman states that both goods and services contain different amounts of inherent risk. As found, services are riskier than goods: services are intangible. This suggestion later gains support from Mitchell and Greatorex (1993). Guseman (1981) and Verhage, Yavas, Green and Borak (1990b) have found evidence to support Bauer (1960) and Cox (1967a): PR concerns uncertainty and consequences, and to measure PR in terms of certainty and danger is appropriate.

Guseman's (1981) measurement approach is challenged by Mitchell and Greatorex (1993) who note that Guseman has neither separated PR into due components (uncertainty and consequences) nor include the detailed types of risk. The researchers argue that due to the inherent characteristics of services (i.e. intangibility, inseparability of product and consumption, heterogeneity and perishability), it is important to separate the two components and essential to examine the types of loss individually in order to identify which loss is influenced by service characteristics.

Thus, Mitchell and Greatorex (1993) measure PR as 'uncertainty' and 'the seriousness of consequences' at four-point scales to identify the differences between services and goods. Six goods (jeans, track suit, coat, portable TV, casual shirt/blouse and tennis

racquet) and six services (restaurant meal, fast-food meal, hairdressing, hotel, bank and sports centre services) are compared, involving four types of risk (performance risk is excluded while psychological and social risk are combined as psychosocial risk).

It is reported that services are perceived as having greater uncertainty than goods; while no difference in relation to the seriousness of consequences is found between services and goods (Mitchell & Greatedorex, 1993). Moreover, Mitchell and Greatedorex illustrate that the application of Cunningham's (1967) original model in analysing consumers' risk perception in service contexts has found new validity: the uncertainty component has a considerable effect on service risk evaluation. This effect typically indicates that as an inherent characteristic, uncertainty plays an important role in risk assessment of services; service uncertainty can undermine consumers' confidence in the consequences of a service purchase. This is primarily because services are intangible and difficult for consumers to assure the purchase outcomes beforehand. As a result, consumers' confidence in purchase consequence varies with the degree of certainty. Lastly, Mitchell and Greatedorex (1993) suggest that future research in studying PR, particularly in service contexts, could use the two-component model to understand consumers' behaviour and so to better devise services marketing strategies.

#### **2.4.1.4 Probability of Loss and Importance of Loss**

Peter and Ryan (1976) have identified that the lack of consensus on PR conceptualisation in consumer behaviour research does result in problems. In line with Bettman (1973) concerning the issue of PR measurement, these researchers propose that PR's measurement models primarily suffer from conceptualisation inconsistency. They further bring a 'new' approach in defining PR – the probability of loss and the importance of loss.

These 'new' components of PR are based on the notion of inherent risk and handled risk (Peter & Ryan, 1976). The probability of loss is proposed to work at a handled risk level whereas the importance of loss operates at an inherent risk level. The researchers' evidence confirms that the probability of loss is correlated with brand and importance of loss is product-related. More specifically, this means that, in a particular purchase situation;

- when the probability of loss is considered more important than the importance of loss, the probability of loss will vary with brand; hence, the probability of loss should be significantly correlated with OPR.

- On the other hand, when the importance of loss dominates the purchase situation, the importance of loss should change along with a product class and have a more significant correlation with PR than the probability of loss has.

Peter and Ryan (1976) propose that those who are greatly concerned about potential losses from both products and brands are likely to be risk-averse; on the other hand, those who are less concerned about potential losses would perceive low risk (i.e. less risk-averse). The conclusion manifests that PR should be viewed as losses, i.e. negative utility, the downside of expected value, or simply adverse consequences in consumer behaviour research.

To define PR in terms of the probability of loss and importance of loss has significant implications on the conceptual development of PR. This approach is applied by Barkworth et al. (2002) in research on blood donation. It is reported that physical and time losses are independent while social and psychological risks are not correlated in their study. Taking a multiplicative approach, these researchers illustrate that the most prominent risk dimension of blood donation is social, followed by physical, time, and psychological risks. Additionally, they indicate that donation frequency can influence donors' OPR, those who have not donated in the previous twelve months perceive a significantly higher risk than those who have donated. In addition to a higher OPR, donors have higher risk perception of each risk dimension. As reported, variables in relation to the probability component are found to have stronger relationships than importance variables (particularly for physical and psychological risks). This highlights that PR is a multifaceted concept and can vary substantially with the indicators used. In addition, a lack of consensus is apparently indicated in PR "sub-dimensions" within the literature. There is a need to develop a common set of variables that may help to guide different research in various contexts.

Furthermore, Van den Poel and Leunis (1996) define risk as probability of loss and importance of loss. In line with Yates and Stones' (1994) argument on the multiplicative measurement approach, Van den Poel and Leunis argue that probability of loss and importance of loss should be independent to each other. This is mainly because importance of loss should have a great influence on a consumer's OPR when the consumer perceives a large amount of probability of loss in a particular context. Two risks (financial and performance losses) are included in comparing mail order with in-store shopping.



Van den Poel and Leunis (1996) have found that consumers encounter greater risk in purchasing via mail order than from shops. This is consistent with other studies (e.g. McCorkle, 1990; Spence et al., 1970). Also, it is evident that PR varies in the context of mail order. For example, price has a significant impact on consumers' risk perception. Consumers are more likely to perceive a great deal of financial loss when the product is an expensive item. Moreover, when a product's value increases, the difference in risk perception between mail-order buyers and in-store shoppers becomes bigger (Van den Poel & Leunis, 1996). It is noted that the same consumer may perceive the same degree of probability loss between two different products, while significantly feeling different importance of loss.

This finding is consistent with other researchers (e.g. Jacoby & Kaplan, 1972) but different from others (e.g. Bettman, 1973). The question of why this happened becomes interesting. One key element may help explain the above findings. It is apparent that relatively 'high value' products (e.g. refrigerators, stereo-equipment, and sofas) examined in Van den Poel and Leunis' (1996) study are inherently riskier than the grocery items included in Bettman's study. Therefore, price becomes a potential element to trigger high risk.

#### **2.4.1.5 Product Category Risk and Product Specific Risk**

Based on the suggestion of inherent and handled risk (Bettman, 1973), Dowling and Staelin (1994) develop another PR measure model – product category risk and product specific risk, consumer acceptable risk. Overall, compared with the relatively more common models (e.g. Cunningham's uncertainty and consequence model, Peter and Ryan's probability of loss and importance of loss), this is a complex measure that it is rarely examined by other researchers (Mitchell, 1999).

Product category risk and product specific risk share common roots with inherent and handled risks. Product category risk is described as a "fixed" component from Dowling and Staelin's (1994) perspective as it represents the risk that is related to a product. Major factors include product class and attributes; whereas product specific risk is a component varying with individuals and major sources include individuals' purchase goals, purchase situation, specific product attributes etc. The third and 'extra' risk element is consumers' acceptable risk. There is growing research on this element (e.g. Oglethorpe & Monroe, 1987). The main research areas include the relationship between risk perception and acceptable risk, for example, what makes consumers more or less risk-averse.

However, whether acceptable risk exists or not is debateable in consumer behaviour research. It is argued that owing to the nature of risk which always involves potential losses, "Risk should always be rejected." (Kaplan & Garrick, 1981; cited by Yates & Stone, 1994: p3). This clearly indicates that risk should not be accepted but avoided *when it is recognised*. This leads to a further question: why do people still try to solve risk when they recognise it in a given situation?

Yates and Stone (1994) point out that risk-taking behaviour is one response to risk-handling behaviour, which is a special area in individuals' decision making. The researchers propose:

- When dealing with risk situations, complicated factors are usually taken into account, including positive expected values such as 'satisfaction fulfilment', 'good or successful decision', 'satisfactory or desirable outcomes', 'benefits' and so on. These upside values may trigger consumers. Moreover, it should be noted that these factors could be driven by an individual's psychological reasons such as risk preference. As a result, these reasons or factors can affect decision makers.
- Further, when decision making involves risk, the fulfilment of satisfaction becomes important; people are concerned about whether their decisions would be 'good' or 'successful' so that desirable outcomes (such as satisfactory outcomes or benefits) may be produced. Alternatively, whether outcomes would be as close as possible to expectation may be another major concern.
- Finally, not only can risk create possible benefits, but also it can generate potential negative outcomes. Thus, all these factors can contribute to risk-handling behaviour and in turn, people's decision making can be affected.

Consumers' OPR and possible RRS in relation to a purchase of new dresses are examined by Dowling and Staelin (1994) who adopt a decompositional approach. This approach separates individual consumer's specific risk variables and factors related to product category risk. They have found that product specific risk could significantly influence consumers' intending RRS usage. In addition, there is a positive relationship between consumers' shopping behaviour and the expected potential gains in a purchase situation.

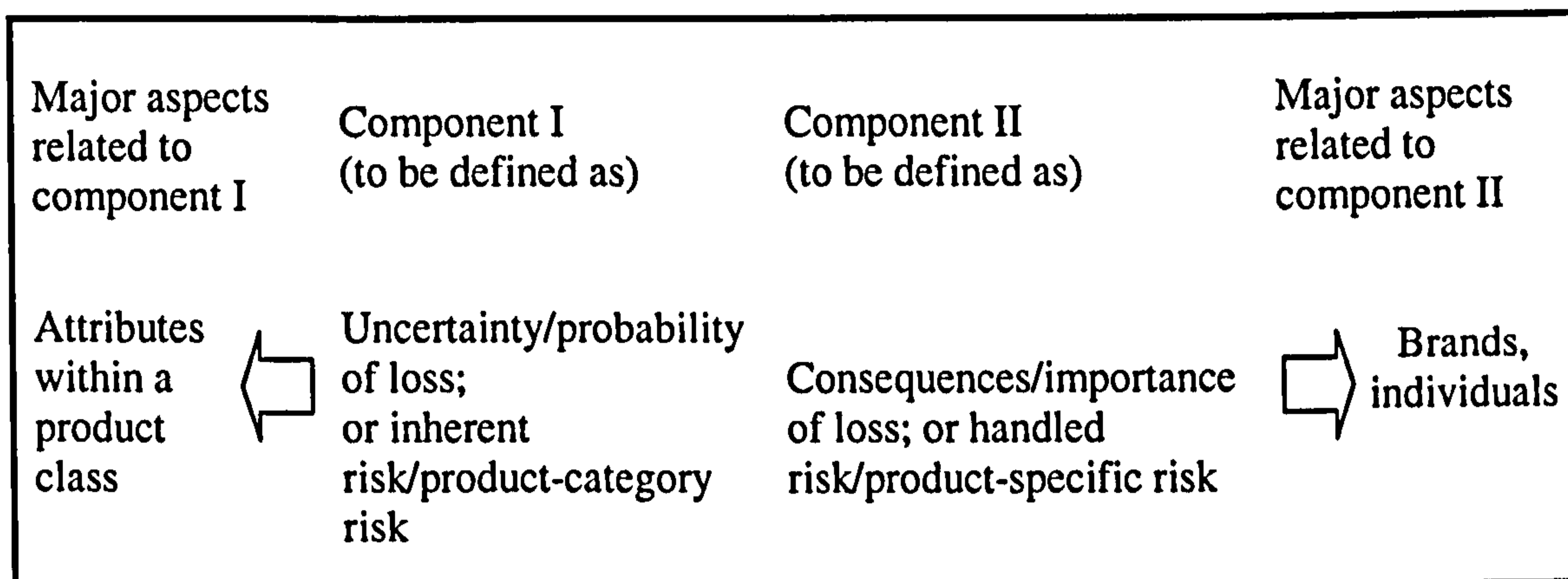
As indicated, the model is complicated and requires a considerable amount of data (Mitchell, 1999). For this reason, very few researchers have applied and examined it

subsequently. Hence, in the literature, the number of studies in using Dowling and Staelin's approach is limited.

### Section Summary: The Relationships between the Proposed Operational Models

A number of thoughts are drawn from the discussion on PR measurement approaches. Figure 2 illustrates the similarities and differences between the models examined.

**Figure 2. The Inter-connection among Perceived Risk Models**



An apparent issue indicated above is that researchers actually share relatively similar views on defining PR but interpret meanings differently (e.g. operational terms vary with contexts). For example, the 'Component I' column shows that constructs like inherent risk, probability of loss, and product-category risk are almost alike in terms of the underlying basis – product attributes in a product class, such as quality, price, etc. The different operational terms suggest that inherent risk comes with a product class so that the risk can be explained through product attributes. If a risk measure is operationalised as the constructs in the left column, a researcher could investigate consumers' risk perception on a product class level. When considering constructs shown in the 'Component II' column, similarities are also found – brands as well as individuals are putatively related to these constructs. Researchers may emphasise consumers' subjective evaluation through probability, or likelihood of a risk occurrence. Moreover, researchers can add an OPR measure along with the consequence measure (see Jacoby & Kaplan, 1972, for instance).

Mitchell (1998a) identifies that there are at least four ways to measure the six PR dimensions. They can be:

- examined through the riskiness level of each dimension;
- measured on a certainty scale, e.g. respondents are asked to rate how certain they feel about one dimension;

- assessed by rating how serious or important the dimensions (such as in terms of loss) are for them, or
- both certainty and seriousness are measured for each dimension.

The considerable evidence indicates that both Cunningham's (1967, 'uncertainty and consequence') and Peter and Ryan's (1976, 'probability of loss and importance of loss') approaches or models are frequently used to measure PR in many previous studies. Such a high degree of application enables researchers a great comparability in the extensive literature.

As discussed, to date, the literature has failed to present useful guidance to help researchers measure PR in various contexts. The question of whether a universal measure is practical remains open. Moreover, individual models have strengths and limitations. Therefore, care should be taken when researchers evaluate model 'performance'.

In addition to this issue (i.e. model determination), a lively debate on risk measurement has been in existence since the PR theory was introduced. The debate is how should the risk components be combined when both are measured simultaneously – should they be multiplied or added? As this debate has great impact on the conceptual development of this research, the following details the debate.

#### **2.4.2 PR Measurement Approaches**

The PR literature details discussed in previous section which raise difficulties in defining PR (e.g. Dowling, 1986; Mitchell, 1999). The debate is ongoing as researchers attempt to measure the concept. The fundamental issue here is that researchers argue whether components should be multiplied or added. Indeed no consensus as to which approach is more effective in a particular context has been reached (Mitchell, 1999):

- Some researchers suggest that the multiplicative approach is appropriate (e.g. Cunningham, 1967) while others challenge this view (e.g. Bettman, 1973).
- Some recommend that the six principle risk dimensions are appropriate for risk measurement (e.g. Jacoby & Kaplan, 1972), but others argue for individual dimensions (e.g. Van den Poel & Leunis, 1996). As a result, it is found that these risks involved have different impacts in varying contexts (e.g. Barkworth et al., 2002).
- Ross (1975) argues that different conceptualisations can lead to various views on the selection of risk dimension(s) for measurement.

It is clearly essential to scrutinise the underlying assumptions, arguments and limitations of these measurement approaches.

#### **2.4.2.1 Multiplicative Measurement**

Cunningham (1967) applied the two-component model of uncertainty and consequences; the components are initially examined by two indirect questions. Two three-point scales are used and multiplied to develop a PR matrix. Numbers are assigned to the matrix. Two basic assumptions are:

- both uncertainty and consequences are taken to have equal weight, and
- the gradations in the risk index are equally spaced.

The details of these assumptions are discussed individually. Although Cunningham (1967) did not specify in his work, the model is taken to derive from expectancy theory in which expected monetary value is calculated by multiplying the probability of outcomes and the monetary value (Dowling, 1986; Mitchell, 1999; Stone & Gronhaug, 1993). As discussed in the section on 'Risk and PR', the components in the EMV model are considered as having the same number of impacts on the expected outcomes. This means that uncertainty and consequences are viewed as functioning independently on consumers' risk perception.

In terms of measurement scales, the gradations of the two components are taken to have equal space and distance. This model is an intuitive approach and therefore becomes debateable. As Schmidt and Wilson (1975: p366) challenge, "Multiplication of scales, in order to be logically meaningful, requires the existence of a true rational zero point on both the measures entering into the product. If such a zero point cannot be shown to exist, the measures are at best interval". This view again reflects on the issue of scale limitation.

Also, Stem et al. (1977) point out that the ordinal scale applied in fact provides limited ability in data analysis. In essence, an ordinal scale enables researchers to analyse and understand data through ranking or order (Diamantopoulos & Schlegelmilch, 2000). With an ordinal scale, researchers can find out any ranking or 'ordered' relationship between respondents and the objects under examination. This suggests that ordinal scale data has limitations in terms of analysis ability – it does not allow researchers to explore difference or why a respondent ranks on the objects more or less. For example, questions

regarding why product X is considered riskier cannot be answered through ordinal data. Thus, the two-component model that applies an ordinal scale has limitations.

Apart from these limitations, the basic two-component model is adopted overwhelmingly by researchers (e.g. Barkworth et al., 2002). The multiplicative two-component model has been employed for decades in considerable consumer research. This extensive adoption illustrates its greater reliability and comparability among other measurement models (Mitchell, 1999).

#### **2.4.2.2 Additive Measurement**

The multiplicative measurement model has been criticised as overcomplicated (e.g. Bettman, 1973). Bettman (1973) argues that both components should not be equally weighted because they are supposed to measure the same concept differently. This means that the relationship between these two components should be related.

There is evidence, though relatively limited, showing that the additive model seems superior to the multiplicative model. Bettman (1973) compares the additive and multiplicative models from defining PR as 'uncertainty and consequences' and 'inherent risk and handled risk'. He has found the additive model "fit(s) slightly better". However, he cannot make an explicit statement that the additive model is definitely more effective. Several issues related to methodology weaken Bettman's work in reaching a conclusive statement regarding the measurement model choice:

- Importance explains more in the inherent risk model – this is possibly due to the products examined that are relatively familiar or certain to the respondents (Mitchell, 1998b). The purchase perhaps involves high degree of negative consequences and low probability of occurrence. As a result, uncertainty has less influence in the multiplicative model.
- The model deals with subjective risk. The mean is removed in the measurement. This, as a result, could affect the multiplicative models' performance.
- Bettman suggests that a positive correlation between uncertainty and importance might lead to a result that the additive model performs 'better' than the multiplicative one. This suggestion is also supported by Lanzetta and Driscoll (1968; cited in Bettman, 1973).

Limited support for the model's adoption is established. For example, Horton (1976) provides evidence that the additive model performs better than the multiplicative one. The researcher argues that when importance is defined as negative consequences, then

negative consequences will have a stronger effect on risk perception than the probability component in the equation. This implies that consumers worry more about possible consequences rather than the chance of occurrence or the probability component. The suggestion further implies that consumers may not necessarily consider probability and consequence equally in some purchase situations. This again reinforces an assumption discussed earlier regarding the abstract and concrete constructs.

This is important when researchers consider how to measure PR. The nature of the multiplicative and additive models are summarised in Table 6.

**Table 6. The Nature of The Multiplicative and Additive Measurement Approaches**

<b>Elements</b>	<b>Multiplicative</b>	<b>Additive</b>
Measurement calculation procedure: on the single risk level	Multiply the mean scores of the two PR components	Add the mean scores of the two PR components
Relationship proposed between the components	Independent	Correlated
The relationship between the components and OPR	Either component changes (increase or decrease), PR may increase, decrease or remain the same.	A positive relationship: as one component increases, PR increases.

The debates on PR measurement (component relationship) can be broadly grouped into two schools of thoughts (Yates & Stone, 1994):

- Independent-and-unrelated situations: each risk dimension (based on the consequence component) is postulated as being the same. This means that each individual risk dimension is independent with no impact on other risk dimensions. This suggestion is in line with the normative theory of risk. Therefore, the greater the potential negative risk dimension, the more risk the situation has.
- Interdependent-and-correlated situations: risk dimensions are recognised as related and the dimensions are interpreted differently. This is because the available choices can produce different outcomes (i.e. favourable or unfavourable) with different degrees of importance in a certain context; thus, the outcomes perceived as more important can outweigh the less important ones. Consequently, as the importance of outcomes increases, the potential losses increase; as does PR.

In addition, when consumers encounter highly risky situations (e.g. the product has important negative outcomes and high probability, such as sky-diving), consumers' risk perception is likely to be affected by both components. Yates and Stone (1994) therefore recommend under such risky or complex situations, PR should be examined by multi dimensions with the dual components multiplied. The question – which approach to apply – still remains to be answered in the PR literature, despite having been debated for a long time (e.g. Barkworth et al., 2002; Mitchell, 1998a).

The literature provides somewhat unclear guidelines in choosing risk dimensions (Dowling, 1986). As discussed earlier, some researchers have examined the six principle risk dimensions, but some (e.g. Barkworth, et al., 2002; Van den Poel & Leunis, 1996) only include certain types, and others adopt a single risk dimension. Thus, not surprisingly, contradictory findings are commonly seen in the literature. This reveals two major drawbacks: the need to develop concept validity and the importance of establishing a set of sound criteria to evaluate model performances.

Dowling (1986) also identifies a lack of content validity within PR theory. Indeed, concept validity is significantly related to concept development (Malhotra, 2002). This is particularly true as PR has been developed for over four decades, and yet, the concept itself still has not been established with multiple PR items. As argued by Malhotra (2002) plus evidence in empirical findings, a concept measurement that omits some dimensions could be considered inadequate, thus PR dimension(s) to be selected in a study becomes critical.

The above discussion is important and explains the relationship of the components, and/or between the dimensions in greater detail. This starts to provide a clearer guideline to researchers considering measuring PR.

Having critically reviewed the extensive literature on PR and fully examined the concept, the discussion moves to the factors that influence PR.

## **2.5 Influential Factors**

It is generally acknowledged that the degree of PR varies with a number of factors (Conchar et al., 2004; Dowling, 1986; Mitchell, 1999; Ross, 1975; Stone & Gronhaug, 1993), including:

- product,
- situation,



- individual, and
- culture

Conchar et al. (2004) have integrated product-related factors into situational factors. It is suggested that product and situation factors can simultaneously affect consumers, when perceived. However, this study argues that although product and situational factors are often linked, they are distinct.

### **2.5.1 Product-Related Factors**

Products clearly have effect on consumers risk perception. Overall, services are riskier than physical goods in in-store shopping (Lewis, 1976); both luxuries and necessities have different roles influencing risk perception (Chaudhuri, 1998). As indicated already, the PR literature is still fragmentary: previous studies have been limited to a narrow range of product categories (Van den Poel & Leunis, 1996). This means that findings from the current literature will not necessarily be universally applicable for all products. Chaudhuri (1998) makes a similar point to Van den Poel and Leunis (1996) concerning the ability of PR generalisations. In order to identify further research areas, it is important to scrutinise the literature.

#### **2.5.1.1 Goods and Services**

The growing literature begins to indicate that services are perceived as riskier than goods (e.g. Boze, 1988; Coleman et al., 1994; George et al., 1985; Guseman, 1981; Lewis, 1976; Mitchell & Greatorex, 1993). Lewis (1976) makes one contribution to this finding, proposing that the inherent nature of services considerably affect consumers' risk perception from in-store shopping. Additionally, Mitchell and Greatorex (1993) argue that this is because the unique characteristics of services can cause extra uncertainty to consumers; moreover, it is difficult to predict purchase consequences of services.

In the traditional shopping environment, four fundamental characteristics or elements distinguish services from physical products as follows.

#### **Intangibility**

Three dimensions of intangibility are proposed (Laroche et al., 2003: p124):

- physical intangibility – that which cannot be seen, touched, felt or examined;
- mental intangibility – that which cannot be easily defined, understood, interpreted, or controlled; and
- generality – that which can be perceived by individuals and varies accordingly.

Service is an intangible and abstract construct. It is noted that intangibility can greatly influence the level of consumers' risk perception (Laroche, Bergeron & Goutaland, 2003; Mitchell & Groatorex, 1993). This indicates that services are unable to be standardised for quality control (Guseman, 1981). Clearly, this shares some features regarding mental intangibility outlined above. The lack of standard quality, accordingly, can add uncertainty to services when consumers attempt to evaluate or predict purchase outcomes of a service.

In addition, services cannot be assessed in the same way as goods (Guseman, 1981). Due to physical intangibility, consumers cannot test or evaluate the quality of a service until they have consumed it; whereas consumers can examine the quality of a tangible product before making a purchase decision (e.g. physical touch). Thus, consumers may possibly feel greater risk when encountering a service purchase than the purchase of a physical product.

It should be noted that it is becoming harder to clearly separate 'physical goods' and services, e.g. simply by the way they are formed or presented. Nowadays many physical goods commonly carry added values such as after-sales service, refund/exchange policy etc. Unsurprisingly, consumers may find difficulty in evaluating these added values. Likewise, service can significantly associate with tangible features, e.g. music on tangible disks, software on a compact disk. Apparently, in such circumstances, product features are becoming difficult to evaluate. Therefore, when the degree of physical intangibility grows, especially in relation to unfamiliar purchase situations, it is logical to assume that the lack of physical tangibility can affect on consumers' perception regarding mental intangibility, which, at the same time, can also impact on generality. In this case, it is helpful if consumers can specifically describe, discuss or explain a particular product (Laroche et al., 2003).

### **Inseparability of Production and Consumption**

In the traditional shopping context, services are produced and consumed simultaneously; both service buyers and 'producers or delivers' are involved in the process of service production (Liu & Wei, 2003). However, physical goods are produced in advance before purchase and consumption. Hence, consumers might fear more risk involved when they consider using services than buying goods offline (e.g. in-store).

### **Heterogeneity in quality**

This also reflects on service quality. Physical goods are presented in a consistent and standardised way, but not services (Liu & Wei, 2003). Unlike tangible items, as service quality cannot be standardised and can vary significantly from time to time as outlined previously, heterogeneity can generate a source of uncertainty to consumers when they consider purchasing services in the traditional shopping manner.

### **Perishability**

Physical goods can be stored but not services. Apparently, this is because the latter is intangible so it cannot be stored in the way the former can. For this reason, consequently high perishability can create additional uncertainty to consumers in service purchases.

#### **2.5.1.2 Product Cues: Extrinsic and Intrinsic Attributes**

It is acknowledged that the topic of consumer use of information to evaluate products and make purchase decisions, is significant in consumer research (Rao & Monroe, 1988). In general, two types of product cue are proposed: extrinsic (or subjective) and intrinsic (or objective) product cues (Gabbott, 1991). These cues impact on consumers' risk perceptions at least from two perspectives.

On the one hand, intrinsic product cues may help consumers to develop an understanding of a product and its nature (Gabbott, 1991). This implies that to some extent, product cues can help reduce risk perceived. On the other hand, extrinsic product cues can trigger the amount of risk perceived and these 'cues', as described by Gabbott (1991), are subjective and become significant when intrinsic or objective product cues are unknown by consumers. In view of Swaminathan's (2003) suggestion, product cues, as stimuli, influence PR in relation to the types of loss. For example, product performance can be related to performance risk; high-price can carry potential high financial loss to consumers; and so on.

As mentioned above, intrinsic product cues are referred to as inherent product features, such as size, colour and design of a product. These features help to form the nature of a physical product (Gabbott, 1991). On the other hand, extrinsic cues such as brand, price, warranty etc. are used by individuals to predict or assess a product's characteristics when its intrinsic information is unknown (Gabbott, 1991). It should be noted that extrinsic features can subsequently form part of a product's value but they in fact do not have any effect on inherent features of the physical product (Huang et al., 2004). However, there is a suggestion that under some circumstances consumers will make use

of product extrinsic cues to facilitate a purchase decision. For example, when intrinsic product information is unknown, extrinsic cues (or attributes) are often used to judge a product, e.g. to predict a product's quality upon price, performance through a brand etc. (Gabbott, 1991).

Prior research about how product cues affect PR is indicated below and the discussion starts with the effect of price as one of the most frequently used extrinsic cues.

### **Price**

Consumers often rely on price as a predominant indicator to judge a new product. Price is considered as a valuable extrinsic attribute (Olson, 1977; cited by Gabbott, 1991; Grewal, Gotlieb & Marmorstein, 1994). Price can affect consumers in a number of ways (Rao & Monroe, 1988). From the perspective of traditional economic theory, price may be a signal as a 'future sacrifice' or 'future cost' to consumers. This is because potential loss (e.g. monetary) due to a bad or poor purchase can be hidden in a purchase situation, as consumers will not know the result until they make the purchase so that when dealing with higher prices, some consumers tend to choose less expensive models.

However, from a behavioural perspective, price is often used to predict a product's quality; a higher price, usually, is expected to correspond with a better quality while a lower price could imply a poorer quality (Chen et al., 2005). Research (e.g. Jacoby & Kaplan, 1972; Kaplan et al., 1974) has revealed that finance risk (i.e. value-related, such as price and/or repair cost) 'contributes' to consumers' OPR.

Severe competition makes it almost impossible for marketers to sell low-quality products at high prices (Rao & Monroe, 1988). This is still valid in many markets (e.g. Chen et al., 2005). There is indeed a close relationship between price and quality. This relationship ultimately influences consumers' risk perception. Considerable research confirms this (Kaplan et al., 1974; Van den Poel & Leunis, 1996). The findings from Chen et al.'s (2005) work are also consistent with this.

However, Bettman's (1973) work challenges this. It is noted that products examined in Van den Poel and Leunis's (1996) study are relatively more expensive than those indicated in Bettman's research. Apparently, these studies involve different levels of risky situation. As discussed, given the relationship of low probability/high consequences and high probability/low consequences, it is not surprising that the studies produce conflicting findings.

Some researchers (e.g. Gabbott, 1991) even begin to assert that the degree of PR is associated with 'low-ticket' and 'high-ticket' items. According to Gabbott (1991), 'low-ticket' items are usually low priced, technically simple-for-use, and/or frequent purchases, and may generate low risk, or the risk is just too small to concern consumers. On the other hand, items sold at high prices, with complex product features (e.g. difficult-to-use), and/or infrequent purchase (e.g. durable items) usually are perceived to contain a great deal of risk.

Some researchers suggest that product performance risk, which can be related to product quality, is a useful indicator to predict product overall risk (Jacoby & Kaplan, 1972; Kaplan et al., 1974). Boze (1988) also has found that there is a significant relationship between the perceived variation in law service quality and consumers' risk perception. This means that consumers' perception of risk varies according to the perceived quality.

However, different results do exist across studies. Shimp and Bearden (1982) argue that quality (e.g. through warranty schemes) can moderately influence product price (i.e. financial risk) but not product performance (i.e. product performance risk). This suggests that quality as one extrinsic cue partially helps predict consumers' risk perception; brand also plays the role of predictor.

Having discussed the role of price and quality to PR, the influence of brand in relation to consumers' OPR is reviewed below.

### **Brand**

Brand is a critical external cue to consumers. In the traditional shopping environment, early research (Peter & Ryan, 1976; Roselius, 1971) shows that brand becomes one useful approach for customers to cope with the situation when they encounter potentially large losses. Roselius (1971) emphasises that brand loyalty or brand image only works on subjective but not actual risk. This clearly suggests that brand has an effect on consumers' subjective risk perception.

Consistently, a study by Sheth and Venkatesan (1968) about repetitive purchase of women hair spray indicates that knowing little about a product or brand at the beginning of a purchase, over time after consumers repeated purchasing the same brand, brand loyalty may be enhanced.

In addition to this suggestion, these researchers (1968: p310) comment,

“Perceived risk is a necessary condition only for the development of brand loyalty. The sufficient condition is the existence of well-known market brands on which the consumer can reply”.

This implies that brand loyalty can become important when the brand is well known to those who may be making purchase decision under risk. Previous research (Verhage, Yavas & Green, 1990a) points out that there is positive relationship between PR and brand loyalty in in-store shopping.

However, brand plays a different role in non-store shopping channels such as the Internet. It is noted that the Internet itself potentially carries considerably more risk than the traditional shopping channel to consumers (Tan & Thoen, 2000-2001; cited by Chen & He, 2003). Also, brand is suggested to play a more critical role in an online purchase situation than the traditional channels (Chen & He, 2003). For example, brand knowledge impacts positively on consumers' intentions to adopt online retailers. This means that when consumers have more knowledge about a particular brand, they will appear more willing to choose the brand and shop online. On the other hand, the less consumers know about the brand, the less likely they will buy from the Internet.

Indeed as found by Chen and He (2003), they report that the Internet acts as a mediator between brand knowledge and intention to shop online, and between brand knowledge and information search online. The more the consumers are certain about the product (or seller, etc.), the less risk they will perceive, and as a result, the more likely they will adopt online shopping. As the level of brand knowledge goes down, PR increases; consequently, it is likely that consumers will show less willingness to buy online. Additionally, PR is found to positively affect consumers' information search online. This means that the more risk consumers perceive attached to an online purchase, the more information they will search for over the Internet; and the less risk the consumers perceived, the less information they will require.

However, other studies undertaken in the online purchase context yield different findings. Huang et al. (2004) examine consumers' concerns about buying an MP3 online in a purchase scenario by comparing a famous brand (Sony) with a less well-known brand (Rio). These researchers report that brand affects consumers' risk perception differently:

- brand name augmented but did not decrease consumers' risk perception. This finding is inconsistent with some studies undertaken in the traditional context

(e.g. Sheth & Venkatesan, 1968) but also in an online situation (e.g. Chen & He, 2003);

- no significant difference in risk perception is found between the well-known and less well-known brands.

A number of elements may lead to these conflicting findings. First, the selected brands are not the respondents' preferred, favourite, or familiar brands. Perhaps these brands are not 'stored' in the respondents' minds or the respondents have dissatisfied experience with them, so the brands in Huang et al.'s (2004) study do not effectively reduce risk but enhance it instead.

Secondly, the risk dimensions examined in the study (i.e. perceived sales risk and perceived security risk) are more related to the purchase transaction over the Internet rather than to the product (MP3). This is important, as the product itself can certainly have created a great amount of risk to customers. Also, the Internet is recognised as a purchase channel with various risks (e.g. security and privacy, Chen & He, 2003). However, the risk dimensions included in Huang et al.'s study are only two of the total (e.g. security, privacy concern, financial, performance risk, etc.) that may considerably influence consumers' decision. The relatively well-known brand, Sony, might have been regarded as an expensive model, and it could become a potential loss of money if the purchase went wrong.

Consumer risk perception is studied on the focus of the purchase channel but not the product in Huang et al. (2004). An anonymous web seller is used in the study. It is likely that this anonymous web-seller inherently produces extra uncertainty to the respondents.

### **Product Importance**

As noted, consumer risk perception can be influenced by the importance of purchase outcomes (Dowling, 1986). Research shows that there is a positive relationship between product importance and PR. This means, as consumers' consideration of product importance increases, their risk perception towards that product would increase (Bettman, 1973). This view is shared by Ross (1975). Chaudhuri (1998) supports Bettman's study and states that through product importance and consumers' negative emotion, necessities have a significantly positive relationship with PR.

## **Country of Origin**

With limited research on the impact of 'country of origin' on PR, there is some evidence suggesting that this element has a critical effect on product evaluation and hence a consequence for PR (e.g. Hampton, 1977 and Lumpkin, Crawford & Kim, 1985; both studies are cited in Mitchell, 1998b). The studies have revealed that consumers' risk perception can change when country of origin is noticed. Yet, as identified by Mitchell, limited attention has been given to the role of country of origin in the PR research area, further investigation in this area is needed. For example, research regarding how country of origin changes over time in consumers' decision making would be fruitful.

Apparently, all the elements discussed above are frequently seen as important elements to form a product. Strong evidence suggests that these product-related factors can influence consumers' risk perception greatly. These elements or factors may be associated with risk dimensions; quality with performance risk, price with financial risk, brand with uncertainty etc. the coming section discusses elements related to purchase situations.

### **2.5.2 Purchase Situation**

A relationship clearly exists between situational factors and PR (Vincent & Zikmund, 1976). Factors related to purchase situation play a key part in determining the degree and types of PR (Mitchell & McGoldrick, 1996). Shopping channel is often reported as an overwhelming factor (Schiffman & Kanuk, 2004). With the recent rapid growth of Internet shopping, the Internet as a relatively new purchase alternative has attracted considerable research interest. The following reviews the role of PR impacting on consumers' purchase decisions within online contexts.

#### **2.5.2.1 Purchase Channels**

Many studies have examined the relationship between shopping channels and PR. Considerable evidence demonstrates that consumers not only perceive risk from what they purchase, but also from how they make the purchase. In general, consumers perceive more risk when purchasing via non-store channels (e.g. catalogue shopping, mail order, Internet shopping, etc.) than in-store shopping.

Early supporting evidence comes from work undertaken by Cox and Rich (1964). They started broadly by comparing how different PR functions effect in-store and non-store purchase decisions in the 1960s. These researchers have found that buying by telephone carries greater risk to consumers than buying from stores. Also, it is reported that PR is



the most powerful factor differentiating female telephone non-buyers from shoppers (1964). This indicates that PR can be a useful instrument for marketers to differentiate women who shop via telephone from those who do not.

Extending the above principles to mail order, Spence et al. (1970) also have found that people perceive more risk in buying from mail order than in-store. This reveals that consumers consider different degrees of risk against purchase channels. This finding is generally consistent with Cox and Rich (1964). Evidence starts to 'grow' and suggests that non-store purchase channels inherently contain greater risk to consumers.

In addition, a number of 'new' or modified risk dimensions are noted as potential purchase barriers for consumers to adopt non-store shopping channels (e.g. McCorkle, 1990; Van den Poel & Leunis, 1996). The major inhibitors, commonly quoted and shared among non-store channels, include:

- impossibility of physical inspection;
- primary concern about returning items, and
- doubt about sellers' business ethics.

It is suggested that by understanding these additional risks involved in non-store (or in-home) shopping channels, marketers can develop more effective marketing strategies such as advertising and branding to help consumers manage potential risk.

#### **2.5.2.2 Cultural Aspects**

Some researchers investigate cultural risk differences in Internet shopping adoption. For example, Liebermann and Stashevsky (2002) and Park and Jun (2003) show that PR associated with Internet shopping varies with nations; some important influential aspects are related to cultural differences, e.g. the diversity of Internet development and/or EC infrastructure.

Consistent data has shown that Korean consumers have a higher level of risk perception when shopping online than American consumers (Choi & Lee, 2003; Park & Jun, 2003) and significantly more risk in the particular aspects of product delivery, transaction security, and customer service issues (e.g. return policy and the availability of contacting retailers). Choi and Lee (2003) commented that such significant differences might be caused by the different levels of EC infrastructure between these two countries: EC in Korea is perceived as relatively new whereas in America it is more mature. The suggestion is shared by Park and Jun (2003). More specifically, they have proposed that

the difference should be attributed to the lower availability of secure servers, as a dimension of EC development. Additionally, the fact that Korean consumers are less experienced in direct marketing (e.g. buying from the Internet) is another reason. Indeed, consumers' knowledge and experience of Internet shopping are two significant factors influencing Internet shopping adoption.

Such different risk perception has further determined Korean and American consumers' subsequent purchase decision. Due to risk perception, consumers tend to limit product categories purchased online; Korean consumers prefer standardised or tangible products such as books and CDs (which may also hold low risk) whereas American consumers are more likely to accept varying goods including relatively high-risk or complex products e.g. clothing (Choi & Lee, 2003). Korean consumers possibly see buying products with greater tangibility as having greater certainty.

It is reasonable to expect that when encountering risk in buying online, consumers across the world will employ different methods to balance purchase benefits and costs. Interestingly, both studies (Choi & Lee, 2003; Park & Jun, 2003) have indicated that brand is important to Korean consumers; they prefer big and well-known shopping malls. Therefore, retailers with well-known brands may help to reduce consumers' uncertainty about the purchase. Brand is well established in the western literature as an effective method and now is also found useful to Asian consumers such as Koreans.

However, caution is required when interpreting Park and Jun's (2003) findings. There may display a limited understanding of American and Korean consumers associated with online shopping due to the confusing conceptualisations of risk used – product category risk and financial risk. These risk aspects are not clarified. In the study, financial risk measure includes privacy concerns and transaction security issues – but whether financial risk is the only outcome of privacy concerns is questionable; and product category risk in fact concerns product performance risk. Personal information can be abused for illegal purposes beyond the control of users. As a result, users worry about their personal safety status. Moreover, although the authors explain that these two types of risk are predominant, neglecting other types of risk could arguably mean the report is inconclusive and weakened in its effectiveness. Thus, the study can be challenged as having limited scope and application of PR associated with consumer Internet behaviour. As argued earlier, the risk aspects in online shopping context are interwoven; therefore, it is necessary to clarify them.

The findings should be considered tentatively. One of the doubts is that the model built by the authors is questionable and is of little help in enhancing the understanding of consumer behaviour on the Internet. Specifically, the model supposedly uses the concept of PR to understand consumer behaviour (such as adoption, usage, and purchasing) on the Internet, while in fact, the study does not present a sound application of the concept.

Prior studies have revealed that the more frequently a consumer uses the Internet, the lower the risks are perceived (Chen & He, 2003). This however is not found in the study of Korean consumers (Park & Jun, 2003). The authors have proposed that perhaps in Korea, the Internet is primarily used for education, communication, information search and online entertainment (e.g. gaming). As can be seen, the Internet as a marketing distribution channel is not yet fully accepted by Korean consumers. Such a proposition is not surprising and is consistent with other studies (e.g. consumers in Belgium, Van den Poel & Leunis, 1999). Their study found that consumers in Belgium prefer using the Internet as a reservation channel rather than a distribution one. It suggests that many consumers are not ready to accept online shopping for the reasons outlined previously.

### **2.5.2.3 Profiles of Internet Shoppers and Non-shoppers**

There is evidence suggesting Internet purchasers hold different levels of risk perception from Internet browsers/non-shoppers (Forsythe & Shi, 2003). In general, both Internet purchasers and Internet browsers can identify some types of potential loss associated with Internet shopping such as inability to examine products before purchase, monetary loss due to credit card misuse, personal information exposure (privacy concerns) and time/convenience loss.

Sin and Tse (2002) have found that Internet shoppers tend to be more conscious of time/convenience, and appear to be more innovative (or novelty seeking) and self-confident (or less risk averse); they are higher earners than Internet non-shoppers. These distinctions indicate that compared to Internet shoppers, non-shoppers are likely to perceive higher levels of subjective risk when considering online shopping. Again, consistent findings are gained to support Donthu and Garcia (1999), Hammond, Turner and Bain (2000) that Internet shoppers hold a more positive view towards Internet shopping issues such as security, reliability, and product variety than non-purchasers.

Recently, the literature has started showing some changes in demographic differences between education, age, and gender for Internet shoppers and non-shoppers. An early study by Donthu and Garcia (1999) revealed that American Internet shoppers tend to be

older (the average age is 36-50), compared to Internet non-users; significant differences were not found neither in education nor gender. Similar results are reported by others (e.g. Fram & Grady, 1997).

Thus, it is important to note that the pattern of Internet shopping is changing (Forsythe & Shi, 2003). Age, education, and gender are three useful characteristics to distinguish Internet shoppers. Among these, however, findings on gender are apparently inconsistent – it may or may not generate differences in customers' risk perception on Internet shopping behaviour. Previous findings related to these and other variables are to be discussed and here begins with gender discussion.

#### **2.5.2.4 Gender**

Suggestion of gender differences in risk perception varies across studies. Some researchers believe it exists while others do not. Compared with men, women are found to have a lower level of interest in shopping online (Garbarino & Strahilevitz, 2004). A similar pattern for Hong Kong consumers is reported by Sin and Tse (2002). Garbarino and Strahilevitz (2004) interpreted this as meaning that women have a higher level of PR with regards to online purchase compared to men.

However, other studies, e.g. Forsythe and Shi (2003), Fram and Grady (1997) have reported divergent results. More specifically, when comparing Internet usage, women are found to perceive a higher level of risk than men both from probability and consequence of a particular loss (Garbarino & Strahilevitz, 2004). This finding confirms past research supporting gender differences in PR (Liebermann & Stashevsky, 2002).

Garbarino and Strahilevitz (2004) reported that the gender differences are not based on expertise or experience. Their study suggests that the gender difference in PR is caused by other more important factors than experience. When comparing men with women on privacy loss, women suffered greater fear of severe consequences from privacy loss but not on the probability side. This may imply that women are more serious-minded or more influenced by negative consequences than men. If this implication endorses prior findings, then marketers should develop different strategies to alleviate women's fears. Unlike men, when perceiving risk, recommendations from friends are helpful for women and reduce risk dramatically. Women are inclined to share experiences and they listen to what their friends recommend. Moreover, women's online purchase behaviour can be significantly affected by their friends. This influence is not found in men. Again, the use of recommendations shows a difference in gender. Is it because females in general are

more willing or sociable than males? The question of whether gender can be a predictor of PR in the online environment remains to be explored.

### **Section Summary**

Tensions are discovered in the classical PR literature with online shopping research.

1. Besides the principle risk dimensions, new risks are identified in consumer online shopping behaviour; privacy concerns and security issues are the two most cited risks.
2. In many classical PR studies, social and psychological risks are usually combined to capture precise risk perception, even in studies of non-store channels. In the research of PR and Internet shopping, however, such a combination is rarely seen, and sometimes these two risks are excluded. Perhaps some of the risks are more apparent and specifically related to the online environment; individual privacy, for example, some researchers suggest that it can produce psychological concerns. This implies a relationship between privacy concern and psychological risk. Forsythe and Shi (2003) see them as related while some researchers distinguish privacy concern from psychological risk (Cases, 2002; Corbitt et al., 2003; Featherman & Pavlou, 2003).
3. It should also be noted that most existing literature in consumer online purchase behaviour has been culturally bound by western customers, usually American (Kolodinsky et al., 2004). Currently, it seems research focus is shifting towards other cultures such as Asian (e.g. Chen & He, 2003; Moon, 2004; Park & Jun, 2003) and Middle-eastern (Liebermann & Stashevsky, 2002). Therefore, the existing literature is based on an incomplete understanding of consumer online purchase behaviour and further effort is needed.
4. Moreover, such an incomplete understanding can result in ineffective strategies of online marketing development. For example, most research, applying either a descriptive or behavioural approaches, draws heavily on American or European consumers' attitudes, perspectives, or characteristics whereas those beyond these two groups are rarely understood. Earlier reports (e.g. Donthu & Garcia, 1999) predicted that Internet shopping was becoming popular in America; and a couple of recent papers (Choi & Lee, 2003; Huang, et al., 2004) have shown that more consumers are willing to accept online purchase environment in America where online shopping is becoming common, as consumers seemingly become more positive towards it. But is this going to happen in other markets? As discussed in the section, however, gaps regarding Internet purchase development between the western and non-western markets exist. In Asia, the Internet as a marketing tool is

still relatively new to both consumers and marketers (Sin & Tse, 2002), and they have been given little attention. Inevitably, the imbalance of research attention round the world is weakening the literature. Understanding of other consumers' Internet shopping behaviour needs to be deepened.

5. Inconsistency of results for various reasons including culture should be investigated.

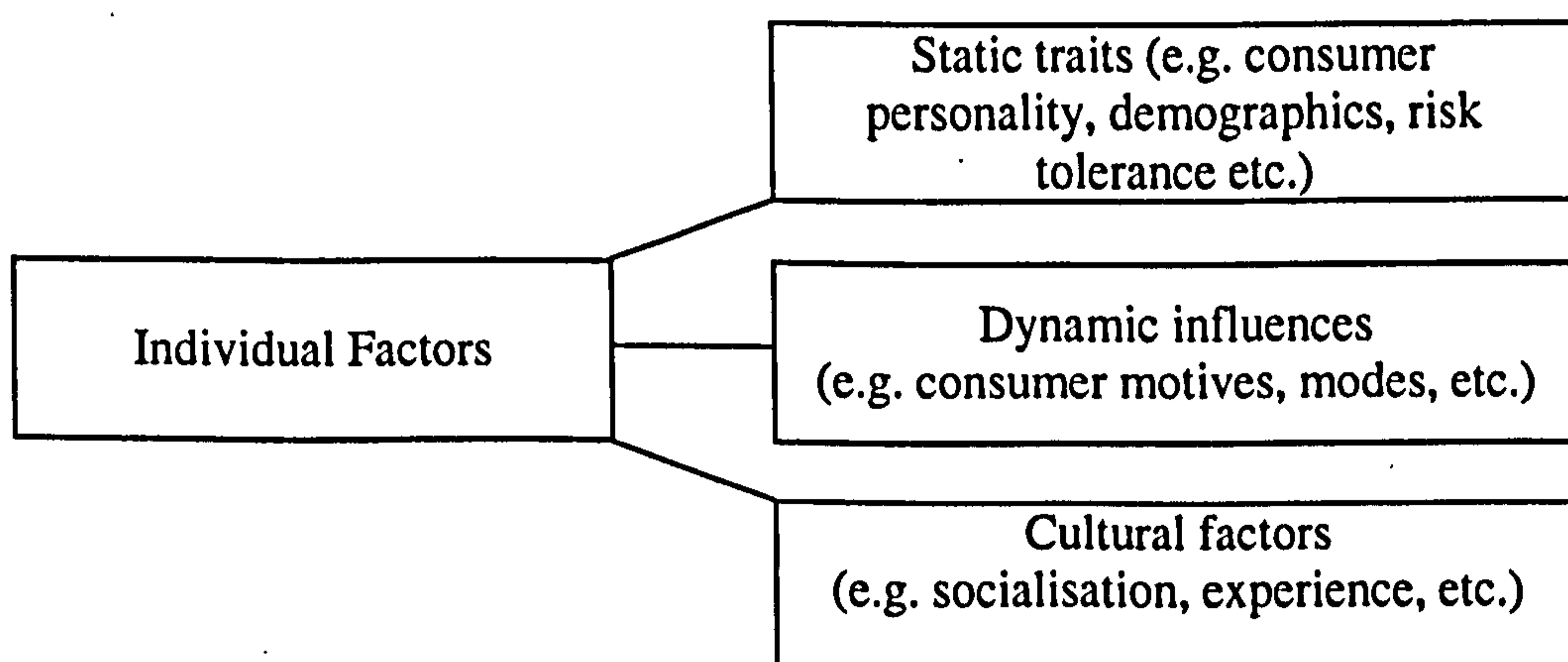
The literature suggests that situational-related factors are important to understand consumer behaviour in risk contexts. However, it should be noted that situational factors are not the unique dimension: factors related to individuals such as gender, risk propensity (e.g. risk averse or risk seeking behaviour) can prevent consumers purchasing from in-home shopping channels (Pablo, 1997). Hence, it is significant to investigate this dimension to better understand consumer's risk-handling behaviour. The following deals with such an investigation.

### 2.5.3 Individual Factors

The PR literature has identified that more research attention was given to situational rather than individual factors; however, factors in relation to individual characteristics do influence consumers pervasively during the whole risk assessment process (Conchar, et al., 2004). The current discussion focuses on these elements by critically reviewing the most relevant literature and presenting empirical findings.

According to Conchar, et al. (2004), major individual factors are outlined in Figure 3.

**Figure 3. Individual Factors**



Debate on whether consumers are rational has existed in the literature for a long time. Some scholars argue that consumer behaviour is goal oriented (e.g. Cox, 1967b). In other words, consumers should have their own purposes or objectives for buying/not buying a product. This implies that consumers should be rational. Cox has asserted that

under this assumption, the theory of PR becomes a useful instrument to explain complex consumer behaviour. This notion is generally accepted by many others such as Cunningham (1967) and Mitchell (1999). More empirical evidence can be found in the discussion of knowledge and involvement.

### **2.5.3.1 Product Knowledge and Involvement**

The body of research examining the relationship between product knowledge, involvement, and PR is growing (Dholakia, 2001). These constructs are recognised as motivational, explanatory, and moderating variables with regards to consumer behaviour – cognitive and behavioural response – that is highly complex.

It is noted that the effect of product knowledge on cognitive process during consumers' decision making has been well documented in the consumer behaviour literature whereas involvement is a crucial aspect (Chen & He, 2003; Dholakia, 2001; Dowling & Staelin, 1994; Laroche et al., 2003; Peter, Olson & Grunert, 1999). Therefore, it is important to review these two constructs.

In general, knowledge encompasses two dimensions – general knowledge and procedural knowledge (Peter et al., 1999). The former refers to individuals' understanding, interpretation, and explanation of relevant information about their environment and behaviour; the latter describes how individuals deal with particular things or process procedure (e.g. jobs etc.).

Apparently, each consumer's level of knowledge varies and alters over time. Experience and expertise are two common related aspects of knowledge (Laroche et al., 2003), also styled: 'familiarity and expertise' (Alba & Hutchinson, 1987; cited by Rao & Monroe, 1988), 'subjective and objective knowledge' (Brucks, 1985; also cited by Rao & Monroe, 1988). To define product knowledge as subjective and objective knowledge is consistent with the ordinary knowledge concept (namely general and procedural knowledge). Regardless of what operational terms are used, there is a sharing perspective in the literature suggesting, conceptually, (product) experience should be distinguished from (consumer) expertise: experience is specific to a product; it is in existence and stored in someone's memory. On the other hand, expertise potentially exists but is not yet active by the consumer. As a result, Rao and Monroe (1988) have discerned that product experience is important to consumers but insufficient to reach the stage of consumption expertise.

Although distinguished conceptually, nevertheless there is a relationship between these two aspects (Laroche et al., 2003; Rao & Monroe, 1988): what consumers believe or perceive they know about a product (subjective knowledge) depends heavily on what they actually know about the product (objective knowledge). Therefore, consumers' product knowledge is of great concern to marketers for product positioning (Schiffman & Kanuk, 2004). Consistent findings are reported by Rao and Monroe (1988), illustrating that consumers are rational in terms of using price as an indicator to evaluate product quality and there are associations between price and quality.

Furthermore, Peter et al. (1999) have categorised product knowledge into three types: knowledge about a product's attributes or characteristics; knowledge about desirable outcomes/consequences or benefits of purchasing and using a product, and knowledge about values achievement or self-satisfaction. It is argued that increased knowledge is associated with knowledge development (Hayes-Roth, 1977 and Marks & Olson, 1981; cited in Rao & Monroe, 1988). This means consumers use different information in product knowledge development, enhancement, and/or assessment; the more they know about the product, the more familiar they are with the product.

As previously suggested, involvement is discussed with product knowledge in many consumer behaviour studies. Involvement theory has significant implication for marketers; it has been applied to enhance understanding of consumers and develop effective marketing strategies. More specifically, in the marketing literature, involvement indicates the degree of an individual's interest, relevance, attention and/or importance that is subject to a particular situation or event (Engel et al., 1995; Peter et al., 1999). Engel et al. (1995) have addressed how far personal involvement depends on the person, objects, and situation. Clearly, the level of a consumers' involvement in a particular context can influence subsequent reaction or responses.

Additionally, Dowling and Staelin (1994) share a similar view. They suggest three types of involvement:

- echo involvement – the focus is on the relationship of a product to an individual's self-concept;
- product involvement – the focus is on a particular product category; and
- purchase involvement – a specific purchase context being considered in a purchase decision is the emphasis.



Moreover, Engle et al. (1995) have noted that personal factors such as need and drive would be powerful elements to trigger one's involvement without which it is less likely that individuals would get involved in particular situations; alternatively, the level of involvement could be low. Sometimes, personal involvement is related to the concept of personal self-concept (Dowling & Staelin, 1994) or self-image (Engle et al., 1995). Product involvement is purported to have a great impact on consumers' cognitive and behavioural responses (Dholakia, 2001).

Overall, marketing researchers propose that the degree of involvement (e.g. high or low) can significantly influence the degree of risk perceived (e.g. Dowling & Staelin, 1994; Engel et al., 1995). Interestingly, Venkatraman (1989) questions the relationship between involvement and PR: does the level of PR affect the degree of involvement, or conversely, in fact is it rather the level of involvement that influences the amount of PR (Venkatraman, 1989)?

Indeed, empirical evidence indicates that there is a close and complicated relationship between risk and involvement (Dholakia, 2001). Often risk is regarded as an antecedent of involvement (Choffee & McLeod, 1973; cited by Mitchell, 1999) and sometimes risk is seen as a part of involvement (Laurent & Kapferer, 1985; cited by Mitchell, 1999). It is noted by a few researchers (e.g. Dholakia, 2001) that PR and involvement have something in common with regards to their conceptualisation. For example, both concepts can function on product importance; both concepts can affect consumers' cognitive and behavioural process (e.g. subsequent responses during decision making).

This complex relationship is further investigated by grouping various involvement interpretations into two broad schools of thoughts: instrumental involvement and enduring involvement. Venkatraman (1989) has found that instrumental involvement is rooted in the risk literature. Instrumental involvement is called situational involvement by some authors (Richins et al., 1992; cited by Mitchell, 1999). The differences between instrumental involvement and enduring involvement have been addressed by several researchers. Various perspectives are summarised in Table 7 (see next page).

**Table 7. The Distinction between Instrumental Involvement and Enduring Involvement (Based on Dholakia, 2001; Venkatraman, 1989)**

Aspects	Instrumental involvement	Enduring involvement
Contexts	The degree of a consumer's concern about purchase outcomes	The degree of an individual's concern between a product and him/herself
Drivers (or motivation)	Being triggered by possible, negative, poor, bad or any other unexpected purchase outcomes in relation to a specific situation or some specific usage goals involved	Being attracted by desirable outcomes related to personal benefits, e.g. purchase enjoyment, pleasure, self-concept, value etc. Individual and the product are considered.
Behaviour purposes	Possibly minimise undesirable purchase outcomes, e.g. try to avoid bad purchase etc.	Maximise desirable purchase outcomes, e.g. seek to obtain satisfaction etc.
Consumers' focus	Lies at purchase outcomes (as listed above)	The product itself, including product features, usage, etc. but not the situation itself.
Duration	Short-term, temporary, and discontinuous phenomenon	Long-term, ongoing, stable and continuous product concern or interest
Relationship with PR	PR comes earlier than involvement which conceptually drives from PR and shares some PR features (e.g. the importance of avoiding negative outcomes from a poor purchase). Difficult to measure involvement and risk separately, involvement is suggested to be dependent upon risk perception.	PR comes after involvement; PR as a part forms enduring involvement, which can affect on PR rather than another way round – an independent relationship.
Overall	PR is an antecedent of involvement. PR precedes involvement.	Enduring involvement determines PR which is seen as one dimension or outcome of involvement.

Table 7 shows that there are clear distinctions between the two types of involvement, clarified and well supported by empirical research (e.g. Dholakia, 2001). As illustrated, when involvement is defined as situational, it has conceptual similarities to PR and this type of involvement is stimulated by the situation (e.g. the amount of risk perceived). On the other hand, when involvement is conceptualised as an enduring construct, it is the product (e.g. characteristics) and the individual that arouse a consumer's interest or attention – enduring involvement determines the *degree* of PR (Mitchell, 1999).

This said, one difference between PR and involvement to note is that involvement (enduring or situational) can be triggered by favourable, positive and/or negative outcomes and the positive outcomes can be linked with individual ego achievement (e.g.

self-image), commitment or interest in a particular brand. According to Dholakia (2001), this linkage does not directly mediate between PR and the product, whereas it is generally agreed in the literature that PR primarily covers negative outcomes such as financial loss. From the above discussion, it is obvious that the concepts of involvement and PR are interrelated but distinctive.

Mitchell (1999) suggests that the level of involvement varies. This suggestion is in concert with the one made by Dowling and Staelin (1994). From Dowling and Staelin's perspective, clearly, their effort in subdividing involvement is by no means new to the distinction between enduring and situational involvement; they are very much alike in terms of the influential variables.

Researchers explicitly suggest that the level of involvement may be contingent upon individual, brand, and/or product category. This perspective is somewhat analogous to the influential factors affecting PR. As argued by researchers (e.g. Venkatraman, 1989) and indicated in Table 7, it is not surprising that risk and involvement are found to be interwoven. Venkatraman (1989) highlights that the relationship between enduring and instrumental involvement is related specifically to product class. This means that if consumers are enduringly involved with a product, they could increase the importance of avoiding certain negative outcomes. Alternatively, if consumers initially want to avoid poor purchase (situational involvement), the involvement may not have to exist. The nature of a product may be one influential dimension to these stated relationships. In other words, it depends how the consumer sees the product or how it is related to purchase goals, i.e. does he/she want to have the product for personal pleasure (satisfaction, hedonistic etc.) or personal need (functional)? Clearly the relationship between enduring and instrumental involvement varies with the product class, as Venkatraman emphasises.

Empirical research has suggested that consumers vary their responses/behaviour to PR. Consumers who are high-risk perceivers are more likely to get involved in situations, and since they have limited knowledge of the product (or purchase outcomes), they tend to use extrinsic cues (brand, store image, price, others' opinions etc.) to reduce PR. Therefore, high-risk perceivers tend to be opinion-seekers. On the contrary, unlike the preceding group of consumers, those who look for purchase pleasure, fulfilment or satisfaction are more likely to perceive low risk or they have a greater ability to handle risk. This is because they are knowledgeable about the product and/or they are initially motivated by the product and themselves, rather than situational factors; hence, they

have less risk to handle. This involvement is long lasting and if this group of consumers wish to reduce any risk perceived, they will use intrinsic cues (i.e. the nature of the product) for risk reduction. Because they are knowledgeable about the nature of the product (e.g. size, function, etc), they tend to be opinion-leaders.

In summary to the discussion on knowledge, involvement and PR, there are clearly relationships between them. Particularly, the relationship between involvement and PR is argued to be: either led by involvement or PR reversely. As noted in the PR literature, more research attention is required in this area.

### **2.5.3.2 Trust**

The close relationship between PR and trust is identified in traditional business contexts (Mayer et al., 1995; cited in Kim & Prabhakar, 2000), and in the development of EC (Morrison & Firmstone, 2000). Researchers have stressed that risk and trust are inseparable during decision making process and therefore they are always discussed simultaneously (Misztal, 1996; cited by Morrison & Firmstone, 2000). It is suggested that the greater the risk perceived, the greater the trust is needed (Jarvenpaa & Tractinsky, 1999). This general principle is also applied in many online purchase contexts (Hoffman et al., 1999).

Various definitions of trust have been proposed by researchers in different disciplines (Yousafzai, Pallister & Foxall, 2003). The focuses are given to individual personality, organisations or institutions, and social psychology. The various ways of examining trust imply that it is difficult to reach a conclusive definition in the literature.

When engaging in an online purchase decision, trust is always cited as a critical factor (Corbitt et al., 2003). Trust should not only be viewed as a short-term issue or temporary solution to stimulate consumers' willingness to adopt purchasing products or using services over the Internet; rather, trust should be treated as a most significant antecedent in the long-term (Yousafzai et al., 2003).

According to Corbitt et al., trust can be built up from three dimensions: trust related to EC in general, trust related to individuals, and trust related to a specific website (i.e. online seller). Trust from these dimensions has different impacts on consumers' online purchase adoption. Firstly, trust of EC in general shows a consumer's willingness whether or not to adopt Internet shopping.

However; supportive evidence is lacking from Corbitt et al.'s (2003) study to announce a direct negative relationship 1) between PR and trust and 2) between PR and EC participation (e.g. Internet shopping). Further evidence is needed.

### **2.5.3.3 Demographic Variables**

Variables related to individual demographics are found useful to understand consumer behaviour. As noticed, more attention has been given to situations associated with PR rather than to individuals and PR (Conchar et al., 2004). Even so, limited evidence has indicated that PR does vary with major demographic variables such as age, gender, social class, level of education and income (e.g. Barkworth et al., 2002; Coleman et al., 1994; Dowling, 1986; Mitchell, 1999; Spence et al., 1970). The relevant literature and major findings in past research are outlined here.

When conducting research on individual demographic variables in risk contexts, several areas have been often researched to identify the relationship between PR and personality traits. Conchar et al. (2004) point out that risk aversion has been widely applied in economics, finance, and decision sciences studies. Risk aversion can be traced back to the theory of Subjective Expected Utility (SEU), which has been extended to Prospect Theory; SEU suggests individuals form their own expected utility subjectively and try to maximise the expected utility (Kahneman & Tversky, 1979; cited by Conchar et al., 2004). There are some fundamental assumptions about SEU theory:

- It is subjective and individual-based.
- Values can be changeable, depending on the context; even when facing with the same product, people may think of possible outcomes differently, alternatively, people's reference points may change over time so that people could have different outcome sets for assessment.
- Correspondingly, people would evaluate the outcome probability differently.

However, researchers have divergent opinions regarding the above. One of the inconsistencies is: whether individuals can specify the objective likelihood of outcome occurrence within a particular context. If so, the probability calculation should be relatively easy; if not, then the attempt to calculate expected value can become complicated (Bazerman, 1986). A major aspect that adds complexity to the expected value calculation is such an attempt involves individuals' subjective evaluation. This then leads to a longstanding argument – whether consumers are rational or not.

Three dimensions related to individuals' response towards risk handling have been observed by researchers; individuals response can be categorised as risk-averse, risk-seeking, and risk-neutral according to situations:

- Individuals who favour gains (outcomes are described from a gain prospective), look for certainty, their decisions are based on these gain outcomes – they tend to avoid risky alternatives (Bazerman, 1986; Stoddard & Fern, 1999).
- When individuals are concerned about losses and make decisions framed upon loss alternatives (i.e. outcomes are expressed from a loss angle), they may seek for or take more risk (Stoddard & Fern, 1999).
- Finally, when individuals' expected value is equivalent to objective outcomes within an uncertain event, they may be regarded as risk-neutral (Bazerman, 1986).

The first and second suggestion is consistent with Prospect Theory which also assumes that people tend to make less risky decisions or avoid risk when dealing with outcomes framed in gains as they want to assure or preserve their gains; people tend to take more risk, contrarily, when decision outcomes are termed as loss (Conchar et al., 2004). Empirical studies have challenged the belief that human beings are not always rational (Monroe, 1979; cited by Rao & Monroe, 1988); human beings do have variant characteristics contingent on the context. These viewpoints have been recognised in the economic field. Pablo (1997) has investigated decision makers' risk propensity. Inconsistent findings are found by the researcher, who reports that, contrary to Prospect Theory, even when involved under a threatening (negative or loss) situation, the respondents would rather take a 'surer' risk than a riskier alternative; the respondents are therefore regarded as risk-averse decision-makers.

The dimensions discussed above are closely associated with consumers' reference point, decision frame, and subsequent choice (Qualls & Puto, 1989; cited in Stoddard & Fern, 1999). Consumers may set different reference points according to the context. Simultaneously, how their decisions are framed is important to their subsequent responses (e.g. whether the outcomes are worded in a positive or negative way, in other words, emphasised as gains or losses); subsequent behaviour may be influenced greatly by the way they think with respect to event outcomes. Accordingly, it can be seen that decision frame interposes consumers' reference point and subsequent choice.

#### **2.5.3.4 Risk Preference**

“Risk preference is a label used to describe a person’s choice when faced with two options that are equal in expected value but differ on a dimension assumed to affect the riskiness of options, for example the variance of outcomes” (Weber & Hsee, 1998: p1206). This quotation suggests a number of meanings. Clearly, individuals hold different preferences on one option over the other during the decision process according to the individuals’ attitude towards risk: a positive or negative attitude. Either can significantly influence subsequent action direction – risk seeking or risk aversion.

Weber and Hsee (1998) have emphasised that the driving force behind difference in individuals’ risk preference is a crucial aspect to be explored. They assume that during the decision process, two aspects can function on the differences. If one believes risk perception is the driving force, then the exploration will usually be focused on cognitive and perceptual variables (i.e. how individuals define and perceive the riskiness of the choice options such as outcomes). On the other hand, if perceived risk attitude is assumed to be the driving force, then the focus should be placed on individuals’ affective response/action towards perceived risk.

It has been noted that individuals have different preferences or propensities on risk taking (Chen & He, 2003). Sitkin and Pablo (1992) have considered risk propensity as a tendency in an individual’s response in risk circumstances. That is, consumers are either inclined to against risk taking decisions (i.e. to avoid risks or risk averse) or for risk taking decisions (i.e. take risk or risk seeking).

Having illustrated a detailed discussion on various factors that influence risk perception, empirical findings in relation to consumer demographic profiles are detailed.

#### **2.5.3.5 Findings about Demographic Variables**

The important demographic variables are discussed as the following and begin by considering gender.

##### **Gender**

Past research has noted that in general, men tend to take more risks than women (Stoddard & Fern, 1999). Some researchers have suggested that men are likely to attribute internal factors (e.g. their own ability) to the success they achieve whereas women credit their success (e.g. good performance or behaviour) with external factors

(e.g. luck, hard-working, task difficulty etc.). This explanation has been made a while ago (Beyer, 1990 and Weiner, 1985; both cited by Stoddard & Fern, 1999).

However, whether this explanation still holds needs to be explored. This is because more women are educated and employed. Would this change women's point of view against those views on risk-taking behaviour held in the 1980s and 1990s? Arguably, it is possible that the answer could be different so that some interesting questions emerge: is there any difference between men and women now in terms of PR. If there were little, could the effect be explained by culture?

Stoddard and Fern (1999) apply a simulated organisational purchase in which price is used as a purchase criterion. The researchers report that a difference exists between gender and decision frame. This means that gender has an effect on decision making. More specifically, when dealing with decisions framed as gains, both men and women prefer to make decisions towards sure outcomes rather than taking risk. This finding is consistent with Prospect Theory.

However, inconsistent with early research (Fagley & Miller, 1990; cited by Stoddard & Fern, 1999), the results in Stoddard and Fern's (1999) work shows that when decision outcomes are termed as losses, there is no difference between males and females but women appeared more willing to take risks than males when decision outcomes are made as gains. As Stoddard and Fern themselves have recognised, the findings are contrary to others' work. Whether this contradiction is due to the small size of samples (188 for 1<sup>st</sup> study and 116 for 2<sup>nd</sup> study) is not investigated.

### **Age, Income, and Education**

The effect of age on PR has received little particular attention. Perhaps much PR research, due to restricted resources, has to employ convenience sampling, such as students, who are usually young, educated, with relatively low income. Thus, many individual characteristics such as age will be homogenous so that very few studies have found significant effect.

These elements, however, sometimes influence consumers' risk perception. For example, Spence et al. (1970) report that the higher education, the lower risk decision makers perceive; the higher the income, the lower risk they perceive as well. But significant differences are not found by gender, age or religion.



Van den Poel and Leunis (1996) also indicate no significant relationships between demographic variables and PR, including age, education, car ownership, or family size. However, some risk difference is found between those from urban and rural areas. This means that for some products, consumers living in rural areas felt it riskier to buy products via both mail orders and in-store shopping, compared those living in urban areas. Van den Poel and Leunis (1996) have not provided a clear explanation of this finding. One possible reason is that people living in rural areas might feel it is troublesome to shop via mail-orders due to the geographical distance; when encountering unexpected purchase outcomes, consumers probably worry that they have to deal with extra uncertainty (e.g. longer time or distance for delivery, exchange, etc.). Alternatively, the sample selected (i.e. housewives, similar education etc.) of this study led to this finding.

### **Cultural Effects**

That the marketing literature is mainly developed on understanding American consumer is noted as a shortcoming in the PR literature (Hoover et al., 1978). Since this observation was addressed by Hoover et al. in 1978, support from cross-cultural research in the area of PR is increasing but is still limited (e.g. Bao, Zhou & Su, 2003) This demonstrates that the theory is applicable in studying consumer behaviour beyond American culture (e.g. Verhage, et al., 1990b). Therefore, it is important to examine the role of culture on consumers' risk perception thoroughly.

Culture is defined as "... the interactive aggregate of common characteristics that influence a group's response to its environment" (Hofstede, 1980: p19; cited by Tse, Lee, Vertinsky & Wnhrung, 1988: p82). Indeed, culture is 'well known' for its complexity, including a set of "knowledge, belief, art, morals, laws, customs and any other capabilities and habits acquired by man as a member of society" (Tylor, 1871; quoted by Weber & Hsee, 1998: p1208). The definition reveals that culture is a multidimensional concept which has a set of values, beliefs, and rules.

Knowledge is often recognised as an important element within cultural studies. People use it to interpret their experience and to create, produce or describe social behaviour (Joynt & Warner, 1996; cited in Bao et al., 2003). Since knowledge has been discussed previously, the current section will not repeat the details; instead, the other variables of cultural values are discussed.

In the context of culture, face consciousness and risk aversion have been identified as two important dimensions affecting consumer decision making (Bao et al., 2003). Tse et al. (1988: p83) refer face to “the respect, pride, and dignity of an individual as a consequence of his or her position in society”. It indicates how an individual is treated and respected, whether an individual’s dignity will be given by other social members. Chinese are considered to be strongly influenced by face.

Empirical research supports the statement that the degree of face consciousness influences consumers’ decision making. Consumers who are highly face-conscious may be more likely to have high social needs in consumption or social influence. Chinese consumers are known to be involved in socially-collectivist culture, in which social members play a distinctive role from consumers of individualist cultures (e.g. American); Chinese consumers can be profoundly affected by social members (Hsee & Weber, 1998; cited in Weber & Hsee, 1998). According to Tse et al. (1988), a product represents an individual partially and the user is psychologically bound to the product; therefore, any criticism about the product may cause damage to the user’s ‘face’, ultimately, weakening the user’s position in the society.

Moreover, users would pay more attention to extrinsic attributes of a product (e.g. good brands, high price etc.): it is partially because these consumers aspire to demonstrate their image to the other social members; in doing so, they seek to gain, enhance, or retain safe social positions within their social group; simultaneously, they would try to avoid any possible chance of derogating their public position or image; thus, all these factors can reflect on the decision making of high face-conscious consumers such as the Chinese.

In addition, those with high face consciousness would be more conscious about making decisions in ambiguous, risky, or unfamiliar situations. This is also related to risk-aversion. It indicates that the consumers would feel more uncertain or at risk when facing new products or brands than those who are less risk-averse since the purchase outcomes are uncertain or unknown until the purchase is made. To avoid possible purchase mistakes such as financial loss, which may ultimately affect social image or cause disquiet in a reference/social group, therefore, some high risk-averse consumers might walk away from new products’ adoption, or stay with familiar brands.

A couple of studies have contributed to exploring the relationship between PR and brand loyalty in non-American cultures. Hoover et al. (1978) investigated the relationship

between PR and brand loyalty in upper-middle and upper class females from Mexico and U.S.A.. Bath soap, toothpaste, and instant coffee were chosen for the study. Significant differences were found between the American and Mexican consumers. Firstly, for the three products, the Mexican consumers held lower level of risk perception than the American ones. Secondly, comparing the means of brand loyalty, the Mexican consumers had higher scores than the American. This suggests that the Mexican consumers appeared more loyal to their brands than the American. Finally, the researchers reported that in general, they had found differences in PR and loyalty relationships between these two groups of sample, particularly in the purchase of bath soap and instant coffee, but not toothpaste.

The findings from Hoover et al.'s (1978) study suggest that there are differences in perceiving risk and the effectiveness of brand loyalty in the three products examined between the two countries. This supports Cunningham (1967), who initially proposed a significant relationship between PR and brand loyalty among American housewives.

Likewise, Verhage et al. (1990a) apply Hoover et al.'s (1978) approach in four countries: Netherlands, Saudi Arabia, Thailand and Turkey. By examining bath soap and toothpaste and employing a similar sample, however, the researchers have not found significant positive relationships between PR and brand loyalty among consumers in these countries. The researchers then further indicate that except for Turkish consumers, no significant relationship exists between the components and brand loyalty. The results illustrate that Turkish consumers consider the uncertainty component to be significantly correlated with their brand choices when they are purchasing toothpaste but not bath soap.

These findings are counter to some studies, particularly on American consumers such as Hoover et al.'s (1978). The lack of significant relationships indicates that brand loyalty may not necessarily act as an effective way to reduce risk perception in some countries. Instead, the results reveal that consumers outside the U.S.A. are not loyal to a brand when buying toothpaste and bath soap.

One possible reason for the conflicting suggestion between Hoover et al. (1978) and Verhage et al. (1990a) is that the different methods of data collection employed in the studies. Concerning the samples employed, geographically, Mexico is next to the U.S.A.. It may be logical to assume that these groups of consumers' behaviour could be mutually affected within the region. These groups of consumers might share similarities.

Whereas the consumers involved in Hoover et al. (1978) study are more geographically and culturally diverse. In addition to this diversification, data were gathered by different methods within studies. More specifically, these researchers employed telephone interviews with American female respondents and for Mexican respondents. Verhage et al. relied on faculty members of an educational institution in Mexico. Home interviews were conducted in the Netherlands and Turkey, store-intercept in Thailand's local supermarket, and snow ball technique in Saudi Arabia.

An additional factor that may have contributed to the conflicting results should be taken into account; namely, the products involved in the studies were frequently-purchased, low value or low involvement goods. Although argued by Verhage et al. (1990) that low involvement products, according to Laurent and Kapferer (1985), are justified; other researchers (e.g. Mitchell, 1999) point out that a purchase of low value products may involve too little risk to attract consumers' risk concern. Consequently, the choice of products may be questioned.

Furthermore, the literature has highlighted that consumer decision making varies across nations that hold different levels of economic development, education, income, social influence, and cultures (Hoover, et al., 1978). It is likely that a different degree of brand development or operation in these countries would affect the results. But Hoover et al. (1978) only examine brand loyalty at a general level; in other words, no specific brand had been employed. As proposed above, all these differences could lead the inconsistent findings from the two studies. It consequently requires marketers to tailor practical risk mechanisms for different consumer cultures.

To sum up, despite inconsistencies, previous studies have confirmed that PR is a meaningful, applicable, and valid concept for cross-cultural studies in consumer behaviour. Other researchers (e.g. Mitchell et al., 1996; Tse et al., 1988) have also endorsed this suggestion. The literature has suggested that cultural differences do have a profound impact on decision makers (e.g. marketing executives).

### **Section Conclusion**

As noted, some researchers have argued that Asian consumers may be influenced by western consumption styles and culture, however, the central or key values of Asian countries/cultures are not yet fully understood (Huntington, 1996; cited by Mattila, 1999). Although there is prior research on investigating the role of culture in consumer risk perception, especially in the areas of how much risk has been perceived by non-

American consumers, the number of studies that have explored Chinese consumers is rare. Topics such as what risk aspects have been involved in a particular purchase environment, what differences or similarities across nations and what methods do consumers employ for risk reduction, remain unresolved. Thus, PR theory should be further investigated.

The literature suggests that consumers' risk perceptions may be changed over time – increase, decrease, or remain the same. When consumers perceive risk against a purchase decision, they tend to develop strategies to reduce risk. There are some strategies and possible approaches to reducing risk indicated in the literature; and these are discussed in the next section.

#### **2.5.4 Perceived Risk Implications**

PR has a significant impact on a company's marketing strategies such as market segmentation (Ingene & Hughes, 1985). Risk reduction strategies (RRS) and risk management strategies (RMS) are identified as two major research domains in the lengthy literature on risk (Humphreys & Ingene, 1980). RRS aim to help individuals reduce uncertainty and/or consequences of PR in a given context (Mitchell & McGoldrick, 1996). With regards to RMS, Creyer, Ross, and Evers (2003) suggest that from the decision theorists' perspective, risk is manageable so that some decision makers are generally considered to avoid taking risk or to be risk neutral, but very few seek risk. For the few who do explore and take risky decisions, the literature suggests that the decision makers are trying to maximise financial gains (e.g. gambling, lottery, etc.). The section on risk-perceivers has previously reviewed RMS so that the current section's emphasis is on RRS.

In the marketing literature, individual behaviour associated with risk reduction methods is frequently studied by consumer behaviour researchers. In the following section, attention is given to a review of RRS among the extant research from the marketing literature.

##### **2.5.4.1 Consumer Behaviour of Risk Management**

The PR literature indicates when perceiving risk in a purchase situation, consumers tend to do something to relieve their risk perception (Roselius, 1971). Initially, two primary strategies of risk reduction have been identified by Cox (1967b):

- either reducing the degree of risk or lowering the chance/probability of loss (e.g. avoiding unfavourable outcomes) from a failure purchase, or

- increasing the certainty of purchase outcomes.

Cox (1967b) suggests; if individuals perceive less risk, they should in theory have less risk to handle. Cox's suggestion is accepted researchers, such as Mitchell and McGoldrick (1996) and Ross (1975). Roselius (1971) also focuses on how consumers tactically respond in risk reducing situations. More specifically, the researcher proposes four general dimensions of risk response based on Cox (1967b):

- to reduce PR directly by either decreasing the probability of purchase failure or decreasing the importance of perceived loss (i.e. negative or undesirable purchase outcomes);
- to shift the perceived type of loss, e.g. convert risk A to risk B (the risk that the perceiver could tolerate);
- to postpone the purchase so that the consumer would have more time to search relevant information about the product; and
- to make the purchase – take the risk.

The first dimension, to a large extent, is similar to what Cox (1967b) suggested earlier and the other three are new directions. There is also a suggestion that the first approach, namely reducing uncertainty, is more useful for consumers than the others (e.g. Cox, 1967b; Ross, 1975). Additionally, Sheth and Venkatesan (1968) have construed that perhaps it is easier for consumers to reduce uncertainty of purchase outcomes rather than to change purchase outcomes. This is because, in general, consumers cannot change the actual or objective outcomes of a product or choosing a brand. Yet, consumers can change their uncertainty about getting these purchase outcomes (e.g. reduce uncertainty or enhance certainty). By doing so, they hope to avoid unfavourable or negative outcomes.

However, within the context of repeat purchase, Sheth and Venkatesan (1968) have pointed out that two major dimensions related to consumer risk management are not yet well researched in the existing literature. One dimension is about how consumers use RRS within the risk reduction process (e.g. do consumers have preference for RRS?) and the other is whether RRS will be changed over time (e.g. if consumers repeat their purchase in which they perceive risk, how will consumers respond to the risky situation?). Specifically, three major ways to reduce uncertainty are discovered; they are information seeking, pre-purchase deliberation, and brand loyalty. The findings from Sheth and Venkatesan and how following researchers responded to their questions will be discussed in detail in the next section on Consumer Risk Reduction Methods.

#### **2.5.4.2 Consumer Risk Reduction Methods**

In the early studies of RRS, researchers' interests focussed on exploring possible methods to reduce risk. The literature has identified various ways for risk reduction and the research focus shifted from merely identifying possible RRS towards the relationship between risk type(s) and RRS. Some approaches to risk reduction are deemed to be more or less associated with the dimension(s) of PR (Derbaix, 1983). Moreover, further research has confirmed that consumers have their preferences of RRS in different risk-situations. Various methods affect consumers' risk perception differently under different circumstances (e.g. Van den Poel & Leunis, 1996).

Eleven general strategies are associated with the types of PR in Roselius' paper (1971), including endorsements, brand loyalty, brand image, private testing, store image, free sample, money-back guarantee, government testing, shopping around for relevant product information, expensive model (i.e. take the most expensive item from the product range) and word of mouth. Overall, in Roselius' (1971) study, when consumers perceive risk related to time, echo (related to psychology and social influence), and money, there are particular strategies available for risk reduction. Brand loyalty and brand image (e.g. reputation) are reported as the most effective methods to reduce risk for all types of loss by respondents. But when the risk aspects of time, echo, and money loss were involved, other risk reduction methods such as store image, shopping around for product information, product trial, word of mouth, independent product test reports are less effective. Roselius reported that the respondents were not happy with endorsements, money-back guarantees, and private testing to reduce the four types of loss.

Many researchers have conceived that when perceiving risk, consumers would search for more information associated with the purchase in order to lower the amount of PR (Cox, 1967b). This is perhaps because via doing so, it is expected that more relevant information should enable the purchaser to increase his/her confidence, experience or knowledge; in other words, to reduce potential loss in the purchase (Murray, 1991; cited in Chen & He, 2003; Sheth & Venkatesan, 1968).

However, not everybody has agreed with this statement: a few researchers have started questioning the use of information search and proposed that in some circumstances (e.g. second-hand market), consumers would be more likely to reduce their information search (Gabbott, 1991). Information search as a common approach to risk reduction has been examined in the traditional purchase environment for a long time.

In addition, consumers regarded purchasing the most expensive model as the least favourable or effective method to reduce the particular types of loss in Roselius' (1971) study. Perhaps buying the most expensive model may create another source of loss (e.g. finance), which can in turn bring greater risk to consumers; as a result, this method is considered as the least favourable risk-reducer. This indicates that RRS can vary by consumers.

Moreover, Roselius' research has been challenged. It has limitation for practical utilisation of the eleven RRS since there is no product class nor purchase method included, as Derbaix (1983) argued. Jacoby and Kaplan (1972) have provided evidence to remedy this and have examined the interrelationship between twelve products and the types of loss (which can be used as directions to effective RRS). According to Derbaix (1983), in Jacoby and Kaplan's study, the focus of investigating the relationships between PR and RRS was neglected. Derbaix has provided empirical evidence suggesting that the types of risk are associated with product classes – therefore some products are inherently more risky than others – because of the inherent risk, thus some RRS (e.g. money-back guarantee, brand loyalty, store image and shopping around for comparison) are found to be more helpful in terms of reducing some particular risk dimensions.

Further to Roselius' (1971) study, Mitchell and McGoldrick (1996) recategorised variety strategies for risk-reduction into 'simplifiers' and 'clarifiers'; they also announced that whether an RRS is a simplifier and/or clarifier depends on how a consumer handles information sources. If the consumer takes the advice on a product from friends etc. and makes a purchase, this may then be regarded as a simplifier. If, however, the consumer uses the information to help make a purchase decision (e.g. for comparison purpose), it then can be considered as a clarifier. The advantage of simplifier and clarifier classification is to improve the understanding of consumers' purchase behaviour.

Thirty-seven strategies have been further classified by Mitchell and McGoldrick (1996). The common methods are shown in Table 8.



**Table 8. Common RRS and Interpretations (Mitchell & McGoldrick, 1996)**

<b>RRS</b>	<b>Interpretations</b>
Word-of-mouth communication	Consumers may seek product information, valuable opinions, and/or advice on products or services via informal conversations from others (e.g. friends, family members, etc.) (Schiffman & Kanuk, 2004).
Brand loyalty	Can be a strong mechanism to reduce risk. Consumers may be loyal to their favourable brands/companies and select the brand they know about.
Brand name	May be an effective means of reducing risk by building up well-known, reputable brands.
Store image	Is an alternative RRS related to store image.
Buying the most expensive model	When encountering risk towards a purchase, some consumers often tend to select the most expensive model; this may probably imply that the most expensive model can guarantee the best quality, (Schiffman & Kanuk, 2004).
Money-back guarantee	An important device to reduce subjective risk; the brand selected offers a money-back-guarantee with the product (Derbaix, 1983). Such a strategy may at least help reduce some perception of financial loss perceived before purchase.

To summarise, in general, much earlier research has focused on reducing risk in new products, but only few (e.g. Gabbott, 1991) researchers have examined the application of RRS associated with second-hand markets. There is evidence suggesting that the effectiveness of RRS will vary according to the markets.

Having critically reviewed the PR literature, a number of conclusions are drawn for discussion as following.

### **Chapter Conclusion**

The PR concept in consumer behaviour literature is related and distinctive to the normative theory of risk in economics. The fundamental arguments regarding risk in economics inevitably have extended to consumer behaviour theories (e.g. risk vs. uncertainty). In addition to the existing arguments from economics, the PR theory has created new principles and challenges to consumer behaviour researchers.

Since its introduction in the U.S.A., considerable research efforts have been put in understanding consumer behaviour from a risk perspective. The PR literature covers a wide range of interesting topics as illustrated in this chapter. Apart from the research in its conceptualisation, operationalisation, and measurement, PR has been primarily applied to consumer research in retailing, in-store vs. non-store shopping channel

choices, situational and individual factors in risk contexts, risk-taking propensity, risk handling behaviour (e.g. methods for risk reduction).

However, the current understanding of consumer behaviour from a risk aspect is limited as:

- many prior studies favour investigating goods with low value, frequent and/or convenience purchases, little involvement and low-complexity;
- products (including goods and services) with high cost, infrequent purchase, complex and high involvement are relatively neglected;
- the comprehension of how PR can help explain consumers' decision making within complicated purchase situations should be advanced.

In addition, more goods have been examined than services under the PR theory. As noted by Mitchell (1999), the existing literature in PR based on the findings of physical goods or low-risk purchase situation is extensive; but the understanding of services or complicated purchase situation involving high risk is limited.

Furthermore, Mitchell (1998b) pointed out that the retail industry has been experiencing a major shift from manufacturing to services marketing; more importantly, with the widespread application of advanced technology, as well as the rapid development of information systems, it is noted that the industry has changed to be more technology-related such Internet distribution and sales. Research on this suggestion is increasing; yet, the literature of PR in this area is still deficient. Thus, there is strong need to put more effort in the 'new' and challenging retail environment (e.g. focus on services and technology).

Findings from prior research in the PR area have been mixed; that is, although to some extent researchers appear to generate agreement on some topics (e.g. the principle dimensions of PR), the remaining topics, such as which risk dimension should be examined in a given situation, are unresolved (Pablo, 1997). This issue is considered in the current study.

Furthermore, the imbalance of research attention can weaken the validity of the concept and produce research bias. Not until recently has the concept been extended into consumer Internet shopping contexts, not only for goods shopping but also online services adoption. Compared with traditional channels, studies report that the Internet is

considered a highly risky distribution channel in which risk profoundly affects consumers' decision towards Internet shopping adoption.

It is identified that arguments regarding PR measurement have long been in existence within the literature. A number of issues remain unresolved, notably the following; how does PR function, should PR be measured by multiplicative or additive measures, what are the relationships between OPR and the two components (i.e. are the two components independent or related, how do the components function on overall risk perception). Some of these issues are addressed in this research.

Furthermore, the theory relies heavily on drawing findings from Western consumer studies. Among those, reports of American consumers predominate the extant literature. Whether PR theory is applicable in studying other markets and consumer cultures remains an important area for further research. This thesis begins to address this need.

### **Implications for the Current Study**

Several important implications are drawn from the critical literature review:

1. The current study agrees with many consumer researchers such as Bauer (1960), Cunningham (1967), and Mitchell (1999), who have identified that PR is about consumers' subjective estimation of probability and outcomes, but not objective or actual risk. Also, the current study conceptualises PR as a function of uncertainty and consequences. There are several reasons for the adoption. First, this conceptualisation has been most frequently employed, examined, and improved by researchers since the PR theory was introduced in 1960. The long-standing examination indicates the conceptualisation has been proved valid. Thus, using established examination ensures the current study has a greater degree of comparability. It is expected that insights about the concept may be provided. Secondly, PR as uncertainty and consequences appears to be the most appropriate model within the current context. The existing literature indicates that uncertainty plays a significant role not only in services but also in the purchase channel (e.g. the Internet). Moreover, researchers have agreed that consequences are multidimensional. If only one component (e.g. either uncertainty or consequences) is included, it can be argued that the results would be fragmented. Having considered these major reasons, the study employs the model of uncertainty and consequences.
2. The operational definitions are based from the extant literature; 'how certain would you feel in buying/using ...' in terms of uncertainty and 'how serious would the consequence be in the purchase/usage of ...' for consequences. This is because the

terms are found useful in service contexts and are recommended for further studies within service research (e.g. Mitchell & Greatorex, 1993). The application of these definitions therefore enables this research to examine whether they are valid in the current context.

3. A number of measurement arguments have been addressed in the literature, such as whether the two components should be multiplied or added. With little guideline from the literature, this study will examine the 'performance' of the two common PR measurement models (i.e. the multiplicative and additive approaches). It is hoped that the study may be able to reach a reflection on the argument. Before making such an examination, the current study assumes that both uncertainty and consequences would affect on consumers differently:

- I. Uncertainty can have strong effects on both aspects: the purchase channel (i.e. the Internet) and the product (i.e. IBS). Uncertainty as a major characteristic of services has been reported and confirmed to have a significant impact on consumers' decision in buying services. This is mainly because consumers are uncertain about service outcomes before service delivery. Also, it is hardly possible that consumers could estimate all possible outcomes before purchase/usage – in principle. This is similar to goods purchases in that consumers may find it difficult to know all purchase outcomes.

Moreover, consumers possibly have to deal with extra uncertainty in Internet purchase situations. As suggested in the literature, the Internet is perceived to operate under huge uncertainty. Subsequent to that it is almost impossible for consumers to return or refund the service once the service is delivered online from the service provider to the consumer. This can increase the uncertainty perceived when consumers 'purchase' services on the Internet.

- II. A wider range of consequences should be perceived as possible hurdles preventing potential customers from IBS adoption. Some particular risk dimensions have been identified as unique to purchase on the Internet, such as privacy concerns, security issues, and credit card fraud. These risks are possibly applicable in the current context. This study argues that risk dimensions would have different effects on consumers' decisions: some (e.g. financial loss) may dominate consumers' risk perception and undermine their decisions to use IBS.

- III. The current study applies the theory of PR into the Chinese IBS market. Although consumers' perceived risk during decision making has been an important construct of consumer behaviour theories for over four decades, and an increasing body of literature on Internet shopping behaviour is developing, limited research attention has been given to consumers' risk perception in the IBS context and the Chinese market. Therefore, it is expected that the present study may provide a better understanding of the role of PR in affecting consumers' decision on whether or not to use banking services over the Internet.
4. As an exploratory study, emphasis will only be put on risk aspects related to IBS as a general comprehension and no particular brand will be involved. This is consistent with most previous PR studies (e.g. Mitchell & Greatedorex, 1993), testing at the level of product classes. It is however noted that messages related to brands or names of services providers can affect consumers' perception of risk. Also, results from a study on a brand level would provide a limited base for generalisation. Hence, a focus at a product class level is justified.

Given the review of PR presented, two important research areas are identified. First, PR can influence consumers' decision of whether or not to purchase in a given situation and secondly, if consumers decide to purchase, how do consumers handle the risk perceived. As an exploratory study, rather than directly address the latter, which could be further explored in the future, this thesis focuses on the former area. The specific research objectives for the current study are:

- to examine the relationship between uncertainty and consequences that influences Chinese consumers' perception of specific risk variables;
- to evaluate the relative importance of uncertainty and consequences in establishing consumer risk perceptions;
- to examine the usefulness of the PR measurement models within the current context;
- to identify whether gender differences in risk perception exist between male and female Chinese consumers;
- to explore whether Chinese culture plays a role in Chinese consumers' risk perception;
- to develop effective marketing strategies to help banks better promote IBS services among the particular group of potential IBS users.

With regards to the very little research on the Chinese IBS adoption, it is hoped that the current study may provide some insights into this area: The next chapter discusses the methodology adopted.

## **Chapter 3 – Methodology**

This chapter presents the research framework used within the current research and details the process of decision making in developing this framework. The rationale for each decision is fully discussed. The chapter is organised to cover these issues:

- the alternative philosophical positions available to the current study;
- the general procedures adopted within the research;
- the details of its design (e.g. data collection, analysis, and writing-up), and
- its limitations.

The chapter begins by considering how the philosophical position was defined. As the foundation of research, it guides researchers to determine a research design and provides a rationale for conducting the research. Next, this position facilitates the researcher to justify the current research strategies, to clarify the most appropriate approach among other alternatives. The research framework or paradigm should contain consistent views parallel to philosophical assumptions, general research strategies, and specific methodology. These views illustrate how knowledge is viewed and studied. At the end of this chapter, the above should be explicitly demonstrated.

### **3.1 Research Philosophy Available to the Current Research**

Four common paradigms are available to develop different views of the world; positivism, critical theory, constructivism and realism (Guba & Lincoln, 1994; cited in Healy & Perry, 2000). Constructivism and critical theory are seen as two major frameworks deeply rooted within the phenomenological school, while realism may be considered as an intermediate between the extreme paradigms – positivism and phenomenology (Healy & Perry, 2000).

#### **3.1.1 The Extreme Philosophical Paradigms – Positivism and Phenomenology**

The extreme paradigms represent the traditions of philosophy in many fields (Proctor, 2003). Advocates in either philosophical 'camp' or school follow distinct tenets, beliefs, assumptions and views in approaching 'the truth' or knowledge of the worldview. In essence, these perspectives are counter-arguments. In addition, each school has its own particular approach to methodology development, which subsequently leads to a series of distinctions between the research methods, data types and analysis techniques commonly adopted under each philosophy. It has been long noted that each of these research methods has its own strengths and limitations (Saunders, Lewis & Thornhill, 2003). Perhaps the two schools are so different, sometimes one method is used uncritically and perhaps inappropriately to define a research philosophy without contents (Sobh & Perry, 2006), e.g. qualitative methods would lead from phenomenology and



quantitative method follow positivism. This approach might be appropriate if methodology was the only element to form a research framework, or no other philosophical schools was available. However, this is uncritical and inappropriate as methodology is one, but not the only, element in the development of a research framework (Guba & Lincoln, 1994; cited in Sobh & Perry, 2006).

It is essential to review the critically distinct perspectives of these schools to determine which philosophy is appropriate for the current study. There are three elements in a research paradigm, and these are (Guba & Lincoln, 1994; according to Healy & Perry, 2000):

- ontology – the theoretical perspective on reality, what we know about ‘something’ (i.e. our knowledge of the subject);
- epistemology – the relationship between that reality (i.e. subject) and the researcher, i.e. the role of the researcher in an inquiry;
- methodology – how researchers approach and investigate subject.

Table 9 outlines these elements, as well as additional related perspectives such as research methods in relation to the most extreme philosophical positions available to a researcher.

**Table 9 Summary of Extreme Perspectives between Positivism and Phenomenology**

Facets	Positivist	Phenomenological
Basic ontological assumption	Viewing the world as objectivity	Subjectivity
The nature of the world	‘Out there’, external	Internal
Theoretical aim	To test theory	To build theory
The role of researcher(s)	Being independent of the phenomenon, to observe and measure it	Being interactive with the subjects, to discover and ‘reveal’ the problem
Research purposes	<ul style="list-style-type: none"> <li>▪ To describe a phenomenon</li> <li>▪ To offer explanation to the phenomenon (i.e. the causal relationship)</li> <li>▪ To predict/generalise from certain patterns or behaviour to the whole population</li> </ul>	<ul style="list-style-type: none"> <li>▪ To understand people’s interpretation of an event</li> <li>▪ To discover meanings of the event</li> <li>▪ To construct theories from interpretation and understanding</li> </ul>
Methodology	Observation and measurement, usually establish hypotheses to test or refute a theory	Understand and discover, to construct theory from the reality
Desired research methods	Quantitative oriented, e.g. survey, questionnaire	Qualitative oriented, e.g. grounded theory, interviews
Data source	Probability and non-probability	Incline to be purposive selected,

	sampling	exclude probability
Data features	<ul style="list-style-type: none"> <li>▪ Numerical and standardised 'format'</li> <li>▪ Substantial in quantifying of individual cases</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rich text, not standardised quantity in terms of 'format'</li> <li>▪ Rich and complex, hard to reach full comprehension</li> </ul>
Data analysis techniques	<ul style="list-style-type: none"> <li>▪ Often apply statistical analysis techniques, computer software available, such as SPSS and SEM</li> </ul>	<ul style="list-style-type: none"> <li>▪ Usually include coding, drawing out key theme, outline concepts, recent computer software available, NVIVO</li> </ul>
Data 'quality' evaluation	Important to examine internal validity, reliability, construct validity and external validity	Essential to assure truth or credibility, neutrality or confirmability, consistency or dependability

(Source: Creswell, 2003; Healy & Perry, 2000; Proctor, 2003; Saunders et al., 2003; Tashakkori & Teddlie, 1998)

Table 9 compares the conflicting views of the traditional extreme schools of thought. The fundamental distinction begins at the core value how the world or reality is viewed. Positivists see the world as an objective and logical system containing subsystems; knowledge combines realism and rationalism (Johannessen & Olaisen, 2005). This means that the world is regarded as objective; researchers are independent of an inquiry and offer reasoning; and subjective interpretation from participants regarding the inquiry does not 'exist' as 'reality'. This core value subsequently leads to a series of linked selections: scientific methods are preferable in an inquiry or research design; empirical evidence of quantitative data is key to an inquiry; statistics and mathematical models are used to examine the truth (Creswell, 2003). Data reduction and determination are therefore two common features of positivist research.

Furthermore, these scholars insist that it is important to evaluate data quality and research findings; for example, they are interested in questions of whether data is reliable and valid, whether findings are generalisable to the whole population (Gephart, 1999; Pather & Remenyi, 2004). Thus, these researchers strongly believe that reality is "real" and "apprehendable" (Lincoln & Guba, 2000; cited in Cupchik, 2001).

On the other hand, phenomenological advocates (e.g. relativists and constructivists) take the opposite perspective – the world is not objective but subjective (Healy & Perry, 2000). Reality and human beings are interactive and dependent. This means that reality is structured by individuals and groups and can only be understood through these 'subjects', who subjectively develop various views of social phenomena. Individuals' behaviour in response to one phenomenon is relatively unimportant in relation to their views or perception (Sobh & Perry, 2006). This suggests that ideas, views, and

perception are important to the social world and they 'produce' behaviour. It is through understanding the uniqueness of subjectivity in reality that constructivists and relativists believe knowledge can be built or generated, and knowledge development is based on shared understandings or common ideas through processes containing people's interpretation, discussion or dialogues (Sobh & Perry, 2006).

Moreover, relativists or constructivists believe that without human interaction in the processes, an inquiry into the social world becomes too abstract to understand. These researchers insist that measurement by quantitative data is essentially fallible because human beings' views or ideas are subjective and highly individually-based (Sobh & Perry, 2006). This implies that the measurement may involve dynamics and difficulties. Rather, to achieve comprehension, relativists are interested in human beings' values, beliefs, and understanding via qualitative data (e.g. conversations).

The above briefly outlines the core issues and controversies dividing positivistic and phenomenological paradigms. As shown, advocates in each camp defend the appropriateness of their tenets, assumptions, and approaches. They also argue for the respective abilities that their methods provide and that each is superior to its 'counter part' in approaching 'reality'.

When the traditional paradigms are applied in a wider range of social science research, such as business management, it is noted that much early management or marketing research has employed a pure positivistic approach without a full evaluation of the approach's adaptability in complex social science (Sobh & Perry, 2006). Inevitably, some research encountered problems. This led to critiques revealing that the application of a positivistic approach may not be entirely useful within marketing research discipline (Sobh & Perry, 2006).

### **3.1.2 Postpositivism**

Postpositivism is one paradigm which seeks to move on from positivism. As "the intellectual heir to positivism", postpositivism emerged approximately between the 1950s and 1970s, challenging the traditional assumptions associated with positivism and seeking to respond to some problems of the paradigm (Tashakkori & Teddlie, 2003: p6). However, stemming from the traditional philosophical school, postpositivism shares the problem of quantification, addresses the appropriateness of 'quantifying' social phenomena, and applies the techniques to different contexts such as perceptions – areas that are not investigated within the pure positivism paradigm.

Postpositivism critically reviews the fundamental stance of positivism, acknowledging the assumption that the world may be objective and external but care is needed to study knowledge (Phillips & Burbules 2000; cited in Creswell, 2003). This indicates that postpositivists broadly accept the existence of an objective world with careful consideration. Additionally, this critical perspective is in response to the problem of quantification mentioned previously – whether it is appropriate to quantify social phenomena.

Postpositivists challenge the positivists' position that the absolute truth is the basis of 'pure' knowledge. The scholars go on to question the assumption of viewing reality as one entity of objectivity. One fundamental argument is that it is inappropriate to assume that researchers are completely independent of reality. Postpositivists explain that researchers, as part of reality, influence research from at least two aspects: research is influenced by the theory of interest and by the values of the researcher (Tashakkori & Teddlie, 2003). This influence or inter-dependence potentially conflicts with the proposed independence role of a traditional positivist scholar (see Table 9).

Therefore, postpositivistic researchers accept one constructivist assumption: the understanding of reality is structured and constructed by human beings (Tashakkori & Teddlie, 2003). This position influences the nature of research: it is affected not only by the researcher, but also by measurement, and the 'subjects' involved in that research. This reflects on the 'quantification' argument discussed earlier. The concern here is how to deal with any problems inherently stemming from quantification (Sayer, 1992).

### **3.1.3 The Problem of Quantification in Social Science Research**

As discussed earlier, natural science studies support quantification for data reduction. They measure constructs, such as behaviour but not perception, through the form of numbers. This suggests that there may be an implicit assumption behind quantification: mathematics is a common response to philosophy and methodology particularly in relation to positivism. However, this approach could be problematic in social science when subjective perception is involved. In social science, much research is related to individuals who gradually and continuously develop a set of ideas regarding a phenomenon. The measurement process usually involves dynamic elements such as individuals and contexts. As dynamics can affect outcomes in social science research regardless of whether the approach itself is adequate or not, the main doubt here is whether these subjects should be treated in the same way as the objects in the natural world.

Sobh and Perry (2006: p1197) reflect on this issue, pointing out that it may be inappropriate and problematic to quantify an inquiry in social science research, such as marketing and management. The researchers note that there are conflicting findings since replication of positivistic research does not always yield the same results, and therefore confirm existing findings. This reveals a challenge in social science research: whether research findings may be generalisable to the whole population. This challenge may be highlighted through meta-analysis.

It is found that meta-analysis of many studies begins to reveal that a pure adaptation of positivism cannot fully address research complexity in varying contexts (Sobh & Perry, 2006). For example, Gemünden (1985) has reported that many PR studies do not produce the same results and this suggests a high degree of hypothesis failure in the PR research domain. Measurement scales are another important concern. Sayer (1992) articulates that strictly, only observable objects invariant in quality are adequate forms for quantification by using interval scales. This means that the objects can be measured at different times or places for different research purposes and they will remain invariant in nature and produce the same results. No matter how the condition changes, invariance in quality should remain independent. This is commonly evidenced in much scientific research in the natural world. However, this is less evident in the social world. This can be explained by the feature of context-dependence in social science, e.g. many objects can be changed contingently based upon contexts such as attitude or perception.

Sayer (1992) notes that the application inevitably creates problems such as measurement error to research. The researcher comments that:

“Yet the recognition of the power and elegance of mathematics should not prevent us inquiring into the limits of its applicability. ... The discovery that a model is free from mathematical errors says nothing about whether it is applicable to the world. The purely formal nature of mathematical reasoning does not relieve us of the need to inquire into its practical adequacy when it is applied: on the contrary, it is precisely because it is neutral that the adequacy of the forms of abstraction used in applying mathematics to the world must be closely scrutinised.” (Sayer, 1992: p175-176)

This comment indicates a common issue for discussion; researchers must critically evaluate the application of maths in social science work. Mathematical models or approaches may help explain one or several facets of a phenomenon. However, this capability should not mask the concern regarding its ‘adaptability’ in social science. Sayer further states:

“Mathematical modellers therefore tend not to be concerned with explaining what it is about social objects which produces certain changes *but with representing and calculating the effects of actions.*” (1992: p180) [Emphasis added]

This implies that the power of mathematics would not guarantee researchers the certainty of portraying an overall picture of a phenomenon; nor would the power to model lead to a conclusion that mathematics is fully applicable in explaining social phenomena. According to Sayer (1992), mathematical models should be considered as an approach that helps measure outcomes but do not themselves explain causal factors associated with an inquiry. Those who do not critically clarify this position but simply adopt mathematic approaches can produce serious effects on their research. Especially when a positivist approach is employed, contexts and subjects are separated, researchers may fail to address the complexity of a situation. It is noted that the vehicle/mechanism of reaching the proposed absolute truth is fallible – measurement is by no means perfect. As discussed earlier, measurement error can occur and sampling bias can be produced. This suggests that researchers should be critical of each paradigm: no philosophical stance is perfect on its own (Pather & Remenyi, 2004). It then may be challenging for a postpositivist to gain insights into a complex situation solely based on the quantitative measurement, as an in-depth understanding of respondents' perception is lacking. While it is impossible for phenomenological research to produce generalisable results to the whole population, simply because the phenomenological perspective does not accept generalisation.

Clearly, mathematics in social science research has limitations in providing a full understanding of an investigation. Without addressing this critical issue, the power of mathematics may be overlooked; the nature of a phenomenon can be oversimplified; and a full comprehension of the phenomenon can be far more difficult or complex to achieve.

This further reveals the problems of a pure philosophical approach in social science and it begins to cause concern when fully applying its approaches and methods in social science. This also starts to highlight that social science researchers need to be more critical of pure positivism or phenomenological approach. This perspective is accepted by those considering how researchers can assure that a measure is accurate and consistent with human perception. In other words, data quality assurance and accuracy are essential.

Creswell (2003) therefore emphasises that it is difficult for researchers to find the absolute truth or the objectivity of reality. Mitchell (1999) presents a similar argument in

the theory of PR. The researcher points out the difficulty in reaching a comprehension of objective or realistic risk and comments that subjective or relative risk may enable researchers to gain some understanding of consumers. Obviously, researchers will encounter problems that are derived from measurement imperfection. This as a result creates challenges for scholars to overcome and increases the difficulty in building an effective understanding 'bridge' between the objective world and the subjective world.

The acknowledgement of such error probability forms a compromising position between positivism and phenomenology or realism and relativism: postpositivism acknowledges that knowledge may be measured quantitatively; quantitative methods are merely tools or mechanisms to understand a phenomenon; as there is probability of measurement error in the social/subjective world, careful application and implementation should be established.

Over time, other research paradigms were also developed to respond to these identified problems while critical realism may be the 'closest' school to the postpositivistic philosophy as critical realism stems from and shares many assumptions with it.

#### **3.1.4 Critical Realism**

In the marketing field, critical realism is one branch or framework that shares common positions with postpositivism. Likewise, scientific realism or critical realism occupies the middle ground between pure realism and pure relativism (Hunt, 1990). The core values or assumptions create a common ground for researchers to discuss, challenge, and develop different philosophical positions across disciplines in recent research (Tashakkori & Teddlie, 2003).

Critical realistic philosophy acknowledges the external world and its independent existence (Russell & Moore 1929; cited in Hunt, 1990). Johannessen & Olaisen (2005) remark that critical realists consider reality as an external world which needs to be investigated through human minds. This begins to suggest a connectivity between the objective world and the subjective world. It is through this connectivity that realism seeks to gain comprehension of complex social phenomena (Healy & Perry, 2000).

However, it is noted that this connectivity is not easy to establish. Sharing with the postpositivistic perspective, this is because of the idea that the understanding of the external world will be changed over time, depending on contexts, human experience or knowledge, cultural and social structure, or research instrument (Silverman, 2001). This

implies that there may be multiple layers in the social world and the natural world (Carter & New, 2004). This helps explain why critical realists suggest that the external world should be distinct from the social world (Sobh & Perry, 2006). The distinction shows that much social research is based on contingency and contexts (Healy & Perry, 2000).

Thus, critical realists broadly accept that knowledge may be generated from individual perceptions about the external world and potential problems can be caused if a direct realist/positivist approach is employed without fully addressing its limits. This further reveals that knowledge may encompass errors. Research questions usually include what knowledge is, how 'good' it is to explain a situation, how knowledge is processed, structured or created by human beings. Again, this observation is based on the postpositivism concern that individual perceptions may not be absolutely accurate since human beings are fallible. They may be wrong or inadequate so that "illusions or even hallucinations" can be unexpectedly produced (Hunt, 1990: p9).

Furthermore, this underlines that observation and measurement are undertaken with the dynamics of individual perceptions and potential uncertainty. Since the core value of realism is to gain knowledge of the external world through individual perceptions, this can weaken an inquiry and discredit it if illusions emerge without being noticed, e.g. measurement is imperfect. Hunt (1990) states that researchers should critically evaluate the accuracy of individual perceptions in social science research. The researcher recommends:

"all knowledge claims must be critically evaluated and tested to determine the extent to which they do, or do not, truly represent or correspond to that world."  
(Hunt, 1990: p9)

Again, due to the possibility of measurement problems, it is essential for critical realists to examine the degree of 'accuracy' of individual perceptions, e.g. how close are individual perceptions to the truth. Schostak (2002: p1) describes the social world as "messy, uncertain, supercomplex and dynamic". These features support the previous discussion that there are differences between the natural world and the social world, and it is significant to make explicitly this distinction in critical realism research (Johannessen & Olaisen, 2005).

It is also suggested that the natural world can be manipulated or influenced through experimental and statistical elements so this world is considered as "amenable" and "controllable" (Schostak, 2002). However, the social world has different features to the



natural world. The former does not show the possibility of manipulation or control; it functions differently; individuals have their own ideas and understanding of the world that they live in (Pather & Remenyi, 2004; Schostak, 2002). These ideas or understandings are changeable, depend on context and individuals. Therefore, critical realistic researchers propose that it may be inappropriate to adopt fully statistical methods to examine the social world; rather care is needed to evaluate the appropriateness of measurement in social science research.

In addition, critical realists are aware that statistical analysis of quantitative data can produce social patterns such as correlation while these patterns do not necessarily provide conclusive answers, as the social world is dynamic and changeable. Critical realists acknowledge that a causal relationship found in a situation may or may not occur in another situation (Sobh & Perry, 2006).

Thus, methodological techniques should be considered as tools to refine knowledge where appropriate (Johannessen & Olaisen, 2005). No commitment in terms of philosophical and methodological framework should be tied in a single piece of research (Mingers, 2002, cited in Pather & Remenyi, 2004). A critical perspective usually delves beneath the surface of a problem (through description) to investigate and reveal how a situation is structured (e.g. why it occurred), to explain the situation in a greater depth.

This perspective requires flexibility in relation to methodology such as the application of mixed methods or multiple models. Knowledge existence through various elements, such as material, conceptual, social and psychological aspects, require different methods to gain comprehension of a situation/problem. It is important to apply critically various methods of understanding these elements and their interactions (Mingers, 2002, cited in Pather & Remenyi, 2004). This begins to suggest the appropriateness of applying mixed methods or mixed model in research design.

Finally, the complexity and dynamics of the social world must be noted. Critical realists address the problems of observation and measurement and the impact of such knowledge. Critical realist research should acknowledge the limitations of positivism and carefully 'borrow' quantitative approaches, methods and analysis techniques as a tool kit to answer research questions. Therefore, while measurement tools are borrowed from the positivist school, fundamental assumptions and limitations must be clearly addressed.

With the awareness of these limits, critical realism is applicable in much marketing management research (Healy & Perry, 2000). In fact, many marketing studies have shown that researchers often employ the position of critical realist (or scientific realism, Hunt, 1990). Hunt comments:

“Theories comprising such diverse concepts such as “attitudes”, “intentions”, [...] “brand awareness”, “information search”, “perceived risk”, and so forth give us warrant for believing (to the extent such theories are successful) that these entities have a real existence and the theories comprising these entities truly “say something” about the world.” (1990: p9)

To respond to the problems identified in the traditional schools of thought and to solve these problems, some researchers propose that paradigms may collaborate with each other if research is designed carefully and critically. For example, constructivism can be a useful supplement to overcome some of the limitations of positivism, by facilitating the notion of ‘triangulation’ (also termed as ‘mixed methods’ by Tashakkori & Teddlie, 2003). Some argue that a critical perspective is essential in determining a theoretical foundation in social science (Olsen, 2004).

### **3.2 The Research Framework Employed in This Study**

Given the divergent opinions on the alternative philosophical positions, and the consideration of the existing PR literature, the current research employs critical realism as its theoretical research position. The adoption of this paradigm impacts on the literature search, research strategy, research nature, research design and limitations. Primarily, this paradigm impacts the process of literature search for this research.

#### **3.2.1 Literature Search**

The literature search considers existing information, in relation to a theory/construct of interest. The search could lead to relevant or useful information to develop more specific research questions (McDaniel & Gates, 2002). Literature search usually begins with secondary data, which is relatively cheap, easy, and quick to collect. The advantages of such data include that (Malhotra, 2002; McDaniel & Gates, 2002):

- it illustrates what was known and what was not;
- it helps identify research problems;
- it details how other researchers have approached similar research problems;
- it potentially provides possible solutions/alternatives to a particular research problem;
- it offers guidelines to design research;

- it provides researchers with insights to compare and contrast results with previous work. This allows researchers to examine theory credibility and validity.

The examination of secondary data certainly has its limits, including “lack of availability, lack of relevance, inaccuracy and insufficiency” (McDaniel & Gates, 2002: p90). These limits require researchers to evaluate the reliability of secondary information and to carefully determine the appropriateness/fitness of the relevant data in their particular research design. The process of examination and evaluation is likely to contain detailed work over an extended period of time. Researchers usually ask (Malhotra, 2002; McDaniel & Gates, 2002):

- What is/is not found?
- In what context was the research implemented (e.g. the specific research nature, questions, objectives etc.)?
- How relevant is the information to new research?
- How reliable is the information?

These questions could lead to a meta-analysis study. However, the literature search in this study is driven by the first question to identify a research gap in the theory for investigation. This study is not interested in undertaking a meta-analysis (Gemünden (1985), for example, has conducted one in the PR field) but it is rather interested in applying PR into a growing and culturally distinct market. Secondly, there is a difficulty in undertaking a meta-analysis among the existing work – great differences in various research contexts and objectives (Mitchell, 1991). The study partially adopts Mitchell’s (1991) rationale: the literature search seeks to address the major research flow in PR theory, to identify research ideas, and to define research question(s) for this study.

In conducting the literature search, two broad sources of secondary data are identified, including internal and external data (Malhotra, 2002). Internal data is referred to as the information collected within an organisation for internal purposes, such as annual reports. This kind of information belongs to the organisation and its availability depends on its ‘owner’.

External data is more relevant and suitable, according to the critical realistic perspective adopted within this research. The major sources of such data include: text books, academic journals’ articles, conference proceedings, academic dissertations, government reports and press articles. These provide a platform from which to gain an essential

understanding of PR theory in various research contexts. The search was mainly undertaken through academic databases, books, publications, and the Internet. The early literature (from the 1960s to the 1990s) was presented and discussed in a chronological process while more recent literature (from 2000 to the present) was organised in a purchase-channel-related approach (e.g. Internet shopping). In part, the different approaches reflect on the major flow of research interest in the PR area.

Additionally, literature search also aimed to identify the “mainstream” of research methods in the research area. It was found that the “mainstream” in PR research is dominated by the positivism tradition and quantitative methods, instead of constructivism and qualitative methods (Mitchell, 1999). Moreover, no research has applied PR to understand Chinese consumer behaviour in any market; specifically, little was known about how PR influences Chinese consumers’ IBS adoption. This gap needed to be explored and it led to the development of specific research questions for the current study.

- To what extent, does PR influence young Chinese Internet users’ perception of IBS?
- How does PR influence young Chinese Internet users’ decision whether or not to use IBS?
- Are there gender differences in risk perception?
- What are the factors influencing consumers’ different risk perceptions within the Chinese market context?

It is suggested that research positioning in the critical realist paradigm requires different procedures from those in other paradigms e.g. positivism (Sobh & Perry, 2006). More importantly, the research should explicitly acknowledge the procedures/principles in relation to research design, data analysis, findings report and limitations. To effectively undertake the exploratory nature of this research and to answer the research questions, it was decided that a ‘traditional’ research strategy (e.g. a pure quantitative or qualitative approach, a mixed approach of qualitative and quantitative or quantitative and qualitative) would not enable a full investigation of these questions, or to recognise or address the complexity of the research problem. Also, the research could miss the potential connectivity of the social world and the external world. Additionally, the researcher is aware of the problems regarding quantification. In an attempt to minimise the problems of oversimplifying mathematical models in the current context and to avoid the possible failure of mathematics in this research, the study is designed to cover

three stages: exploratory (stage 1) – descriptive (stage 2) – follow up interviews (stage 3). The rationale for the adoption of this particular design is detailed below.

### **3.2.2 Research Design**

Research design may be defined as three broad categories according to research purpose: exploratory, descriptive, and causal (Churchill, 1988). These designs have individual uniqueness and limitations.

#### **Exploratory Research**

Exploratory research is commonly considered as an initial step to an investigation (Malhotra, 2002). It offers a flexible design to research when the problem of interest is not entirely understood by the literature. Researchers can begin with a broad investigation when they have limited knowledge or lack sufficient understanding of the situation (Churchill, 1988). Usually exploratory studies are not strictly planned or highly structured in order to maintain researchers' flexibility in the investigation such as data collection through qualitative interviews. In so doing, researchers aim to define research problems more precisely, to develop hypotheses, to establish guidelines for further research or to provide useful information about the investigation (Churchill, 1988). Perhaps for this great flexibility and uniqueness, exploratory research can be used at any stage of the research process (Malhotra, 2002). As the main purpose for exploratory research is to gain understanding and insights into a situation, findings or proposed explanations from these studies are tentative and not representative of the whole population (Malhotra, 2002). Further detailed examination of exploratory findings is usually recommended such as a follow up research by descriptive or causal purpose (Churchill, 1988).

#### **Descriptive Research**

Research that employs this approach often works on the basis of an existing theory and uses variables indicated in the literature to design a research instrument such as questionnaire. Often, specific hypotheses may be developed in descriptive research to gain understanding of a situation, such as associations or relationships between variables (McDaniel & Gates, 2002). Researchers seek to give detailed descriptions of market characteristics or functions (Malhotra, 2002). It should be noted that descriptive research is not designed to provide explanations of a situation, rather to help researchers to identify variables for a casual study (McDaniel & Gates, 2002).

Descriptive research and causal research are relatively more formal, planned, and structured. The former focuses on describing frequency and relationships among variables (Churchill, 1988). It helps to identify and develop understanding of a target market (a market profile such as age, sex and purchase habit), to estimate certain consumers' behaviour in a given situation or to predict the relationship between two subjects, such as information search and purchase intention (Churchill, 1988; Malhotra, 2002). Since the main purpose is to describe a phenomenon through facts gathered on that phenomenon at one time with help from existing theory/knowledge, descriptive studies are detailed. Research questions will be specified into sub-questions, such as subjects, events, time, location or reasons (Churchill, 1988). These questions show that descriptive studies are highly structured and 'fixed'. Additionally, this underlines that descriptive research focuses on facts and association but is less effective or appropriate to examine causal relationships.

### **Causal Research**

Causal research involves finding and determining cause-and-effect relationships (Churchill, 1988). Experiment is a typical and suitable form of causal research. Researchers may separate the sample into control and experiment groups so that they can manipulate independent variable(s) in one group, test and control variable(s) in the other (Malhotra, 2002). Researchers also seek to develop linkage between independent and dependent variables (McDaniel & Gates, 2002). Laboratory experiment and field experiment are two common types of causal research designs. The former is conducted in a created situation with researchers' "desired conditions" while the latter is a "realistic or natural situation" (Churchill, 1988). The difference in these approaches is whether researchers seek to fully manipulate and control certain variables. This suggests that there is a different degree of ability associated with manipulation and control between laboratory experiment and field experiment. If research was designed properly, researchers would be able to conclude which specific variable(s) has/have caused the changes of other variable(s).

These designs could be 'different' in terms of how they are developed to serve research objectives or solve problems respectively, such as varying in research processes; while it is noted that "the distinctions among the three are not absolute" (Churchill, 1988: p75). This means that one design may be more appropriate or effective to approach specific research problems than others while this does not imply that particular design becomes the 'best' among others (McDaniel & Gates, 2002). In fact, Malhotra (2002: p95) suggests that these designs can be used to complement each other. This suggests that to

determine which design to employ, research should always follow its specific research objectives (Churchill, 1988). Moreover, detailed approaches and analysis techniques are also guided by research objectives. Accordingly, approaches and techniques should be tailored best to answer research questions.

### **3.2.3 The Connection between Research Design and Methods within This Study**

Having considered various designs and their appropriateness to the current research objectives, as discussed, the research is designed to contain three stages; exploratory (stage 1), descriptive (stage 2), and follow up (stage 3). This may be considered as a mixed-method research approach but not a multiple method research design (Readers are referred to consult Morse, 2003, in Tashakkori & Teddlie, 2003, Chapter 7, p189-208).

The current research is based on the critical realist perspective. This indicates that quantitative strategy is the major 'microscope' to examine the specific research questions. The qualitative data approach is regarded as a supplemental resource to offer the researcher an additional 'window' (i.e. opportunity) to investigate the questions, to gain useful insights into the sample, and to form an in-depth understanding of the research topic. As Morse (2003: p192) summarises, "These [supplemental] strategies increase the scope and comprehensiveness of the study."

However, this research noted that such an increase in terms of scope and comprehensiveness may potentially increase the complexity of the research such as data collection, analysis, and findings report. Methodology should therefore maintain consistency in terms of its data collection methods and analysis techniques (Morse, 2003). A number of principles were observed to design this study and to balance its advantages and limitations. Firstly, this study is driven by its philosophy position – critical realism – so it accepts and follows basic assumptions of this paradigm. Secondly, the study is mainly a quantitative inquiry design, which examines whether the theory of PR is useful to understand Chinese consumers' decision of IBS adoption. This clarification is important as it guides the development of linked methodological issues and reminds the researcher to retain major assumptions associated with critical realism paradigm. Thus qualitative methods adhere to this core value and are regarded as supplementary sources of data.

Accordingly, this research was implemented in a number of stages. Table 10 details the process.

**Table 10. Research Process**

Stages		General Purposes	Period of Time
1-Exploratory	Group/individual interviews	Guided by the literature, to explore broader ideas and understanding of IBS.	December 2004 – January 2005
2-Descriptive	Questionnaire development	To examine how PR influences Chinese consumers' decision of whether or not to use IBS.	January 2005 – Mid-March 2005
	Questionnaire pretest	To pretest the questionnaire.	Mid-March 2005
	Questionnaire distribution	To distribute the questionnaire.	April 2005 – Mid-May 2005
3-Follow up	Post questionnaire mini group interviews	To provide insights into the questionnaire findings and to further investigate gender differences in relation to risk perceptions.	Late-May 2005 – Early June 2005

Having discussed the fundamental theoretical position of this research, as well as the general strategies for research design, sampling is described below.

### 3.3 The Sampling

Issues addressed here include the target population, the decision of the sampling frame, the choice of sampling techniques and sample size. Before these issues are outlined, the discussion begins by the difficulty in adequately defining Chinese consumers.

#### 3.3.1 The Difficulty in Defining Chinese Consumers

Research suggests that China is a heterogeneous market (e.g. Dickson, Lennon, Montalto, Shen & Zhang, 2004; Lu et al., 2005; Walters & Samiee, 2003; Worthington, 2005). It contains significant differences across the country, such as urban vs. rural, coast cities vs. inland cities, eastern vs. western regions, southern vs. northern areas. The major differences are also evident in economic development, infrastructure, income, living standard, purchasing power, and sub-cultural factors within and across regions (Walters & Samiee, 2003). This implies that consumers from different areas or regions are not necessarily identical. They may share common values in relation to some issues but also can differ greatly in others, such as sub-cultural values, food, and spending habit. This suggests that it is difficult to define a representative sample across the diversity country.

These differences across regions make the idea of considering China as a homogeneous market less convincing. In fact, the differences in geographic size, scope, and diversity



may be increased, especially during the dynamic process of China's economic transformation. These special characteristics could also establish methodological challenges (Walters & Samiee, 2003). Perhaps a more appropriate approach is to divide the whole market into smaller ones based on a sound rationale, such as region and economic development. Then, within the particular region/area, a more appropriate sample for a given research problem could be identified. However, such an approach could raise the concern of homogeneity within the target sample, such as regional/local cultural values. Effort should then be made to seek balance between similarities and differences.

Having considered the above, the exploratory nature of this study, and previous work in the PR field, non-probability sampling is deemed appropriate. More specifically, young Chinese Internet users were employed because:

- the 12<sup>th</sup>-14<sup>th</sup> CNNIC (Jul, 2003; Jan, 2004; Jul 2004) reports consistently indicate that the majority of Internet users were young (18-24). These consumers are educated (most of them were students) and often familiar with computers and/or the Internet. This implies that this group of people might be more likely to be early IBS adopters.
- The sample is suitable for knowledge testing. The targeted sample shares a large degree of homogeneity. This is appropriate for theory development.
- Convenience sampling has been widely employed in the PR field and reported as suitable, including earlier studies (e.g. Kaplan et al., 1974; Peter & Ryan, 1976) and many recent ones (e.g. Alturas & Santos, 2004; Choi & Lee, 2003; Dholakia, 2001).

### **3.3.2 Sampling Criteria**

This study argues that consumers from Guangdong province are suitable for this exploratory research. The province is one of the most developed areas in China (Zhao, 2002). This illustrates a great potential from the economy perspective.

In addition, the 13<sup>th</sup> CNNIC (Jan, 2004) report shows that this province has positive signs to promote IBS adoption: compared with the other provinces, it had the most Internet users by December 2003; 12%, or approximately 9.5 of the 79.5 million Internet users nationwide.

For these reasons, young Chinese Internet users (18-24) from Guangdong province were selected for this research.

### 3.3.3 Sampling Methods

Sampling enables researchers to use information and results from a sample to make estimates of the whole population; the common forms are probability and non-probability samples (McDaniel & Gates, 2002). The former refers to the approach that every member/element of the population has a “*known, nonzero* chance of being included in the sample” (Churchill, 1988: p394). This means that each member of the population has a known chance for selection. Sampling employed under this approach tends to avoid arbitrary decisions, and limits bias selection of sample elements (McDaniel & Gates, 2002). Researchers are able to gain an understanding based on the information obtained from a representative sample, to calculate sampling error, and to estimate the whole population of interest. It is noted that major problems of this approach are that it is costly and time-consuming.

On the other hand, non-probability sampling methods mean that researchers select specific elements from the population without each element having a known chance or certain probability (Saunders et al., 2003). Researchers choose specific elements to satisfy research objectives. Convenience sampling is one common non-probability method. It attracts researchers because it is quick and inexpensive (Malhotra, 2002; McDaniel & Gates, 2002). Usually, this type of sampling is easy to operationalise; members in the sample may also tend to be cooperative or interested in the research problem. This helps researchers approach various research problems (Malhotra, 2002).

However, this approach comes at a high price. Since specific elements are chosen to ‘filter’ the sampling to fit specific research purposes, this weakens researchers’ confidence in judging whether the sample is representative. Bias is also possible because this method restricts researchers’ ability to calculate sampling error. Owing to these disadvantages, care needs to be taken when interpreting results or findings as usually they are not generalisable to the population (Malhotra, 2002; McDaniel & Gates, 2002). Therefore, a careful and critical manner is needed in forming a non-probability sample to address the potential bias (Churchill, 1988).

Finally, taking cost and time into consideration, as well as the criteria developed earlier, students were determined to be appropriate.

### 3.3.4 Sampling Procedures

#### *Stage 1*

Due to time and resource restrictions, the snowball technique was applied. Chinese students who were studying at the University of Gloucestershire in the U.K. were approached for discussion. The students were aged between 18-24 and most of them were recent arrivals from Guangdong province, China (e.g. less than one year). The interviews were conducted in appropriate locations (e.g. the library) within the University of Gloucestershire Park campus (more details in relation to data collection procedures are presented later).

Mini-group interviews were considered as appropriate for this study as the product was relatively new and could be unfamiliar to the respondents. The interviews may enable researchers to identify common and important issues among acquaintances. This was considered as an advantage to establish group dynamics.

However, when mini group interviews were difficult to arrange, personal interviews were also implemented. Personal interview allows researchers to probe interviewees in greater depth and to uncover important information (Saunders et al., 2003).

#### *Stage 2*

The questionnaire was administered to students of three universities and one college in Guangdong province, China; Guangdong University of Foreign Studies, Jiangmen Wu Yi University, Jiangmen Radio & TV University and Shunde Polytechnic. These universities provide a cross-section of university types and student types:

- one major university within the region as it has 'high fliers' – competitive students;
- two local universities – average students, and
- one polytechnic – targeting students with relatively low grade points.

This selection helps reflect the concern of homogeneity raised earlier – the balance between similarities and differences. It also minimalises the bias of a convenience sampling with students from different cities, courses, and backgrounds.

#### *Stage 3*

Mini-group interviews were again conducted in China with volunteers who also responded to the questionnaire. The respondents were studying at the Jiangmen Radio & TV University due to recruitment difficulty. This was determined by taking Morse's

(2003: p194) suggestion, “If the main project is quantitative and a qualitative component is added, then the sample must be purposefully selected from the main study.” This facilitates get data consistency.

Moreover, this design reflects an important issue in collecting data in the Chinese context. There is concern about information quality in relation to the Chinese market (Walters & Samiee, 2003). More specifically, prior research shows that it is difficult to access data and gain reliable information in China. In fact, researchers (e.g. Calantone, Griffith & Yalcinkaya, 2006) applying Western theories in the Chinese context have noticed this difficulty. One possible solution is to establish links with information ‘providers’ through personal relationships such as ‘guanxi’. For example, Calantone et al. (2006) used special contacts to approach their respondents. This illustrates the difficulty in relation to data accessibility perhaps may be solved by trust establishment. The current study therefore applied this tactic.

### **3.3.5 The Sampling Size**

The decision in determining a sample size (especially non-probability) involves arbitrary elements but needs to be based on a rationale. How sample sizes for the three stages were decided is illustrated below.

#### *Stages 1 and 3*

A mini group usually contains a minimum of three to a maximum of five participants: as fewer than three would not be considered as a mini-group while more than five would be referred to as a focus group. Stage 1 dealt with three to four participants in each group. Usually, the minimum number of group interviews is six. This is to ensure that data consistency will be met: when data redundancy is found, researchers may stop the investigation. In addition to this, it was important to balance the current researcher’s skills, given the complexity of this research. These criteria were applied through the first and third stages of qualitative interviews.

At Stage 1, the researcher however encountered problems arranging more than four group interviews (two groups of males and two groups of females). Individual interviews were then applied; two males and two females. In total, seventeen participants were interviewed.

As to the post-questionnaire interviews (i.e. stage 3), the discussions were conducted among six groups, three for males and three for females. Twenty-five participants were invited for discussion.

### *Stage 2*

Guidelines to determine sample sizes are usually available for probability sampling methods (Malhotra, 2002; McDaniel & Gates, 2002). However, suggestions for non-probability methods are seldom made, possibly because the principles of probability sampling size determination are impractical in relation to non-probability methods, which tend to be much more flexible and less procedurally-bound. It is therefore more important to meet sampling selection criteria guided by existing literature. In the PR field, it was found that the common size of convenience sampling varied from 100 (e.g. Dholakia, 2001; Huang et al., 2004; Jacoby & Kaplan, 1972; Tan, 1999) to 300 (e.g. Cunningham et al., 2005b; Featherman & Pavlou, 2003; Hassan, Kunz, Pearson & Mohamed, 2006; Jasper & Ouellette, 1994).

Moreover, attention was given to minimise the potential statistical bias due to a non-probability sampling. As suggested by statisticians (Hair, Anderson, Tatham & Black, 1998; Tabachnick & Fidell, 2001), the bias can affect analytical results such as multivariate analysis techniques. The bigger the sample size, the more stable the analysis.

In line with the above discussion, the proposed sample size was then determined as around 200-300. If possible, over 300 responses are desirable to ensure more robust model solutions. The influence of sample size in relation to analytical techniques is discussed in the section of analytical techniques.

## **3.4 Research Guide and Instrument Development**

### **3.4.1 Stage 1 – Research General Guide**

To meet the first research objective, the PR literature, especially in relation to Internet shopping, was used as a general guide at this exploratory stage (Appendix 1). No specific questions were established to implement the semi structure interviews so the interviewees had the chance to talk freely. Also, the researcher could concentrate on the discussion and probe the interviewees. For example, if the discussion did not cover the dimensions identified in the literature, such as psychological, the interviewees were asked for their ideas about the dimension. This enabled the researcher to validate the issues identified in the literature and to check whether the PR dimensions and elements were meaningful to the respondents.

Each discussion lasted approximately one hour. The common themes were identified, compared and combined with the literature (mostly in relation to Internet purchase), to facilitate the development of the questionnaire items. In addition, a number of statements that are related to respondents' broad understanding of IBS were identified. These statements also form the questionnaire in stage 2.

### **3.4.2 Stage 2 – Instrument Development**

The process of research instrument development broadly includes a series of decisions; what are the operational definitions of the concept, how to measure it, and which appropriate measurement scale needs to be applied.

#### **3.4.2.1 Operational Definitions of the Concept**

According to the literature and the exploratory findings (i.e. stage 1), the operational concepts included two components, eight dimensions, and one OPR assessment.

The concept of PR is measured through its dual components – uncertainty and consequences. The components were operationalised as 'certainty and seriousness'. The detailed rationale for this conceptualisation is provided in the chapter of Literature Review. To summarise, it is acknowledged that to define PR into the components of 'uncertainty and consequences' offers researchers a number of advantages. Firstly, this definition is widely used and therefore provides the maximum research comparability across studies (e.g. Boze, 1988; Cunningham, 1967). Secondly, researchers suggest that 'uncertainty and consequences' are particularly useful in examining PR in service contexts (Lewis, 1976; Mitchell & Greatorex, 1993). To maximise research comparability, therefore, PR is measured through the components of uncertainty and consequences. These form the base of the questionnaire.

#### **3.4.2.2 Measurement Dimensions and Variables Development**

Multiple variables associated with PR are considered appropriate to test consumers' risk perceptions (Gemünden, 1985; Stone & Gronhaug, 1993). Stone and Gronhaug (1993) as well as other researchers (e.g. Dowling, 1986) have identified that the concept of PR is seldom examined via multiple items. In fact, there is a lack of measurement models that contains multiple items/variables in relation to the PR concept. In addition, Gemünden (1985) also points out that the approach to measurement of PR in terms of two components has been neglected for sometime. He further suggests that this approach would help researchers better predict/assess consumers' OPR.

Others (e.g. Diamantopoulos & Schlegelmilch, 2000) argue that it is almost impossible that a single dimension could fully capture a construct, and it is, perhaps, even more difficult to assume that a single variable could account for a single PR dimension (e.g. Stone & Gronhaug, 1993). This is because PR is found to be a multiple facet construct.

Hence, the current research seeks to develop and measure PR through various risk dimensions that contain multiple variables measured using dual components – uncertainty and consequence. This study extends Gemünden's (1985) argument and suggests that measuring PR by using a two component approach provides researchers with the ability to understand which of the components dominates (specific) risk dimensions.

It is expected that this measurement approach may help assess consumers' risk perception in a comprehensive manner. Moreover, this approach enables the research to apply more sophisticated statistical analysis, such as factor analysis, to better assess the underlying relationships between the risk variables. The details of these variables are discussed below.

#### **3.4.2.3 Questionnaire Design**

Questionnaire design is important to ensure the research to answer its objectives (Robson, 2002). More specifically, it is important for researchers to assure that research questions are transformed into appropriate questions, to ensure that response information is accurate and relevant to the research questions. Robson's (2002: p239) suggestion of six stages to design a questionnaire was employed; initial questionnaire design and planning, designing the questionnaire, questionnaire pre-testing, final design and planning, data collection, and data analysis and report. The following section details these stages.

Also, when ordering the questions in the questionnaire, the funnel approach was applied (Malhotra, 2002). That is, the questionnaire begins with general questions, then more specific questions. This is important to help prevent confusing or misleading respondents. The questionnaire was designed through a number of iterations before pre-testing. The elements below outline the structure of the final questionnaire.

The questionnaire consisted of six parts and a total of 53 items were measured on different scales (see Appendix 2a for English version and 2b for Chinese version). Each part contains brief statement; answer instructions are provided.

### ***Part 1 – Pre-screening Questions***

The first part includes two pre-screening questions to filter respondents eligible to participate in the research: whether they have used the Internet and/or used IBS.

### ***Part 2 – Questions Regarding Online Experience***

This part explores respondents' Internet experience in terms of access location, usage duration (in terms of year), knowledge and usage length (hours per week). This information is designed to help the researcher to understand the nature of the sample regarding Internet experience in depth and to analyse the sample in greater details. This could lead to the implication for market segmentation.

### ***Part 3 – Broad Understanding of Respondents' Awareness Associated with IBS***

This element is divided into two small parts. 'Part 3A' investigates two questions: whether respondents were aware of IBS and what were the available IBS services among prompted choices. Those who were not aware of IBS were advised to 'skip' to Part 4, aware respondents were required to carry on. Respondents could choose more than one IBS service and additional opportunity was provided (i.e. open ended questions) if respondents wished to specify any other online banking services that were not listed. The 'split' technique applied here enables the researcher to distinguish those who are aware of IBS from who are not. This could lead to a comparison between these two groups of respondents' perception.

'Part 3B' contains ten statements associated with IBS drawn from the exploratory interviews (i.e. stage 1). This sub-part aims to explore the respondents' broad understanding of IBS:

- five potential benefits of IBS (positively worded) as:
  1. it is convenient to use IBS;
  2. IBS is good to use because I do not need to interact with other people (e.g. bank staff);
  3. I can get higher interest rates;
  4. IBS helps me to control my personal finance, and
  5. IBS is easy to use.
  
- two potential 'disadvantages' of IBS (negatively worded) as:
  6. IBS is more difficult to evaluate than the traditional banking services;
  7. IBS is subject to a greater degree of uncertainty than the traditional banking services.



- three cultural aspects with regards to the current IBS ‘situation’ (positively worded) that:
  8. in China, the current Internet banking infrastructure (e.g. server) is excellent;
  9. in China, the current legal regulation of Internet banking is effective, and
  10. in China, the current Internet banking system is reliable.
  
- Finally, where appropriate, these respondents were also assessed to determine to what extent, the decision not to use IBS was due to limited money to manage.

These questions enable the researcher to broadly investigate the respondents’ overview of IBS. It also starts to provide insights into some important features in relation to IBS in the Chinese context.

#### ***Part 4 – Respondents’ Risk Perception In Relation to IBS***

This contains a series of questions designed examine various risk dimensions measured through a dual lens of components in the context of IBS. Following Stone and Gronhaug (1993), multiple items/variables are used based on relevant literature and exploratory qualitative findings (i.e. stage 1). Furthermore, to respond to a question raised in relation to PR measurement by Gemünden (1985: p84), the components in relation to each risk variable were examined. This approach was found useful in previous work (Mitchell & Groatorex, 1993) and it would enable the current research to examine the relative importance of the two components through multiple items in the context of IBS, e.g. which of the components is seen as more important that corresponding and appropriate strategies can be established to reduce consumers’ OPR.

Eight risk dimensions are examined by using twenty-four individual risk variables. Because there was limited literature in the area of IBS from a PR perspective published by the time of developing the research instrument, relevant studies (e.g. PR in Internet shopping contexts) were used as general guidelines for instrument development (for example, please refer to Cases, 2002; Corbitt et al., 2003; Featherman & Pavlou, 2003; Lim, 2003). The variables drawn from the previous research were compared with those identified in the exploratory interviews (stage 1). They finally formed a set of twenty-four variables used to measure PR at stage 2 (Table 11).

**Table 11. Major Risk Dimensions and Variables**

Dimensions	Variables	Analysis Codes
Performance	IBS will not work properly.	Per1
	IBS will not work as well as I expect.	Per2
	IBS have technical problems.	Per3
	I will have to be careful when I use IBS because I need to ensure I don't make mistakes.	Per4
Security	The Internet banking system is not secure.	Sec1
	Fake Internet banking web servers may be shown online.	Sec2
	Internet banking systems can be attacked.	Sec3
Financial	I will lose money.	Fin1
	I will lose control of my bank account.	Fin2
	My money loss will not be covered by the bank.	Fin3
Privacy	Others will know my personal details.	Pri1
	Others will misuse my data.	Pri2
	I will lose control of my personal data.	Pri1
Time / Convenience	Using IBS will be inconvenient because there are lots of banks on the street.	Tim1
	I will have to spend extra time solving problems that using IBS could cause.	Tim2
	I will not be as efficient as I was when I did not use Internet banking.	Tim3
Psychological	I will feel frustrated.	Psy1
	I will feel anxious.	Psy2
	I will feel depressed.	Psy3
Social	I will look foolish to others.	Soc1
	My usage of Internet banking will be judged negatively by others.	Soc2
	My decision to use Internet banking will not be socially accepted by others.	Soc3
Physical	I will have headache.	Phy1
	My eyesight will be affected (e.g. get sore eyes).	Phy2

(Source: Cases, 2002; Corbitt et al., 2003; Featherman & Pavlou, 2003; Gierl & Hammer, 2003; Lim, 2003; Mitchell & Greatorex, 1993; Stone & Gronhaug, 1993)

In total, the questionnaire seeks 48 responses regarding risk perception in relation to IBS. An open-ended question was again used to provide respondents with the opportunity to discuss any additional relevant risk elements associated with IBS.

Then consumers' OPR was additionally measured by another approach – a 'self-evaluated' OPR measure. This approach enables the current research to assess consumers' OPR from another perspective, apart from an OPR value calculated from the aggregation of risk dimensions. The approach is also designed to respond to the research objective: to test the 'usefulness' of the two common measure of OPR – through an individual and direct assessment compared to an aggregated value (Gemünden, 1985).

To be consistent with other component measures, a four-point scale is applied (1-4, 'not at all risky' to 'very risky'). OPR is not separated into two components but employs the traditional approach which has been reported as valid (e.g. Jacoby & Kaplan, 1972).

#### *Part Five – Adoption Intention of the Respondents*

Two questions were applied to explore respondents' adoption intention in relation to IBS; a short-term intention (in the next twelve months) and a long-term intention ('in the future'). Those who expressed that they would be 'very unlikely' or 'unlikely' to use IBS in the next twelve months, were further invited to present their intention to adopt in the future. This design was useful to distinguish those who would likely be early adopters and late adopters from non-adopters. Also, this enables the researcher to compare group differences between 'adopters' and 'non-adopters' to identify sub-group difference in the homogeneous sample.

#### *Part Six – Characteristics of the Respondents*

This contains a series of demographic questions regarding age, gender, education, occupation and income. The descriptive information was used for sample description purposes and this helps identify prospective IBS customers within the target sample.

#### **3.4.2.4 Scale**

The measurement scale used is an important issue in relation to research design. There are concerns that Chinese consumers tend to select the midpoint rate such as the 'neutral' position (Shenkar, 1994; cited by Walters & Samiee, 2003). This tendency can generate three potential problems:

- researchers are unable to interpret group means adequately;
- statistical measures such as a construct's internal reliability (either lower or higher values) could be affected; and
- data derived from multiple heterogeneous samples (e.g. probability sample) could influence the analysis outcomes in relation to underlying dimensions of interest.

These could have a serious impact on the research, e.g. the potential of producing unreliable or invalid results. Also, there is a suggestion that the midpoint (or neutral point) in a scale does not necessarily refer to the neutral point between two extremes (Oppenheim, 1992). This may be referred to as a potential source of central tendency bias. As Oppenheim (1992) explains, the selection of the midrange may be due to a lack

of knowledge or an indifferent or reluctant attitude in giving a 'true' value. Under such circumstances, it is difficult for researchers to correctly interpret results.

The problems mentioned above have implications in this research. Several scales were used to reflect these problems. The details of the major scales are in Table 12.

**Table 12. Major Scales Applied in This Research (Tashakkori & Teddlie, 1998)**

<b>Scale Types</b>	<b>Scale Nature</b>	<b>Scale Details</b>	<b>Questionnaire Parts</b>
Nominal	Categorical, labelling, mutually exclusive; often differentiates status or group memberships	Binary or multiple choice items	Part 1, 2, and 3A
Ordinal	Mutually exclusive, a 'ranked' measure of attitudes, beliefs, perceptions or intention	4-point Likert scale	Part 3B and 4

Categorical scales consisting of binary or multiple answers were used to investigate the respondents' Internet experience, knowledge, behaviour and personal characteristics.

With regards to the PR measurement, as argued in previous research, there are potential problems in using the neutral point with Chinese consumers. To offset this tendency, two four-point Likert scales are applied to measure the components of uncertainty and consequences. There are several reasons for the use of these scales:

- it is in line with many researchers such as Mitchell and Grotorex (1993) who have reported that this scale is useful in the context of services;
- it enables a wide range of comparability among PR research;
- it has been applied to measure PR both multiplicatively (e.g. Guseman, 1981) and additively (e.g. Mitchell & Grotorex, 1993). This helps the current study to apply the two measurement models.

These scales were fully 'anchored' (1 – 'very certain/very serious', 2 – 'certain/serious', 3 – 'somewhat certain/somewhat serious' and 4 – 'not very certain/not very serious'). This is because many previous studies have used fully anchored scales and reported them as useful and validated scales (Cunningham, 1967). Also, this was to respond the concerns made by some researchers (e.g. Schmidt & Wilson, 1975; cited in Mitchell, 1998a: p382) – a true rational zero point on the measure scales is required for the adoption of a multiplicative model.

### **3.4.3 Stage 3 – Post-Questionnaire Research Guide**

This stage was expected to help the researcher gain insights into the quantitative findings (stage 2). So the interviews were generally guided by the questionnaire; the researcher asked the participants to explain their risk perceptions in the IBS context in greater detail (see Appendix 3 for the guide of questions). Also, additional attention was given to probe and investigate gender difference in risk interpretation. As mentioned earlier, it was hoped that this stage could help limit *some*, but *not all*, problems in relation to the perspective of critical realist such as quantification of a social phenomenon.

## **3.5 Data Collection Procedures**

### **3.5.1 Stage 1**

The exploratory interviews were undertaken at the University of Gloucestershire Park campus; mainly the library and the researcher's office, according to the participants' preference. This was deemed appropriate to ensure a familiar and comfortable environment for discussion.

### **3.5.2 Stage 2**

In line with the position of critical realist, validity, reliability, and generalisability are important issues. These issues are often associated with research limitations. For this reason, the details of these issues are specified in the section on limitations and only content validity is discussed below as it plays an important role in the questionnaire development.

#### **3.5.2.1 Content Validity**

Previous research suggests that attention must be given in relation to construct and measurement equivalence language-related issues (Walters & Samiee, 2003). This means that theory developed in the West might not be necessarily applicable in the Chinese context, and the difficulty in relation to translation (Bond & Hwang, 1986; cited in Walters & Samiee, 2003). This issue raised concerns to the researcher. In response, the current research focused on the issue around context and content validity rather than identical words from the PR literature to the Chinese context.

This approach to content validity examination among academic experts and/or candidates was also applied in previous studies and reported appropriate (e.g. Hassan et al., 2006). Thus, the questionnaire combined in English and Chinese was checked by four bilingual people for content validity within limited time and resources; two volunteers who were studying for Master Degrees in the University of Gloucestershire,

one Chinese researcher with much experience in China-based research and the researcher. The questionnaire was found meaningful and some semantic changes were made to clarify the questions. It is noted that pretest should be taken to further verify this before questionnaire distribution.

### **Pretest**

The finalised questionnaire was pretested, for the purpose of clarification on the wording and meaning of statements with ten Chinese students fitting the sampling criteria in China but who did not form part of the final sample. The students were volunteers from the Jiangmen Radio & TV University. Most of the respondents took about 20 minutes to complete the questionnaire during the pretest. It was noted that the length of the questionnaire might become an issue in relation to response rate.

#### **3.5.2.2 Questionnaire Distribution**

The researcher approached one contact person in each institution. These contacts distributed the questionnaire on a particular day to a range of students. The questionnaires were distributed to 900 students (mainly undergraduates) in classes (with or without the current researcher's presence). The in-class distribution firstly allowed immediate self-administration by the respondents and collection by the researcher. Secondly, it enabled the researcher to brief the respondents directly about the questionnaire and the research when possible.

#### **3.5.3 Stage 3**

After the distribution of the questionnaires (stage 2) and some preliminary analysis, six mini-group interviews (stage 3) were arranged. The interviews were undertaken in classrooms or seminar-rooms at the Jiangmen Radio & TV University. The participants were invited to interpret their risk perception in relation to IBS and discuss why. This helps the researcher to get insights into the questionnaire (e.g. opinions on risk dimensions, views on risk sources, and gender differences). Three male and three female group interviews were carried out. Each interview contained 4-5 respondents who had completed the questionnaire and expressed their interest in participating the qualitative discussion. Each group interview lasted for approximately one hour. Single gender groups were considered appropriate as this would help develop a more comfortable environment for conversations between group members, rather than if the groups were mixed.

## **3.6 Data Analytical Techniques**

### **3.6.1 Qualitative Data – Stages 1 and 3**

One feature of qualitative data is non-standardised (see Table 9). Some researchers, such as Gaskell (2000), King (1994, cited in Cassell & Symon, 1994) and Saunders et al. (2003), argue that there is not any 'best' approach to analysing qualitative data. Similarly, King (1994, cited in Cassell & Symon, 1994: p24) comments that 'there is no single set of rules for the analysis of data from qualitative research interviews'. These comments may propose that difficulties could be generated in data analysis.

A general strategy was established for qualitative data analysis (i.e. stages 1 and 3) (Saunders et al., 2003):

- categorisation – to understand the statements and establish meanings within the current context. This is important to generate the meanings based on the purpose of this research. The literature was used as the guide to categorise themes; additional labels or phrases emerged from the data were identified.
- data rearrangement and reduction – guided by the literature and the purpose of the research, to identify related ideas or discussions for broad themes development. Data was reduced into a more manageable form.
- recognising relationships and forming additional categories – to analyse the reorganised data and to generate key themes, patterns, or relationships. Moreover, themes were compared to identify differences. If additional meanings were observed, the broad themes were specified. The analysis process was stopped when no further themes were generated.

According to the above general process, the qualitative data was analysed through the following steps (Rudestam & Newton, 2001; Saunders et al., 2003):

- 1) to review all statements of the respondents;
- 2) to find out the relevant statements;
- 3) to rearrange, classify and refine the data from written texts into meaningful codes by using a computer;
- 4) to attach relevant codes to the appropriate generated categories;
- 5) to seek the interrelated and interactive nature of data to describe arguments; and,
- 6) to create and present the themes that emerged from the interviews.

All interviews were taped, transcribed, analysed and translated into English. In the exploratory interviews (stage 1), the transcripts were coded by using the PR dimensions.

Relevant variables were identified and grouped under each dimension to develop measurement scales.

As for the post-questionnaire interviews (stage 3), the analysis emphasised those elements or key themes of the discussion that helped explain risk dimensions and variables. Literature was used as a general guide. In addition, particular attention was given to identify possible gender differences in relation to risk interpretation. The gender discussion was compared in terms of content and interpretation.

### **3.6.2 Quantitative Data – Stage 2**

Microsoft Excel was used for data preparation and Statistical Package for Social Science (SPSS) version 12.0 was used to analyse the data statistically. Given the nature of this study, nonparametric statistical techniques were employed where appropriate. The essential analysis included Spearman's Rank Order Correlation ( $\rho$ ) and differences between groups (e.g. Kruskal-Wallis test and Mann-Whitney U test, Cross-tab Chi-square). Two multivariate analysis techniques – factor analysis (FA) and stepwise discriminant analysis (DA) – were applied to answer specific questions. The purposes and details of these techniques are provided in the coming section, first by considering data preparation in relation to risk measurement.

#### **3.6.2.1 Data Preparation**

A number of numerical steps were taken before the statistical analysis was carried out. For each risk variable, its original values of certainty and consequences were multiplied and added respectively for each respondent. This generated two values for each risk variable (for valid responses). The calculation served two purposes: to develop individual average scores for the risk dimensions and to calculate average scores for OPR between the two models. These numerical values are essential to conducting further analysis.

#### **3.6.2.2 Statistical Process Overview: The Assessment of PR Measurement Models**

Several techniques were employed to assess the two common PR measurement models (i.e. additive vs. multiplicative). Table 13 outlines the techniques applied.

**Table 13. The Outline of Analytical Techniques to Assess PR Measurement Models**

<b>Techniques</b>	<b>Variables</b>	<b>Conceptual Purposes</b>
Spearman's $\rho$	The self-evaluated OPR and 2 calculated OPRs	To overview the respective relationships briefly.



	The self-evaluated OPR and the 8 risk dimensions	To assess the relationships between the models respectively.
	The 8 risk dimensions	To scrutinise relationships between risk dimensions.
Descriptive method (e.g. ranking order of average scores)	The two components of the 8 risk dimensions	To examine and evaluate the average scores derived from the 8 risk dimensions.
Spearman's rho	24 pairs of 'uncertainty and consequences' components	To examine the relationship between these two components.
FA	24 risk variables	To identify the underlying relationships between the risk variables; to reveal the factor structures of the variables, and to compare the performance of the two PR measurement models.
DA	The risk factors revealed by FA and the self-evaluated OPR	To further evaluate the efficacy of the PR model with 'better-performance'.

Firstly, Spearman's rho was applied to examine several relationships (the test is detailed after the section of multivariate analysis discussion). A particular purpose was to examine whether the components of uncertainty and consequences are independent. From the correlations observed a number of risk researchers (e.g. Dowling, 1986) suggest that this information can then be used to determine the most appropriate measurement approach (additive or multiplicative). The basic suggestion is that where a positive correlation is found between the components then an additive approach should be applied (Lanzetta & Driscoll, 1968; cited in Mitchell, 1999). The efficacy of following this advice was further examined by considering the results gained from examination of the performance of the two models.

Next the ranking order of the average scores derived from the eight risk dimensions were provided using both a multiplicative and additive method of calculation. The means were then ascribed ranks (1 = highest mean, 2 = second highest mean and so on...). To evaluate whether any significant difference exists between the rank orders of the two models they were again subjected to Spearman's rho.

To assess the performance of the two PR measurement models, the first issue was to establish how performance is to be evaluated. Performance could be evaluated by considering:

- which of the models provides a greater 'total variance explained', or
- which model produces results that are most closely aligned with the original data, or

- the level of adequate classification correction derived from each model, or
- the 'goodness of fit'.

Here the issue is one of establishing a range of criteria to evaluate the models rather than simply applying one, which may mask other underlying issues and possible problems.

Therefore, this research uses a number of techniques and examines various elements to derive an overall estimate of 'best' performance. FA by a varimax rotation method is applied to uncover the underlying relationship of the risk variables. The evaluation then goes on to apply stepwise DA (using equal-sized classification) to classify the respondents into different groups based on the factors extracted. DA provides an additional lens, which further investigates the effectiveness of the factors as a means of understanding the data and explores using the outcomes of the factor analysis as a predictive mechanism. The use of these techniques enables this research to maximize its ability to examine the two common perceived risk models (multiplicative vs. additive).

The reasons for utilising these techniques are discussed below. The discussion is focused more on multivariate analysis techniques (i.e. FA and DA) rather than the non-parametric techniques applied here (e.g. Spearman's rho) as multivariate analysis approaches are relatively more complicated and therefore need more attention for discussion.

### **3.6.2.3 Multivariate Analysis Techniques**

The details of the multivariate analysis techniques applied in this research are discussed below.

#### **3.6.2.3.1 General Issues for Consideration in Relation to Factor Analysis**

During the FA analysis process, a number of important issues were considered, including whether the data is suitable to conduct FA, how many factors should be extracted, which rotated method should be considered, what is the desired sample size and how factor scores should be calculated.

First, it is important to assess whether data is appropriate for FA. In practice, two questions are proposed for consideration: the measure and number of variables (Hair et al., 1998). Researchers should examine whether variables are measured by metric scales since only metric variables are suitable to implement FA. In addition, a reasonable number of variables should be included. This is possibly due to a well-known expression

regarding FA solutions: “garbage in, garbage out” (Hair et al., 1998: p97). It clearly highlights that the decision of entering variables to FA is critical. Hair et al. (1998) suggest that when a set of existing variables are employed from the literature in a particular study, the conceptual foundation of these variables (e.g. relationships) should be carefully considered as a rationale to guide researchers to determine the input of the variables to conduct FA. This also highlights that researchers could eliminate some variables that are not eligible based on selected rationales.

Moreover, researchers should pay attention to the impact of sample size. There are various recommendations on sample size and the lack of agreement leads to confusion. For example, Field (2005) suggests 10-15 participants in each variable. Similarly, Hair et al. (1998: p99) propose a general ratio: ten-to-one. Applying this ratio, the proposed sample size of a study that examined 20 variables could be around 200-400. Other authors added that the overall sample (e.g. the minimum is 300) could be more practical (Tabachnick & Fidell, 2001). It is noted that these various suggestions could vary in different research contexts in terms of nature, theory, and objectives.

It is acknowledged that the sample size affects the reliability of the FA solution (Field, 2005; Hair et al., 1998). This raises a couple of issues for consideration. For example, it is easier to detect statistical power (e.g. significance in correlation coefficient) when the sample becomes larger; while this significance could be due to the sample size. It could be argued that such a statistical significance might generate little significance in practice. It could imply that results might be unreliable or invalid.

Therefore, Hair et al. (1998: p99) recommend that researchers should always be aware of “the chances of overfitting the data”. When the actual sample is determined, tests should be done to examine the overall appropriateness of data. These include Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), Bartlett’s test of Sphericity, and the inspection of correlation coefficients. The first two tests examine the statistical appropriateness of the data and the correlation inspection is related to the degree of common variance shared between variables.

It is recommended that KMO should be above 0.7 as a generally acceptable level (Kaiser, 1974; cited in Field, 2005, see Table 14). Any value below 0.5 suggests that the data is not suitable for FA and researchers should reconsider the application (Hair et al., 1998).

**Table 14. The Accepting Values of KMO**

<b>KMO Value</b>	<b>Interpretation</b>
Over 0.5	Barely acceptable
0.5 – 0.7	Mediocre
0.7 – 0.8	Good
0.8 – 0.9	Great
Over 0.9	Superb

(Source: Kaiser, 1974; cited in Field, 2005: p640)

If KMO shows a satisfactory result, researchers should also consult the result of Bartlett's test of Sphericity – statistical significance means appropriateness (Pallant, 2005). This test examines whether the overall data is appropriate to employ FA. So a statistical significance result of this test suggests that data is appropriate.

However, it should be noted that both KMO and Bartlett's test are particularly sensitive to sample size (Hair et al., 1998). This means that statistical significance is likely to be detected as a number of elements increase, including the sample size, the average correlation coefficient, the number of variables (Hair et al., 1998). This suggests that researchers should not solely rely on results from KMO or Bartlett test; instead, a third criterion should be taken to assess the appropriateness – the inspection of inter correlation coefficients among variables.

The inspection must be examined thoroughly in the correlation coefficient matrix (Hair et al., 1998; Tabachnick & Fidell, 2001). This is important as this 'raw' matrix enables researchers to scrutinise the original correlations between variables. The issue here is whether sufficient correlations are generated among variables. More specifically, researchers should examine whether:

- many coefficients are less than 0.3 – which means the correlation is rather weak, suggesting that data may be inappropriate for FA, or
- many variables are greater than 0.7 – a high correlation, which raises issues of 'multicollinearity' and 'singularity'.

Multicollinearity means that several variables are so highly correlated that in fact, they are measuring the same thing; while "singularity is an extreme case of multicollinearity" (Kinnear & Gray, 2001: p349). As either of these can be a threat to the research, researchers are recommended to avoid both issues (e.g. Morrison, 1969).

Either too low or too high correlation can lead to concerns regarding 'factorability'. Researchers are therefore strongly advised to examine the correlation coefficient matrix

before carrying out FA (Tabachnick & Fidell, 2001). If extreme coefficients are found, e.g. many coefficients with low values (e.g. less than 0.30), it is suggested that those variables should be removed from the analysis; also, if multicollinearity is suspected, the highly correlated variables should be omitted from the analysis (Kinnear & Gray, 2001).

Effort was also given to respond to the issues discussed above to seek balance. To summarise, these tests were examined and the sample is generally satisfactory for FA. The details are provided in the results chapter.

### **3.6.2.3.2 Factor Analysis**

Two types of FA techniques are available: exploratory and confirmatory (Tabachnick & Fidell, 1989). At the early stage of research, exploratory factor analysis (EFA) is useful to reduce a large set of data into a more manageable number and/or to discover the underlying structured relationships among linked variables (Hair et al., 1998; Pallant, 2005). This suggests that in addition to the primary goal of data reduction, EFA also enables researchers to reveal a conceptual relationship and to evaluate dimensionality.

As Fabrigar et al. state:

“The primary purpose of EFA is to arrive at a more parsimonious conceptual understanding of a set of measured variables by determining the number and nature of common factors needed to account for the pattern of correlations among the measured variables.” (1999: p274)

On the other hand, confirmatory factor analysis (CFA) is usually applied at a more sophisticated research stage, where researchers have a prior knowledge, to test the theory by building up a particular model (Tabachnick & Fidell, 1989). CFA enables researchers to investigate whether stated hypotheses are confirmed (Kline, 1994). This purpose clearly shows that CFA is inappropriate to meet the current research's specific objectives, while EFA is. This is because no clear guideline was available in the literature in the current context and EFA provides an appropriate mechanism to explore the data and examine a number of research objectives (See Table 15 on next page).

Principal Components Analysis (PCA) and Common Factor Analysis are generally referred to as EFA techniques. These approaches are designed to answer different research questions – though broadly share an overall aim to reduce data – and differ in terms of their underlying assumptions, usage purpose, procedures/techniques and outcomes (Field, 2005; Tabachnick & Fidell, 1989). The major differences are outlined in Table 15.

**Table 15. The Summary of Major Differences Between PCA and Common Factor Analysis**

<b>Elements</b>	<b>PCA</b>	<b>Common Factor Analysis</b>
Analysis goal	To reduce data	To discover the underlying structure or relationships among variables
Communality (common variance assumption)	Assumingly equals 1, including: <ul style="list-style-type: none"> <li>▪ common variance – the variance shared with other variables</li> <li>▪ unique/specific variance – only associates to the measure (variable) itself</li> <li>▪ error variance – unreliable variance</li> </ul>	Estimating the amount of common variance (less than 1): <ul style="list-style-type: none"> <li>▪ only contains common variance and,</li> <li>▪ excludes unique variance</li> </ul>
Communality estimation method	To transform the original data into linear components.	To estimate factors based on a mathematical model.
Analysis outcomes	Principle components	Hidden common factors
Advantages	To summarise a large set of variables to a smaller set of components – data reduction is key.	To discover the ‘latent factors’ (important factors) – to discover the underlying relationship is the emphasis.
Disadvantages	No explicit error as the variance includes common, unique, and error variance.	An explicit error model, estimated common variance based on a mathematical model. The estimation may cause problems in reproducing the correlation matrix.

(Source: Field, 2005; Hair et al., 1998; Tabachnick & Fidell, 1989; Stevens, 1992)

Two fundamental issues in deciding which technique to apply include: what is the research analysis goal and do researchers know the amount of variance (Hair et al., 1998). There are suggestions that PCA is more appropriate if the research goal is purely to reduce data whereas Common Factor Analysis is more suitable to discover a theoretical solution/model (Hair et al., 1998; Tabachnick & Fidell, 1989). Moreover, the decision should also consider subsequent analysis intention examining if factor scores are to be used to conduct further multivariate analysis through examining the new set of factors, e.g. multiple regression (Field, 2005).

The above shows that Common Factor Analysis is more suitable to the current research, because of its analysis goal and the lack of knowledge detailed in the PR literature in relation to variance between risk variables. Principal Axis Factoring (PAF) is used as it only includes common variance shared between variables, excluding error and unique variance in the analysis (Tabachnick & Fidell, 1989).

Researchers can use either orthogonal or oblique approaches to rotate factors. Orthogonal solution does not allow different factors to be correlated so factors rotated by an orthogonal approach are treated independently. On the other hand, oblique approach enables factors to be correlated such as direct oblimin (Tabachnick & Fidell, 1989). The choice of approach mainly depends on theoretical guidelines. If existing theory suggests correlated relationships, an oblique approach should be applied or vice versa (Stevens, 1992).

Even though theoretical guidelines are available, Hair et al. (1998) propose that researchers should carefully interpret and validate results from an oblique FA solution. This is however an oblique rotation method allows factors to be correlated; whereas this correlation is usually considered as specific to the particular sample so results are not necessarily generalisable to the population, especially when the sample size is small or the sample-ratio in each variable is low (this influence will be discussed later). In such a circumstance, it is suggested that an FA solution with an oblique approach could become problematic.

On the other hand, unlike oblique methods, factors rotated by orthogonal solutions are easier to understand, interpret, and report (Tabachnick & Fidell, 1989). Varimax is a common orthogonal method, which tends to load a number of high-correlated variables on each factor and to minimise the variables' correlation on other factors (Kaiser, 1960; cited in Stevens, 1992). This implies that Varimax provides a simple and easy-to-understand solution for researchers. This is considered as an important advantage of Varimax by many statisticians (e.g. Hair et al., 1998; Pallant, 2005; Tabachnick & Fidell, 1989). As Kline comments:

“Varimax is an excellent method reaching orthogonal simple structure and that in many case oblique solutions are virtually identical because correlation between the factors is so small as to be negligible”. (1990: p68)

This advantage is carefully considered by the current study. As recommended, independent factors are more appropriate for subsequent analysis such as discriminant analysis (Hair et al., 1998; Tabachnick & Fidell, 1989). To fulfil the second analysis objective of this study, this research therefore follows the recommendation by applying Varimax to rotate factors.

### **3.6.2.3.3 The Number of Factors for Extraction**

Two common methods are available to determine the number of factors for extraction; a scree plot or the guideline of eigenvalues-greater-than-one (Pallant, 2005). The choice of method is somewhat arbitrary.

A scree plot illustrates the number of factors in a plotting diagram in which the shape of the curve changes its direction and becomes horizontal (Catell, 1966; cited in Pallant, 2005). The factors with high variance start from the left side and slip towards the right; until the line becomes flat. The guide is to find where the 'elbow' is located as it shows the break in the diagram. This means that factors laid on the horizontal line are not suitable for the analysis as these factors tend to have low variance.

On the other hand, the eigenvalues-greater-than-one is a common rule. A factor's eigenvalue indicates the amount of total variance explained by that factor (Pallant, 2005). Only factors that have the eigenvalue of one are eligible for factor extraction and rotation.

Researchers argue that the eigenvalue rule sometimes retains too many factors while the scree plot allows too few (Field, 2005). It was found that the use of scree plots depends on the researcher's assessment while the eigenvalue rule is based on statistical assessment. This seems to suggest that the eigenvalue rule would be more appropriate and possibly less susceptible to research bias. To gain appropriate interpretation from EFA, other elements such as the sample size, the number of variables and communality are further considered. Hair et al. (1998) suggest that when the number of variables is between 20 and 50, the eigenvalues rule is most reliable (Hair et al., 1998). Given these more explicit criteria and that the use of eigenvalues is common in recent EC-related studies (e.g. Bhatnagar & Ghose, 2004; Charbaji & Jannoun, 2005; Devlin & Yeung, 2003; Hassan et al., 2006; Karjaluoto, et al., 2002b; Laurent & Kapferer, 1985; Lu et al., 2005; Okazaki, 2005), this suggestion is used to extract factors.

### **3.6.2.3.4 Factor Loadings**

Factor loading is the correlation between each variable and the factor (Tabachnick & Fidell, 1989). This correlation is important to factors: the higher the loading, the more the variable is correlated to the factor, and the factor represents the variable.

Research shows that only highly correlated factors should be remained for meaningful interpretation, for example, studies in the service quality field (e.g. Kangwa & Olubodun,



2003; Minhas & Jacobs, 1996; O'Neill & Palmer, 2003). The decision regarding what constitutes appropriate factor loading values is important as it involves the consideration of the relationship between practical and statistical significance (Hair et al., 1998). However, this decision is not always straightforward. In part, this is because how to decide the value of meaningful interpretation varies from study to study. For example, to assure practical significance, Hair et al. (1998) broadly recommend that loadings could be:

- of  $\pm 0.30$  as the minimum level,
- of  $\pm 0.40$  as an 'improved' level, or
- of  $\pm 0.50$  as better.

It should be noted that the above suggestion does not take the sample size into consideration, which is an important element in multivariate analysis such as FA. As emphasized, the above only focuses on the practical significance, therefore, it should be considered as a general but not restricted guideline. Hair et al. (1998) further discuss the factor loading values and sample size. This general guideline is provided in Table 16.

**Table 16. The Guidelines on Factor Loadings and Sample Sizes Needed**

<b>Factor Loading</b>	<b>Sample Size Needed for Significance*</b>
.30	350
.35	250
.40	200
.45	150
.50	120
.55	100
.60	85
.65	70
.70	60
.75	50

(Source: Hair et al., 1998: p112)

(\*Note: significance at 0.5 level)

As shown in the Table, as the sample size increases, the factor loading requirement becomes smaller. This suggests that the sample size has an impact on the loading values and that to reach statistical significance a decision needs to be made balancing the two elements. For example, if a research study has relatively small factor loadings, two elements must be increased to ensure the analytical power of FA: a larger sample size and a larger number of variables being examined (Hair et al., 1998). The researcher considered factor loading cut-off value and the sample size to seek for a balance upon a rationale.

The nature of the sample is also noted to have an influence on factor loadings, Tabachnick & Fidell (1989: p640) state:

“the size of loading is influenced by the homogeneity of scores in the sample. If homogeneity is suspected, interpretation of lower loadings is warranted. That is, if the sample produces similar scores on observed variables, a lower cutoff is used for interpretation of factors”.

The researcher responded to this issue. From the frequency distribution scores of the two components, homogeneity scores were established, given the nature of the sample itself, this is not surprising.

Considering the various views above, while it is acknowledged that the decision of factor loading inevitably involves a researcher's subjective judgment, a number of empirical tests consisting of different loading values (0.3, 0.35, 0.365, 0.4) were carried out to establish the most appropriate criterion. The comparison shows that within this set of data, a loading of 0.4 produces the 'cleanest' and simplest factor matrix for interpretation so it is used as the cut-off point to remain important factors. This appears appropriate as the sample contains more than 200 and display some homogeneity of scores.

Finally, two common criteria are applied to assess the performance of the EFA solution: to examine the total variance explained and to check the residual percentage after rotation. In essence, the more the total variance is explained by a model, the better the solution; and the lower the residual percentage (e.g. close to zero), the better the solution (Kline, 1994).

#### **3.6.2.3.5 Discriminant Analysis**

DA classifies and predicts major differences among group memberships within one or more than one mutually exclusive and exhaustive statistical function (dependent variable)

from a number of predictors (independent variables/numerical measures) (Tabachnick & Fidell, 1989). This is important as the literature does not have explicit suggestions illustrating which of the risk dimension(s) in the IBS context would be more significant to influence consumers. DA therefore helps researchers who answer these questions (Morrison, 1969):

- among the independent variables, which is useful to classify group membership?
- how effective can the variable discriminant group membership?

DA is similar to multiple regression. The main difference is that DA is suitable when the dependent variable is categorical and the independent variables are numerical measures (Hair et al., 1998). Stevens (1992: p274) describes DA as a 'mathematical maximisation procedure'. This implies that researchers who attempt to employ this analysis must beware of:

"[the] tremendous opportunity for capitalisation on chance, especially if the number of subjects is not large relative to the number of variables. That is, the results found on one sample may well not replicate on another independent sample." (Stevens, 1992: p274)

This highlights the potential problem between this technique and statistical chance. It is said that the mathematical procedure of DA functions like MANOVA (the multivariate analysis of variance) (Tabachnick & Fidell, 1989). The difference is that the inputs of dependent and independent variables are 'turned around' in MANOVA. According to Stevens (1992), DA provides researchers with two features: to obtain 'parsimony of description' and to reach 'clarity of interpretation'. These features in fact form the entire procedure of DA: the classification function and the prediction function (Tabachnick & Fidell, 1989). During the classification function, group differences are identified through a mathematical model which indicates the most important independent variables to describe group differences. In the second function, the reliability of these important independent variables is further examined for group membership prediction. Finally, the classification accuracy is compared with the prediction accuracy to determine whether the DA solution is reliable or not. Thus, the outcome of DA is to assess and determine the usefulness of the independent variables to discriminate and predict group memberships.

#### **3.6.2.3.6 Types of Discriminant Analysis**

DA has three approaches to input independent variables into the analytical procedure: the standard (or direct), hierarchical, and stepwise methods (Tabachnick & Fidell, 1989). According to Hair et al. (1998), the standard approach considers all independent

variables at the same time and inputs them into the equation simultaneously, regardless of their individual discriminant power (e.g. not based on individual statistical power). Only the unique association of an individual predictor is considered and the common variance among predictors is assigned to assess the discriminant relationship between the predictors and the groups' membership (i.e. classification) (Tabachnick & Fidell, 1989).

Hierarchical DA allows predictors to enter the discrimination equation/function sequentially. This method is suitable when researchers have theoretical guidelines regarding the order of independent variables. Researchers then can assess the difference in classification and seek for model improvement every time when a new predictor is added to the prior predictors (Tabachnick & Fidell, 1989).

However, stepwise DA is appropriate when a researcher has no prior knowledge in assigning the order of particular predictors; rather, the stepwise approach relies on individual statistical power which decides the order of a specific independent variable to enter the discriminant function at a time (Hair et al., 1998). This is similar to stepwise Multiple Regression. The advantages of a stepwise approach are that it enables researchers to investigate which variable is the most useful predictor and to what extent it helps define a certain group of people. This allows researchers to reduce the original number of predictors to a more manageable set (Kachigan, 1991; Tabachnick & Fidell, 1989). For example, if the FA solution revealed different patterns of risk dimensions from the literature, and no guideline on which risk factor should be entered into the formulation existed, stepwise DA could then be applied to examine the usefulness of factors to distinguish the sample. Obviously, as guidelines were available from the literature, and stepwise DA is applied.

#### **3.6.2.3.7 Group Difference Measurement**

To evaluate statistically significant group difference in stepwise DA, Mahalanobis  $D^2$  and Rao's  $V$  measures are the two most appropriate approaches – because “both are measures of generalised distance” (Hair et al., 1998: p262). The major advantage of the former approach is that:

“it is computed in the original space of the predictor variables rather than as a collapsed version used in other measures. The Mahalanobis  $D^2$  becomes particularly critical as the number of predictor variables increases because it does not result in any reduction in dimensionality. ... In general, Mahalanobis  $D^2$  is the preferred procedure when the researcher is interested in the maximal use of available information.” (Hair et al., 1998: p262)

This suggests that a stepwise DA with the Mahalanobis  $D^2$  approach to examine group difference will use and reserve the data in as 'natural' a state as possible. This also suggests that the approach is useful to adjust unequal variances (Hair et al., 1998). This is considered important for its 'purity' and the approach is adopted here.

After the statistical significance of the discriminant function is detected, the sample will be split based on the criterion of an 'equalised' chance or 'actual' proportion for classification assessment and prediction validation (Hair et al., 1998). The question raised here is how to evaluate the actual membership with the predicted membership. This question becomes more critical when the sub-groups have unequal sizes because it affects how the prior probability influences the classification procedure (Morrison, 1969).

The procedure compares the actual membership with the predicted membership. If the accurate predicted membership is greater than the actual membership, it may suggest a satisfactory DA model. The difference between the criteria is whether to split the sample equally or based on the proportion of the actual largest sub-group. Both approaches have an impact on the evaluation of a DA solution performance – accuracy of classification.

The 'equalised' criterion can be explained through a simple example. With a sample of 100 respondents with two sub-groups, each sub-group will have a 50% chance of being correctly classified. If the adequate percentages of classification and prediction are much greater than 50%, this suggests that the DA results are stable and robust; the discriminator from this DA model helps researchers to classify and predict memberships within a particular sample. If the sample has three sub-groups, then an equalised chance of 33% will be applied; adequacy of or greater than 33% is considered as a good indicator of DA solution.

On the other hand, the actual proportion criterion is referred to as the maximum chance criterion (Hair et al., 1998). This procedure uses the actual proportion of the largest sub-group size as the criterion to judge a DA model performance. Hair et al. (1998) comment that this criterion would only be recommended when the sole objective of DA is to maximise the percentage of classification adequacy and DA is undertaken between equal sub-group sizes. This is because the decision between the prediction criterion approaches is associated with the issue of error types (Kachigan, 1991). More specifically, it refers to the cost of misclassification, which means on the one hand, respondent X could be misclassified as group A while in fact the respondent belongs to

group B. Clearly, the prediction criterion and the types of error must be considered simultaneously and carefully. Other statisticians such as Tabachnick & Fidell (1989) have stated that equal size is ideal but uncommon in reality. Therefore, the more practical issue here is to apply the 'equalised' criterion to predict the sample and to minimise misclassification.

As shown, the sample size certainly has an impact on the classification and prediction procedure. If the sample size is not large, the split of the sample will be problematic e.g. insufficient cases in each sub-group to perform the discriminant function and to detect significance. As no explicit rule is specified in the literature, a sample of at least 100 respondents is reasonable (Hair et al., 1998). It is recommended that the actual proportion should be employed when researchers are sure the sample is drawn randomly from the population; on the other hand, the equal probabilities should be applied when researchers are uncertain whether sample proportions are representative to the population proportions (Hair et al., 1998). This suggestion is taken into account when the questionnaire was distributed to its target sample.

#### **3.6.2.3.8 Issues for Consideration**

The dependent variable was a non-metric measure containing four sub-groups. One sub-group, 'not at all risky', is found to have too few responses to be eligible to run DA. Similar to FA, DA is also sensitive to sample size, particularly the number of responses in each independent variable, according to Hair et al. (1998). These researchers comment on the minimum requirement, suggesting the smallest sub-group size must exceed the number of independent variables. Also, in practice, each sub-group should at least have 20 responses in each independent variable.

Researchers (e.g. Kachigan, 1991) recommend that the cross-validation procedure should not be overemphasised. This is because the cross-validation procedure uses the same sample to test DA's efficacy while this could be problematic – results on chance (Kachigan, 1991). Error can occur during the classification and prediction procedures, such as a respondent's actual membership is misclassified or mispredicted, this seriously impacts on the DA model/solution, e.g. unreliable results. Thus, results should be validated with an entirely new sample, such as samples from another population or similar samples from the same population.

In addition to the above concerns, researchers should also examine two key assumptions in relation to DA. The details of DA assumption checking are provided below.

### 3.6.2.3.9 Assumption Checking

Two primary assumptions associated with DA must be examined: whether independent variables are normally distributed and whether covariance between groups is homogenous (Hair et al., 1998). The assumptions are examined through P-P plots and the Box's M test respectively.

The research design suggests that the use of convenience sampling is rarely representative of the whole population. As clearly stated earlier, the target sample is only a group of the whole population and it is not targeted to represent the whole population.

Normal P-P plots are applied to examine multivariate normality of the factor score distribution. The decision is based on a visual assessment. If the graphs show tails at the right end, this may imply that the independent variables are somewhat normally distributed with a certain degree of positive skewness. This could then suggest that the data appears to support the normality assumption.

Another primary assumption about DA is whether the variance/covariance between the three groups is the same in the population, i.e. homogeneity (Tabachnick & Fidell, 1989). This assumption will be assessed by the Box's M test which evaluates whether the covariance matrices differ between groups formed by the dependent variable. However, researchers such as Hair et al. (1998), Tabachnick & Fidell (1989) note that Box's M test is very sensitive to sample size. As noted earlier, if a sample size is large, a tiny difference could easily achieve *statistical* significance while in reality, this difference may have little practical significance at all. Indeed,

“The multivariate Box M test for homogeneity of variances/covariances is particularly sensitive to deviations from multivariate normality, and should not be taken too “seriously”” (Statsoft, 2006)

Influence of sample size on the Box's M test is noted by the current research. The two assumptions will be examined by the techniques proposed above and the viewpoint on these techniques' application will be critically considered.

Having detailed the multivariate analysis techniques, it is useful to highlight the non-parametric techniques applied within this research.

#### **3.6.2.4 The Non-Parametric Techniques in Examination of Various Groups**

Chi-Square test, Mann-Whitney U test and Kruskal-Wallis test were applied to examine various group differences. Also, Spearman's rho was used to identify relationships between different variables.

These non-parametric tests are suitable for this research to adopt. This is because the sample employed in this study is based on a convenience sampling technique, though the respondents met the criteria from the targeted population. This suggests that with the current set of data, it is difficult to judge whether the data is normally distributed. The researcher then is less confident to defend whether the data meets this fundamental assumption concerning parametric tests – data normality.

Non-parametric tests were therefore considered. Compared with parametric techniques, non-parametric tests require less strict assumptions: whether the data is randomly selected and mutually exclusive (Pallant, 2005). The set of data in this research has met these basic assumptions. The questionnaire was distributed by 'contact points' within each institution, given the adoption of a convenience sampling approach. Arguably, every student within that institution would have a non-zero chance to respond to the questionnaire. This implies that the data contains some elements of random selection.

In addition, ordinal data is suitable for performing non-parametric tests (Field, 2005). This type of scale has the nature of ranking or ordering because the scales are independent from each other. This reflects the above assumption regarding non-parametric tests. As this research also applied ordinal data (see Table 12 summarised before), non-parametric tests were adopted.

It should be noted that non-parametric tests have one common disadvantage: compared to parametric tests, these techniques are less powerful or sensitive to statistical significance (Pallant, 2005). This means that there is a potential for the tests to fail to identify actual differences between groups so care should be taken when interpreting results.

The specific criteria to apply individual non-parametric tests within this research are (Pallant, 2005):

- Cross-tab Chi-square – a test to examine the relationship between two categorical variables.



- Spearman's rho – an alternative test to Pearson's correlation coefficient, is used to examine the relationship between two numeric variables. The same technique is applied for interpretation.
- Mann-Whitney U test – an alternative test to t-test for independent samples, restricted to test differences between two groups. The test compares the medians of the variables (continuous measure) between the groups, converts the medians into ranks, and evaluates whether statistical significance exists between the groups.
- Kruskal-Wallis test – an alternative test to a one-way between-groups analysis of variance, is applicable to examine multiple group variances (i.e. three or more groups) in relation to continuous measures. This test applies a similar analysis approach to Mann-Whitney U test described above.

Table 17 details how these tests are applied to identify various group differences concerning a number of variables.

**Table 17. The Outline of Tests Applied to Identify Group Differences**

<b>Group Classification</b>	<b>Techniques</b>	<b>Variables</b>	<b>Purposes</b>
Internet knowledge	Kruskal-Wallis Test	The self-evaluated OPR; the 8 risks	To examine whether differences exist in relation to risk perceptions
Internet usage duration	Kruskal-Wallis Test	The self-evaluated OPR; the 8 risks	To examine whether differences exist in relation to risk perceptions
IBS awareness and non-awareness	Mann-Whitney U test	The self-evaluated OPR and the 8 risks	To examine whether differences exist in relation to risk perceptions
	Spearman's rho	10 'IBS features' and OPR	To examine any relationship between the IBS features and OPR
Usage intention	Cross-tab, Chi-square	Usage intention and IBS awareness/non-awareness	To examine whether Internet knowledge has impacts on IBS usage intention
	Cross-tab, Chi-square	Usage intention and OPR	To examine whether OPR has an impact on usage intention
Genders	Mann-Whitney U test	The self-evaluated OPR and the 8 risks	To examine whether difference exist between genders
	FA	The 24 risk variables	To compare the underlying structures of the 24 risk variables between genders.
	Cross-tab, Chi-square	Gender and usage intention	To examine whether differences exist in terms of

			usage intention between genders
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Given the details of the analysis techniques, it is important to review how research objectives may be achieved. This is presented below.

### 3.6.3 The Reflection of Data Analysis and Research Objectives

Each research stage was designed to answer specific research question(s) and it was expected that each stage should provide different perspective(s) to examine the investigation. The details are illustrated in Table 18.

**Table 18. The Reflection of Data Sources and Broad Research Objectives**

Data Sources	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
	To examine the relation between uncertainty and consequences that influences young Chinese consumers' perception of specific risk variables	To evaluate the relative importance of uncertainty and consequences in establishing consumer risk perceptions	To examine the usefulness of the two PR measurement models within the current context	To identify whether gender differences in risk perception exist between young Chinese Internet users	To identify whether risk perception differences exist between groups in terms of (see below)
Stage 1	(To explore the broad understanding of PR in relation to IBS)				
Stage 2	Spearman's rho	✓	✓		
	Kruskal-Wallis test				<ul style="list-style-type: none"> <li>✓</li> <li>▪ Knowledge</li> <li>▪ Usage duration</li> </ul>
	Mann-Whitney U test			<ul style="list-style-type: none"> <li>✓</li> <li>▪ Risk perception</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ IBS awareness and non-awareness (risk perception)</li> </ul>
	Cross-tab Chi-square			<ul style="list-style-type: none"> <li>✓</li> <li>▪ Usage intention</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ IBS awareness and non-awareness (usage intention)</li> </ul>
	FA			<ul style="list-style-type: none"> <li>✓</li> <li>▪ Discovering significant risk variables</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ Revealing and comparing underlying</li> </ul>

			and underlying factors' patterns	risk factors' patterns	
DA			<ul style="list-style-type: none"> <li>✓</li> <li>▪ to examine the usefulness of the influential factors in discriminating and predicting the respondents' OPR</li> </ul>		
Stage 3		<ul style="list-style-type: none"> <li>✓</li> <li>▪ Provides meanings to the significant risks (dimensions and variables)</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ Helps understand the underlying relationship between risk factors</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ Provides insights into the subtle difference between genders</li> </ul>	<ul style="list-style-type: none"> <li>✓</li> <li>▪ Helps identify different opinions between groups</li> </ul>

As illustrated above, quantitative data helps to establish major understanding regarding the current context (the details of the results are shown in the next chapter). Quantification facilitates the researcher's different objectives, such as the assessment of measurement models, the underlying risk factors, important predictors and differences in group memberships (e.g. gender, Internet knowledge). This suggests that the approach of quantification within the current context is appropriate. This reinforces the researcher's philosophical approach and the specific designs to this research.

However, as discussed earlier regarding critical realist concerns, problems of quantification emerged such as unexpected results from EFA. With the additional source of data collected in stage 3, contextual details were added to the quantitative findings: meanings and specific contents to the current research were drawn from extensive and interesting discussion. Stage 3 also provides insights into the subtle difference between females and males. This indicates that a connection between the social world and the natural world is established through the mixed method of quantitative and qualitative data. This also suggests that the design of a mixed-method approach within this research is useful.

Given the brief reflection between the data and research objectives, as well as the emerging connection, it is noted that the design also has its limitations. These need to be addressed before results of this research are reported because care is required for appropriate interpretation. The coming section deals with limitations and begins with the issue of data reliability.

### **3.7 Limitations**

The discussion of critical realism has clearly demonstrated that potential concerns exist such as methodological problems. As discussed earlier, one major problem of quantification is how to assess data quality. Broadly, the central questions here for the current researcher to answer are: how confident and consistent is the researcher regarding this study's results in relation to reality; how relevant are the findings in terms of representativeness. As the data has different purposes and serves the research in different ways, they are detailed below by categories – qualitative and quantitative respectively.

#### **3.7.1 Qualitative Data – Stages 1 and 3**

The design of stages 1 and 3 is important to this research. Within participants' responses, these stages have produced some justification for this research: guided by the critical realist philosophical perspective, quantitative-related elements are the orientation (e.g. data collection approach). Balance was given to gain the key assumptions of critical realism and the mixed method design. The broad issues in relation to PR and IBS were conducted in stage 1, and insights into the quantitative findings were obtained in stage 3. Within the mini-group interviews undertaken, useful data was identified (i.e. the risk variables measured in the questionnaire), and some common views as well as concerns emerged (please refer to the questionnaire, Part 3). This suggests some degree of data consistency.

During the sampling process (stage 1 and 3 respectively), however, a number of elements could have brought in potential sources for error, despite the care taken. The major concern here is data representativeness, given the nature of the qualitative sample – acquainted participants. This is different from the commonly suggested approach – focus group interview, which would normally use unacquainted participants (Gaskell, 2000). This issue was considered. Firstly, these respondents were volunteers from the same universities due to recruitment difficulty. This suggests that the researcher did not fully have the control of group member selection. Although the participants met the sampling criteria, the discussion could be limited to their academic subjects, experience,

and interests. The researcher noted that sometimes there was an 'acquainted' response (e.g. nodding to support a friend's perspective). This could limit the productivity of the qualitative interviews, given that an element of 'group think' may have occurred.

Moreover, since the respondents were familiar with each other, it was sometimes difficult to generate and manage group dynamics – such as confrontation. This also reflects the issue of using acquainted respondents mentioned above. In addition, some respondents were careful when expressing their opinions about IBS in front of their peers. The topic was not sensitive but relatively new to them, they were concerned about revealing their limited understanding and knowledge regarding the product and that could be related to a potential concern of losing 'face' socially. This might be caused by a broad cultural perspective and it could create barriers in the discussion. In fact, the researcher sometimes had to probe the participants extensively to get greater details or to encourage them to respond (e.g. by asking individual respondents for their opinions).

An advantage of doing interviews is that the researcher interacts during the interviews. This means that the researcher was involved in the process of knowledge production, such as exchanging ideas and understanding (Gaskell, 2000). The common background or personal knowledge helps enrich the data (Tashakkori & Teddlie, 1998). However, this advantage could have impacts on the interviews' analysis and interpretation. For example, the shared background or common perspective between the respondents and the researcher could result in the possibility that the researcher could be less sensitive to identify potentially hidden messages. Because the qualitative data is used for supplementary purposes, the design, data collection method, process, analysis approach and reporting are based on a different perspective rather than a pure phenomenological approach.

Furthermore, the role of the qualitative data in stage 3 – considered as a supplementary source – may have triggered another potential error, which could be associated with the qualitative analysis process and approach. For example, in stage 3, the discussion and analysis focused on identifying key themes and adding contextual details to understand the quantitative results (stage 2). This implies that the researcher might miss the opportunity to probe a wider range of issues such as a greater discussion regarding risk aversion/seeking behaviour – although the current data has shown some interesting findings in relation to this.

It might be interesting to conduct a wider range of qualitative interviews (in both stages). For example, more mini-group interviews could be conducted; particularly at stage 3, it would be helpful if more participants could be recruited from the other three institutions. Also, alternative interview methods (e.g. focus group or individual interview) could be considered. These alternatives might help to gain more depth or richer data about the enquiry and this might provide the researcher with more confidence in relation to representativeness.

### 3.7.2 Quantitative Data – Stage 2

The central issues concerning quantitative data are scale evaluation, including validity, reliability, and representation (Bauer & Gaskell, 2000). More specifically, the researcher needs to answer how valid and reliable this research's measurement scales are and how consistent the results are to represent the drawn population.

#### 3.7.2.1 Validity of the Measurement

The validity evaluation has different types. In addition to the details of content validity outlined earlier, the additional ones are face validity, criterion validity or construct validity (in terms of convergent and divergent), see Table 19.

**Table 19. The Common Types of Measurement Validity**

<b>Types</b>	<b>Description</b>	<b>Application Within This Research</b>
Face validity	Indicates the degree to which a measurement scale measures what it is expected to. It involves researchers' subjective evaluation and may be argued as the weakest validity form.	The measurement instrument was from the literature and exploratory interviews' findings.
Content validity	Similar to face validity, also evaluates to what extent, measurement variables can adequately represent the concept of interest.	PR was operationalised as 'certainty and seriousness' through multiple variables. The operational definitions were considered valid in previous studies (e.g. Mitchell & Boustani, 1993; Mitchell & Greatorex, 1993). As mentioned earlier, the instrument was checked and found meaningful.

Criterion-related validity	Concerns whether association exists between the construct and related variables. The examination includes predictive and concurrent validity – whether relationships exist between future (e.g. predictive behaviour) or concurrent variables with the measurement instrument.	A number of variables (in Part 3B) were measured to explore whether they would influence consumers' risk perception. The relationship between the likelihood of the respondents' IBS usage intention and OPR was measured.
Construct validity	Refers to the degree to which a measurement instrument (i.e. variables) confirms hypotheses developed upon the existing theory. The examination includes convergent and discriminant validity.	This is not applicable to the current study owing to its research nature – exploratory but not confirmatory.

(Source: Dowling, 1986; Malhotra, 2002; McDaniel & Gates, 2002; Tashakkori & Teddlie, 1998)

The level of the validity examination in relation to the measurement instrument was found satisfactory (e.g. OPR was significantly correlated with other risk dimensions). The details of the validity examination are provided in the next chapter.

### 3.7.2.2 Internal Reliability among the Original Risk Variables

Internal reliability is applied initially to assess the unidimensionality of the measurement scale (multiplicative and additive models respectively, see Table 20). More specifically, Cronbach's Alpha test is applied to assess the reliability of the eight risk dimensions derived from the two measurement models. The minimum level is 0.5; the conventional satisfactory level is '>0.7' and may be decreased to '>0.6' for exploratory purpose (Hair et al., 1998: p118).

**Table 20. Internal Reliability (Inter-item correlation)**

Dimension	Multiplicative	Additive
Performance	.614	.608
Security	.633	.657
Financial	.653	.654
Privacy	.752	.749
Time	.484	.496
Psychological	.712	.737
Social	.700	.722
Physical	.522	.557

For both models, many dimensions produce satisfactory results except the dimensions of 'time/convenience' and 'physical risk' have low Alpha values. However, statisticians (e.g. Hair et al., 1998; Pallant, 2005) have noted that reliability value is sensitive to the number of items/variables in the scale. Pallant (2005: p90) points out that with short

scales (variables are less than 10 items), low reliability value is often found (e.g. 0.5). Hair et al. (1998) also made a similar suggestion: with the same degree of inter-correlation between the variables, the more variables examined in the reliability test, the greater the Alpha value would be.

Due to the small number of items being examined in individual scales (i.e. most risk dimensions have three items), Briggs & Cheek's (1986, cited in Pallant, 2005: p6) suggestion is considered by this research – i.e. the mean inter-item correlation for the items is calculated on each scale for the two models. The optimal value is recommended from .2 – .4 by these researchers. The results show that for the two models, the corrected item-total correlations are well above .2.

Additionally, Michell's (1998a) suggestion regarding the issue of PR internal reliability was adopted. As consumers' risk perception is complicated, varying from context to context, researchers should be careful when considering the measure of internal reliability. For example, dimension X may be independent to dimension Y in one situation but both of these dimensions can be correlated in another. Alternatively, within dimension X, variable A is unnecessary correlated to variable B, despite the idea that these variables are both measuring the same dimension. Thus, based on the above discussion, the dimensions are indicated to have reasonably satisfactory reliability in the current context; but further testing is needed to assess the internal consistency. This is presented in the results chapter.

### **3.7.2.3 Questionnaire Consideration**

First, as indicated in the results chapter, there are a large number of invalid/uncompleted questionnaires (the completion rate for this study is 56%). One issue was noted: the rate may be considered as relatively low (e.g. Boze, 1988), nevertheless, the sample size is large compared with previous studies that also applied convenient sampling of students (e.g. Dholakia, 2001; Grewal et al., 1994; Huang et al., 2004; Laroche et al., 2003; Mitchell & Groatorex, 1993; Tan, 1999). The incomplete questionnaire might raise the concern over generalisability and internal validity of the results (Tashakkori & Teddlie, 1998). This could be caused by the complexity of the questionnaire, which required respondents to consider various risk variables and other information. This suggests the results, whilst possibly more limited in scope, are robust.

Some researchers (e.g. Bao et al., 2003) propose that when examining whether a construct is applicable and measurable in another culture, researchers should pay



attention to the issues in relation to language. More specifically, wording through back-translation can impact on the applicability of the construct, such as the potentially unsatisfactory reliability. As noted earlier, content validity was the focus.

The items used in the questionnaire were developed using the existing theories and exploratory interviews. This study supports the suggestion that cross-cultural research that simply translates an existing measurement model to another cultural context through a back-translation technique may overlook the 'adaptability' of the measure in a new research context.

#### **3.7.2.4 Quantification – Analysis Techniques**

Under the guideline of the philosophical position, quantification helps establish some understanding in relation to the current context. However, as identified by the critical realist perspective, this approach does somewhat limit its own ability to build a thorough communication bridge between the social and natural world; also, the approach restricts the researcher to respond effectively to the question of representativeness. This could weaken result generalisability of the current study.

Moreover, major issues regarding the limited ability and response difficulty also impact on the multivariate analysis techniques applied. These include the relatively low percentage of total variance explained, the lack of validation, the primary concern of subjective judgement and the sample.

As indicated previously, the technique applied in EFA – PAF – is based on a mathematical model, which excludes unique and error variance and only common variance is considered in the analysis. This raises several issues for discussion. First, it could explain the relatively low percentage of total variance explained due to variance exclusion (results are indicated in the next chapter). Also, it was highlighted earlier that the nature of the sample could have a potential influence on the common variance; the sample shares a wide range of homogeneous features. It should be noted that in complex situations where the inquiry itself would potentially vary, researchers perhaps need to use additional criterion to assess the performance of a FA solution. As Hair et al. (1998: p104) comment that:

“In the social sciences, where information is often less precise, it is not uncommon to consider a solution that accounts for 60 percent of the total variance (and in some instances even less) as satisfactory.”

This highlights that the percentage of the total variance in a FA solution could vary and that the nature of the study may be one influential element.

Secondly, common factors are hypothetical and should be therefore treated as tentative results (Kline, 1994). It is noted that factors from a FA solution only present a large amount of shared variance between relatively correlated variables. This suggests that results need to be further validated.

Homogeneous convenience samples such as students are considered as appropriate for theory developing (Calder et al., 1981; cited in Stoddard & Fern, 1999). Homogeneous samples help reduce error variance. However, it also can generate problems, e.g. the homogeneous covariance within a data set could influence statistical power. This could cause concerns regarding the analysis, e.g. a greater chance of making a Type II error is likely to occur. This also highlights the importance of result validation.

Another limitation in relation to both analytical techniques is that the techniques were conducted based on subjective judgment, such as which method should be applied; whilst this could raise the concern of how to validate findings in relation to both analysis techniques. More specifically, during the FA analysis procedure, subjective judgment issues include the number of component or factors extracted and rotated and the choice of extraction and rotation models. It could be argued that the decisions were arbitrary so that care is needed for interpretation.

Thus a researcher's 'preference' towards a particular FA model should be supported by reasoning. As Ehrenberg noted:

"The choice of variables to put into the analysis, whether to use FA or component analysis, the choice of a particular version of these techniques, the choice of a particular type of "rotation", and the interpretation of the results are all *subjective*. There is nothing inherently wrong with subjectivity since judgment has to be exercised in many problems in data analysis. But the adoption of some arbitrary analytic technique should not be regarded as objective justification for one's results." (1975: p272)

The researcher responded to the above, considered and consulted the literature for guidelines as much as possible. However, as noted, the problem is again associated with validation. Since no "absolute rule" is established in relation to the above questions, results from FA should be restricted to the sample employed (Field, 2005). As discussed earlier, this is because FA was originally developed as an analytical method, which is suitable to analyse data from the whole population and to generalise findings to the

whole population. It is noted that no standard statistical test is available to validate findings of FA (Minhas & Jacobs, 1996). If FA is performed on data from descriptive research, the findings are restricted to the sample collected and must be further validated in other different samples (Field, 2005). Therefore, the results from this specific approach should be treated as hypothetical, tentative and interpreted with care.

In terms of DA, the above concerns in relation to representativeness and suggestion to possible solutions are also applicable. Researchers should consider how reliable or generalisable a DA model is (Tabachnick & Fidell, 1989). As indicated earlier, although the cross-validation procedure may provide some indications of generalisability and the goodness-of-fit may be assessed, the questions above cannot be appropriately answered within a single study, for example, how independent variables derived from one sample are useful to classify and predict another sample. This indicates that it may be difficult to generalise DA results unless the results of a DA model can be validated through another sample from the same population.

Finally, noted earlier, it is important to examine the assumptions of normality and homogeneity of covariance between groups. The checking of these assumptions is associated with the sample size. Tabachnick & Fidell (1989: p512) point out:

“In inference, when sample sizes are equal or large, DISCRIM[inant analysis], like MANOVA is robust to violation of the assumption of equal within-group variance-covariance (dispersion) matrices. When sample sizes are unequal and small, however, results of significance testing may be misleading if there is heterogeneity of the variance-covariance matrices.”

This highlights the potential difficulty in examining the assumptions within the current sample due to its inherent nature. The practical solution is perhaps to examine the assumptions where possible and appropriate.

### **3.7.2.5 The Sampling**

As discussed, sample nature is an important issue in FA and DA. A particular research study is often subject to its own special circumstances, such as sample selection. More specifically, a homogeneous sample is noted in theory to produce lower variance and lower factor loadings compared with a heterogeneous sample (Kline, 1994). Kline (1994) proposes that this is based on the argument that subjects in homogeneous samples share similarities (e.g. social characteristics, education, etc.); it could be difficult to detect some *potentially important* differences, which remain hidden, masked by the commonalities which are easier to detect. Unless the researcher begins to address this

issue and critically interpret the results, the findings could be misconstrued. This research uses qualitative techniques to explore and respond to this issue.

As highlighted, the DA solution is influenced by the decision as to whether the prediction allows the actual sample size to reflect the group classification (Tabachnick & Fidell, 1989). It was clearly presented that DA is influenced by the overall sample size – it affects the stability of the analysis solution (Hair et al., 1998). For example, when the sample size is large, significant difference could be detected even though the discriminant group difference is marginal or virtually identical (Morrison, 1969). Also, there is a tendency for ‘automatic adequate classification’ to occur when one sub-group is much larger than others. This means that several respondents would be automatically classified into the adequate larger sub-group while fewer cases were correctly classified into the smaller group. Thus, it is important that the concern on the overall sample size in relation to statistical and practical significance be addressed. To meet this concern, care needs to be taken in interpreting the results. Alternatively, as noted earlier, cross validation through additional research using similar samples may be helpful to validate/confirm the findings.

This chapter has presented the philosophical position adopted, and why; how this position guided the current research to establish a set of criteria and sound rationale of research design, data collection methods, procedures, process, data analysis and reporting. Also, analytical techniques were detailed to build assessment criteria of the two PR measurement models. This helps the current research to evaluate the performance of its data reliability and validity.

To serve the research objectives, data collected in stages 2 and 3 is analysed, reported, and discussed in this thesis (as data derived from stage 1 is used only to develop the questionnaire used in stage 2). For convenience and consistency, quantitative data is referred to as ‘stage 2 data’ and ‘stage 3 data’ is used to indicate qualitative data throughout the thesis from this point.

The next chapter illustrates results from stages 2 and 3. It is presented in two sections. Section one reports quantitative data (stage 2) and section two indicates qualitative results (stage 3).

# **Chapter 4 – Quantitative** **and Qualitative Results**

This chapter illustrates quantitative and qualitative results of this research through two separated sections. The first section demonstrates major results from quantitative data in stage 2, summarises the characteristics of the sample, evaluates the PR measurement models, examines a number of relationships in relation to the respondents' risk perceptions, identifies any difference between various groups and indicates respondents' usage intention of IBS. The second section presents qualitative findings in-depth (stage 3). It seeks to show significant risk dimensions perceived by the interviews, to identify and compare group differences. This approach may help the researcher identify connectivity between the quantitative and qualitative data. This may also assist the researcher to reflect on the usefulness of a critical realist approach adopted within this context.

## **Section 1 – Quantitative Data Analysis**

This section details the results of quantitative data analysis within this study. The specific objectives for this chapter are:

- to summarise the characteristics of the sample;
- to examine the relationship between uncertainty and consequences that influences young Chinese consumers' perception of specific risk variables;
- to evaluate the relative importance of uncertainty and consequences in establishing consumer risk perceptions;
- to test the usefulness ('performance') of the multiplicative and additive models within the current context;
- to identify the important factors that influence young Chinese consumers' perception in relation to IBS;
- to examine the usefulness of the influential factors in discriminating and predicting the respondents' OPR;
- to identify whether difference exists in risk perception between males and females, and
- to explore whether difference exists in the young Chinese consumers' intention of whether or not to use IBS.

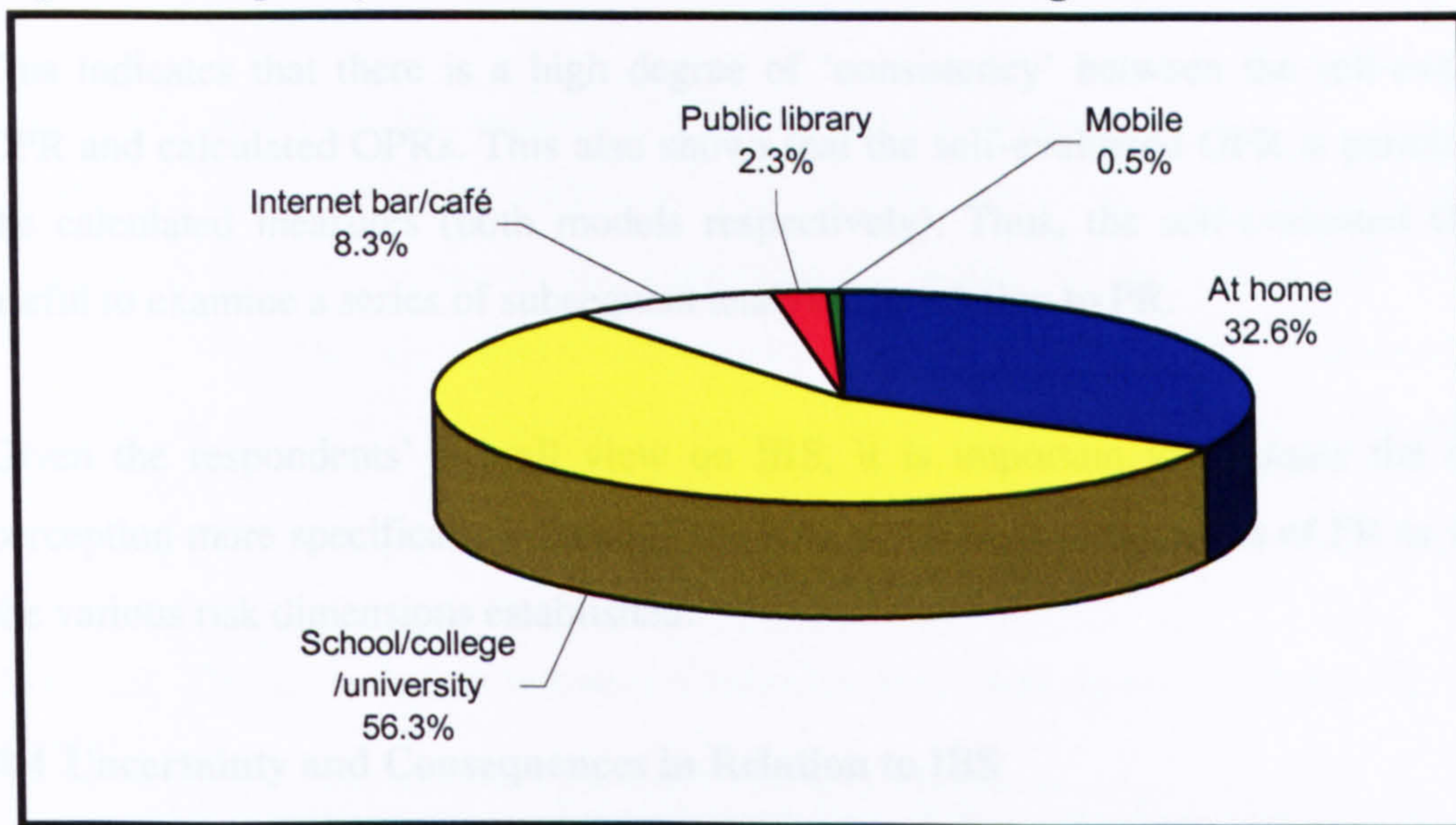
### **4.1 The Sample**

Of the 900 questionnaires delivered, 504 out of the 836 returned responses were completed, a completion rate of 56%. Among these valid responses, there are 490 Internet users (97.2%) and 14 non-users (2.8%). Most of the Internet users are currently IBS non-users (88.2%) and only a few of them state that they are IBS users (11.8%).

The group of current IBS non-users is eligible and form the sample for this study (n=432). Due to the nature of the sampling, most respondents are young (18-25) and students from Guangdong province. Also, 94.7% of the respondents report that they have no or low income. The sample is reasonably divided between gender with 186 males and 246 females (43.1% and 56.9% respectively).

The majority of the respondents prefer to access the Internet either from home (32.6%) or school/college/university (56.3%). While Internet bar/café, public library or mobile access is less popular (see Figure 4).

**Figure 4. Frequency of Internet Access Locations among 432 Internet Users**



In addition, the respondents are reasonably familiar with the Internet in terms of:

- Internet usage duration, ranging from 0.5 – 8 years (the average experience is 3.4 years);
- weekly usage hours, varying from less than 5 to more than 35 hours per week, e.g. 51.9% of the respondent spend about 10 hours a week online, and
- Internet knowledge, being relatively confident with Internet knowledge – 31.7% very/knowledgeable and 47% somewhat knowledgeable.

#### 4.2 An Overview of IBS

The self-evaluated OPR is assessed to explore how the respondents consider IBS. Overall, IBS is regarded as a risky product (the arithmetic mean=2.54):

- ‘not at all risky’ – 0.9%,
- ‘somewhat risky’ – 56%,
- ‘risky’ – 31.3%, and

- 'very risk' – 11.8%.

### 4.3 The Relationship between the Self-evaluated OPR and the Calculated OPR

In addition to the self-evaluated OPR, two calculated OPRs (one from the multiplicative model and the other from the additive model) are gained by averaging the scores of the twenty-four risk variables. Then Spearman's rho (2-tailed) is applied to examine the relationship between the self-evaluated OPR and calculated OPRs. Two positive medium associations are compared; the multiplicative model has a slightly stronger correlation with the self-evaluated OPR ( $R^2=.494$ ,  $\text{Sig}.<.000$ ) than the additive model ( $R^2=.461$ ,  $\text{Sig}.<.000$ ).

This indicates that there is a high degree of 'consistency' between the self-evaluated OPR and calculated OPRs. This also shows that the self-evaluated OPR is paralleled to the calculated measures (both models respectively). Thus, the self-evaluated OPR is useful to examine a series of subsequent analyses in relation to PR.

Given the respondents' overall view on IBS, it is important to evaluate the overall perception more specifically – through the lens of the dual components of PR as well as the various risk dimensions established.

### 4.4 Uncertainty and Consequences in Relation to IBS

Average scores for certainty and consequences in relation to each risk dimension were calculated to establish a ranking of the predominant dimensions of risk in IBS (Table 21). The certainty and consequence scales were reverse coded to be consistent with previous studies (e.g. Boze, 1998). Therefore, the higher the score, the more the respondents perceived a greater likelihood of the risk aspect occurring, and resulting in serious consequences.

**Table 21. Rank Orders by Means of Eight Risk Dimensions' Components (n=432)**

Risk Dimensions	Number of Variables	The Means of Certainty Component	Ranking	The Means of Consequence Component	Ranking
Performance	4	2.66	2	2.89	4
Security	3	2.80	1	3.43	1
Financial	3	2.21	4	3.17	2
Privacy	3	2.26	3	3.01	3
Time/Convenience	3	1.94	5	2.16	5
Psychological	3	1.77	7	2.03	7



Social	3	1.54	8	1.70	8
Physical	2	1.87	6	2.06	6

The results show that consequence means are greater than certainty means in all cases. For both components, the risk dimensions of performance, security, finance and privacy are ranked in the first four places. However, the rank orders vary between the components. The position of these risk dimensions is not surprising given the nature of the product examined. The remaining risks are seen as less important and are consistent in their ranking, with social risk being viewed as the least important risk dimension. Again, this is not surprising as IBS is predominantly a 'private' service consumption experience.

#### 4.4.1 The Relationship between Certainty and Consequences

Spearman's rho correlation coefficient was applied ( $p=.01$  at two-tailed) to test the relationship between certainty and consequences within 24 individual risk variables (Table 22). Significantly positive linear relationships between these components were found for all 24 variables (with the  $R^2$  ranging from "financial 1"  $=.242$  to "physical 2"  $=.667$ ).

**Table 22. The Correlation between Certainty and Consequences (Spearman's rho,  $n=432$ )**

Risk Variables		Coefficient	Sig.	Strength
Performance	1	.249	.000	Small
	2	.320	.000	Medium
	3	.433	.000	Medium
	4	.493	.000	Medium
Security	1	.268	.000	Small
	2	.304	.000	Medium
	3	.392	.000	Medium
Financial	1	.242	.000	Small
	2	.398	.000	Medium
	3	.327	.000	Medium
Privacy	1	.347	.000	Medium
	2	.333	.000	Medium
	3	.388	.000	Medium
Time/Convenience	1	.363	.000	Medium
	2	.473	.000	Medium
	3	.434	.000	Medium
Psychological	1	.530	.000	Large
	2	.649	.000	Large
	3	.616	.000	Large
Social	1	.390	.000	Medium
	2	.558	.000	Large

	3	.574	.000	Large
Physical	1	.601	.000	Large
	2	.667	.000	Large

The strength of the relationships was determined using Cohen's (1988; cited in Pallant, 2005: p126) suggestion. In general, for the majority of risk variables, certainty and consequence show a moderate association (e.g. "performance risk 2, 3, and 4") while strong relationships are found in other risks (i.e. psychological risk and physical risk variables, "social risk 2 and 3"). It is noted that "performance risk 1", "security risk 1", and "financial risk 1" show relatively weak associations between certainty and consequences.

From these results, and following the advice presented in the literature, it would appear that an additive rather than multiplicative model should be applied (Lanzetta & Driscoll, 1968; cited by Mitchell, 1999). However, to test the effectiveness of the two models, both are used.

#### 4.5 The Evaluation of the Two PR Measurement Models

The 'performance' of the two PR measurement models is evaluated by a number of tests. Results are indicated below.

##### 4.5.1 The Measure of the Eight Risks and Their Interrelationship

Firstly, for each risk variable, its original values of certainty and consequences are multiplied and added respectively for each respondent. Then an average score is calculated by the number of variables examined within each risk dimension (Table 23).

**Table 23. The Means and Standard Deviation of the Eight Risks from the Two Models (n=432)**

Risks	Multiplicative			Additive		
	Mean	Std. Deviation	Ranking of Mean	Mean	Std. Deviation	Ranking of Mean
Performance	8.04	2.60	2	5.54	0.92	2
Security	9.85	3.03	1	6.23	1.00	1
Financial	7.29	3.04	3	5.38	1.12	3
Privacy	7.11	3.20	4	5.27	1.21	4
Time/Convenience	4.63	2.27	5	4.10	1.01	5
Psychological	4.07	2.61	7	3.80	1.24	7
Social	2.91	2.04	8	3.24	1.09	8
Physical	4.36	2.92	6	3.93	1.36	6

The results show that for all risks except social loss, the multiplicative model has generated higher means as well as a larger standard deviation. This is clearly unsurprising given the mathematical operations being applied. It is also unsurprising that the mean rankings between these two models show no difference given that the basic numeric relationships in the data are maintained.

Given the same pattern of rankings for the two models, it is important to examine the relationship between various risks and the self-evaluation of OPR. This is achieved by using Spearman's rho coefficient which tests the association between individual risks (both multiplicative and additive models) and self-evaluated OPR.

For both measurement models, all eight risks are positively correlated. The majority of risks are significant at .01 level and only a few are significant at .05 level, 2-tailed (Table 24).

**Table 24. Comparative Correlations of Risk Dimensions between the Models**

Risks	Multiplicative		Additive	
	Variable with the Strongest Association	Variable with the Weakest Association	Variable with the Strongest Association	Variable with the Weakest Association
Performance	Security (.658)	Social (.189)	Security (.664)	Social (.199)
Security	Performance (.658)	Social (.121)*	Performance (.664)	Social (.095)*
Financial	Privacy (.648)	Social (.232)	Privacy (.648)	Social (.236)
Privacy	Financial (.648)	Social (.344)	Financial (.648)	Social (.347)
Time/Convenience	Psychological (.563)	Security (.334)	Psychological (.579)	Security (.287)
Psychological	Physical (.624)	Security (.282)	Physical (.661)	Security (.269)
Social	Psychological (.620)	Security (.121)*	Psychological (.644)	Security (.095)*
Physical	Psychological (.624)	Security (.224)	Psychological (.661)	Security (.211)

\*Significant at 0.05 level (2-tailed); other values are significant at 0.01 level (2-tailed).

Overall, the strength of the associations varies according to the 'combination' of risks. As indicated in Table 24, the associations remain consistent between the two models. In addition, the coefficient values are very similar. For example, both models indicate that performance and security show the strongest correlation (.658 for the multiplicative

and .664 for the additive model) while the weakest association is between social and security risk (.121 for the multiplicative and .095 for the additive model). For the remaining risks, most of the interrelationships are similar (in terms of both coefficient values and relevant strength). It is clear that a high degree of 'consistency' exists between the two models' matrices.

#### 4.5.2 The Relationships between the Eight Risks and Self-evaluated OPR

Applying the two measurement models respectively, the coefficients, strengths, and ranking orders of the eight risks and self-evaluated OPR are shown in Table 25.

**Table 25. The Correlation Coefficients between the Eight Risks and Self-evaluated OPR**

Risks	Multiplicative			Additive		
	Coefficient	Strength	Ranking	Coefficient	Strength	Ranking
Performance	.412	Medium	3	.413	Medium	1
Security	.423	Medium	=1	.412	Medium	2
Financial	.392	Medium	4	.366	Medium	4
Privacy	.423	Medium	=1	.399	Medium	3
Time/Convenience	.330	Medium	5	.298	Small	5
Psychological	.281	Small	6	.270	Small	6
Social	.238	Small	7	.226	Small	=7
Physical	.234	Small	8	.226	Small	=7

All these risks are found to have a significant correlation with the self-evaluated OPR ( $p < .000$  level, 2-tailed). Firstly, the strength of the interrelationships for the two models is almost the same (except time/convenience risk). Secondly, the multiplicative model produces slightly 'greater' coefficient values than the additive model. However, the difference is marginal.

Consistencies are found between the two models. In terms of the strength of association as well as its ranking, the eight risks are consistently divided into 2 parts – medium vs. small association. For the multiplicative model, the variable that has the highest coefficient with self-evaluated OPR is "security" and the variable with the lowest coefficient with self-evaluated OPR is "physical". For the additive model, "performance" has the strongest coefficient with self-evaluated OPR while "social" as well as "physical" risks have the weakest association. Here, there begins to be some divergence in the outcomes of the two models. To investigate further this apparent divergence, factor analysis is applied to discover the potential underlying relationships of the risk variables.

## Summary

The above seems to indicate that ‘similar’ results often emerged between the multiplicative and additive models. These can be seen in:

- the average scores for the eight risk dimensions and the relative importance of the dimensions by ranking orders (Table 23);
- the inter-correlations between risk dimensions (Table 24), and
- the association between the dimensions and self-evaluated OPR (Table 25).

However, the investigation in relation to the two models’ ‘performance’ needs to go further and this is examined by FA.

### 4.5.3 Factor Analysis

Several tests are applied to evaluate whether the two sets of data are adequate for FA, including examining the original correlation matrix, KMO, and Bartlett’s test (Pallant, 2005). The results show that the data (24 variables) derived from the two models is appropriate for FA (see Table 26), according to Pallant (2005).

**Table 26. Results of KMO and Bartlett test**

Tests		Multiplicative	Additive	Acceptable value
KMO test		.899	.905	> 0.7, acceptable
Bartlett’s Test	Approx. Chi-Square	3840.189	4005.409	N/A
	Df	276	276	N/A
	Sig.	.000	.000	Acceptable

The correlation matrices reveal that there are many coefficients of/or greater than .3. However, it was also noted that several variables either have ‘too weak’ or ‘too strong’ associations with other variables, e.g. “performance 1” and “time 1” only have a few coefficients greater than 0.3 but are less related to other variables. This indicates that these variables would add little explanatory power to the analysis. This is also evident by running a number of FA tests including any of these variables; a marginal increase is found in the total variance explained, yet an increase in the residuals percentage occurs.

“Psychology risk 2 and 3” are highly internally correlated for the two measurement models (.578 for the multiplicative model and .610 for the additive model). Further inspection of the correlation among the psychological risk measures has found that these two variables are ‘extremely’ highly correlated (.606 for the multiplicative model

and .608 for the additive model). Given the relatively large size of the sample, these two variables are so strongly correlated that possibly the respondents viewed them as one single aspect, although the variables were designed to measure two different aspects of psychological losses. Clearly, the high correlation raises issues of ‘singularity’ – therefore the two variables are combined on the basis of an average score.

These findings present some difficulty in determining which variables should be ultimately considered for FA. Given the discussion, the original set of variables can be reduced to a more manageable number. By doing so, it is argued that a limited number of factors will be extracted that contain the maximum amount of information derived from the original set of variables. Thus, “performance 1” and “time 1” are excluded while a new ‘psychology risk 4’ is combined. In total, the remaining twenty-one variables are subject to PAF and Varimax.

Finally, this research applies a common criterion for factorability, i.e. factors that have eigenvalues greater than one are considered appropriate (Tabachnick & Fidell, 1989). This results in four factor solutions from both data sets. The factors explain similar amounts of variance within each model (approximately 44.4% for the multiplicative model vs. 45.6% for the additive model). Both models produce acceptable level of residuals – the multiplicative having slightly more residuals (i.e. 13%) than the additive (i.e. 10%).

#### 4.5.3.1 Factor Structures

The two factor structures from the models are compared in Table 27.

**Table 27. The Comparison of Factor Structures**

Model	Factor 1		Factor 2		Factor 3		Factor 4	
Multiplicative	Fin1	.669	Soc2	.751	Sec3	.745	Psy1	.690
	Fin2	.611	Soc3	.659	Per3	.612	Phy1	.510
	Pri1	.584	Psy4	.565	Per2	.405	Soc1	.450
	Pri2	.566	Phy2	.422	Per4	(cut-off)	Psy4	*
	Sec1	.549	Phy1	*			Tim3	(cut-off)
	Pri3	.519						
	Sec2	.480						
	Tim2	.478						
	Fin3	.477						
Variance explained	16.2%		11.8%		9.3%		7.1%	
Additive	Soc2	.758	Fin1	.706	Sec3	.775	Psy1	.585
	Psy4	.717	Sec1	.561	Per3	.633		

	Soc3	.684	Fin2	.525	Pri2	.519	
	Phy1	.662	Pri1	.501	Sec2	.487	
	Soc1	.509	Pri3	.469	Per4	.447	
	Phy2	.492	Fin3	.468	Per2	(cut-off)	
	Tim3	.488	Pri2	*			
	Psy1	*	Sec2	*			
			Tim2	(cut-off)			
Variance explained		16.6%		12.9%		12.4%	3.7%

Note: \*Variables load on more than one factor but have smaller cross loading values. The amount of Variance explained within each factor is rounded.

The factor matrices from the two models do not present simple structures. For example, the variables in each factor are not purely from a single risk dimension – rather, variables from varying dimensions are combined into a factor. This further supports the finding that some risk dimensions are highly correlated (e.g. security and performance risks, financial and privacy risks, psychological and social risks, as indicated in Table 24). This also implies that the underlying relationships between risk variables/dimensions are interwoven – not independent.

In addition, both models have a number of variables loading to dual factors (shown with an asterisk in Table 27). Also, each model has two variables which appear to be cut-off points. This again indicates that the underlying relationships are not as simple as those expressed in the literature; it also indicates that the choice of model has implications for the interpretation of PR.

This is again highlighted by the degree of divergence in the emerging factor structures. To some extent, both models seem to agree on factor contents (similar variables are extracted and rotated in one factor, e.g. factor 1 for the multiplicative vs. factor 2 for the additive model). However, the underlying relationships among these variables are clearly different in the models. This is identified by the different correlation and order of the variables within these factors, as well as the order of the respective factor within the structure.

A thorough inspection of Table 27 supports the suggestion that the multiplicative model is more appropriate than the additive, as it:

- produces a factor structure ‘closer’ to the original data set, see the first four rank orders of the components (Table 21);
- gives more ‘insight’ into the data – by grouping the twenty-four variables into eight dimensions seen as ‘more’ important by the respondents (Table 23);

- appears to provide more diagnostic value, helping to identify more 'important' areas of risk in relation to IBS (Tables 24 & 25), and
- indicates a more logically intuitive structure for interpretation.

In addition to the above, the fourth factor extracted from the additive model appears to be a uni-factor (as it has one single variable with reasonably high loading and the other is a cross loading item). This implies that this factor could be unstable and should be removed. Therefore, the additive model appears to provide a less convincing solution.

Thus, evidence from FA starts to suggest that the multiplicative model shows more efficacy. The remaining analysis therefore details the outcomes generated from the multiplicative model.

#### 4.5.3.2 Factor Labelling

Factor 1: The risk of losing personal control (money, data, and time) – includes respondents' major worries concerning losing money, loss of personal control of bank accounts or individual information, and spending extra time solving any problem caused.

Factor 2: The risk of losing face – details several unfavourable psychosocial outcomes, including that the usage decision would be socially unacceptable. This factor also contains personal feelings of anxiety/depression.

Factor 3: The risk of system failure – comprises three negative outcomes relating to performance and security concerns due to technical failures. The respondents worry that Internet banking systems can be attacked, or that it might have technical problems or that IBS would not work as well as expected.

Factor 4: The risk of displaying problems to others – similar to factor 2, this factor also highlights an individual's psychosocial responses, such as frustration and appearing foolish to others. It also contains a physical risk related to 'headache'. This variable was initially meant to measure an *actual physical* headache, it would be interesting to explore why this 'headache' variable here is combined with other two psychosocial variables.

Cronbach's Alpha statistics are undertaken to examine the reliability of the risk factor scales (Table 28).



**Table 28. Internal Reliability Test**

<b>Factors</b>	<b>Cronbach's <math>\alpha</math></b>
Factor 1	0.850
Factor 2	0.735
Factor 3	0.701
Factor 4	0.674

The Alpha values for 'factor 1, 2, and 3' exceed 0.7 which is the common acceptable level of internal reliability (Pallant, 2005). 'Factor 4' is below this level but with marginal difference and well above the level of 0.6 for exploratory studies.

Also, as discussed in the Methodology chapter, the number of items within a scale certainly has an impact on the reliability test outcome – Alpha will increase as the number of items/variables on a scale increases (Field, 2005). 'Factor 4' contains 3 risk variables and this could result in a relatively low Alpha value in reliability tests. Furthermore, it is noted by Kline (1999; cited in Field, 2005: p668) that for psychological constructs, it is common to gain Alpha values below 0.7 due to the diversity of the constructs being examined. This argument is also applicable within the current context as the theory of PR is a 'psychological and hypothetical' construct (Bauer, 1960). Given the above discussion, the scales of risk variables are therefore reasonably robust.

The factor solution clearly shows that the multiplicative model performs better than the additive one. To further examine the factor solution derived from the multiplicative data, discriminant analysis is undertaken to assess and predict group memberships.

#### **4.6 Discriminant Analysis**

To determine which factor(s) best predict(s) whether a respondent is likely to be classed as 'somewhat risky', 'risky', or 'very risky', stepwise DA is performed. Factor scores are then used as independent/predictor variables and the self-evaluated OPR is the dependent variable. Mahalanobis Distance is applied (Hair et al., 1998).

##### **4.6.1 Sample Size and Assumption Checking**

Before DA is performed, the overall sample size is an important issue. Hair et al. (1998) point out that DA is sensitive to both sample size and the number of independent

variables. Within the current sample, it is noted that the original measure of OPR is unequally distributed (in terms of frequency percentage).

However, according to Tabachnick & Fidell (1989), equal distribution is ideal but, practically, unequal distributions often occur. A more realistic issue here is to ensure that the size of the smallest group should exceed the number of independent variables (Hair et al, 1998; Tabachnick and Fidell, 1989). Thus, the group of 'Not at all risky' is combined with the group of 'Somewhat risky' (246 subjects, 56.9%), and the other two groups remain the same.

Multivariate normality of the factor score distribution is tested through Normal P-P plots. The graphs show the factors (particularly factors 1, 2, and 3) are generally normal distributed.

One primary assumption of DA is whether the covariance matrices of the three groups are the same as those of the population (Tabachnick & Fidell, 1989). Box's M Test is applied here and significant results occur at the .000 level ( $M=103.788$ , approximate F value= $5.080$ ,  $df1=20$ ).

This seems to suggest that the data had violated the assumption of equal covariance among groups. However, caution is needed with Box's M test, as it is particularly sensitive to sample size or unequal sub-group sizes ([www.statsoft.com](http://www.statsoft.com), Tabachnick & Fidell, 1989). To correct this, the sample ( $n=432$ ) was randomly reduced to a smaller sample with equal sub-groups (i.e.  $n_{\text{group}}=30$ ). The second M test on this random sample is not significant ( $M=4.732$ ,  $F=.762$ ,  $df1=6$ ,  $p=.599$ ). Thus, the whole sample is considered as appropriate to perform DA.

#### **4.6.2 Important Predictor Variables**

Two significant discriminant functions are produced. Function 1 explains 93.4% of the variance, and function 2 accounts for the remaining 6.6%.

It is important to identify which variable(s) have the greatest predictive power. This is achieved by examining the standardised coefficients of the respective variables to the two discriminant functions as well as the structure matrix (Table 29). The larger the coefficients, the greater contribution of the variable to the discriminant function between groups.

The standardised coefficients start to show that factors 1, 3, and 4 are important predictors. This is further examined in the following structure matrix.

**Table 29. Structure Matrix**

	Function	
	1	2
REGR factor score 1	.731(*)	-.451
REGR factor score 3	.591(*)	.226
REGR factor score 2	.313(*)	-.194
REGR factor score 4	.321	.768(*)

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions. Variables ordered by absolute size of correlation within function.

\* Largest absolute correlation between each variable and any discriminant function

Consistent findings emerge: factors 1 and 3 provide the major explanatory power in the first discriminant function. Whether their explanatory power is robust and stable is assessed by the model's goodness-of-fit.

#### 4.6.3 Goodness-of-Fit

Two common approaches are used to assess performance, including examining group centroids (Table 30) and the prediction accuracy between groups (Table 31) (Hair et al., 1998).

**Table 30. Functions at Group Centroids**

OPR Groups	Function	
	1	2
Somewhat risky	-.449	.057
Risky	.363	-.204
Very risky	1.203	.266

Unstandardized canonical discriminant functions evaluated at group means

The 'somewhat risky' and 'very risky' groups are well distinguished by the functions. The 1<sup>st</sup> function (containing "the risk of losing personal control of money, data, and time" and "the risk of system failure") discriminates the 'somewhat risky' group from the other two. The largest difference in the group means is between the 'somewhat risky' and 'very risky' groups. In the 2<sup>nd</sup> function ("the risk of displaying problems to others"), the 'very risky' group is further distinguished from the other two groups.

This indicates that overall while IBS is perceived as bringing various types and amounts of risk to respondents, those who see IBS as 'somewhat risky' are initially differentiated

from the others as this group considers 'the risk of losing personal control (of money, data, and time)' and 'the risk of system failure' as less important. In addition, those who are in the 'very risky' group are further separated as they see 'the risk of displaying problems to others' differently.

These variables are then used to classify and cross-validate the prediction of group memberships. The classification and prediction are undertaken based on equal-sized probability (Tabachnick & Fidell, 1989). If the predictor variables are reliable, the model should yield a high percentage correction. In other words, each group should produce a classification percentage greater than 33% (by chance).

**Table 31. Classification Results (b,c)**

	OPR Groups	Predicted Group Membership			Total	
		Somewhat risky	Risky	Very risky		
Original	Count	Somewhat risky	172	46	28	246
		Risky	46	55	34	135
		Very risky	9	10	32	51
	%	Somewhat risky	69.9	18.7	11.4	100.0
		Risky	34.1	40.7	25.2	100.0
		Very risky	17.6	19.6	62.7	100.0
Cross-validated (a)	Count	Somewhat risky	168	50	28	246
		Risky	51	49	35	135
		Very risky	10	14	27	51
	%	Somewhat risky	68.3	20.3	11.4	100.0
		Risky	37.8	36.3	25.9	100.0
		Very risky	19.6	27.5	52.9	100.0

a Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b 60.0% of original grouped cases correctly classified.

c 56.5% of cross-validated grouped cases correctly classified.

Overall, the classification procedure and prediction provides satisfactory results. This is initially evident in the overall adequate classification percentage (60%) which is well above 33%. More specifically, the three groups are well classified by these factors, especially the 'somewhat risky' and 'very risky' groups, which have approximately 70% and 63% adequate classification respectively. The 'risky' group were classified more poorly than the other groups but were still better classified than if by chance.

Also, the cross validation further indicates that the stepwise analysis has generated a stable model (the overall adequate prediction is rounded to 57%). Again, the groups are

adequately predicted by the factors at a satisfactory level. There is a subtle change regarding the adequacy prediction.

From the above discussion, there is evidence suggesting that within the current study, the DA model is reasonably adequate and stable. Three independent variables (especially factor 1 and 3) enable this research to discriminate between the subgroups with a better-than-chance solution.

In the coming section, a number of relationships will be investigated among different groups.

## **4.7 Group Comparisons in Relation to Risk Perceptions**

### **4.7.1 Internet Knowledge and Internet Usage Duration**

Kruskal-Wallis test is applied to identify if any difference exists between those who have different Internet knowledge or usage duration and their risk perceptions (both OPR and the eight risk dimensions). The specific questions are:

1. Does Internet knowledge/usage duration impact on the consumers' perceptions of risk when considering IBS (the self-evaluated OPR measure)?
2. Is there any difference in the eight risk dimensions between the high/medium/low Internet knowledge users, and short-term and long-term usage duration respectively?

The measures of 'Internet knowledge', and 'Internet usage duration' are rearranged before conducting the test:

- Internet knowledge, 3 groups (Table 32);
  - low knowledge – 'not knowledgeable' and 'not very knowledgeable' are combined;
  - medium knowledge – refers to the original measure of 'somewhat knowledgeable', and
  - high knowledge – 'knowledgeable' and 'very knowledgeable' are collapsed.
- Internet usage duration, 3 groups (Table 33):
  - short-term users: 0.5 – 2 years,
  - medium-term users: 3 – 4 years, and
  - long-term users: 5 years or above.

**Table 32. Recoded Internet Knowledge**

New Scales		Frequency	Percent	Cumulative Percent
Valid	Low knowledge	92	21.3	21.3
	Medium knowledge	203	47.0	68.3
	High knowledge	137	31.7	100.0
	Total	432	100.0	

**Table 33. Recoded Internet Duration Usage**

		Frequency	Percent	Cumulative Percent
Valid	Short-term users	156	36.1	36.1
	Moderate-term users	154	35.6	71.8
	Long-term users	122	28.2	100.0
	Total	432	100.0	

**Internet Knowledge/Internet Usage Duration and OPR**

The Kruskal-Wallis test (Table 34) shows that no significant difference in relation to OPR was found between the three Internet knowledge groups (Chi-square=5.037, df 2, sig.=.081). There is also no significant difference in OPR across the different groups of Internet users (Chi-square=2.015, df 2, sig.=.365). This means that among those who have different levels of Internet knowledge or usage duration, their global risk perceptions are similar.

**Table 34. Kruskal-Wallis Test Results on OPR Difference in Internet Knowledge and Internet Usage Duration**

Group	Chi-Square	df	Asymp. Sig.	Mean Rank (OPR)	
Internet Knowledge	5.037	2	.081	Low	195.44
				Medium	226.73
				High	215.49
Internet Usage Duration	2.015	2	.365	Short-term	208.39
				Medium-term	226.12
				Long-term	214.73

**Internet Knowledge/Internet Usage Duration and the Eight Risk Dimensions**

Average scores are calculated for each dimension based on the corresponding risk variables examined. The Kruskal-Wallis test result (Table 35) shows no significant difference with regards to the eight risk dimensions among the Internet knowledge groups. However, among those who have used the Internet for different periods of time, a significant difference in the social risk dimension is found (Chi-square=8.091, df 2,

sig.=.018). More specifically, long-term Internet users perceived the least social risk in relation to IBS (mean rank=189.60), followed by short-term users (mean rank=225.16); while medium-term users had the highest mean rank (i.e. 229.04). This suggests that social risk is seen differently among short-, medium-, and long-term users.

**Table 35. Kruskal-Wallis Test Results on Risk Dimensions in Internet Knowledge and Internet Usage Duration**

Group	Risk Dimension	Chi-Square	df	Asymp. Sig.	Mean Rank		
					Low	Medium	High
Internet Knowledge	Performance	.687	2	.709	213.47	212.95	223.80
	Security	1.607	2	.448	204.09	223.58	214.34
	Financial	.148	2	.929	213.96	218.94	214.59
	Privacy	1.108	2	.575	206.84	222.66	213.86
	Time	.906	2	.636	209.17	214.55	224.31
	Psychological	.262	2	.877	221.85	213.86	216.82
	Social	1.528	2	.466	218.30	222.78	205.99
	Physical	1.236	2	.539	209.28	223.53	210.93
Usage Duration	Performance	.192	2	.908	214.40	220.03	214.73
	Security	.565	2	.754	210.51	220.01	219.73
	Financial	.306	2	.858	216.84	212.62	220.96
	Privacy	1.134	2	.567	210.10	215.44	226.03
	Time	4.817	2	.090	199.92	230.57	219.94
	Psychological	4.803	2	.091	217.63	230.46	197.43
	Social	8.091	2	.018	225.16	229.04	189.60
	Physical	3.416	2	.181	216.84	228.61	200.78

#### 4.7.2 IBS Awareness

Within the sample, 276 (63.9%) respondents report that they are aware of IBS (48.6% males and 51.4% females respectively). The most commonly identified banking services available online are listed in (Table 36).

**Table 36. The Types of Banking Services Available Online (n=276)**

	Awareness	Percentage
Check Balance	193	69.9%
Bills Payment	195	70.7%
Money Transfer	170	61.6%
Loan Mortgage	30	6.9%

In addition, a few services that are less frequently indicated are:

- making appointments for other financial services,
- lost and stolen claims,
- exchange and interest rates,

- foreign currency exchange,
- information search, and
- online payment (particularly for Internet shopping).

**The Relationships between Some Potential Dis/advantages of IBS and the Self-Evaluated OPR among Those Who are Aware of IBS**

As presented in the previous chapter, ten statements regarding IBS are to investigate exclusive relationships with respondents' OPR. Spearman's rho (2-tailed) is used to examine the relationship between the above 'features' of IBS and those who are aware of IBS. To be consistent with the positively worded statements, the original OPR scale is used (1 being 'very risky' to 4 as 'not at all risky'). With the negatively wording statements, OPR is reverse coded as '1 being not at all risky' to '4 being very risky'.

No significant correlations are found with statements 1, 2 and 3 (p value >.05). The rest of the results are detailed in Table 37.

**Table 37. Correlation between the IBS 'Features' and the Self-evaluated OPR (n=276)**

Statements	Means	Coe.	Sig.	Strength
1 – Convenient to use IBS	2.99	.096	.112	N/A
2 – No interaction	2.37	.111	.066	Small
3 – High interests	2.03	-.062	.305	N/A
4 – Help to Control personal finances	2.72	.123	.040	Small
5 – Easy to use	2.77	.229	.000	Small
6 – A greater difficulty in evaluation	2.79	.250	.000	Small
7 – A greater degree of uncertainty	3.09	.337	.000	Medium
8 – The excellence of the current IB infrastructure	1.88	.265	.000	Small
9 – The effectiveness of the current IB legal regulation	2.33	.119	.049	Small
10 – The reliability of the current IB system	2.01	.330	.000	Medium

(Note: \*Coe – coefficient; IB – Internet banking)

The above results suggest that:

- the more control respondents feel IBS enables them to have over their personal finance, the less risk is perceived;
- respondents who feel that IBS is easy to use, perceive less risk;
- respondents who think that IBS is more difficult to evaluate than the traditional banking service, perceive IBS to have more risk;
- the greater degree of uncertainty that IBS is subject to, the more risk IBS is considered to have;



- the more respondents think that the current Internet banking infrastructure is excellent, the less likely they are to perceive risk;
- the more effective the respondents consider the current Internet banking system in China to be, the less likely they are to perceive risk from using IBS;
- the more confident the respondents are with the current IBS system in China, the less likely that they are to perceive risk.

**The Relationship between the Need to Use IBS and the Usage Intention among Those who are Aware of IBS**

Among those who are aware of IBS, Spearman's rho (2-tailed) is used to identify whether any relationship exists between the respondents' need to use IBS and their usage intention. The 'need' is measured by the statement that 'I do not use IBS because I do not have much money to manage' (4-point Likert scale, 1 as 'being strongly disagree' to 4 'as being strongly agree', see Table 38).

**Table 38. The Perceived Need/No Need to use IBS due to Little Money for Financial Management**

	Frequency	Valid Percent	Cumulative Percent
Strongly disagree	8	2.9	2.9
Disagree	71	25.7	28.6
Agree	141	51.1	79.7
Strongly agree	56	20.3	100.0
Total	276	100.0	

Positive relationship was found between the IBS-aware respondents' usage intention and their need to use IBS ( $R^2=.303$ , sig. at .000 level). This indicates that the more money that these respondents have to manage, the more likely they are to use IBS.

**4.7.3 IBS Awareness and Non-awareness: the Difference in OPR and the Risk Dimensions**

Mann-Whitney U (2-tailed) test is used to examine whether any difference exists in risk perceptions (OPR and the eight risk dimensions) between those who are aware and not aware of IBS (see Table 39, next page).

**Table 39. The Difference in Risk Perceptions Between Those who are and not aware of IBS**

Risk Perceptions	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	Mean Rank	
				IBS Awareness (n=276, 63.9%)	IBS Non Awareness (n=156, 36.1%)
Self-evaluated OPR	19279.000	-2.027	.043	208.35	230.92
Performance risk	20675.000	-.685	.493	213.41	221.97
Security risk	21073.500	-.365	.715	214.85	219.41
Financial risk	17990.500	-2.841	.004	203.68	239.18
Privacy risk	18537.000	-2.402	.016	205.66	235.67
Time risk	18961.500	-2.062	.039	207.20	232.95
Psychological risk	19339.500	-1.759	.079	208.57	230.53
Social risk	19836.500	-1.368	.171	210.37	227.34
Physical risk	17651.000	-3.125	.002	202.45	241.35

The above shows that there are differences between the groups in relation to self-evaluated OPR, the dimensions of financial, privacy, time and physical risks. More specifically, those who are not aware of IBS are assigned greater mean rank values than those who are aware of the product.

#### 4.8 The Group Difference in Relation to Usage Intention

The respondents' IBS usage intention is examined at two different points: in the coming 12 months (a shorter period) and in the longer term.

The different groups of intending users/non-users are collapsed to form Table 40. In the shorter term, about one third of the respondents (32.4%) state that they would be 'likely' or 'very likely' to use IBS. This group is identified as 'early IBS users'. Among those who would not use IBS in the coming 12 months, 83.9% of them indicate that they would be likely to adopt IBS in the future (labelled as 'late IBS users') and 47 respondents suggest that they would not use IBS at all, categorised as 'IBS non-users'.

**Table 40. The Frequency of IBS Usage Intention (n=432)**

	Frequency	Percent
Early IBS intending users	140	32.4
Late IBS intending users	245	56.7
IBS intending non-users	47	10.9

The relationships between the respondents' awareness of IBS, OPR, gender and usage intention are explored by applying the Chi-square test for independence.

#### 4.8.1 The Difference between IBS 'Awareness/Non Awareness' and Usage Intention

The Chi-square test result shows that no significant difference was found (Pearson Chi-square=2.687, sig.=.261, 2-tailed). The frequency and proportion within these two variables are shown in Table 41.

**Table 41. Cross-tab between IBS awareness and Usage Intention**

			Usage Intention			Total
			Early users	Late users	Non users	
Awareness	Yes	Count	97	151	28	276
		Expected Count	89.4	156.5	30.0	276.0
		% within IBS awareness	35.1%	54.7%	10.1%	100.0%
		% within Usage Intention	69.3%	61.6%	59.6%	63.9%
		% of Total	22.5%	35.0%	6.5%	63.9%
		Residual	7.6	-5.5	-2.0	
	No	Count	43	94	19	156
		Expected Count	50.6	88.5	17.0	156.0
		% within IBS awareness	27.6%	60.3%	12.2%	100.0%
		% within Usage Intention	30.7%	38.4%	40.4%	36.1%
		% of Total	10.0%	21.8%	4.4%	36.1%
		Residual	-7.6	5.5	2.0	
Total		Count	140	245	47	432
		Expected Count	140.0	245.0	47.0	432.0
		% within IBS awareness	32.4%	56.7%	10.9%	100.0%
		% within Usage Intention	100.0%	100.0%	100.0%	100.0%
		% of Total	32.4%	56.7%	10.9%	100.0%

Similar proportions are indicated within 'IBS awareness' and usage intention. Thus, it is not surprising to find no significant difference between those who are either aware of IBS (or not aware) and usage intention.

#### 4.8.2 The Difference between OPR and Usage Intention

The Chi-square result shows that significant difference was found (Pearson Chi-square=42.289, sig.=.000, 2-tailed). The details of the frequency proportion within each category is shown in Table 42 (next page).

**Table 42. Cross-tab between OPR and Usage Intention**

			Usage Intention			Total
			Early users	Late users	Non users	
OPR	Somewhat Risky	Count	97	136	13	246
		Expected Count	79.7	139.5	26.8	246.0
		% within OPR	39.4%	55.3%	5.3%	100.0%
		% within Usage Intention	69.3%	55.5%	27.7%	56.9%
		% of Total	22.5%	31.5%	3.0%	56.9%
		Residual	17.3	-3.5	-13.8	
Risky	Risky	Count	36	82	17	135
		Expected Count	43.8	76.6	14.7	135.0
		% within OPR	26.7%	60.7%	12.6%	100.0%
		% within Usage Intention	25.7%	33.5%	36.2%	31.3%
		% of Total	8.3%	19.0%	3.9%	31.3%
		Residual	-7.8	5.4	2.3	
Very risky	Very risky	Count	7	27	17	51
		Expected Count	16.5	28.9	5.5	51.0
		% within OPR	13.7%	52.9%	33.3%	100.0%
		% within Usage Intention	5.0%	11.0%	36.2%	11.8%
		% of Total	1.6%	6.3%	3.9%	11.8%
		Residual	-9.5	-1.9	11.5	
Total	Total	Count	140	245	47	432
		Expected Count	140.0	245.0	47.0	432.0
		% within OPR	32.4%	56.7%	10.9%	100.0%
		% within Usage Intention	100.0%	100.0%	100.0%	100.0%
		% of Total	32.4%	56.7%	10.9%	100.0%
		Residual				

As detailed above, differences are indicated in the proportion of OPR and usage intention.

## 4.9 Gender Difference

### 4.9.1 OPR and the Risk Dimensions

Mann-Whitney U test (2-tailed) is applied to examine whether any difference exists between male and female respondents in terms of their risk perceptions (both OPR and the eight risk dimensions). Table 43 (next page) details the results.

**Table 43. The Difference in Risk Perceptions Between Male and Female Respondents**

Risk Perceptions	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	Mean Rank	
				Male (n=186, 43.1%)	Female (n=246, 56.9%)
Self-evaluated OPR	20075.000	-2.451	.014	201.43	227.89
Performance risk	22603.000	-.214	.830	217.98	215.38
Security risk	22869.000	-.007	.995	216.45	216.53
Financial risk	22796.000	-.064	.949	216.06	216.83
Privacy risk	20924.500	-1.522	.128	206.00	224.44
Time risk	22133.000	-.581	.561	212.49	219.53
Psychological risk	20162.000	-2.118	.034	201.90	227.54
Social risk	20628.500	-1.764	.078	204.41	225.64
Physical risk	19933.500	-2.302	.021	200.67	228.47

As shown above, there are significant differences in the self-evaluated OPR, and the dimensions of psychological and physical risks (sig.<.05). The mean ranks regarding these risk measures are higher for girls than for boys. This means that within these dimensions, the female respondents see a greater amount of risk in using IBS than the male.

#### **4.9.2 The Underlying Structures of the Risk Variables between Male and Female**

FA is used to reveal the underlying relationships of the risk variables between male and female respondents. PAF and varimax are used. Eigenvalue-greater-than-one is the criterion used for factor consideration. Again, several tests are applied to evaluate whether the two sets of data (male and female) are adequate for FA, including examining the original correlation matrix, KMO, and Bartlett's test (Pallant, 2005).

##### **4.9.2.1 The Tests to Assess the FA Model Appropriateness**

An examination of the correlation matrices shows that many variables have coefficient values of/or greater than 0.3 for both groups. However, there are a few variables that only have relatively weak coefficients with other variables within each group, e.g.:

- male – “performance 2” and “physical 2”;
- female – “time 3”.

To maximise the comparability between these groups and the previous whole sample FA solution, the twenty-one risk variables identified previously are used to examine gender group differences. Both KMO and Bartless's test show that the two groups are appropriate for FA (Table 44). A three-factor solution is produced for the males and a

four-factor solution is developed for the females. Both models produce the same percentage of residuals (19%). The females' solution explains more total variance (approximately 7% more) than that of the males'.

**Table 44. The Comparison of FA Solutions between Male and Female**

	Male	Female
KMO	.873 (acceptable)	.887 (acceptable)
Bartlett's test	Chi-square 1265.944, sig. at .000 level	Chi-square 2240.586, sig. at .000 level
The number of factors and total variance explained	3 factors, account for 41.3% (rounded) of the total variance	4 factors, account for 48.6% (rounded) of the total variance.
Residuals	19%	19%
Cut-off variables	Performance 2 and physical 2	Time 3
Cross-loading variables	Time 3	Psychological 4 and physical 1

The outcomes of FA are detailed in Table 45.

**Table 45 Factor Matrix Comparison between Genders**

Gender	Factor 1	Factor 2	Factor 3	Factor 4
Male	Sec3 .740	Soc2 .728	Fin1 .595	Tim3 *
	Pri2 .626	Psy4 .710	Sec1 .550	
	Sec2 .581	Phy1 .671	Fin3 .524	
	Per3 .549	Soc1 .637	Per2 (Cut-off)	
	Fin2 .482	Psy1 .530		
	Per4 .476	Tim3 .503		
	Tim2 .466	Soc3 .463		
	Pri1 .425	Phy2 (Cut-off)		
	Pri3 .409			
Variance explained	15.0%	14.9%	7.4%	4.0%
Female	Fin2 .689	Soc3 .771	Sec3 .731	Psy1 .724
	Fin1 .677	Soc2 .708	Per3 .668	Phy1 .515
	Pri1 .660	Psy4 .550	Per2 .420	Soc1 .500
	Pri2 .657	Phy2 .496		
	Sec2 .585	Phy1 *		
	Tim2 .583	Tim3 (Cut-off)		
	Pri3 .577			
	Sec1 .551			
	Fin3 .487			
	Per4 .450			
	Psy4 *			

Variance explained	20.3%	12.9%	8.1%	7.3%
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Note: \*Variables load on more than one factor but have smaller cross loading values. The amount of Variance explained within each factor is rounded.

#### 4.9.2.2 Factor Interpretation

The first four variables with highest loadings are considered for interpretation.

##### Female Model

Overall, the four-factor model is almost identical to the model of the whole sample (the multiplicative measure, see Table 27) in terms of:

- factor contents,
- the order of the contents within each factor, and
- the order of the factors.

Therefore, factor labelling remains the same for the female model:

- factor 1 – the risk of losing personal control (of money and personal data);
- factor 2 – the risk of losing faces;
- factor 3 – the risk of system failure, and
- factor 4 – the risk of displaying problems to others.

However, the three-factor model for the male respondents is structured differently. The model indicates that system insecurity is the ‘dominant’ dimension within the factor solution (e.g. factor 1 and factor 3) while factor 2 appears to be ‘similar’ to the female’s structure in terms of 3 variable contents (i.e. “Soc3, Soc2, and Psy4”). There are indeed differences in:

- the factor contents – “Soc1” and “Psy1” are not loaded in the female model;
- the structure of the variables – some variables are loaded in the male model but not shown in the female model. For example, “Phy1” is a significant variable in the male model but is a cross-loading variable in the female model. A similar pattern is also found in “Tim3”.
- the order of significant variables.

Thus, factors of the male model are labelled as:

**Male Model:**

*Factor 1 – the risk of system insecurity and failure*

- the concern over insufficient security – IBS system may be attacked, fake Internet banking web server may be shown online;
- system failure – IBS will have technical problems, and
- privacy – misuse of data.

*Factor 2 – the risk of losing faces*

- social – socially unacceptable and appearing foolish;
- psychology – anxiety & depression, and
- physical – headache.

*Factor 3 – the risk of money loss and system insecurity*

- finance – potential money loss not covered by banks, and
- insecure IBS system.

Factor 4 – shall be removed, as:

- only 'tim3' is loaded on this factor while this variable is in fact a cross-loading item. This implies that this factor could be unstable and should be removed. This leads to a three-factor model for the male respondents.

This suggests that males have a 'cleaner' FA solution than the females. Having identified the gender difference in risk factor relationships, further analysis investigates whether any differences exist between genders and their usage intention.

**4.9.2.3 The Difference between Gender and Usage Intention**

The Chi-square result shows that no significant difference was found (Pearson Chi-square=.173, sig.=.917, 2-tailed). This is unsurprising, given the similar frequency and proportion illustrated in Table 46.

**Table 46. Cross-tab between Gender and Usage Intention**

			Usage Intention			Total
			Early users	Late users	Non users	
Gender Male	Count	60	107	19	186	
	Expected Count	60.3	105.5	20.2	186.0	
	% within Gender	32.3%	57.5%	10.2%	100.0%	
	% within Usage Intention	42.9%	43.7%	40.4%	43.1%	



	% of Total	13.9%	24.8%	4.4%	43.1%
	Residual	-.3	1.5	-1.2	
Female	Count	80	138	28	246
	Expected Count	79.7	139.5	26.8	246.0
	% within Gender	32.5%	56.1%	11.4%	100.0%
	% within Usage Intention	57.1%	56.3%	59.6%	56.9%
	% of Total	18.5%	31.9%	6.5%	56.9%
	Residual	.3	-1.5	1.2	
Total	Count	140	245	47	432
	Expected Count	140.0	245.0	47.0	432.0
	% within Gender	32.4%	56.7%	10.9%	100.0%
	% within Usage Intention	100.0%	100.0%	100.0%	100.0%
	% of Total	32.4%	56.7%	10.9%	100.0%

As indicated, similar percentages are found within gender, where males have 32.3% early users, 57.5% late users, and 10.2% non-users while females have 32.5%, 56.1%, and 11.4% respectively. Similar proportions are also found within usage intention. No significant difference is found between gender and usage intention.

### Section Summary

In this section, quantitative results are presented. The sample details are outlined first. The efficacy of the multiplicative and additive models are compared and evaluated through a series of analytical techniques. Evidence from FA and DA suggest that the multiplicative model is more appropriate and applicable within the current context. A number of variables are examined to identify whether any difference exists between groups (Internet knowledge, Internet usage duration, IBS awareness, IBS usage intention, and genders).

The major results include:

- the relationships of certainty and consequences
  - there are significant positive correlations between the components of certainty and consequences.
  
- the relationships of the eight risk dimensions and self-evaluated OPR are investigated to evaluate the relative importance of uncertainty and consequence in the context under examination (both models are applied):
  - a few risk dimensions appear to be considered as relatively more important in the context of IBS (i.e. performance, security, financial and privacy);
  - the inter-correlations vary across risk dimensions, and

- significantly positive correlations are found between the specific eight risk dimensions and the self-evaluated OPR.
- the underlying relationships of the risk variables for both models
  - the four-factor solution extracted from the twenty-one risk variables derived from the multiplicative model reveals a more appropriate model that explains the underlying structure of the variables;
  - the model is further examined by using DA to classify and predict the respondents' OPR, and
  - the outcomes of DA show that the factor solution from the multiplicative model is stable and satisfactory.
- the relationships between risk perceptions, Internet knowledge, and Internet usage duration
  - the respondents who perceive different amounts of OPR are not significantly different in their Internet knowledge or Internet usage duration;
  - when OPR is separated into the eight specific risk dimensions, no significant difference is found between Internet knowledge and the eight risk dimensions. However, significant difference in relation to social risk dimension is found between those who have more experience of the Internet.
- the relationship between those who are aware and who are not aware of IBS
  - some potential dis/advantages in relation to IBS are found to have significant impact on those who are aware of IBS at an OPR level;
  - the relationship between the need to use IBS and IBS usage intention is explored within the group of IBS aware respondents. Positive relationship is found;
  - significant differences are found between those who are and are not aware of IBS in terms of the self-evaluated OPR, financial, privacy, time, and physical dimensions.
- gender difference
  - significant differences between gender are found in relation to self-evaluated OPR, psychological, and physical risks;
  - the four-factor solution for females is 'cleaner' and more consistent with the whole-sample solution.

- the differences between groups and usage intention
  - no significant difference is found between those who are aware or are not aware of IBS and their usage intention;
  - significant difference is found between the different groups of respondents who perceive the overall riskiness of IBS differently and their usage intention;
  - finally, no significant difference is found between gender and the respondents' intention to use IBS.

Having presented the quantitative results, the next section details the qualitative results. Both quantitative and qualitative results are integrated for discussion in the following chapter.

## Section 2 – Qualitative Results

This section presents and discusses the results of six mini-group interviews (i.e. stage 3) that were conducted after the questionnaire distribution and very preliminary analysis.

The specific objectives are:

- to discuss significant risk dimensions identified in the group interviews;
- to compare the interpretation of these risk dimensions by the female and male respondents, and
- to analyse key themes between significant risk dimensions.

### 4.10 The Respondents' Understanding of IBS

Respondents' awareness of IBS was assessed, as was their knowledge of the service. IBS is identified as an online tool for personal finance management (see Table 47). More specifically, many groups name various banking services available online, while some only identify a few.

**Table 47. The Identified Banking Services Available Online**

Services Available	Groups	
	Females	Males
(Broadly) Personal finance management	1	1 & 3
Account inquiry		
▪ Balance inquiry	1	
▪ Account checking		2
Funds transfer	1, 2 & 3	2 & 3
Payment		
▪ Online shopping payment	1	2 & 3
▪ An e-payment / bill payment	2	3
Foreign currency trade		2
Interest rate checking		3
Loans	3	

As summarised above, the most frequently cited services are: funds transfer, online shopping payment, and bill payment. In addition to these, other less well known banking services are listed, including foreign currency trade, interest rate checking, and loans.

Many respondents also identified a number of potential IBS benefits (Table 48); however, respondents in 'female group 1' failed to identify any and they explicitly stated that it is more convenient to use physical banking services.

**Table 48 The Potential Benefits of Using IBS**

Aspects	Group No.	
	Female	Male
Convenience		1, 2, 3
▪ Time-saving – no need to visit physical branches	2	
▪ Time-saving – no need to queue in banks	2 & 3	2
▪ No time/location access limit – can bank at home	3	3
▪ A convenient payment method of Internet shopping	2	2
The avoidance of cash carrying risk		
▪ Could reduce the risk of being robbed or physically injured.	2 & 3	
▪ Could reduce the [financial] risk of cash carrying.		3
▪ Could avoid the subsequent psychological risk, e.g. worries or concerns due to the potential physical harm.	2	
Efficiency increase	2	
▪ More banking information available at home		2 & 3
Better control of personal finance		2

Table 2 shows that a number of potential benefits are identified by both genders. ‘Convenience’ is the most frequently cited advantage, followed by ‘the avoidance of cash carrying risk’ and ‘efficiency increase’. The least frequently mentioned positive attribute is ‘a convenient payment method of Internet shopping.’

When discussing ‘convenience’, many group members point out that by using IBS, they may save time, as they no longer need to visit, and more importantly to queue in, physical banks, which they view as a ‘hassle’. They also state that queuing is very common. Perhaps consumers have to encounter much queuing in China. It is therefore not surprising that ‘convenience’ is appealing, and that IBS may be considered as a possible solution. They also identify that IBS enables access to banking services at any time and location. Additionally, IBS is regarded as a convenient payment method for Internet purchases.

‘Avoidance of cash carrying risk’ is also often noted. More specifically, many group members (particularly ‘female groups 2 & 3’ and ‘male group 3’) indicate that by using IBS, they reduce the risk of being robbed and subsequent physical injury. ‘Female group 3’ further identifies that IBS also avoids some additional psychological risk such as worries due to potential harm to their safety and health. As one female respondent notes:

“Withdrawing cash via ATM on the street may be noticed by others. This is not safe.”

This seems to suggest that the respondents perceived robbery is common in China. This implies that IBS could overcome the unease associated with using physical banking, particularly when consumers perceive potential physical risk from being robbed.

Many male respondents also think that IBS would help them increase efficiency. For example, 'groups 2 and 3' point out that they can get more banking information at home while 'female group 2' only mentions 'efficiency increase'. This suggests that 'efficiency increase' could be more important to the males than the females.

It is noted that the male members in 'group 2' believe that they could better control their accounts if they use IBS. One remarks:

"You may better control your account at any time. It is better if you could clearly know about your account status. You would benefit from this when you spend more in investment or manage your personal finance."

The above results suggest that the respondents have different understanding and opinions of IBS across the groups. Therefore, the groups are categorised based on their knowledge of IBS;

- limited knowledge – 'female group 3' and 'male group 1' (short form FG3 and MG1 respectively);
- medium knowledge – 'female group 1' and 'male group 3' (short form FG1 and MG3), and
- relatively high knowledge – 'female group 2' and 'male group 2' (short form FG2 and MG2).

This grouping is important as it helps to interpret better subsequent discussion and distinguish the inter-group similarities and differences, in addition to the gender split. It is also expected that this would facilitate further segmentation within IBS non-users, allowing more specific marketing strategies to be developed.

Furthermore, during the discussion of IBS advantages, a few respondents comment that IBS is an innovation essential for conducting some types of activities, which are related to the Internet development. IBS is also described as 'an inescapable development'. A female remarks:

"It is almost an essential product to implement online business [particularly online shopping]. ... Without IBS, online shopping becomes problematic. IBS is a trend." (FG2)

A couple of male respondents associate IBS with the technology revolution and identify it as a natural Internet development trend. One member of the medium knowledge group comments:

“We are living in the era of information technology. I am interested in products that relate to information technology, particularly the Internet and computers. I want to catch up with the world’s revolution and the development pace.” (MG3)

The above quotations suggest that participants were positive about IBS. However, during the subsequent discussions, it is noted that the majority consider IBS to be a complex ‘product’ that contains various risk dimensions. At a ‘surface’ level, these dimensions are widely shared between the two genders and key themes are outlined based on the dimensions. However, below the ‘surface’, many elements within the dimensions are perceived differently between the genders. This might imply that at a broad level, risk sources may be perceived similarly but can also be distinct between the genders.

The following discussion therefore both focuses on shared key themes and examines the differences in the underlying elements. It begins by demonstrating the inter-relationships of the various risk dimensions identified.

#### **4.11 The Relationships of the Important Risk Dimensions**

A number of significant risk dimensions that relate in particular to security issues, performance doubt, privacy concerns and financial loss are commonly discussed and inter-related. Among these, security predominates, and is more frequently raised, over the positive attributes of IBS discussed previously. Security issues seriously discourage many respondents from IBS adoption.

##### **4.11.1 Security Issues and Performance**

As most of the respondents have not used IBS, they often compare IBS with physical banking services. IBS is frequently considered as unsafe, unreliable, or insecure. Each of these factors acts as a deterrent to respondents, especially the females. In particular, the female respondents state that when visiting bank branches, they feel safe as they can ‘experience’ the transaction by watching the operation, touching and counting the *real* money. However, IBS does not give them the same feeling of safety. Many females initially address the ‘safety’ construct in a broad manner. For example:

“IBS is not reliable at the moment so I decide not to use it. If it becomes more reliable, more certain, I would use it for its great convenience.” (FG2)

This seems to suggest that the respondent perceived a lack of trust in IBS. More specifically, another group member points out that: “It is impossible to distinguish whether the online bank [website] exists or not.” (FG3)

Other female respondents explain that this unreliability is related to Internet intangibility, which plays a discouraging role. One expresses:

“The Internet is intangible. I can’t see its operation – it is *invisible*. When you go to physical banks, you can see the staff operating behind the counter.” (FG3)

This quote implies that due to Internet intangibility, IBS has greater uncertainty which could lead to performance doubt. In addition to this, there is a growing concern about hackers and computer viruses. The interviewees in ‘female groups 1 and 3’ indicate that fake websites are sometimes built by hackers. These interviewees raise the issue that IBS relies on computers for transaction records, and user account data (e.g. the amount of money) may be changed by computer viruses. One remarks:

“... I don’t think it’s perfect. ... IBS uses computers for [transaction] recording. I’m not quite sure whether my money would be ‘edited’ by some kind of computer virus. If [the saving figure] is increased, that is good. But if it is decreased, then it is my loss. I will be very depressed and not sure what I shall do. What happens, if [the account] is attacked by hackers? They can remove my money and I will have money loss. I still worry that when I use IBS, if somebody steals or knows my password, he/she can take my money [out of my account] straightaway, then I have money loss.” (FG1)

Another female interviewee also addresses the issue of virus attacks on IBS systems and databases:

“I am aware from the news that some people with professional computing knowledge use viruses to attack bank databases, access bank accounts, remove the funds in the account and damage the data in the bank system.” (FG3)

Clearly, hackers, viruses or fake IBS websites are a matter of concern related to security. These issues are so overwhelming that the female respondents are deterred from IBS adoption. Some security issues also imply performance risk, as cited earlier. Additionally, unfavourable outcomes such as fund removal may happen incurring financial risk. Three themes are summarised from the discussion:

- many female respondents doubt security, e.g. whether IBS is safe due to its operational intangibility;
- they are also uncertain about the existence of an online bank website, and
- they are clearly aware of the seriousness of hacker/virus attacks or fake IBS websites.



These themes receive widespread 'support' across the female groups of all knowledge levels. The discussion shows that the female interviewees regard these themes as interwoven. The dimensions of security, performance, finance and privacy are related in their minds regardless of knowledge level.

In addition to this, it is also noted that when attempts were made to investigate further the security risk sources, very few female respondents were able to respond directly. Rather, they often discuss security issues in relation to their Internet usage experience at a broad level. These respondents usually avoid the security discussion and focus on other related risk dimensions such as financial loss. These results suggest that the female interviewees possibly have limited knowledge or experience particularly in relation to IBS security. Alternatively, other risk dimensions (e.g. financial loss) are more influential to them. In general, IBS is still perceived as problematic in terms of its security.

Many of the male respondents can articulate their concerns into much more specific issues. One respondent, from the limited knowledge group, discusses security broadly.

He suggests:

"Not reliable at all. Nowadays the Internet develops so fast. You (banks) must constantly improve your system to provide your customers with greater safety/security." (MG1)

Additionally, similar to the females' concerns discussed earlier, another respondent in the same group also compares his worries with physical banking experience. This respondent ascribes his feeling of anxiety to 'invisibility'. He states:

"I think that IBS is not as good as face-to-face banking. ... IBS gives me an unsafe feeling because it is invisible. You can't see whether the money that you want to transfer is really transferred to the recipient account." (MG1)

The respondent is uncertain about what 'happens' when using IBS, therefore, he prefers in-branch banking which can give him a greater degree of certainty through visual affirmation.

Security issues related to hackers and computer virus are more frequently addressed by the other two groups (MG2 and MG3). The risk of logging onto a fake website without noticing is also mentioned, but less frequently. For example, when talking about security, one male interviewee remarks:

"I still feel it is not safe enough – hackers are just too smart nowadays. This is similar to the case that if you do not want to be attacked by viruses, the only thing [that you could do] is not to use the Internet. You can imagine how 'secure'

the Internet is! And your online banking is sitting there [the Internet] all the time!” (MG2)

Other possible serious consequences emerged when the male respondents discussed IBS security, such as accounts being secretly accessed and data loss. As one male respondent suggests:

“I feel like there is a lack of something solid ... security! In particular, there are so many web virus and hackers. They are very clever. Only one password, they could access your account! I do not feel safe at all.” (MG3)

One member from the high knowledge group adds, “There is a computing programme called ‘Trojan Horse’. It can get your account number or password. Many people know this type.” (MG2)

This suggests that the respondent has a high level of computer knowledge and he is anxious. Another one points out:

“I still have concerns regarding security. You know, the records of IBS are digital data. If there is anything wrong, anything could happen e.g. data loss ...” (MG3)

The discussion above indicates that the male interviewees interpret security issues in greater detail. The males can ‘separate’ the dimension into specific sub-dimensions. A number of key themes emerge from the discussion:

- IBS is generally unsafe as it is difficult to ensure its operation – mainly due to ‘*virtual*’ visibility – compared with physical banking. (This is similar to the first theme observed earlier from the females, see p191).
- Security issues such as hackers, virus attacks, programming and fake online banking websites are identified (this is also raised among the females).
- In addition to these, it is apparent that other dimensions (e.g. accounts being hacked or data loss) are also present.

In general, both the female and male groups share common security concerns. The first theme is broadly accepted across the groups. The theme is also related to IBS performance, as discussed earlier. Two possible elements may help explain this. The product is delivered through the Internet as a medium; this may cause respondents concern. It is the lack of ‘*virtual*’ visibility that weakens the respondents’ confidence in IBS systems. This ‘*virtual*’ visibility could be caused by Internet intangibility. This perception is frequently mentioned by respondents from the relatively limited knowledge groups (e.g. FG3 and MG1). These respondents are less familiar with or knowledgeable about IBS. This suggests the notion of knowledge and visibility.

As to the second theme, the issues raised (hackers, virus attack, and fake online websites) support the variables measured in the questionnaire. These detailed interpretations are more specific to the male respondents, as some of them may identify 'Trojan Horse' as one major source of security risk. It is apparent that security is an important dimension to both genders. The details of security issues are not as well formed in the relatively inexperienced females who are therefore less able to provide examples. As a result, many female interviewees usually present a general view on the topic. For all groups, security is an important dimension that weakens respondents' confidence in IBS adoption.

Further, it is noted that other risk dimensions (e.g. performance, finance and privacy concerns) are also mentioned while the respondents discuss the security dimension. This highlights that these risk dimensions are probably interrelated. This supports the quantitative results, which have already shown that some dimensions are indeed correlated. Among these dimensions (from both the quantitative and qualitative results), performance appears to be closely connected with security.

As outlined previously, the security discussion shows a subtle difference between gender perceptions – in that the details of risk interpretation are slightly different. Ongoing discussion about other risk dimensions may help identify further differences between the genders.

#### **4.11.2 Privacy Concerns and Financial Loss**

It is noted that during the discussions, privacy concerns and financial loss are often connected and, in fact, sometimes it is difficult to draw a clear line between the two dimensions. More specifically, a split in terms of 'gender difference' is more effective than 'knowledge' classification. To keep the natural conversation flowing and retain the relationships under examination, the following analysis combines the results related to privacy concerns and financial loss and particularly focuses on gender differences.

There is a common concern between genders regarding the treatment of personal data if it is accessed without permission. For example, one female respondent remarks:

"I worry that somebody else would use my details to do something unexpected, bad things particularly. I will not know." (FG3)

Also, one male interviewee regards personal details as someone's property. He suggests:

**“Privacy is very important. [Personal details and property] are yours. You don’t want them to be known by others. If your [money] is not secured by your bank, you could just keep it yourself rather than passing it into banks.” (MG2)**

The above suggests that personal data is important to both the female and male respondents. To these respondents this issue is related to the ‘control’ of data. Particularly, if accounts are accessed, how personal data is manipulated by others is a real worry to the respondents and this implies the risk of losing data control. More importantly, as cited, many interviewees are not confident of the exact outcome of unauthorised access. It seems the concern also varies in relation to their Internet knowledge.

Some female respondents further point out that financial loss may be one serious consequence. As one fears and says:

**“Each of these [e.g. the exposure of someone’s data, password being stolen] is vital. Any of these happening would lead to money loss.” (FG3)**

This fear of potential money loss is widely shared by many male respondents from the limited knowledge group. These interviewees say that money loss is one of the most significant outcomes if IBS goes wrong. As another male interviewee states:

**“If your account information is stolen, then the biggest loss is money loss in your account.” (MG1)**

It is apparent that IBS is perceived as being insecure; many respondents consider privacy and financial loss as two serious potential outcomes. There are both similarities and differences between female and male respondents’ views. Broadly, the quotations seem to suggest that to many respondents particularly the females, the seriousness of financial loss is more influential than privacy concerns.

However, the male respondents (especially those in the limited knowledge group) have a different perspective of privacy and financial loss. These respondents consider privacy ownership, individual control, and data manipulation as more important than money loss.

For example, one says:

**“I think if account details are stolen, the loss of personal data is greater than the loss of money. [Why?] If your details were lost, you would be concerned how thief handles your information. They can use your information to do illegal things.” (MG1)**

They further comment:

**“Your personal details are closely related to your life while money, you could earn back later.” (MG1)**

The above suggests that the males' values towards money and personal details are different; perhaps, they worry about losing 'face' so that they seek for greater control of personal details. Many respondents are more concerned about financial loss while some (especially the males from the little knowledge group) care more about the control of their own data. For those who consider financial loss as the overwhelming outcome, they also address the construct of personal data loss and its occurrence. One female remarks broadly:

"I am not sure when [privacy being stolen] would happen." (FG2)

Another male respondent comments in greater detail:

"Well, the seriousness of the outcome depends on its [i.e. an event's] probability of occurrence, e.g. whether my account number or password would be stolen. If it does happen, it is very serious. ... I suppose that probability varies, depending on the place where you access the Internet. If you go to an Internet café, I assume the chance of it being stolen would be greater. But if you use it at home, then the chance would be smaller. ... [Why?] There is a computing programme called a 'Trojan Horse'. It can get your account number or password. Many people know this." (MG1)

It is apparent that this male respondent is aware of the seriousness of the possible consequences if his account is accessed or his data is manipulated without his knowledge, and the probability of these events' occurrence. This respondent is also confident when discussing how to deal with the uncertainty of his 'account being accessed or data being manipulated' while this is not mentioned by female respondents. This suggests that a male/female divide exists in terms of the seriousness of negative outcomes and the probability of negative outcome occurrence. As with the females, the males are concerned about outcome seriousness. However, the males also believe they could reduce the probability occurrence by some means. It seems that personal data is perceived to be more 'controllable' by the males. This highlights the notions of *perceived* control and real control. This addresses an issue whether the males feel more ability to solve problems than the females. It is interesting to explore whether the perception is caused by that the males believe they are more experienced with computers and the Internet or other factors.

Using the Internet in a public place is perceived as more risky as it is likely that public computers would be more easily attacked by computer programme types such as the 'Trojan Horse'. Although the respondent has not directly indicated that this greater perceived risk is derived from the view that public computers are open to everybody and therefore easy to be manipulated, this would seem to be the underlying assumption. Moreover, users do not have to take individual responsibility for public computers. Thus,

there is a concern related to encountering greater risks by using public computers for IBS access.

Given the above interpretation, it is noted that when discussing security issues, privacy and financial loss are often addressed simultaneously. A number of key themes are drawn from the discussion from the different perspectives of both genders;

- data manipulation – data ‘treatment’ without the customer’s permission. The main outcomes mentioned are exposure of personal details without the customer’s knowledge, passwords being known/stolen, unauthorised access of accounts and account funds being removed without notice;
- the importance of maintaining control of personal data, respondents concern whether people do ‘illegal’ things with stolen data;
- possible money loss as a significant outcome, and
- the relationship between personal data control and possible money loss.

When encountering financial loss, many interviewees further identify the issue of compensation, which could inherently have a cause-and-effect relationship with the worry of financial loss. This is investigated further by examining redress issues.

#### **4.11.3 Redress Issues**

One major concern regarding redress is how banks deal with the situation when customers encounter financial loss. More specifically, many respondents are uncertain whether the bank would cover or compensate any money loss. This uncertainty is often discussed by female respondents:

“I am not sure how banks will solve problems, particularly when money loss is involved”. (FG1)

“Money loss is related to redress issues. The bank should follow my case/query. If it’s not my fault that I have lost account funds, banks should compensate me.” (FG3)

“In general, if the loss is small, then I wouldn’t worry that my bank would neglect my case it is a big bank. But, if the loss is big, then I’m not sure what the bank will do.” (FG2)

This highlights that there is a concern regarding ‘problem scale’. The female respondents are uncertain about or lacking in confidence how banks will deal with redress issues. As with a problem with a small scale, the respondents *believe* that banks would solve the problem. It may imply that when dealing with a small problem, which is too ‘small’, respondents do not view it significant. However, when encountering a big

problem scale, they are less confident. This suggests that the respondents see the banks as 'too big' (i.e. hierarchical) and problems would be handled according to priorities.

In addition, as IBS reduces face-to-face interaction, this remote nature can increase the concern of 'problem scale'. Extra uncertainty may be added as an extra amount of risk that relates to security, privacy concerns, and financial loss. The female respondents from the high knowledge group further point out that they are not sure how they could show banks that they are not 'responsible' for the loss due to their "mistakes" (e.g. in the case of loss owing to system hacking).

One female clearly remarks:

"No evidence (e.g. payment receipt) can prove my online transactions [referring to IBS online payment]. I do not feel 'solid'. I am not sure whether the money/payment has been made or not. But, if you go to a bank, the proof will be given and I can destroy it right away. By doing so, I try to avoid the risk that others may know my bank account details and password." (FG2)

This reveals that 'tangibility' is fundamental to the females. The respondent thinks that the online proof '*cannot*' be given in the same way as the receipt that she gets from traditional banking. Therefore, she cannot confirm the transaction via a receipt and then physically 'destroy' the record in the way she is used to. As a consequence, she worries that hackers could use programmes to 'break into' her account, inspect all her records, change her password and 'sneak away' her money afterwards. This is indeed a potential serious outcome to those who are aware of the difficulty of evidence collection and provision. Also, tangibility plays a key role in 'augmenting' consumers' uncertainty. For this reason, it is not surprising that some respondents find it hard to collect and present evidence of IBS transactions. As another female respondent notes:

"One of my interests – actually confusion – is how to gather evidence to prove/verify the online transaction that you have made if any conflict occurs. [I think that] The relevant legal documents [regarding general Internet commerce] are insufficient as [the Internet] is different from the traditional business which can provide customers with evidence." (FG2)

This respondent further states that this perception is partially derived from the media. The above discussion starts to show that there is an emerging concern in relation to obtaining proof. To these respondents, it is important to obtain 'something' such as a written paper or booklet detailing transaction records. This reflects the issue of 'virtual' invisibility. It is noted that this particular redress issue also interacts with the significant risk dimensions discussed previously (e.g. security and privacy concerns). Moreover,

this highlights that there is a lack of knowledge concerning how the IBS systems work. This is consistent across all the 'knowledge' groups.

Similar to the females, many male respondents also state that it is difficult to collect evidence to prove external access. In particular, some statements reveal another aspect regarding evidence collection difficulty – how banks will treat the evidence. These respondents remark:

“The seriousness of financial loss, well, it depends on whether I can have my loss covered or not. If I can, that is not an issue. But banks might doubt what I say or report, they would suspect whether it is true or not. [Bank staff] don't know you. It's different from personal ID card – something you can verify. [Why would you think so?] I could pretend that my account details were stolen by others. It is difficult to prove [what you are claiming for], you know.” (MG1)

This suggests that apart from broad concern in terms of the difficulty of getting evidence to prove IBS usage, the male respondents further highlight a major concern with regards how much credence the evidence would gain from banks. This is identified as another male/female divide. Additionally, another male respondent raises a series of specific questions:

“Of course I worry. Where shall I complain if anything goes wrong? I fear that my money may be stolen. What can I do? Where and who shall I complain and report to? The banks are owned by the government; banks launch this service. Shall I complain to the government? If I lost a large amount of money, what shall I do? Who is going to be responsible for the loss? The bank might say, 'Well, it is your personal business. You decide to put your money into our bank. We have no knowledge about how you do it while you use online banking services. You could be careless when you use the service so that others may access your account and steal your account information and password, then money loss etc. Do you have any evidence to prove yourself?’” (MG2)

This respondent clearly points out that the relationship between the government and banks may impinge on redress issues. This triggered a series of interesting discussions, e.g. another respondent questions:

“If a bank is robbed, money is taken, obviously the money is the account holders'. Banks will cover your loss. Isn't it the same in online banking?” (MG2)

Another male group member comments:

“Perhaps it is not the same. As for robbery in reality [i.e. in physical banks], you can gather evidence. But is there any evidence in online banking if my account was stolen by others? I guess no.” (MG2)

This again indicates that unfamiliarity plays a role. Those who are more familiar with IBS, however, show greater confidence regarding this aspect. They comment:

“I suppose it would not be a problem to prove as IBS has records of every transaction.” (MG1)



“There are transaction records and you can print them out. Also, you can have banking records [statements].” (MG2)

Another male respondent argues,

“But even hackers can change [e.g. delete] the records. I am sensitive to hackers.” (MG2)

It is noted from the above discussions that redress issues impact on privacy concerns and financial loss, and vice-verse. In fact, the relationships are often interwoven. Two key themes are summarised regarding redress issues across the groups:

- the majority of the interviewees are uncertain about how banks will deal with situations if IBS customers encounter loss (such as account details or money), and
- respondents perceive it is difficult to collect evidence to prove account holders’ transactions (e.g. if IBS system is attacked externally), and
- the males further specify the difficulty of evidence authentication/credence.

Within the significant risk dimensions discussed here (privacy concerns, financial loss, and redress issues), there are differences in terms of how the female and male respondents interpret their risk perceptions, and how important they consider individual risk dimensions. For the female respondents, if IBS fails, financial loss is their primary concern. More importantly, the females worry about how banks will deal with financial loss claims.

On the other hand, many male respondents prioritise individual personal information and regard money loss as less important. These respondents are also concerned about how to claim for compensation. This is similar to the females’ anxiety regarding redress issues at a broad level. However, some male respondents consider that redress issues are further complicated by the fact that banks are still owned and controlled by the government. The assumption here seems to suggest that the government might play an important role in redressing issues such as the establishment of legal regulation. Whether this assumption weakens the respondents’ confidence in adopting IBS needs to be explored.

#### **4.12 The Role of the Government**

A number of issues in relation to the government’s role were considered as important and are discussed below.

#### **4.12.1 Legal Regulations**

When discussing redress issues, respondents were probed about their understanding of established IBS regulations. The main discussion developed in the high knowledge groups (MG2 and FG2). It shows that there is a lack of essential understanding in relation to legal regulations within these two groups. More specifically, some group members recognised that they were not particularly familiar with this topic. Compared with the females, the male respondents were more confident during the conversation.

For example, only a few female interviewees were able to respond to the discussion of IBS legal regulations. In fact, these interviewees indirectly expressed their views through the discussion of their rights and interests' in relation to using IBS. One girl in the high knowledge group remarks:

“As far as I am concerned, no legitimate protection [regarding online transactions] is available from the government, nor a set of sound laws or regulations to protect individual rights and property is ready. ... Perhaps there might be something [out there] that I did not know. This is again due to the inefficient advertising mentioned earlier. ... I know what my rights are as a consumer [e.g. I know where to seek redress if a purchase went wrong] but I am not sure about my rights in relation to being an IBS consumer.” (FG2)

This interviewee is not confident with the current IBS regulations. This may imply that respondents are not familiar with their rights and interests in relation to IBS.

Initial response from the male interviewees also shows a poor understanding, particularly in the limited knowledge group. As some admit:

“Not familiar at all. ... I am not sure about relevant laws or regulations about IBS.” (MG1)

However, respondents in the high knowledge group present a more interesting discussion. In particular, there are different 'voices' in this group. One negatively remarks:

“The protection provided by the government to protect my rights is insufficient. ... The law system has lots of flaws.” (MG2)

Another respondent shows more confidence in the current legal system and therefore remarks:

“Well, I agree on this – the laws are not perfect. But I think even the laws in the U.S.A. still need to be improved. You cannot avoid these kinds of 'flaws'.” (MG2)

This draws other group members' attention and reveals more confidence from these male respondents. They comment:

“Banks launch this service, I think, there should be some relevant regulations.”  
(MG2)

“Yeah, there should be something out there. Launching IBS without legal protection? How is that possible? What is the procedure/guideline if anything goes wrong?” (MG2)

Furthermore, respondent C adds:

“Internet banking in fact should be the same thing as physical banking. Internet banking is just an alternative banking approach in addition to the traditional one [i.e. physical banking]. They [both IBS and physical banking] use the same network. As an extra banking mechanism, it [IBS] helps increase banks’ efficiency. That is all.” (MG2)

This shows that the males from the high knowledge group are more confident in terms of the current legal regulation or what it must be for IBS to have been launched. They believe that a set of parallel rules or regulations would be adapted from physical banking and applied on IBS. The above quotations demonstrate that in general, respondents’ understanding regarding IBS legal regulations varies. More importantly, the discussion from female respondents reveals that they know little about this aspect while the male respondents present more focused and considered points. This difference may imply that the male respondents are more confident or certain about IBS regulations than the females. This difference can be further observed as the discussion moves on. During the interviews, both genders identify the issue of establishing “Internet police”.

#### **4.12.2 Internet Police**

When discussing security issues, the idea of “Internet police” emerged consistently across all the groups, high knowledge groups in particular. A couple female respondents show their uncertainty:

“I seldom hear [from the press] that people [who commit online crimes] are caught [by police]. If I had seen/read this, I would be less concerned and have known more.” (FG2)

“I think there should be some [police officers]. But they might only watch for national big crimes but not small problems that we may encounter.” (FG2)

This again reflects the issue of ‘problem’ scale – as if the individual will be overlooked.

While a male respondent in the ‘high knowledge’ group states:

“As far as I am concerned, there is online police force in China now. ... Recently, a number of hackers, approximately 10 to 20, have been caught by the police. These hackers have conducted attacks by using Trojan Horse programmes.”  
(MG2)

It is apparent that the female respondents are more uncertain about “Internet police”. Their anxiety extends further and some suggest:

“Hackers might be ‘Internet police’ and ‘police’ might be ‘hackers’. The police officers must have good techniques and skills to guard the system and catch bad guys. These [police] may also hack into others’ computers [or system].” ...“Yes, [they may become] good or bad.” (FG2)

The above concern between “Internet police” and hackers suggests that the female respondents consider those who are knowledgeable about IBS procedures, may have the power to find or hide evidence secretly, just like the ‘police’ and thief. To these respondents, both have the expertise in dealing with IBS transactions or operation; more importantly, both are invisible and difficult to distinguish. Compared with ‘normal’ crimes, the above-mentioned online crimes (e.g. removing money illegally from someone) are invisible and remote – crimes at a distance – this might add difficulty in ‘in-time disclosure’ to the public. This also again highlights the notion of visibility. Thus, these elements become critical to weaken the respondents’ confidence in trusting the IBS operation.

The above helps identify that the discussion of “Internet police” is related to Internet security, which ultimately has considerable impact on IBS system security. If the system was perceived as secure, the concerns about the establishment of “Internet police” would be less significant. It is this perception of insecurity in relation to the Internet that the respondents identify as the reason for the need to develop a force of “Internet police”, which can guard general Internet operation.

Overall, the respondents (especially the females) have a vague idea about “Internet police”. Perhaps the majority of the respondents know little, or have limited experience, regarding such issues. Thus, although they have mentioned this aspect when discussing redress issues, they are uncertain about the detailed working or feasibility of “Internet police”. This can also be implicitly related to the respondents’ feeling of unease in relation to IBS unreliability from another perspective – the need to establish so-called “Internet police”. In particular, the worry regarding anonymity which may be derived from the Internet. Therefore, “Internet police” is considered as important in helping to protect/guard the system. Perhaps this would ultimately reduce some risk perceived by the respondents.

As the discussion moved on, it was also evident that there was a general concern regarding low government involvement. Also, as suggested earlier, some respondents

consider that the government still plays a key role in banking operation. It is therefore appropriate to consider the nature of this role further.

#### **4.12.3 Perceived Low Government Involvement**

The majority of the respondents state that the government has not been involved in promoting IBS to any real degree. Many female respondents suggest that the government does not pay enough attention to providing information (perhaps through promotion, advertising) to 'foster' IBS knowledge expertise. The interviewees in the high knowledge group state:

"The government has not shown great interest in IBS yet. If the government was interested, then there should be a considerable amount of advertising on TV, for example." (FG2)

"If a bank wants to promote this new service and the bank may benefit from it, then the bank would make an effort to get agreement and support from the government. Then the government should be involved in promotion. This of course is related to banks, too." (FG2)

Therefore, due to the perceived governmental control of banks, when there is consideration of IBS development (e.g. the need to develop "Internet police"), respondents expect that the government should be involved with such product development and/or promotion. As quoted below, some respondents state that the government should even be responsible for providing training. They comment:

"The government has not yet paid enough attention to training such expertise in IBS network/technology. ..." (FG2)

"The lack of expertise is one of the reasons that I do not use IBS. If anything goes wrong during the transaction, I may ask these [experts] for help and to solve problems. If there isn't any, I would feel helpless." (FG2)

Another one adds:

"The domestic banks operate independently but the government does have an important role in [controlling] policies. The government still controls the [domestic] banks strictly."(FG2)

This clearly shows that the respondents have high expectations of the government and banks in China and they perceive a close relationship between the government and banks. As stated, major domestic banks were still under government control. This relationship helps explain why many respondents suggest that the government should play a stronger role in IBS development during the conversations. For example, respondents frequently complain that IBS advertising is ineffective and this is also related to the government.

Moreover, respondents implicitly point out the importance of a “market-driven economy” in China’s banking industry which will bring in foreign brands. One respondent believes that the entry of foreign banks may help remove the governmental control of banks and balance the market competition:

“Perhaps when the banks are all under the governmental control, competing in the same system, the [internal] competition is not that big. If [the bank] is structured and operated independently, the bank is responsible for its expenses and profits, then the competition would become greater. [IBS] would develop faster.” (FG2)

This starts to bring in the notion of foreign brands and the preference for these brands.

Another interviewee says:

“Perhaps foreign banks are more developed/mature than the national banks. ... [Foreign banks] must be better to enter and compete in the Chinese market!” (FG2)

Interviewees from the same group add:

“It is like the Internet, which was also ‘imported’/introduced from abroad and brought into China. Its development abroad is faster than us.” (FG2)

“The foreign bankers must have competitive advantages to compete with the domestic banks otherwise how would they be confident of entering China for business?” (FG2)

A similar perspective was addressed by the male respondents from the medium knowledge group. These respondents point out that there is a perceived difference in Internet development between China and other developed countries – technology is a key element in the difference. A divergence in relation to IBS begins to emerge.

It should be noted that there is a clear preference for foreign brands, however, the respondents seldom point out which foreign brand they prefer. This illustrates that the preference of foreign brands as a broad notion which may be related to ‘country of origin’. It is possible that this is related to the fact that the Internet was developed in western world before it became available in China. Also, it seems foreign brands have not yet established a strong brand recognition within this market. This is mainly due to the fact that the high entry barriers that have been established by the government to protect Chinese domestic banks. As less foreign players provide banking services in the market, Chinese consumers are therefore less aware of foreign brand recognition.

The above suggests that the respondents tend to ‘blame’ the government for acting in a *perceived* limited manner in promoting IBS in China, e.g. the government seldom fosters IBS through advertising leaflets or expertise training. An interesting question emerges:

is 'blaming' going to save the respondents' 'face' since they knew little about IBS? According to the interviews, the government's low involvement and the banks' role both influence the respondents' slow adoption of IBS.

#### **4.13 The Role of Banks**

When the notion of visibility is identified, it is noted that credible information should be 'given' by banks to consumers who are less proactive to find relevant information for themselves. There is a common concern indicating a lack of effective advertising about IBS from banks. In particular, many female respondents state that banks have neither done enough to convince them to adopt IBS, nor are bank staff active enough to encourage them to use IBS. In fact, the respondents frequently complain about IBS from a promotion perspective – e.g. lack of bank adverts such as leaflet in-branch illustration. They also clearly observe that there is little human help from a personal selling perspective.

Discussion undertaken between the females of the medium knowledge group starts to reveal that there is little information regarding IBS available from their banks. Findings from the interviews indicate that the respondents consider IBS advertising ineffective and inefficient. More specifically, the respondents acknowledge that very few IBS adverts are shown on TV. Additionally, in-branch advertising such as leaflets is so limited that many of the respondents often do not notice. Thus, this kind of advertising material may be labelled as a promotion perspective which passively provides potential customers with essential IBS information.

In addition to this passive perspective, female respondents identify an interactive aspect which centres on bank staff who they feel do not actively promote IBS. A number of elements are proposed as the reason for this lack of activity. One female interviewee remarks:

“In general, bank staff's service quality is poor. ... Bank staff seldom take the initiative to tell you anything about the new banking services, especially after you open accounts with them.” (FG1)

Another group member joins the discussion:

“We guess bank staff would think that they would waste time if they introduce new services to customers since very few people would use IBS anyway. So, to 'save' some time, staff prefer to do less, hence they do not approach us to promote the product”. (FG1)

Similarly, other female respondents summarise:

“Bank staff are seldom active in promoting or introducing this service. Perhaps they suppose that you would ask for relevant information if you feel you need it. ... Definitely not enough promotion advertising.” (FG2)

Again, participants from the limited knowledge group repeat:

“Staff are not actively promoting IBS nor do they encourage us to use it.” (FG3)

“They only promote other services e.g. insurance. Sometimes I see IBS advertising online but this information is not given through bank staff.” (FG3)

This highlights the importance and preference of personal information than ‘non-personal’ information – the issue of source credibility. This also reinforces the notion that Chinese consumers prefer human contexts. The above clearly shows that bank staff are considered as discouraging IBS or at the least not actively promoting it. Also, adverts about IBS are not successful at drawing consumers’ attention/interest. This again emphasises that there is an issue of source credibility. This perceived ineffective marketing strategy from bank staff has a considerable impact on building respondents’ knowledge and understanding of IBS. Two female respondents note:

“... If bank staff could ‘educate’ me more about their new services/products every time I visit the bank, this would increase my understanding of the bank. But usually they would not do so. I feel that [bank staff] are less interested/proactive in explaining [their products] to customers.” (FG2)

“The bank seems to show little care/interest about online banking whatsoever.” (FG2)

Given the above, the role of banks can considerably affect consumers’ confidence in deciding whether or not to use IBS. Especially when the product itself is at the early development, it is likely that customers may be cautious. Indeed, why should respondents use IBS if bank staff do not really seem to be involved? Therefore, information from banks is essential for customers to develop a thorough understanding of the product. As discussed so far, this is identified as one of the inhibiting factors in the development of IBS in China.

#### **4.14 The Perceived Development of IBS in China**

There is a common theme which emerges between genders regarding the development stage of IBS: the majority of the respondents explicitly consider that IBS in China is new and still in its infancy. One particular aspect – Internet infrastructure – is commonly identified. For example, one female respondent remarks:

“IBS is still in its early stages. ... It is not popular. The Internet infrastructure is not advanced and IBS is not mature. ...” (FG2)



Also, a male respondent in the high knowledge group supports this view. He notes:

“IBS is an innovative product. It may have been popular abroad for years but in China, it is still in its early development. Not many people are aware of it yet. [Why?] Because in general, we are conservative.” (MG3)

This suggests that positive perceptions form on the basis of perceived trust from others demonstrated a link with respondent buying behaviour. In addition, this reveals that culture may be significantly affecting the respondents. The above comments reveal that when respondents discuss their perception of IBS development in China, they often refer it to as being in an early stage. Moreover, the respondents frequently compare IBS provided by Chinese domestic banks with the *perception* of IBS provided by foreign banks. For example, one male respondent comments:

“You often hear that some government websites were hacked into. This also occurred on company websites. To me, this implies that there are many drawbacks of IBS. The hackers may attack a bank’s website at will. They may modify or steal your personal information. It seems that the technologies related to security are not good enough. I feel like the technology here is [developed] at a lower level than in other countries. It seems that it is easier for hackers at home and abroad to attack the Internet [e.g. websites or systems]. I suppose there is a gap in Internet development between China and other developed countries. There is also a gap in technology. That the Internet is flawed creates greater chances to be destroyed.” (MG3)

The major views on IBS development provided by domestic and foreign banks can be summarised. Respondents perceive that IBS from foreign banks is more advanced. This is mainly because, like the Internet which was introduced earlier internationally, IBS is also an ‘imported’ product that has been recently launched in China. In terms of the product development, IBS in China is still perceived as being at a relative early stage while those provided by foreign banks have been developed for a longer period of time. Many respondents also perceive that IBS abroad is ‘*well developed*’. Indeed, when the respondents compare Chinese IBS with IBS designed abroad, many of them (especially the female respondents) state that IBS is still developing in China.

Based on the above perception, it is unsurprising that the respondents show a more favourable attitude towards IBS provided by foreign banks:

- IBS from foreign banks would perform better than domestic IBS;
- there is higher perceived security and greater trust in relation to the foreign IBS, and
- IBS provided by foreign banks is perceived to produce less risk and to be safer than domestic IBS.

This again reinforces a notion made previously regarding foreign brands and 'country-of-origin'. In addition, the respondents also expect that as the competition in relation to IBS increases, e.g. due to China's commitment to WTO, the entry of foreign banks would help improve product development, bringing in new technology and introducing regulations for example.

The above shows that the Internet for purchase (either goods or services) is not easily accepted by Chinese consumers. Moreover, when discussing their understanding and acceptance of IBS, respondents often highlight the impact of the mass media.

#### **4.15 The Impact of the Mass Media**

It is evident that the mass media have a significant influence on the respondents' understanding of IBS. Many respondents, particularly the females, frequently cite that they have read relevant news, reports or stories in the mass media about the negative outcomes of using IBS.

For example, some female respondents comment that the mass media have a significant influence (e.g. when the news reports fake IBS servers/systems, cheating websites, or distrust of the service providers). They also know from the media that IBS failure could produce outcomes such as personal data loss. As a result, account money may be stolen.

"I knew this [i.e. the Internet is unreliable] from news. It said that some people with professional knowledge used virus programming to access banks' database, got account numbers, removed some of the money in these accounts, and modified the information in the database." (FG2)

The male respondent adds:

"I once read a newspaper reporting that somebody established a fake bank website, and yet looked very similar to the real one. This fake website tried to cheat those who were not aware of this and logged onto it. Then (after people logged on), those people's account details and password were stolen and used to remove/steal the money in their accounts! This has a great impact on me." (MG2)

Another male respondent B in the same group asks:

"How could people wrongly log on a fake website?" (MG2)

Interestingly, respondent D replies:

"In reality, you would not make this kind of mistake. It is just like that you will not simply regard a corner shop X as a bank branch – as apparently it is a shop. But this is very different on the Internet. Many people would not know much about the Internet. When you are experiencing a new thing, usually it is difficult to identify whether it is true or not." (MG2)

The stories cited above frequently mention significant risk dimensions, including security issues (e.g. fake bank website), privacy concerns (e.g. password being stolen), and possible money loss. The stories from the media considerably 'deepen' the respondents' worries about these risks as significant dimensions and further weaken respondents' confidence in considering IBS adoption. It seems that female respondents often associate themselves with the characters and are more concerned about the outcomes illustrated in the reports/stories while some of the male discussion shows that they are more knowledgeable/confident when talking about the stories reported by the press. It is also noted that uncertainty plays a key role in these stories, reinforcing the establishment of negative perceptions and the importance of information from a credible source.

#### **4.16 Cultural Aspects**

It is noted that many of the respondents are not certain about the probability of possible outcomes occurring that are discussed previously. Some of the respondents address the notion of uncertainty in relation to potential negative consequences – this also begins to highlight the requirement of greater certainty among the respondents especially the females.

A female interviewee comments:

“You can't foresee/predict the outcomes of your input. I mean you won't know whether your money is transferred to the person's account. ... Additionally, the traditional views lead me to an uncertain feeling if I use it.” (FG2)

Interestingly, a male respondent identifies:

“You know if [any negative outcome such as data lost] does happen – even one chance in ten thousand – this is still bad.” (MG3)

Another one continues:

“[A Chinese proverb says] we may foresee 10,000 outcomes, but what about the outcome we have not foreseen? That is what I worry about.” (MG3)

It is apparent that these respondents are subjectively uncertain about actual outcome and its probability of occurrence. They fear that even though the chance is low, they feel that IBS is a product full of uncertainty. This also highlights that the respondents tend to seek a great degree of certainty. More specifically, when the respondents were probed to explain why, two common themes are highlighted:

- the respondents generally regard themselves as 'conservative' consumers, and

- they seek a high degree of 'self-protection'.

A few respondents refer to their traditional banking behaviour as 'conservative'. When one male respondent in the high knowledge group is describing IBS as an innovative product, he comments:

"Many people tend to be conservative and prefer traditions. These people think that traditions are good. But there are some people who like innovation while some are neutral." (MG2)

Also, a female respondent expresses a similar point. She states:

"In China, people follow traditions. ... My parents would influence my banking usage behaviour [e.g. in terms of how to manage personal finance]. But they wouldn't ask me not to use new or innovative products such as IBS [i.e. which mechanism she chooses to bank]. They would think this is an innovation and they would not discourage me from using it. But I need to be responsible for usage outcomes." (FG2)

It seems that change, especially against the tradition behaviour, is difficult in China. This 'traditional' perspective (i.e. seeking greater certainty) deters the respondents' from deciding to adopt new banking mechanisms (e.g. Internet banking). The preference for a 'traditional' path (such as in-branch banking) may imply that the respondents would tend to avoid the corresponding risk that new or unfamiliar banking approaches may produce – as the traditional approach is well established and has worked for a long time. This is identified by a number of female respondents (in the medium knowledge group). The respondents have shown a high degree of cautiousness.

One participant remark:

"It is better that you [banks] lose rather than me. ... This [i.e. by not using IBS] can protect myself – avoid getting possible loss." (FG1)

This respondent notes that IBS is problematic in her perception. She is aware of some possible outcomes that could be negative or unfavourable. As she indicated, she would rather not use IBS to avoid these possible negative outcomes. This may be referred to as risk avoidance behaviour and it is also applied by another female respondent who states:

"I am sure that I will wait for others' opinions. I would not wish to be the guinea pig [i.e. to try this new banking approach right now]. It is stupid." (FG1)

The discussion indicates that many respondents (especially the females) appear to be risk averse over time and prefer affirmation. This highlights again the source credibility.

Among these respondents, many suggest that their usage decision is influenced by others' opinions.

#### **4.16.1 The Influence of Social Peers' Views on IBS Adoption**

Social risk is not highlighted in the way how others view on one's decision of whether or not to use IBS. Rather, respondents implicitly indicate that they were strongly influenced by their social peers. The majority of respondents explicitly state that few people around them have started using IBS. This indicates a low adoption rate among the current respondents. The key findings are:

- currently IBS is not popular among the respondents;
- few people would talk about this service, and
- it is likely that others' behaviour may influence individual usage decisions.

As to the influence of others' behaviour on individual usage decisions, differences are identified between the male and female respondents. Briefly, the female respondents express that to them, the influence of others' views/behaviour is great while the male respondents do not agree with this. The male respondents show they are more confident with themselves. Perhaps this may be related to the difference in the perceived control and ability between males and females. In addition, the male respondents identify that there is an increasing trend of using IBS among their social peers while this is not seen in the females' social circles. Overall, the females consider that;

- the males would be less concerned about negative outcomes while the females would tend to be more careful when handling finance;
- the males would perceive IBS as less risky and much safer than the females, and
- the males would be more confident and therefore less concern than the females.

The male respondents express that the females would have similar risk perceptions in terms of dimensions; however, the details of the risk perceptions might be different. The male respondents suspect that this would be mainly due to relative unfamiliarity or less experience with the Internet, for example:

“I suppose we [both boys and girls] are quite similar so we would have similar major concerns.” (MG2).

“Perhaps we have similar worries regarding IBS, if the worries are caused by technology. But I'm not quite sure about other aspects.” (MG3)

“If both genders decide not to use, then I think their main reasons are similar. Perhaps there may be a subtle difference. For example, boys would think that it saves time and offers convenience when banking online; but girls ... girls might

know less about computers so they might be less familiar with operations. This relates to all those who knows more about computers.” (MG1)

“Perhaps for girls, they would be more concerned. Relatively speaking, they use computers less frequently; they know the Internet less. ... They might be more sensitive. They might be less likely to use it when there is a lack of security.” (MG2)

“Girls tend to consider more and think more carefully. ... Girls would be more careful than boys especially on subtle things. They think more deeply.” (MG3)

The above discussion appears to be consistent with the results presented earlier. The significant risk dimensions identified are not different between the genders. However, the females are indeed more concerned about some risk dimensions (e.g. finance). This is different from the males who focus more on privacy loss and recognise the priority of privacy loss. In addition, when discussing other relevant aspects such as the current development of IBS and corresponding regulations, the males appear to be more confident than the females.

#### **4.17 Other Risk Dimensions**

The qualitative results show that no considerable risk is perceived regarding physical, psychological or time dimensions. In particular, the male respondents indicate that they have not noticed any physical risk due to IBS or computer usage. The female respondents also have not identified any significant physical or psychological risk.

In terms of the time dimension, it is highlighted that physical banking provides a great deal of convenience due to the well-developed banking network in China (e.g. ATM and physical branches), despite the observation that the respondents often have to queue for banking services. There is research suggesting that banking in a physical branch is regarded as a ‘habitual behaviour’, especially for those who are old, less wealthy, less educated, but have high flexibility to ‘allocate time’; these consumers would be less likely to change their banking behaviour (Wan et al., 2005). Perhaps due to the well-developed banking network and being highly flexible in terms of managing time, the current group of consumers is less concerned about time loss regarding a poor IBS if they decide to use it.

In addition, the qualitative discussion reveals that many respondents are not entirely sure about IBS operational procedures. Perhaps for these reasons, the respondents’ overall risk perception is not ‘caught’ by the time dimension, thus, they are less able to link their

discussion with time risk or find it difficult to envisage what elements in relation to 'time risk'.

### **Section Summary**

This section has presented the significant findings of the qualitative data. IBS is consistently considered as a convenient approach for banking and it helps avoid the risk of cash carrying by both genders. The use of IBS to increase personal efficiency and to better control personal accounts is seen as more important by the male respondents. Common banking services online include funds transfer, online shopping payment, and bill payment while foreign currency trade, interest rate checking, and loans are less frequently identified by the respondents.

The interview groups were classified according to their knowledge and the depth of interpretations regarding IBS. The classification is more effective to help identify and compare inter-group similarities and differences when the split of gender is applied. This classification enables the research to investigate the hidden potential differences that quantitative data failed to identify (e.g. the common similarities regarding the relationships between significant risk dimensions and OPR in terms of Internet knowledge and experience classifications).

Both genders are consistently concerned about security, performance, privacy and financial risks. The discussion suggests that these risks are interwoven in the respondents' interpretation; security and performance, privacy and finance. All being perceived as important, these risks affect the females and males differently. Females are concerned about security at a broad perspective while males are more knowledgeable about the specific elements of security. Both genders are not certain about IBS operational procedure which consequently establishes a perceived significant dimension of performance risk. Greater divergences between the genders are found between privacy and financial risks. Privacy is weighted as more significant by the males and the females see financial risk as a predominant issue. However, if financial risk occurs, redress is an important notion shared by both genders.

Apart from these dimensions, additional elements are highlighted to establish risk sources. There is a lack of essential understanding of IBS regulations. The majority of respondents are unable to clarify this aspect. Those who are more knowledgeable of IBS (FG2 and MG2) show that they have a better understanding, the males particularly. More specifically, there is a common 'thread' regarding source credibility, the

importance and preference of visibility across all the groups. This could be related to culture aspects.

Also, the notion of affirmation is highlighted; the need to establish an independent and credible party is identified, such as “Internet police”. In addition, the government involvement in IBS is commonly stated across as an important indicator that affirms IBS. Especially the females, the government involvement is perceived to be low and the government had strict controls over banks in China. It is perceived therefore that the government should affirm more its commitment to IBS development. The females tend to ‘blame’ more on the ineffective marketing role of banks such as the lack of personal and trustful information regarding IBS while the males appear to be more confident in their own judgement ability.

Moreover, IBS is perceived to be experiencing its early development in China, as the majority of respondents are not entirely certain about the product, nor are they familiar with or have widely accepted the Internet for purchase. Reports published by the mass media ‘strengthen’ the above-mentioned negative perceptions and slows down the respondents’ pace of adoption.

Furthermore, culture plays an important and even fundamental role in the risk sources discovered here. Respondents implicitly suggest that cultural factors affect their adoption behaviour, including high human interaction contexts, the requirement of greater certainty, risk aversion, the importance of information source credibility and visibility, and the influence of social member adoption behaviour.

Having analysed and discussed the significant risk dimensions in relation to IBS, it is identified that there are similarities and differences in relation to themes between the females and males. At a broad level of discussion, the major themes and dimensions are similar. However, as presented in this section, the specific elements in explaining these themes and dimensions are detailed differently between the two genders. A more specific discussion on the quantitative and qualitative results may help us better understand the respondents are therefore detailed in the next chapter.



## **Chapter 5 – Discussion**

This chapter integrates results and discusses the significant findings identified in the quantitative (stage 2) and qualitative data (stage 3) with previous literature in this field. A number of themes are generated to structure the discussion, which link directly with the research objectives. These include:

- the understanding of IBS among young Chinese consumers;
- their overall level of risk perception in relation to IBS;
- the relationship between the components of consequence and uncertainty;
- the performance of the two measurement models within the current context;
- the underlying relationships between the significant risk factors and OPR, and
- barriers to overcome risk factors.

The main reason for organising the discussion in this way is that the respondents were unfamiliar with the product; this unfamiliarity affected their overall understanding, their specific perceptions in relation to detailed risks, and their intention to adopt the product. Understanding these elements is therefore vital to identify barriers and develop strategies to overcome the respondents' risk perception.

Additionally, results indicated in the previous chapter show that the Chinese IBS market is in its infancy. It could therefore be useful to review and compare more advanced markets such as those in the West to gain a better understanding of the Chinese IBS market at this early stage. This enables the researcher to identify commonalities and differences between West and Chinese IBS contexts. This also helps to review some effective strategies developed from mature markets and discuss whether they may be applicable in the current context.

There are clearly differences within the current context. Broadly, behind the perception of risks, a number of themes are found to be particularly associated with the market. These themes, being considered as major barriers to IBS adoption, have generated great differences between the Chinese IBS market and those studied in the Western contexts. Marketers need to tailor specific strategies that can overcome barriers, reduce risk perceptions, and accelerate adoption pace.

The similarities and differences are compared with the literature and the discussion begins by presenting the respondents' overview of IBS. When applicable, group differences, such as gender, are specified for an in-depth investigation otherwise the discussion is based on findings from the overall sample.

## **5.1 The Awareness and Understanding of IBS in China**

The suggestion that the Chinese IBS market is not mature can be supported in a number of ways:

- the low awareness of IBS;
- the unfamiliarity of IBS, and
- the lack of knowledge and understanding about IBS operation.

Of the whole quantitative sample, approximately two thirds of respondents are aware of IBS. Both quantitative and qualitative findings indicate that their knowledge and understanding of IBS is varied. Overall, results suggest that there is only limited comprehension of IBS among the respondents. This supports Laforet and Li's (2005) research which suggests that the market is in its early development. This early development stage is initially demonstrated by how much detailed knowledge respondents have about IBS.

### **5.1.1 The Unfamiliarity of IBS**

Only a small number of basic banking services were commonly identified as available on the Internet. Both quantitative and qualitative results show that balance inquiry, bill payment and money/funds transfer were the best known online banking services. Other services such as loans, mortgages, credit cards or investments were less frequently mentioned.

This suggests that the respondents were primarily unfamiliar with IBS. The finding may be explained by several reasons. First, as detailed in the Methodology chapter, 'prompted questions' (i.e. a range of services were shown for selection) were provided in the questionnaire but not in the post-questionnaire interviews. Secondly, as the well-known services are routine daily banking services or basic features of most bank accounts and the respondents are university students who have low/no incomes, it is likely that at this stage, they rarely need to use 'sophisticated' banking services, such as mortgage and investment. Thus, they were much less familiar with these services.

### **5.1.2 The Lack of Knowledge and Understanding of IBS**

Several potential benefits of using IBS were consistently demonstrated within both the quantitative and qualitative findings. The qualitative results reveal that 'convenience' and 'the avoidance of cash-carrying risk' were generally identified by interviewees while 'efficiency increase' and 'better control of personal finance' were more 'valued' by males. Some of these views are different from Western consumers' perspective.

Like many Western consumers, convenience is important to the Chinese respondents. Convenience is outlined as no need to queue, no access limit in terms of time and location, and a fast way to complete online shopping transactions. These findings, summarised as time saving and flexible accessibility, support previous IBS studies (e.g. Akinci et al., 2004; Black et al., 2001; Cunningham, Gerlach & Harper, 2005a; Gurau, 2002; Karjaluoto et al., 2002a; Wan et al., 2005) and Internet shopping research (e.g. Forsythe & Shi, 2003; Huang et al., 2004). It is clear that convenience in terms of 24-hour accessibility is indeed a major advantage for electronic banking adoption as physical banking has time and location limitations (e.g. Lockett & Littler, 1997). Additionally, IBS is welcomed by the respondents who suggest that it may help them reduce the anxiety caused by using physical banking, such as when receiving a poor banking service. This is similar to some Western consumers' perspective (e.g. Cunningham et al., 2005a). In short, IBS may provide consumers with some solutions to the problems caused by physical banking.

However, convenience on its own (as shown above) is not appealing enough to persuade the Chinese respondents to adopt IBS; rather, the perception of greater convenience offered by physical banks was often mentioned by the Chinese participants. This is because the retail network in China, such as in banking, offers great geographic convenience to Chinese consumers – many within walking distance (Wong et al., 2004). This is different from some Western markets. Since Chinese consumers can bank conveniently through the well-developed traditional retail network, in addition to the above benefits, IBS must be more competitive or outperform the traditional banking network in China otherwise consumers may not consider adoption.

Furthermore, IBS is considered to reduce the possible risk of carrying cash when banking in a physical branch. Researchers acknowledge that traditionally, Chinese consumers would tend to carry cash for banking (Laforet & Li, 2005). This research has found that there is real concern across the interview groups (especially the female groups) regarding robbery when using physical banking services. IBS was therefore regarded as an alternative to help reduce possible injury or financial loss by the respondents. Interestingly, this concern is seldom highlighted by consumers in developed countries or areas, such as New Zealand (Gan, Clemes, Limsombunchai & Weng, 2006) and Hong Kong (Wan et al., 2005). This may suggest that unlike customers in these developed markets, Chinese consumers are more concerned about their safety and possible money loss due to a *perceived* higher security threat. Such perceptions might be associated with the particular market, given the current period of

the country's economic transformation. As China is undergoing a fast changing process, the respondents might feel that they were in a less certain environment. It could affect the respondents' overall attitude towards risk and perhaps require different mechanisms for risk handling by the respondents.

Moreover, respondents from the relatively high knowledge groups (both the females and males) were able to point out that IBS enables users to pay bills online and engage in Internet shopping. This advantage was less familiar among respondents across other groups. This is perhaps because of their limited knowledge or the lack of actual experience of the product. It again highlights the fact that when a product is newly launched, different responses often emerge in the market. For example, those who are interested in the product might be more active in searching for relevant information and react faster than others to accept it. The issue for marketers to consider is how to identify this group of earlier adopters among consumers and how to encourage them to try IBS.

In addition to the above benefits, unlike consumers in more developed markets, it is noted that advantages, such as obtaining higher interest rates, cost saving, or professional financial consultation were not valued as important by the Chinese respondents. The quantitative results show that there is no significant relationship between 'high interest rates' and OPR. The qualitative data also supports this finding. As summarised in the Introduction, there are differences in terms of development between Western and Chinese IBS markets. For example, interest rates are still controlled by the Chinese government (Worthington, 2005). There is no difference in terms of interest rate between normal banks and Internet banks. This is different from many Western markets. Consumers from the U.S.A., U.K., and Finland believe that they may save money thanks to higher interest rates and fewer transaction fees (Black et al., 2001; Cunningham et al., 2005a; Karjaluoto et al., 2002a; Lee et al., 2005; Littler & Melanthiou, 2006). This indicates different features of IBS in Western and Chinese markets and therefore helps explain why consumers' views on IBS are different.

As with cost saving, the Chinese respondents showed a low degree of familiarity, unlike consumers in developed markets. Previous studies indicate that organisational IBS users or sophisticated personal banking users noted this 'economic gain' (Devlin & Yeung, 2003). Also, Hong Kong consumers acknowledge that they may receive professional financial services through Internet banking (Wan et al., 2005). Interestingly, neither of these was mentioned by the respondents. This shows some differences in terms of IBS familiarity and understanding between customers from developed markets and China.

Within the current context, to this group of potential IBS users, their daily banking services seldom involve transaction fees and therefore they are less sensitive to the 'economic gain' by using IBS.

Additionally, the qualitative results reveal that the respondents were uncertain about whether IBS is easy or friendly to use. It also suggests that respondents are less clear about IBS operations. This again reinforces Laforet and Li (2005) who have reported a low level of IBS awareness in China.

The above discussion shows that it is important to identify different groups of consumers in terms of their banking needs and differentiate these groups within the Chinese IBS market. This differentiation is vital as it assists banks to respond to the market more effectively. It is expected that this may also increase banks' competitiveness in the Chinese IBS market.

Indeed, as discussed later in this chapter, the limited or lack of knowledge of IBS influences the respondents' OPR, which in turn significantly discourages respondents from adopting IBS. About one-third of respondents defined themselves as 'early IBS intending users', the majority as 'late intending users', and the rest as intending 'non-users'. The next section details consumers' perceptions in relation to IBS to establish a deeper understanding of why currently the respondents decide not to use IBS. The section begins by the overall level of risk perceived.

## **5.2 Consumers Risk Perception Associated with IBS**

Overall, both the quantitative and qualitative results show that the respondents perceived IBS as an innovative and risky 'product' with high probability of loss and even more serious consequences. Consumers' OPR is separated into various dimensions – with some perceived as more significant than others. Comparing the results derived from the two measurement models, security, performance, privacy and financial risks are consistently found as the most important risk dimensions. However, the underlying relationships of the risk variables are complex. Additionally, the components influence the respondents differently. This section presents these complex relationships of consumers' risk perception and evaluates the efficacy of the two PR measurement models. The section begins by discussing respondents' overall perception.

### **5.2.1 Overall Risk Perception: The Self-evaluated OPR and Calculated OPR**

Results suggest that the majority of the respondents considered IBS as a risky product. This is evidenced in the self-evaluated OPR. The finding is further assessed by examining the relationship between the self-evaluated OPR and calculated OPR. There is a significant positive relationship between these two OPRs. This illustrates a high degree of consistency between the two measures. This finding also addresses a question raised by Gemünden (1985: p85) – whether OPR should be assessed through a separate measure (at a ‘riskiness’ level) or take a calculated format (an aggregation value).

### **5.2.2 The Relationship between the Two Components**

Certainty and consequences are considered to be distinct but are viewed differently by respondents. Positive correlations between the two components are consistently found in the 24 risk variables. More specifically, young Chinese consumers rate the consequence component more significantly in terms of mean score than the certainty component. This positive relationship differs from some of the early work on PR, e.g. Cunningham (1967) who proposed an independent relationship between the components. But this positive relationship gives support to later work (e.g. Laurent & Kapferer, 1985). Several suggestions could explain this positive correlation, as presented below.

#### **5.2.2.1 Elements Related to Measurement Issues**

Mathematically, the relatively short scale may have contributed to this relationship. The 4-point scale used in this study may not have a wide enough range of variations to capture the subtleties of consumers’ perceptions. Consequently, consumers’ perceptions of an individual risk do not vary significantly between their certainty and consequence scores. In more significant risks such as performance, where a relatively large variation between average scores exists, this study argues that a less strong correlation is logical. This group of respondents is not only subjectively certain about the risky events happening, but even more concerned about the seriousness of event consequences. Therefore, particularly with the less significant risks, the scores are narrowly distributed.

Also, the sample size can influence the statistical findings, as discussed in the Methodology chapter. While the current sample is relatively large, this may have an impact on the statistical significance.

#### **5.2.2.2 Elements Related to Internet Service Contexts**

The consequence component is more ‘concrete’ than the certainty component for evaluation. The respondents may see the consequence component as more solid in

relation to a risky event than assessing the certainty of its occurrence. This finding supports Featherman and Pavlou (2003: p459) who state:

“The importance (value) portion of the expectancy-value measurement is an insightful indicant of perceived risk as it identifies the facets most important to the sample population. Additionally, many consumers are not able to accurately gauge probability of risk.”

Both quantitative and qualitative results from this study reflect this statement. The qualitative results show that when the respondents were discussing their worries in relation to IBS, they were more concerned about the potential consequences but less confident in adequately evaluating the probability of event occurrence. This finding is in line with both Mitchell and Grotto's (1993) and Barkworth et al.'s (2002) studies. Following Featherman and Pavlou's (2003) comment, this suggests that the consequence component may be easier to assess while the certainty component appears to be more difficult for evaluation in a subjective manner. To make the evaluation meaningful, the probability component needs to be 'attached' to its 'counterpart' – consequence.

This emphasises the importance of defining PR in terms of both consequence and uncertainty in service contexts because uncertainty as a feature of services can seriously undermine consumers' confidence in service performance evaluation (Mitchell & Grotto, 1993). Researchers (e.g. Littler & Melanthiou, 2006; Yousafzai et al., 2003) comment that uncertainty is an important notion to assess various consequences in the context of IBS because customers are physically separated from banks and conducting banking services that are operated through the open global medium – the Internet – which is impersonal and remote. This builds barriers for consumers to overcome. The current research confirms this view: when consumers are involved in an online and risky service context, it is even more difficult to measure certainty.

Furthermore, the subjective evaluation of the probability component may become more complex when an innovative product is involved and there is a lack of 'perfect' knowledge regarding the product. Thus, the respondents had to reply more on insufficient/incomplete information or knowledge to envisage the product's outcomes. For the respondents in this study, IBS may be so new that they are unfamiliar or inexperienced with the operation of the product. Some of the major barriers to adoption of IBS are created by subjective concerns including whether the service will work properly, whether personal details will be revealed to third parties, whether banking systems are secure, and whether financial loss will be created if the service goes wrong.



With the limited understanding of IBS operation, if something unexpected happens (e.g. the online banking system encounters problems), the potentially unfavourable results, for example money loss, can be disastrous to the account holder. These issues are particularly important in the early stage of IBS development. With a limited knowledge of IBS, as the respondents see the importance of these negative consequences increasing, the chance of such events happening increases in a same direction. This helps explain why the potential unfavourable consequences could be inherently attached to a high *subjective* probability of occurrence.

In addition to the uncertainty associated with services, IBS inherently carries at least two additional sources of uncertainty over normal banking services. The respondents have acknowledged that uncertain elements exist in terms of the medium – the Internet. For example, concern about press reports or news about IBS security is growing. As respondents did not know much about the product, stories from the mass media augment their perceptions in relation to uncertainty. This is frequently cited in the qualitative data. Respondents often complained that their risk perception is greatly influenced by negative press reports regarding IBS. The respondents are also unsure how to seek redress or indeed where the problem lies, adding further to their perceptions of the seriousness of the consequences, without providing a solid basis for an estimate of the likelihood that a negative event will occur.

Moreover, results begin to suggest that cultural issues can further weaken the Chinese consumers' confidence in using the product and the medium: Chinese consumers tend to seek greater certainty. The lack of confidence forms a predominantly negative picture of the possible consequences of using Internet banking. The potential seriousness of consequences might be considered the main barrier that discourages respondents. Thus, in the present context, consumers perceived consequences as more serious; perhaps much of this can be explained both by the influence of the service medium as well as the cultural aspects (this is discussed later in this chapter).

These discussions assist in understanding the positive relationship between the two components. For this group of respondents, the subjective consequences of risk events are so serious that it is difficult for them to break down perceived barriers and use IBS. The understanding of the relationship between the components has implications to marketers and researchers: which PR measurement model to adopt (the multiplicative or the additive model) and how banks should reflect on customers' concerns over the two components. As critically reviewed in the Literature chapter, the guideline on which

model to adopt is ambiguous. Under this circumstance, the current study has examined both of the models.

### **5.3 The Perceived Risk Measurement Models**

Initially, there appear to be 'similar' findings between the multiplicative and additive models; these are reflected in:

- the average scores for the eight risk dimensions and the relative importance of the dimensions by ranking orders;
- the inter-correlations between risk dimensions, and
- the association between the dimensions and self-evaluated OPR.

However, results from a more sophisticated analytical technique (i.e. EFA) start to reveal important differences between the two models in relation to the underlying relationships between the risk variables.

There is strong evidence that a multiplicative model appears to 'best fit' the current data set and research context. Moreover, when the factors derived from the multiplicative model are assessed for their ability to discriminate between respondents, both the overall adequate classification and prediction yield are stable. In addition, the post-internal-reliability test shows the risk variables examined in this study are robust.

This section discusses the detail findings of the above aspects.

#### **5.3.1 A Large Degree of Similarity in Initial Analysis between the Models**

##### ***The Average Scores for the Eight Risk Dimensions***

The multiplicative model generates higher mean scores for all risks except social risk. Numerically, the multiplicative model shows a wider curve/spread than the additive model. Yet, the rank orders among the risks between the models are exactly the same. This indicates that the risk results from the models show 'agreement'.

##### ***The Correlation between the Eight Risks and the Self-evaluated OPR***

By examining the correlation between the eight risks (calculated multiplicatively and additively) and self-evaluated OPR, it is clear that the coefficient values of the two measurement approaches are virtually identical. Both models have shown that the eight risks are consistently separated into two divisions in terms of average means and coefficients with the self-evaluated OPR. This indicates that respondents are concerned about some risks such as performance and security, but not about all eight risk

dimensions. This supports previous work (e.g. Boze, 1988; Chen & He, 2003; Jacoby & Kaplan, 1972; Kim, Kim & Leong, 2005; Stone & Gronhaug, 1993), which indicates that the dimensions of PR vary with context, with some being seen as more 'important' than others (e.g. social and physical).

Conceptually, consumer OPR in conventional shopping is often purported to contain six principle risk dimensions (e.g. Jacoby & Kaplan, 1972; Roselius, 1971). However, when these dimensions, and additional risks, are applied here only half are evident (in both models). A key question in relation to PR measurement issues emerges from this finding, i.e. how should these risks be tailored (e.g. modified or measured) in non-store shopping contexts such as the Internet which may involve various influential factors? In fact, previous research has shown that the particular type and level of risk varies across non-store channels. For example, Van den Poel and Leunis (1996) within their research on mail-order only examine financial and performance risks. This implies that great care is needed when researchers attempt to 'separate' consumers' risk perceptions into specific risk dimensions in non-store purchase situations. Suggestions in relation to this are provided in the final chapter.

The results examined so far in this research present similar findings between the two models. This lends support to previous research where similar *coefficients* between the models are also found (Bettman, 1973; Horton, 1976). However, as discussed earlier, this study argues that given the 4-point scales, it is not surprising that this 'similarity' is seen in average scores and coefficients.

### 5.3.2 The Emergence of Differences between the Models

The 'divergence' noted previously is further evident in the factor structures. The two models produce the same number of factors, similar percentages of total variance explained, as well as yielding similar residuals, but they do not have similar factor structures. More specifically, the differences are identified in:

- the 'cleanness' of the factor matrix respectively;
- factor order;
- factor content (i.e. the variables within each factor), and
- variable order.

Consideration of the differences lends support to the multiplicative model being judged as more efficacious. This also supports previous research, which suggests that a

multiplicative model should be applied when a purchase is full of significant losses, attached to substantial chances of occurrence (Yates & Stone, 1994).

The above discussion shows that it is crucial to determine which risk dimension(s) should be applied in an Internet purchase/adoption context. With the ambiguous suggestions indicated in the literature particularly associated with PR online-related contexts, this study seeks to examine the validity of the well-developed risk dimensions (i.e. the six principal dimensions) and additional dimensions within the Chinese IBS context. The study has examined these dimensions by using multiple variables in relation to IBS. By performing EFA (i.e. PAF with varimax as a rotation method), it is found that the remaining 21 variables, derived from a multiplicative model, explain approximately 44.4% of the total variance.

Compared with some PR studies in conventional shopping situations, the explanatory power found in this study appears to be relatively low – apart from the nature of the analytical method which only considers common variance between the variables and excludes error variance. For example, Jacoby and Kaplan (1972), Stone and Gronhaug (1993) report that the risk dimensions respectively account for 61.5% and 88.8% of the total variance in OPR. However, the variance explained in this study falls in the range of average variance explained in the PR field, which is 41.6% with a standard deviation of 26.9%, as reported by Dowling (1986). Also, studies in Internet contexts that used the conventional risk dimensions to explain consumers' purchase intention reported a similar level of variance, approximately 40% (Cunningham et al., 2005b; Kim et al., 2005) The relative low percentage found in the study suggests that the total variance is not well captured by the risk variables examined, disregarding the nature of the EFA extraction method applied.

The explanatory power reflects on a few questions previously addressed; the application of the principle risk dimensions and additional dimensions in an Internet purchase context, the appropriateness of multiple variables, and the usage of dual components. These questions are deemed important in PR theory development, particularly in relation to its measurement (Gemünden, 1985). As Stone and Gronhaug (1993) pointed out earlier, there was no a single PR measurement model using multiple variables (including dimensions and sub items, and/or components). To address this, the current study has applied multiple variables to further analyse PR in the Chinese IBS context.

Recently, researchers (e.g. Barkworth et al., 2002) started to propose that the findings of PR research on dimension measurement, such as explanatory power, can vary significantly with the risk indicators (e.g. risk dimensions, variables, or components). Also, evidence from the current research supports this suggestion within an IBS context. This study argues that the principal risk dimensions are perhaps not always 'universal' to every purchase context within which PR may vary significantly. This is indicated in the current situation: the risk dimensions and individual variables change according to contexts. This finding supports Lim (2003) who suggests that the risk dimensions vary significantly within online shopping contexts. For example, the decision of buying a pair of shoes online can trigger different risk dimensions compared with the risks caused by buying a book on the Internet, even though both decisions are related to an Internet purchase. This suggests that the dimensions and degree of risks also change according to the product/service that is sold online – as some risks are seen as more significant than others and consequently, these significant risks influence the consumer's purchase decision.

The four-factor solution extracted from the multiplicative model was then further examined as predictor and classification variables in a stepwise DA. In particular, 'factor 1' and 'factor 3' are significant in distinguishing respondents. As the results in terms of adequate correction are similar between the classification and cross-validated prediction, these predictor variables are considered robust and stable.

Furthermore, the post-test of internal reliability for these factors has shown that the content of each factor is valid, adding evidence that a multiplicative approach is more appropriate. This finding suggests that the variables examined in this study have content validity, which has implications for researchers and marketers (this will be discussed in the final chapter).

Given the detailed examination and comparison of the two common models of PR measurement, the respondents' views on risk dimensions are discussed below. More specifically, the discussion focuses on findings in relation to different groups and results are compared with previous studies.

#### **5.4 Group Differences in Relation to Risk Dimension Perception**

Several attempts were made to split the quantitative sample; Internet experience (knowledge and usage duration), IBS awareness and gender. A wide range of similarities

is found in Internet knowledge and usage duration while greater differences were indicated in IBS awareness/non-awareness and gender groups (see Table 49).

**Table 49. Summary of Various Group Differences**

<b>Groups</b>	<b>Variables</b>	<b>Results Interpretation</b>	<b>Implications</b>
Internet Knowledge	Self-evaluated OPR	<ul style="list-style-type: none"> <li>No significant (&lt;.05) difference found between the low, medium, and high groups of Internet knowledge.</li> </ul>	<ul style="list-style-type: none"> <li>An ineffective device to divide the sample perhaps due to the homogeneity of the sample.</li> </ul>
	The eight risk dimensions	<ul style="list-style-type: none"> <li>No significant difference regarding these risks found between the groups. People who have different knowledge regarding the Internet do not hold different perceptions in the eight risks.</li> </ul>	
Internet Usage Duration	Self-evaluated OPR	<ul style="list-style-type: none"> <li>No significant difference found between short-, medium-, and long-term Internet users in considering OPR.</li> </ul>	<ul style="list-style-type: none"> <li>Again, an ineffective device to divide the sample perhaps due to the homogeneity sample.</li> </ul>
	The eight risk dimensions	<ul style="list-style-type: none"> <li>No significant difference found in the eight risks except social loss. This means the respondents who use the Internet for different durations express similar importance on most risks but not social dimension.</li> </ul>	
IBS Awareness	Self-evaluated OPR	<ul style="list-style-type: none"> <li>Those who are not aware of IBS perceived a greater OPR.</li> </ul>	<ul style="list-style-type: none"> <li>Suggests that those unaware of IBS perceived greater risk than those who were aware.</li> </ul>
	Performance, security, and social	<ul style="list-style-type: none"> <li>No significant difference found. Whether consumers are aware of IBS or not, they perceive no significantly different perception regarding these risks.</li> </ul>	<ul style="list-style-type: none"> <li>Suggests that performance and security are predominant dimensions weakening consumers' certainty in using IBS; no matter whether the respondents were aware of IBS or not.</li> <li>Social risk – possibly because IBS is a private consumption, there is little impact on social esteem.</li> </ul>

	Finance, privacy, time, psychological and physical	<ul style="list-style-type: none"> <li>People who are aware of IBS perceive less risk in relation to finance, privacy, time, psychological, and physical dimensions.</li> </ul>	<ul style="list-style-type: none"> <li>Evidence begins to suggest that the awareness of IBS affects the respondents' risk perceptions differently.</li> </ul>
Gender	Self-evaluated OPR	<ul style="list-style-type: none"> <li>Overall, the female respondents evaluated IBS as riskier.</li> </ul>	<ul style="list-style-type: none"> <li>Male respondents perhaps know more about IBS or females are more risk averse.</li> </ul>
	Performance, security, finance, privacy and Time	<ul style="list-style-type: none"> <li>No significant difference regarding these important dimensions. Both genders have similar level of risk perception.</li> </ul>	<ul style="list-style-type: none"> <li>This begins to highlight that these risks are so prevalent that they penetrate the whole sample (no matter how it is split).</li> </ul>
	Psychological, social and physical	<ul style="list-style-type: none"> <li>Females perceive greater risks in relation to psychological, social and physical aspects.</li> </ul>	<ul style="list-style-type: none"> <li>Gender appears to be an effective tool to differentiate the IBS market of young Chinese Internet users.</li> </ul>
	Usage intention	<ul style="list-style-type: none"> <li>no significant difference</li> </ul>	<ul style="list-style-type: none"> <li>Suggesting that both genders would have similar adoption pattern. Also the gap between genders is narrowing.</li> </ul>

As summarised in Table 49, in terms of Internet experience (both the Internet knowledge and usage groups), a large degree of similarities exist in the self-evaluated OPR and the specific risk dimensions. IBS is considered risky irrespective of knowledge levels. This suggests that within the current context, for some reason, the respondents who have different knowledge of the Internet, or have used it for different durations of time, did not perceive differences in IBS-related risk. The findings are in line with some studies that also examine young Internet users' perception in EC contexts. For example, Corbitt et al. (2003) reported that the respondents' experience in terms of Internet usage did not have an impact on their risk perception in relation to Internet shopping. Results suggest that given the early stage of IBS development, IBS is so new and therefore the respondents are not familiar with it. Although the respondents are familiar with and/or knowledgeable about the Internet, they have not experienced using IBS or other similar service-oriented products on the Internet. In essence, their knowledge and experience of the Internet appear to be irrelevant in developing a good understanding of IBS. For these

reasons, the respondents did not effectively differentiate themselves in relation to risk perception. Thus, within this context, Internet experience and knowledge are not found as an effective device to differentiate groups.

However, group differences were indicated in relation to IBS awareness and gender. It is found that those who were not aware of IBS considered it riskier in relation to overall level, finance, privacy, time, psychological and physical dimensions, when compared with those who were aware of IBS. This supports Laforet and Li (2005) who also report a significant difference between users and non-users of Internet banking and mobile banking. Interestingly, this group of 'IBS aware' respondents perceived a similar level of risk in relation to performance, security and social as those who were unaware of IBS. This again emphasises the impact of customers' awareness of IBS as these customers tend to understand IBS more. For example, they were clearer about the types of banking services available online and felt more confidence in considering IBS benefits. This suggests a link between IBS awareness and risk perception. The similarities and differences may help establish different marketing strategies for operation.

Furthermore, the results suggest that gender differences exist within the current context. In general, the female respondents perceived greater overall risk than the male. This is in line with other research within Internet-related contexts, such as Internet shopping (e.g. Garbarino & Strahilevitz, 2004; Kolsaker & Payne, 2002; Liebermann & Stashevsky, 2002) or research in organisational decision making contexts (Stoddard & Fern, 1999). Additionally, results indicated that compared with males, females were more concerned about psychological, social, and physical risks.

In relation to the dimensions of performance, security, privacy and time, they caused concerns for both male and female respondents so no significant differences were found. The results show some inconsistency with previous research. On the one hand, it supports some work in Internet contexts, such as Kolsaker and Payne (2002). These researchers report that security associated with payment, privacy in terms of confidentiality of information, and integrity of e-sellers (in relation to returns and refunds) caused concern to both males and females with no significant difference found. On the other hand, the results are different from other researchers, for example, Liebermann and Stashevsky (2002), who have found that females perceive greater risks in relation to credit card theft/fraud when purchasing online than males.



The above indicates some variation in the results from the literature. Within this context, there are differences between the male and female respondents in relation to some risk dimensions but not all. However, the differences are not particularly easy to detect. As the results comparison was based on PR dimensions but not specific variables, the underlying relationships between the variables could be masked. This may produce serious outcomes, such as misleading results and therefore it is important to scrutinise such relationships. This leads to the discussion of factor results produced in the current study. The following section discusses the risk factors in-depth.

The four-factor solution for females is 'cleaner' and more consistent with the whole-sample solution. When interviewing the respondents, however, risk dimensions and sources are interpreted differently. The qualitative results consistently indicate that the picture of male respondents' views on IBS appears to be clearer and the discussion would tend to focus on one dimension (e.g. the concern over security). On the other hand, female respondents presented a more interwoven discussion – more influential elements are connected during the discussion.

### **5.5 The Risk Factors in Relation to IBS**

The results show that there are both similarities and differences between Western and Chinese consumers' perspectives in relation to risk perception. The significant PR dimensions found in this context are similar to those dimensions identified in Internet-related contexts. As outlined earlier, security, performance, privacy and financial risks are considered as the most important set of risks that delay Chinese consumers' decision to adopt IBS. The differences emerge in how the Chinese respondents consider the relationships of various PR variables. This is revealed by the four factors extracted by EFA:

- factor 1 – the risk of losing personal control (money, data, and time);
- factor 2 – the risk of losing face;
- factor 3 – the risk of system failure, and
- factor 4 – the risk of displaying problems to others.

Overall, risk factors contain different variables across risk dimensions. This suggests that some risk dimensions and variables are correlated. This finding has produced some confusion within the PR area regarding how consumers treat the relationship of the risk dimensions:

- on the one hand, the finding supports recent research in Internet contexts that suggest positive correlation between risk dimensions (e.g. Gierl & Hammer,

- 2003; Kim et al., 2005; Yousafzai et al., 2003);
- however, it is different from some PR research (e.g. Barkworth et al., 2002; Cunningham, 1967; Lu et al., 2005) which proposed an independent relationship between risk dimensions,.

The inconsistency again reveals that PR is indeed a complex and diverse construct, which varies with the product, people, and context. It therefore deserves a detailed discussion on the results obtained within this study. The details of the factors are discussed below by comparing previous relevant research. As 'factors 1 and 3' are found as two important predictors to distinguish the respondents' OPR (see the stepwise DA results), the discussion therefore focuses on these factors and 'factors 2 and 4' are summarised.

***Factor 1: the Risk of Losing Personal Control (Money, Data, and Time)***

This factor is formed by the variables derived from financial, privacy, security and time dimensions. Financial- and privacy-variables dominate this factor. This reinforces recent studies in Internet-related contexts, suggesting that privacy concerns and/or financial risk are consumers' major concerns in deciding whether or not to use the Internet for product purchase (e.g. Cases, 2002; Hassan et al., 2006; Hoffman et al., 1999) or for services adoption (Gierl & Hammer, 2003; Littler & Melanthious, 2006; Yousafzai et al., 2003). More specifically, consumers are not sure how their personal data such as name, address will be treated, e.g. personal information may be manipulated or mis-used without their knowledge. If this happens, they believe they will lose control of personal data, and more importantly, consumers fear that their details may be used inappropriately.

These concerns are also considered and augmented in the IBS context when the Chinese respondents considered whether or not to adopt the product. Apart from personal details, the respondents were also anxious about their account details being exposed, accounts being accessed without authorisation, or passwords becoming known. Consequently, they perceived that money loss could occur, e.g. funds might be removed from their accounts. This perception of financial loss is similar to some Western consumers' perception. For example, customers in the U.K. worry that financial loss would occur if IBS goes wrong, such as due to technological error (Littler & Melanthiou, 2006). This concern is broadly shared by the Chinese respondents, especially the Chinese male respondents who considered financial loss from hidden software (e.g. Trojan Horse) to be a particularly serious outcome.

The positive relationship between privacy concerns and financial risk found in the quantitative results is supported by the qualitative results that also imply such a relationship. The more the consumers worry about their privacy control, the more they are concerned about financial loss. Moreover, if money loss occurred, respondents raised a major concern in relation to redress issues. They were uncertain whether their loss would be compensated by banks, also how they would ask for help or advice. This uncertainty is noted by Littler and Melanthiou (2006) who have reported that in their study, British consumers are unsure about bank guarantees particularly in relation to new bank brands. Indeed, with the limited or lack of knowledge associated with the product and its attributes, concern related to redress act as a barrier to IBS adoption.

### *Factor 3: the Risk of System Failure*

The quantitative results show that security and performance are perceived as two important dimensions in terms of the average means, ranking and coefficient strengths to OPR. Subsequent EFA revealed that the variables attached to these two dimensions are interrelated and load primarily on 'factor 3'. The content of the variables illustrates a real concern with IBS system failure due to technical problems. The respondents are concerned about when online banking transactions are appropriately undertaken, whether the transactions will be secure or subject to security issues. The qualitative interviews also support these concerns: the more the respondents suspected IBS systems, the more performance risk they feared.

Like Internet shopping, IBS also shares many problems derived from the channel – the Internet. Research on Internet shopping suggests that security and privacy are often considered as the two most significant barriers for many Western consumers to overcome for online shopping (e.g. Bhatnagar & Ghose, 2004; Cases, 2002; Forsythe & Shi, 2003; Gierl & Hammer, 2003; Hassan et al., 2006; Kim et al., 2005; Liebermann & Stashevsky, 2002). There are general suggestions that this is because the technology can weaken consumers' confidence (e.g. Huang et al., 2004). They worry whether the purchase of a product or service will perform as well as expected (Lim, 2003).

With regards to IBS, Littler and Melanthiou (2006) propose that when considering whether to adopt the product, consumers are also uncertain about technology problems such as hackers and unauthorised access to accounts. Many consumers are therefore discouraged from IBS adoption (e.g. Polatoglu & Ekin, 2001; Sathye, 1999). This is supported by the current study; if security goes wrong, outcomes can seriously affect

IBS performance. Moreover, since IBS is new and operated on a non-traditional medium, the respondents' risk perception is likely to become greater. This suggests that the performance dimension is related to some security-dimension variables.

The qualitative results suggest that two barriers, IBS features and the nature of the Internet, help explain the respondents' concerns in relation to 'factors 1 and 3'. The details of these and other barriers are provided in the next section.

#### ***Factor 2: the Risk of Losing Face***

This factor is not considered as the major risk influencing the respondents' risk perception in relation to IBS. The factor consists of social and psychological variables. Two issues are addressed for discussion. First, the literature suggests that psychological and social risks are difficult to separate (Jacoby & Kaplan, 1972) and sometimes researchers combine these into one dimension (e.g. Derbaix, 1983; Mitchell & Grotorex, 1993). The current study has also found a similar situation where psychological and social risk dimensions are positively correlated. Social risk includes whether consumers' decision of IBS usage will be socially unacceptable or disapproved of and whether others' (e.g. peers groups) positive or negative perceptions in relation to IBS may affect one's usage decision.

Secondly, within the current context, IBS is primarily a private consumption and has little social effect in the respondents' risk perception. This is in line with research on Internet shopping (e.g. Cases, 2002) and IBS (Black et al., 2001) contexts. Thus, the dimensions of social and psychological risks are not effective predictors in explaining the respondents' risk perception in relation to IBS.

#### ***Factor 4: the Risk of Displaying Problems to Others***

Similar to 'Factor 2', the factor is formed by variables across the dimensions of psychological, physical, and social risks. This factor only explains a very limited amount of variance in consumers' risk perception. This suggests that the factor is not an important predictor of consumers' risk perception. This is confirmed by the result indicated in the stepwise DA technique.

Having discussed the important factors which influence the respondents' risk perception, several barriers for IBS adoption are drawn from the qualitative results to help understand how the significant risk factors influence the respondents' usage intention. This is presented in the coming section.

## **5.6 Underlying Barriers to IBS Adoption**

Results suggest that it is important to understand the underlying barriers that prevent the respondents from adopting IBS. The benefit of getting such an understanding includes providing banks with possible strategies to encourage more Chinese consumers to adopt IBS.

The qualitative results illustrate a number of themes and barriers to help understand the respondents' risk perception in relation to IBS, these are:

- the influence of intangibility in relation to IBS and its operation medium;
- the perceived IBS development in China;
- the preference for face-to-face transactions;
- the influence of Chinese culture.

Each of these is discussed below beginning with the notion of intangibility which impacts on both IBS and its operation medium – the Internet.

### **5.6.1 Intangibility**

The research results and the literature suggest that the similarities identified in relation to the perception of significant risks between Western and Chinese consumers are primarily due to intangibility – an inherent feature of services contexts and the nature of the Internet. IBS and its operating channel rely heavily on technology and both of them share commonalities in terms of intangibility. Within this context, IBS is considered as an innovative product 'consumed' through the Internet – a new and impersonal channel. Since respondents have not experienced this product before, they are not fully aware of product features and are concerned about various negative outcomes. In short, from the respondents' perspective, the problems of IBS outweigh its benefits based on their current understanding.

Many negative outcomes inherent in Internet purchase contexts are derived from the technology; intangibility is cited by Western consumers as one of the most common aspects (Eggert, 2006). As discussed in the Literature Review chapter, intangibility has three dimensions: physical intangibility, mental intangibility, and generality (Laroche et al., 2003). Results show that consumers' risk perception in this context is more associated with physical, then followed by mental intangibility while generality has little effect.

Physical intangibility is a common element within service contexts (Laroche et al., 2003). It can weaken consumers' certainty with regards to services. This is because services are intangible, difficult to define and evaluate. Prior research on traditional purchase situations has indicated that service intangibility can result in a greater degree of uncertainty and hence increased risk perception (George et al., 1985; Mitchell & Grottel, 1993). Moreover, when considering online service adoption such as IBS, the uncertainty increases and its impact becomes more influential to consumers' risk perception (e.g. Littler & Melanthiou, 2006). Results from this study have found evidence to support these perspectives. More specifically, among those who are aware of IBS, the greater degree of uncertainty that IBS is subject to, the more overall risk IBS is considered to have. Since the overall risk measure has a positive and high correlation with the risk dimensions, it is reasonable to assume that uncertainty can also significantly influence the respondents, particularly in relation to security, performance, privacy and finance risks when considering IBS adoption. This indicates that the respondents' concerns regarding these risks and the uncertainty notion need to be addressed.

Moreover, qualitative data indicates that respondents often linked IBS features, such as invisibility, with Internet intangibility. This seems to suggest a broad connection between physical intangibility and mental intangibility within the current context. Since consumers cannot conceptualise services into physical features such as they use to examine physical goods, like colour and shape; this therefore creates difficulties for service evaluation. This difficulty can trigger consumers' concern regarding mental intangibility, according to Laroche et al. (2003). These researchers report that in their study, uncertainty in service evaluation augments consumers' mental intangibility, which has the greatest correlation with OPR and mediates the relationship between physical intangibility and generality. Although it is not the focus of the current study to examine these specific dimensions of intangibility, the elements leading to the difficulties that respondents had in evaluating IBS were considered important in understanding the relationship between such elements and self-evaluated OPR. The results suggest that the more difficult respondents find it to evaluate IBS, the greater risk they perceive.

The above findings illustrate that respondents are familiar with daily banking services conducted in a physical branch but not those operated through the Internet. This raises an interesting question: if the channels of delivering banking services are not considered for product performance evaluation, and if the operation is conducted properly, banking

in a physical branch and the Internet might have similar product performance evaluation since the expected outcomes of using a banking service could be the same. However, when the service delivery channels are considered and compared, the evaluation becomes complex. Using banking services online is perceived to be more intangible and difficult to visualise than those experienced in a physical branch. This suggests elements that are particularly associated with the Internet may increase intangibility in a number of ways. Physical intangibility weakens service certainty; this decrease of service certainty may influence consumers' mental intangibility in relation to the product performance, and it could increase risk perception.

Comparing in-branch and Internet banking further, the former has attached to it more tangible elements; including physical buildings, staff, computers and other assets. These elements are important to establish a physical context for consumers, e.g. visualising the service. In addition, a number of researchers have identified that Chinese consumers prefer high physical contact for business (Wong et al., 2004; Yu, 2006). Face-to-face transactions are the traditional business model in China. This facilitates the opportunity Chinese consumers have to achieve high physical contact within the product and seller relationship. Face-to-face transactions also enable consumers to establish certainty, confidence, credibility and trust. The majority of respondents observe that they feel more certain about physical banking partially because they can use various tangible elements to gain confirmation. For example, physically being in a place that presents a bank helps clarify uncertainty; watching the process conducted by bank staff facilitates 'authentication' of the transaction; as does receiving evidence which further reduces risk.

Technology-based marketing channels such as the Internet however, substantially reduce human interaction. Many tangible elements are eliminated in the context of IBS. Consequently, this increases consumers' mental intangibility. The nature of the Internet helps explain the increase of such mental intangibility. The Internet itself is open to the world; it neither solely represents any bank, nor is it owned by anyone or indeed any bank. It is through the website that banks deliver banking services to customers. Since the process enacted through the Internet is invisible, banking transactions are not processed in a traditional, 'observable' fashion. It is difficult for consumers, especially those who prefer high physical contact, to establish certainty and credibility in such an 'environment'.

Moreover, the concern about operational assurance seems to suggest the need for process physicality. This is because respondents have noticed that they must undertake the operation. These respondents worry that if things go wrong, it is likely that they would be required to take responsibility for the outcomes. It is therefore important that IBS users are careful in enacting the process during the transaction to ensure accuracy. To this group of respondents, who have recognised the problem of visual confirmation and lack of relevant experience, it is clear that the decrease in physicality becomes a vital factor in their decision to adopt IBS.

Consequently, many concerns particularly related to security and performance risks were raised due to the limited understanding of the IBS operation displayed by respondents and the lack of visual confirmation they receive. For example, respondents doubt the creditability of a bank website because fake websites can be produced; also, respondents are uncertain about how to obtain transaction confirmation. Although transaction evidence is provided in a digital format and printable, it will become useful only when potential users are aware of this function and can establish some certainty in the IBS system. However, the qualitative results demonstrate that this information is only noticed by a few male participants within the high knowledge group. This again reveals that a clear and detailed understanding of IBS operation is deficient among the majority of respondents. As a result, even though some forms of visual confirmation are available, most of the respondents are unaware of them. This also supports the notion that knowledge influences mental intangibility, which can augment uncertainty and unexpected outcomes.

Thus, intangibility becomes a primarily hidden source of risk that particularly relates to security and performance dimensions. This is evident in 'factor 3' (the risk of system failure). The literature indicates that the Internet, as a global marketing medium, causes great concern in consumers internationally. Security is the predominant hurdle/barrier for consumers to overcome when considering whether to adopt the Internet as a purchase medium. In the IBS context, consumers in other countries also state that security plays a discouraging role in their decisions. For example, Sathye (1999) has reported that security negatively affects Australian consumers from adopting IBS. Likewise, Littler and Melanthiou (2006) indicate that from the perspective of British consumers, security is a major barrier. Polatoglu and Ekin (2001) have also found that Turkish consumers are not confident about IBS security. Findings from the research by Kim et al. (2005) on the purchase of Internet airline tickets illustrate that security risk still discourages many American consumers.



The substantial evidence indicates that security is a fundamental factor deterring many consumers from Internet buying adoption. In line with the cited research and in addition to the 'factor 3' content, the qualitative results also suggest that the security risk significantly influences respondents who consider hackers, virus attacks, programming and fake online banking websites as major concerns. This again confirms that security is widely acknowledged as a common thread, discouraging consumers from accepting the Internet for both goods purchase or service adoption.

As consumers cannot see or touch the Internet, they have great concerns over IBS security issues; moreover, they have doubts about IBS performance. This finding is in line with Lee et al. (2005) and Yu (2006). Yu (2006) has studied China's EC adoption from June 1999 to June 2004 and outlined that Chinese Internet purchasers are very concerned about product quality and security, over payment, delivery, and price. Also, it is noted that concerns related to quality have increased from June 2002 onwards, while security issues, have decreased over the same period. This seems to suggest that over time Chinese consumers have developed some confidence in Internet security, while product quality is still a major obstacle. The present study has found that respondents are uncertain about whether the Internet is secure for financial transactions, whether account details are protected and safe and whether personal information such as ID will be stolen and misused for illegal purposes. These findings support the study by Gerrard, Cunningham and Devlin (2006) who found Singapore consumers do not use Internet banking due mainly to the lack of adequate security: in particular related to concerns about unauthorised use and abuse of accounts and personal detail manipulation. These findings are also consistent with Western consumers in the early days of Internet adoption. This implies that perhaps technical strategies that are carefully adapted could help Chinese respondents reduce their risk perception.

As discussed, technology-related issues, mainly inherent product features and the nature of the purchase channel, significantly contribute to respondents' security concerns and performance doubt. Apart from these issues, a number of additional elements help explain Chinese consumers' high risk perception in relation to IBS. These include the different stage of IBS development in China compared with other Western countries; the role of the government, the influence of the former economic model, the culturally hierarchical system which pervades the country and the notion of 'country of origin effect'.

### **5.6.2 Perceived IBS Development in China**

The quantitative and qualitative results suggest that IBS is underdeveloped in China. This is evidenced in relation to three broad issues. Those who are aware of IBS were not confident that the:

- Internet banking infrastructure in China was excellent;
- Internet banking legal regulation was effective, and
- Internet banking system was reliable.

These views were frequently cited by the interviewees when the interviews were examined in terms of both gender and varying IBS knowledge. Respondents proposed that the central government plays a powerful role in IBS development in China. They believed that Chinese IBS development is different from foreign IBS market development, while the former is perceived at an early stage of development and the latter is mature. These findings can be better understood by reviewing the EC development in China.

Firstly, the above perspective supports the growing research suggesting that in China, EC development is still in its early stage (Hu et al., 2004; Tang, 2000; Trappey & Trappey, 2001; Wong et al., 2004; Yu, 2006). It is noted that annually the number of Chinese Internet users grows quickly. Alongside the promising Internet usage growth in China since 1997, the adoption of EC also shows positive trends, such as the continuous increase of online shoppers (Wong et al., 2004). As indicated in the Introduction, the latest report on Internet development in China reviewing the period till 31<sup>st</sup> December 2006 indicates that of the 137 million Internet users, only 23.6% have purchased online, while a mere 10.5% have banked and traded stocks online (CNNIC, Jan. 2007). This suggests that using the Internet for purchase has not become popular: there is a huge gap between Internet users and Internet shoppers and a larger difference between Internet users and non-users. This unfamiliarity also impacts on the adoption of IBS. So the understanding of barriers in terms of EC expansion would help explain the undeveloped market of China's IBS.

A number of obstacles prevent EC expansion in China which includes:

- the strict government control of EC development in China – the prohibited involvement and contribution from foreign investment to Internet infrastructure (Agarwal & Wu, 2006; Trappey & Trappey, 2001). This results in a relatively weak infrastructure in terms of telecommunication, the Internet, and EC;
- consumers' preference for the traditional retail network (Wong et al., 2004; Yu,

2006);

- the lack of a well-developed nationwide delivery system (Agarwal & Wu, 2004; Wong et al., 2004; Yu, 2006);
- strict government control of the financial industry, the ineffective and deficient support from the current banking system, the low penetration of credit cards in terms of both individual possession and business acceptance (Worthington, 2003 & 2005), and this impact on delaying EC adoption (Laforet & Li, 2005; Trappey & Trappey, 2001; Wong et al., 2004; Yu, 2006), and
- the lack of reliable information resources (Tang, 2000) – this can be linked to business ethics or business reliability/credibility.

Many of the barriers could be applied to explain respondents' perceptions regarding IBS. Government control is a predominant factor among these obstacles. The major reasons for a strong government role are to integrate the Chinese information market into the global information economy and to increase the government's administrative efficiency (Zhao, 2002). Thus, the government is often considered as the major force that stimulates and promotes Internet development, e.g. launching and implementing a series of Internet-related projects, constructing essential infrastructure, network integration and improvement. Agarwal and Wu (2004) specify that before China's accession to WTO in 2001, EC was heavily controlled by the government. For example, no foreign investment was permitted to provide Internet services; severe restrictions were established to confine individuals or private organisations in their Internet content provision. This is different to other developed countries since in those countries, the major forces of Internet development are not associated with the government but with individual organisations or private companies (Zhao, 2002).

However, Trappey and Trappey (2001) point out that the strong government role actually weakens the development of Internet infrastructure in China and it has seriously limited individual contribution to EC development. Indeed, it is criticised in that:

“China's current system of laws and regulations does not create a particularly hospitable environment for the development of e-commerce.” (Mckenzie, 2000; cited in Hu et al., 2004: p304)

These unclear regulations consequently created barriers to the successful explosion of EC in China. For example, the Internet is described as 'imbalance development' within the country (Zhao, 2002). The local development of the Internet varies across regions depending on overall economic development and telecommunication infrastructure. Thus, some less developed regions may have slow Internet speed but high costs and

these problems are seldom found in developed regions or cities, such as Beijing and Guangdong (CNNIC, Jan. 2007).

The imbalance development also has implications for EC-related industries such as banking. Indeed, the government still strongly influences the Chinese financial market. There are still restrictive laws and regulations to protect Chinese commercial banks, although market deregulation is expected to be completed by 2007 (Worthington, 2005). Findings from the current study support the above discussion. The majority of the respondents were not convinced that the present Internet banking infrastructure in China was well developed. Also, they identified that the banking market is lacking external competitors such as foreign banks.

The above suggests that although EC is a global development, it has its special features in China. In many Western markets (e.g. USA, European countries), governments seldom intervene in EC development – it is part of the economy and therefore driven by the market. Apart from the above discussion on government's role, the current study proposes that a number of important elements predetermine the strong government role in IBS development within China.

- Historically, the hierarchical system in Chinese society has been established for thousands of years (Walters & Samiee, 2003). This top-down system penetrates the country almost everywhere, politics, economy, business organisations, society, social network, family, and so on. Fundamentally, living in a hierarchical and bureaucratic structure, the strong role of the central government is deeply embedded in establishing individual and organisational beliefs, values, and behaviour (Calantone et al., 2006). Many respondents are used to following traditions and are likely to continue to use bank branches.
- Secondly, the former economic model applied in China – a planned economy – requires a strong governmental role. Currently, the country is gradually transforming its planned economy towards a market-orientation model (Da Costa & Foo, 2002; cited in Worthington, 2005). The transformation will bring to Chinese consumers social and cultural changes (Yolles et al., 2006). This is mainly because not only is this transformation process time-consuming as it requires a considerable amount of change and implementation throughout the country's economic system and structure, but it will take time for Chinese consumers to notice, adapt, and respond to the new model. During the transformation, clearly, the central government still acts in its fundamental role in decision making and gradually withdraws its role as a main driver in

economic development. Also, as the market is changing, it is likely that consumers may still be heavily influenced by the former economic model; thus, their values, beliefs, views or expectations might not change as fast as the transformation to the economy itself. This helps explain why the respondents frequently suggest that the central government has not been active enough in promoting IBS in China. Given the historic role of the government, they expect it to be more involved in IBS promotion. However, this highlights an interesting tension, customers' expectations in relation to the government are still bound to its role in a planned economy, whilst they welcome the additional economic flexibility, including foreign investment, brought in by the move to a more market-driven economy. In part this emphasises the additional risks that are brought to the fore as consumers experience a radical, if gradual, shift in expectations and behaviour.

- Thirdly, Chinese Internet users have distinct Internet behaviour (Wong et al., 2004). They are restricted by strict laws and regulations regarding Internet usage and content; they are not free to use any websites. For example, websites that contain sensitive, unfavourable political information are closely monitored, filtered, or even prohibited such as [www.wikipedia.com](http://www.wikipedia.com) (BBC, May. 2006). This again highlights the strong government role in Internet development and also strengthens the influence on Chinese Internet users' behaviour. As a result, the behaviour pattern of Chinese Internet users is different from Internet users in other countries. Common usage among Chinese Internet users is limited to information searching, gaming, sending/receiving emails, and entertainment; while EC-related activities such as online shopping or banking are less frequently used (CNNIC, Jan. 2007).

The government clearly has a direct impact on economic development (e.g. retail network, EC development), which is also fundamentally interwoven with culture, as suggested above. This implies that the relationship between the government and culture in economic development is complicated. This also begins to highlight the notion that Chinese consumers are strongly influenced by the government and culture. Their purchase behaviour is distinct, complex and not parallel to Western consumers. The following discussion of traditional Chinese retail networks helps explain results of this research.

### **5.6.3 Preference for Face-to-Face Transactions and Its Impact on IBS**

As mentioned earlier, Chinese consumers favour highly interactive contexts (Yu, 2006). It is acknowledged that the Chinese retail industry has developed a pervasive network. Face-to-face transaction is preferable in many purchase situations for a number of reasons. First, it provides Chinese consumers with great benefits such as convenience. This can have a negative impact on Internet shopping adoption (Wong et al., 2004; Yu, 2006). Also, as discussed earlier, the pervasive traditional network enables consumers to obtain physical and personal contacts with products and sellers. This is important to Chinese consumers: it helps establish trust which is a vital element in various relationships (e.g. business and individual). Chinese consumers value trust, such as the notion of 'guanxi', in varying relationships (Walters & Samiee, 2003; Worthington, 2005).

Further, trust is related to business credibility. In China, the retailing system of after-sales service is weak and problematic, especially compared with Western markets. According to Wong et al. (2004), the relationship between sellers and buyers is usually terminated once purchase transactions are completed. If buyers encounter quality problems, they need to contact manufacturers directly for problem solving e.g. maintenance. In essence many Chinese consumers are dealing with "caveat emptor" in many purchase situations – consumers must beware of the quality before they buy. It is therefore not surprising that price and quality are identified as the two most important determinants in Chinese consumers' clothing purchasing (Dickson et al., 2004). As with China's EC development (from June 1999 to June 2004), previous research indicates that quality is also one significant barrier to Internet shopping adoption (Yu, 2006). Also, when the Internet is considered for purchase, it is almost impossible to negotiate price as in the physical interactive way. This highlights two issues: quality as one criterion to evaluate products and the importance of business credibility in both the conventional and Internet purchase contexts. The problem-solving process requires effort input and can become time-consuming. In order to avoid unnecessary inconvenience, consumers prefer to fully inspect the product before purchase. The above explains why physical contact is so important among Chinese consumers and why face-to-face transaction is preferable. As there is a lack of a sound after-sale service policy, it may be reasonable to suggest that consumers expect to have useful advice from reliable parties such as the government.

This implies there might be a strong need to obtain positive recognition from external opinions while the government is a powerful authority to provide such guidelines. The

need may be related to one cultural value in the Chinese society – the respect for authority (Lowe & Corkindale, 1998). It is thought that Chinese consumers may be influenced by the hierarchical system, according to contexts. In general, they tend to obey rules, accept guidelines from the system, and behave ‘properly’ in accordance with ‘right rules’ or ‘social acceptance/expectation’. This again shows that Chinese consumers would tend to value others’ opinions and respond to society as group members.

As a part of the traditional retail network, the Chinese banking industry also shares similar advantages and problems as mentioned above. The banking industry is well-known for its nationwide network that contains a large number of physical branches, ATMs, and staff (Lu et al., 2005; Worthington, 2005). However, researchers have noted that the financial system in China is essentially inefficient and ineffective, supporting neither the country’s fast-growing economy (Worthington, 2005) nor EC transactions (Agarwal & Wu, 2004; Trappey & Trappey, 2001). This is particularly evidenced in the low penetration of credit cards: only a few consumers hold credit cards while shops are usually reluctant to accept credit cards for payment, and the use of debit/credit cards is limited in the card-issuing areas (Worthington, 2005). Trappey and Trappey (2001) further remark that even if some consumers have credit cards, usually they can only use Chinese currency for purchase. Hu et al. (2004) point out that a reliable security system and nationwide credit card system is lacking to support the implementation of electronic transactions. Accordingly, the Chinese banking system is deficient to support online business and this slows down consumer adoption of EC. In turn, consumers are unfamiliar and perhaps unwilling to try banking online.

The historically strong role of the government in economic development (EC and the financial market) has a strong influence in Chinese consumers’ beliefs, values, and perception in relation to IBS. Interviewees naturally linked the government’s role with IBS development e.g. marketing promotion. Moreover, they specified that the role of the central government in IBS development such as promotion is not active or indeed strong enough. It is noted that during the transformation of China’s business model, the Chinese banking industry is still heavily influenced by the government and the traditional retailing network/system (Worthington, 2005). As discussed previously, the Chinese banking industry is networked by former state-owned banks through many physical branches and ATMs. This creates considerable challenges to new entrants to penetrate the Chinese market. Although it is often cited that consumers are waiting to be told that IBS is good to use by the government, whether they would believe them and

adopt the product eventually is indeed challenging. This underlines that this specific concern needs to be addressed to achieve growth in the Chinese IBS market.

In addition, it should be noted that the after-sale service system becomes more problematic in the IBS context. The time-risk dimension has shown that respondents worry about spending extra time in relation to problem-solving when they use IBS. In addition to these worries, interviewees failed to understand how they should react if IBS goes wrong. This lack of essential and adequate information on after-sale service fundamentally weakens respondents' confidence in IBS adoption. In fact, the qualitative findings demonstrated that both genders are unaware of their relevant rights as IBS users and the banks' obligations to protect their rights. Furthermore, respondents suggest that it is difficult to collect evidence to prove crimes and claim loss due to the remote and intangible nature of IBS crimes.

Arguably, the concerns mentioned above exist mainly because respondents are unfamiliar with IBS operational procedures, nor are they clear on the details of the 'after-sale' services provided by banks, nor if there is any. Therefore, if things go wrong, money loss is one serious outcome to many respondents, especially the females, and data manipulation is another important concern of the males. Since respondents are fundamentally uncertain about the details of IBS, they have no idea about whether losses will be covered.

Meanwhile, participants are reluctant to adopt IBS due to the concern of information credibility. For example, participants are uncertain regarding information sources and become cautious when dealing with product information; they also value and prefer promotional techniques that are delivered through mechanisms such as personal selling/contact to receive product information. Finally, they expect that third parties will provide credible information to authenticate IBS performance. These findings suggest that respondents have a low risk tolerance and a strong tendency to avoid uncertainty. This supports previous research (Laforet & Li, 2005; Sun, Horn & Merritt, 2004).

Littler and Melanthiou (2006) propose four sources of IBS uncertainty; consequence uncertainty, information uncertainty, brand uncertainty and post purchase uncertainty. According to the results presented in the quantitative and qualitative sections, the present study suggests the uncertainty can be explained as follows.

- Consequence uncertainty – it is desirable that consumers are 100 percent certain of what will happen, though in reality this is impossible. Such a notion in fact is



similar to Cunningham's (1967) suggestion, which is reviewed in the Literature Review chapter. The notion is clearly indicated in the quantitative results section as well as the subsequent group interviews. Respondents need to feel much less uncertainty, however, they do not have adequate knowledge to estimate which consequence is going to happen if IBS goes wrong. This is related to the various risk dimensions examined in the current study.

- Information uncertainty – whether IBS information from banks is reliable, such that banks declare their IBS system is secure but this may be questioned. This is supported by the qualitative results. Arguably, this can be related to Internet security issues at a broad level. Further, this uncertainty strengthens the importance and great need of authentication in the current context. Results indicate that banks and government influence uncertainty.
- Brand uncertainty – there is also a lack of essential knowledge regarding banks especially new brands/players. This reflects on brand strength, business reliability and trust. The current study has found that foreign brand recognition is weak among the respondents.
- Post purchase uncertainty – this is associated with intangibility (e.g. 'standalone net bank'); as a result, consumers are uncertain about IBS performance, e.g. whether transactions are completed successfully (Littler & Melanthiou, 2006). In the current study, this is particularly related to IBS authentication and transaction confirmation. This is highlighted in the 'after-sale' service discussion in which the notion of lack of redress is commonly raised.

The above sources may be recategorised into two levels of dimension. Within this context, at a macro level, consequence and information uncertainty play primary roles before the respondents' adoption. These two sources share similar features – they are both associated with the uncertainty element which is proposed to be 'attached' to the consequence component. Such uncertainty often emerges before consumers try IBS as they might not be experienced or knowledge about usage outcomes. It could be confusing to isolate consequence and to recategorise it into different uncertainty sources. At a micro level, brand and post-purchase uncertainty may refer to more specific notions that would be focused more on an 'after-adoption' stage – transaction confirmation and 'after-sale' policies. It seems these notions have greater impacts on the respondents post-transaction therefore are referred to as 'after-use uncertainty'. It is clearly presented in the qualitative results section that transaction confirmation and 'after-sale' policies are vital in IBS adoption decision making when consumers have limited or no knowledge about IBS, especially when product information is not fully available in the market.

Consequently, how losses are dealt with becomes a primary concern, as identified earlier.

It has been identified that in China, full product information is frequently lacking; even when it exists, it can be questionable (Bao et al., 2003). This suggests that there is a lack of reliable or trustworthy product information in this particular market. Under these circumstances, it can be argued that the search for and use of information may increase the amount of risk perceived rather than reduce risk (Gemünden, 1985). For example, incorrect information can have a negative impact on product evaluation, or potential effect such as psychological and social loss can occur. When consumers try to evaluate a new product using such information, they might have to speculate in relation to purchase outcomes since unreliable or invalid information can potentially produce confusion or hide unexpected purchase consequences. This is clearly identified by the interviewees in the current study.

Due to the invalid or barely credible product information, therefore, Chinese consumers tend to seek greater certainty through different means. First, they highlight that this is related to the government. Consumers prefer to have strict regulation and legislation to help them minimise purchase uncertainty, and furthermore, to protect their rights (Laforet & Li, 2005). The quantitative results show that among those who are aware of IBS, many respondents disagreed that the current regulation or law regarding Internet banking is effective in China. In addition, the majority of participants were not convinced about regulation effectiveness at all. Many of them, especially the females, have not noticed relevant laws or regulation. Since regulation is seen as one effective means to reduce uncertainty and obtain assurance, stringent laws and regulations should be established, announced and enforced. This suggests that rules made by banks and supported by legislation would be useful to help consumers to manage their risk perception.

Secondly, the idea that police enforce laws is important. As consumers tend to want legal protection which is perceived as deficient at the moment, they tend to seek greater certainty through third parties such as the idea of Internet police. Respondents suggest that it is important to have IBS monitored and the police appear to be a reliable party to implement this task. It is noted that the males are relatively more confident in the concept of Internet police. This is possibly related to their greater knowledge and familiarity of computers/the Internet.

With decisions under uncertainty, Chinese consumers usually prefer to stick to routine behaviours or lifestyles and are less willing to explore or adopt changes (Sun et al., 2004). This is also observed by Laforet and Li (2004) and supported by this research. For example, the female respondents stated that they would prefer not to be “guinea pigs”. They would rather wait for others’ to adopt the product and ask their opinions on the product instead. This supports the literature that Chinese consumers are generally risk-averse.

Moreover, in light of the above uncertainty due to the lack of product information, the respondents also implicitly addressed the effect of ‘country-of-origin’. As shown in the qualitative results, the respondents were aware that IBS was originally designed and launched abroad. When they compared the differences in IBS between the Western markets and the Chinese market, they preferred the IBS developed in the West. This ‘better development’ perception or preference may be associated with the notion of ‘country-of-origin’. According to Zhang (1996), when short of information to evaluate foreign products, Chinese consumers would become sensitive to ‘country-of-origin’. In particular, the influence is likely to increase when the products are expensive and complex. For example, consumers would tend to link or use the perceived country image to evaluate the product. This tendency was also found in the current context – the preference of IBS from Western markets rather than Chinese IBS development. Currently, foreign brands cannot provide individual customers with IBS services in the Chinese financial market. Even so, in general, the respondents still held a more positive attitude towards foreign IBS providers. This suggests that country-of-origin could be a particularly useful ‘symbol’ in promoting IBS although the respondents had not highlighted a particular foreign ‘brand’ (IBS provided by foreign banks, e.g. American, British banks).

#### **5.6.4 Cultural Aspect**

Face consciousness and risk avoidance are often considered as two useful constructs to understand Chinese consumers’ decision-making behaviour (Bao et al., 2003; Lowe & Corkindale, 1998). Moreover, risk avoidance could considerably influence Chinese consumers’ innovation adoption. It is noted that these constructs could be related to other elements such as the influence of social opinions and group orientation. These notions may have different marketing implications and are applied here to understand better the results presented in the previous chapter.

#### **5.6.4.1 The Influence of Social Opinions in Adopting an Innovative Product**

The quantitative results indicated that social risk accounted for a marginal effect in explaining OPR and the qualitative findings revealed that some respondents had concerns about peers' adoption behaviour. Firstly, the quantitative results are somewhat in line with Western consumers' views, suggesting that using the Internet for banking services is primarily a private decision so that little social influence would be made (e.g. Black et al., 2001; Lee et al., 2005; Littler & Melanthiou, 2006). For example, Black et al. (2001) in investigating British consumers' attitudes found that IBS would be less associated with an individuals' social esteem, so whether or not to use IBS would not be a common topic for social discussion. The feature of being a private consumption mainly explains why the social dimension accounted for limited explanatory power of OPR. This perspective is commonly illustrated within the qualitative results.

With regards to adoption intention, the qualitative results show that respondents, especially the females, were influenced by others' adoption behaviour. In line with Laforet and Li (2005), this suggests a relatively low level of awareness in China. More specifically, it was found that respondents seldom discussed IBS advantages and disadvantages among family members and friends. The majority of respondents stated that very few of their peer group had started to use IBS. The females emphasised that this would affect their adoption decision.

Studies suggest that Chinese consumers tend to care about social members' opinions and seek social group harmony (Bao et al., 2003). Moreover, the influence of social opinions could become greater when the consumers were encountering innovations (Lowe & Corkindale, 1998). For example, compared with Australians, Chinese consumers tended to be more sceptical to an unknown situation and they would be more likely to accept "the concept of "mean"" (Lowe & Corkindale, 1998: p853). This means that the Chinese consumers try to avoid being extreme or they attempt not to be seen to act distinctly and differently from others as it would demonstrate the individual's difference from the majority. This also implies two related interesting issues – the importance of "exercising self control" (Loudon & Della Bitta, 1988; cited in Lowe & Corkindale, 1998: p853) and a general tendency of risk aversion among Chinese consumers.

The issue of self control is mainly evidenced in 'factor 1', which referred to the risk of losing one's accounts control, funds or personal data if IBS went wrong. Perhaps retaining control is particularly important to the respondents as it could be a positive symbol to signify one's social stability. Whereas within the current context, the

respondents expressed that because IBS was operated on the Internet, which inherently had special characteristics such as security issues and data manipulation, the respondents worried that they might make mistakes or lose control over this medium too easily. Results show that for these respondents, mistakes are more likely to occur over the Internet perhaps because of lack of knowledge. Thus, making mistakes due to the adoption of a new/unfamiliar product over a problematic channel could potentially harm the respondents' social status, may be losing face in front of others. Research indicates that those Chinese consumers who are concerned about this negative outcome would try to avoid it (e.g. Kindel, 1982; cited in Lowe & Corkindale, 1998). One common strategy is to adopt a new product slowly. In fact, it is found that Chinese consumers hesitate to accept new products, compared with Australian consumers (Lowe & Corkindale, 1998).

In addition to the avoidance of losing face, risk avoidance behaviour could be attributed to the 'mean' acceptance. This helps explain why some Chinese consumers' respond slowly to new products. Lowe and Corkindale (1998) reported that when the Chinese consumers were involved in innovations, the 'mean' acceptance (e.g. slowly accepting a new product) allowed them to avoid the uncertainty involved in an unfamiliar situation at an early stage. Also, with limited knowledge and familiarity of the product, Chinese consumers usually prefer to continue with their familiar brands or existing products. This implies that Chinese consumers would tend to be conservative so delaying the pace of innovation, especially during early adoption stage when many of their peers have not yet adopted the product and little is known about the product from personal sources. Moreover, the slow adoption rate reveals that in general, Chinese consumers may be less tolerant of risk in uncertain situations (Sun et al., 2004). Thus, it seems they tend to stick to routine life styles, prefer safety or certainty, and are careful when dealing with innovation.

The above discussion may be applied to help understand the results from this study. The qualitative results have shown that the respondents held similar views to the above. The interviewees were concerned about others' opinions and actions towards IBS adoption. More specifically, the participants commonly believed that IBS was not popular otherwise peers should be discussing it; additionally, as not many peers had adopted IBS they would be less likely to consider adoption. This suggests that, in general, these Chinese consumers were influenced by their group members through different means such as personal recommendation. If a product is socially acceptable, it is likely that the product would become popular quickly. This supports previous work in studying Singapore consumers' choices of retail banking (Tan & Chua 1986; cited in Devlin,

2002). Tan and Chua (1986) reported that Singapore consumers significantly value social factors such as recommendation or advice from family and friends rather than other elements (such as opening hours and interest rates) when they were selecting a retail bank. Perhaps for them, advice through personal approaches would be a more reliable source. It seems that whether information is felt to be reliable would have an impact on individual's risk adoption behaviour. The female respondents particularly stress that they would tend to wait for peer group members' action on IBS adoption. This emphasises the importance of opinion leaders to Chinese respondents' decision of IBS adoption.

Researchers (e.g. Sun et al. 2004) suggest that consumers who are from collectivistic cultures such as the Chinese, can be more easily influenced by social members. Sun et al. (2004) remark that these consumers consider themselves belonging to groups; they integrate themselves to the group and seldom regard themselves as to being self-centred or individualistic. Moreover, they value group membership and are concerned about group processes and decisions; they also expect to gain help from other group members, or vice versa, when needed. For these consumers, it is important to establish good relationships with other group members, to maintain harmony within the group, and to avoid losing face.

As proposed, unlike products that are more socially related such as a hair cut or a dress purchase for a wedding, IBS is predominantly a private product. Theoretically, it would produce little social risk. However, as outlined earlier, differences exist between the genders in terms of the risk of losing control where the males see control as more important than the females. It is likely that the males worry that losing personal control is associated with personal 'face' concept.

Thus, it is not surprising that the Internet is considered as a more uncertain channel for banking services. This view is in line with Trappey and Trappey (2001) who suggest that Chinese consumers tend to have low confidence in EC, particularly the Internet as a shopping channel.

#### **5.6.4.2 Gender Interpretation on Risk Perception**

Research suggests that genders view risk differently; in general, females perceive greater risk than males. Stoddard and Fern (1999) review research on the evaluation of job performance which suggests that females and males attribute success to different factors. More specifically, males tend to use 'internal and stable' elements to explain their job

success, for example individual ability and effort; while females are inclined to mix 'internal and external', 'stable and unstable' elements to evaluate their success, including good luck, hard work, or task difficulty/complexity. This suggests that men see their behaviour as more straightforward and more related to themselves as individuals whereas females are more likely to use a mixture of elements to explain their behaviour.

This proposition is interesting and may be applicable to the current study to explain the findings associated with gender difference. The qualitative interviews reveal that the male respondents were more confident in relating their IBS non-adoption behaviour with their personal knowledge, skills, and individual capability of the operation system – the Internet. On the other hand, the female respondents consistently 'blamed' external elements as causing their decision not to use IBS, such as the role of the government and banks. The males are also more certain about legal regulations regarding IBS compared to the females. As the females are uncertain how these external elements (e.g. the role of the government and banks, unclear legal regulations) will influence the IBS operation, they perceive a greater degree of OPR than the males.

Furthermore, the females are found to perceive greater risk in relation to physical and psychological dimensions than the males. This research has also found that there is a positive relationship between physical and psychological risks. This means that physical risk will increase when psychological risk increases, and vice versa. One possible explanation for the gender difference is that the females are more concerned about their bodies and physical safety, this concern has a bigger impact on their psychological aspect than the males. Thus, females are found to have a greater risk perception in relation to overall, physical, and psychological dimensions.

Interestingly, no significant difference is found when usage intention between the males and females is compared. This is different from prior work. In the current study, IBS is still innovative to both the female and male respondents who perceive the product to have varying and considerable risks. Thus, there is no significant difference in their usage intention. A question can be raised here – is the gender gap in relation to online activities decreasing?

#### *Gender Difference in Visual Confirmation*

Furthermore, the genders consider visual confirmation differently. Qualitative findings have revealed that female respondents are in greater need of authentication than males.

This suggests that the females feel less confident and require greater security than the males. Indeed, the female respondents comment that physical banking is an effective approach to gain verification since banking operations are conducted by bank staff. This indicates that the females prefer not to take responsibility if things go wrong – passing this on to staff – although errors also exist in physical banking.

This addresses a number of issues for discussion. First, it is possible that the females inherently perceived themselves to have limited computer literacy. Therefore, they worry that they would easily make mistakes. Secondly, perhaps the females link authentication with predominantly negative outcomes such as financial loss (while the males do not) so that the females require more verification than the males. Alternatively, the females tend to seek the status of ‘perfection’ while IBS mistakes might be seen as an unnecessary individual failure, meaning physical banking is used instead. Since IBS is a self-service product, users have to cope with unexpected outcomes that might further lead to psychological and/or social impact. For these reasons, the female respondents require greater security than the males. Researchers and marketers should attend to these gender differences.

Having discussed the major findings in depth, conceptual considerations, marketing implications, future research directions and conclusions are presented in the coming chapter.



**Chapter 6 – Contributions,**  
**Marketing Implications and**  
**Conclusions**

This chapter presents an overview of the research, highlights major findings, addresses its conceptual contributions and marketing implications for those who are considering entry into the Chinese IBS banks, and concludes with recommendations for further research directions.

## **6.1 The Overview of This Research**

Results from this research have provided sufficient evidence to confirm that PR theory is valid and appropriate to explore decision making within the Chinese IBS context. The research, therefore, responds to the conceptual gap identified in an examination of PR in non-Western cultures (Hoover et al. in 1978; Verhage et al., 1990a). More specifically, PR not only assists in understanding Chinese consumers' decision making in relation to IBS, it also helps identify appropriate marketing implications in this transitional market.

Guided by the critical realist perspective, a primarily descriptive approach consisting of mixed methods for data collection was applied. Based on the existing literature and exploratory interview results, a detailed and useful framework to examine a pre-purchase situation was developed. To consider thoroughly whether the PR held concept validity in the Chinese IBS context, the construct was defined as having eight dimensions and dual components in this market. Moreover, the dimensions were specified into multiple risk variables and each of these was further conceptualised through the lens of dual components – uncertainty and consequences. Following Mitchell and Groatorex's (1993) suggestion, the components were operationalised as 'certainty and seriousness of consequences' because validity of these terms was found in services contexts and were recommended for future service-related research. The use of the dual component lens has found new validity in the Chinese IBS market.

The advantages of this framework can be summarised as enabling the researcher to gain detailed information on risk perception regarding IBS adoption; examining PR in terms of its significant PR dimensions, and more importantly, investigating which component is more likely to dominate consumers' risk perception. This two-component measure builds on Mitchell and Groatorex's (1993) research which commends that it is important to evaluate how PR influences consumers' decision making by considering both uncertainty and consequences.

In addition, the framework provides flexibility in evaluating the efficacy of the two common measurement models – the multiplicative and the additive. The detailed comparison between the models demonstrates that, within the current context – a high-

risk service situation – the multiplicative model is more appropriate. This supports the suggestion made by Van den Poel and Leunis (1996) and by Yates and Stone (1994) who argue for the multiplicative approach in high-risk situations.

Finally, by using this multiple-variable framework, this research is able to respond to previous comments regarding the testing of reliability and validity within PR (e.g. Dowling, 1986; Mitchell, 1998a). These issues are seldom addressed or examined. Within the current context, satisfactory results regarding internal reliability and validity are obtained. Issues associated with these elements are presented later in this chapter.

Results discussed in the previous chapter have shown both commonality and differences in terms of risk perceptions between Western and Chinese consumers. PR is not considered by Chinese consumers in the same manner as the literature developed in Western contexts suggests. Also, the research has found that some of the differences are particularly associated with gender, Chinese culture and the context examined. The major findings are indicated below.

## **6.2 Major Results**

To measure whether PR was valid in the Chinese IBS context, six principle risks derived from the traditional shopping situations and two additional Internet-related risks were adopted. These risks were then integrated with exploratory results and modified to suit the context of Chinese IBS. This includes a number of conceptual considerations:

- the relationship between OPR and multiple risk dimensions;
- the inter relationships between the risk dimensions;
- the relationship between OPR and risk variables;
- the measure of the two PR components in a service context;
- the evaluation of the additive and multiplicative models;
- the usefulness of a self-evaluated OPR, and
- finally, suggestions for PR measurement approaches are presented.

### **6.2.1 The Relationships between OPR and Risk Dimensions**

At an early stage of data analysis, some consistencies between the Western and Chinese consumers were found in terms of the relative importance of individual risks. Within the current context, the respondents identified the eight risk dimensions as having different significance – as some (i.e. security, performance, privacy and financial dimensions) were seen as more important in influencing OPR than others. This supports the literature

that the composition of PR varies according to the product, situation, and people (e.g. Dowling, 1986; Garner & Thompson, 1985; Jacoby & Kaplan, 1972; Mitchell, 1999; Stone & Gronhaug, 1993). This general consensus also suggests that some broad conceptual considerations are shared between Western and Chinese consumers. It implies that *some*, but not *all*, practical considerations may share Western and Chinese contexts.

### **6.2.2 The Inter Relationships between the Risk Dimensions**

The risk dimensions were considered to be positively inter-related by the Chinese respondents (e.g. security and performance are highly correlated). This is different from previous work, which has reported independent relationships between risk dimensions (e.g. Barkworth et al., 2002). The positive relationships between risk dimensions are seldom reported in earlier PR studies except for a few dimensions such as psychological and social risks (Jacoby & Kaplan, 1972; Lewis, 1976; Mitchell & Greatedorex, 1993; Stone & Gronhaug, 1993). However, the results responded to more recent researchers' concern about the relationship between risk dimensions within the IBS context, for example, Yousafzai et al. (2003) propose that security and privacy may be conceptually correlated. In addition, findings from this research have shown that half of the risk dimensions are significant in relation to OPR. Risk dimensions are not necessarily independent, depending on contexts; they may or may not be correlated.

This highlights that PR is a diverse and complex concept and therefore it is difficult to develop a 'universal approach' for measurement. Perhaps a more practical question is how to gain a better understanding of consumers depending on the situation. This also indicates that different approaches to evaluate PR in various contexts are required. This demonstrates that the literature regarding PR measurement approaches needs to be refined: at least movement from the risk dimension level should be subject to a more in-depth analysis, such as the usage of multiple risk variables within individual risk dimensions.

### **6.2.3 The Relationship between OPR and Risk Variables**

Sub-dividing PR dimensions into multiple variables allows the researcher to capture a clearer picture of how the respondents view PR. Results from this research suggest that assessment of OPR based on a single variable within each risk dimension would not fully address the complexity of PR in various decision making contexts.

The use of multiple measures enabled this research to reveal the underlying relationships between risk variables, to discover risk factor patterns, and to examine how helpful these factors are in terms of differentiating the respondents' OPR. In addition, it facilitated an evaluation of the performance of the common PR measurement models. When considering the use of variables to examine risk perception, it is clear that they do not explain the patterns in the data fully (e.g. see total variance explained). However, as outlined above, when considering the relationship of the dimensions to self-evaluated OPR it is apparent that the dimensions do capture issues that are positively correlated to the assessment of overall risk. This again suggests that the examination of risk dimensions is valuable, but is not sufficient to understand the complexities of consumers' risk perceptions.

Researchers need to be careful when applying risk dimensions and variables within a specific context. This is because PR changes in different contexts and as mentioned, it is therefore difficult to develop a 'universally applicable' instrument. The findings support previous suggestions that research in PR areas may generate different results, depending on the variables measured (e.g. Barkworth et al., 2002; Mitchell, 1998a).

Thus, to examine risk appropriately, researchers need to consider:

- the relationship between OPR and the dimensions;
- the detail of how the dimensions are formed through the components, and
- the relationship between OPR and the components.

This reinforces the work of researchers such as Gemünden (1985), Mitchell and Greatorix (1993), who support a separated measurement of PR components to allow a better understanding of relevant risk components. It is expected that this could improve explanation and predictability in the study of PR.

#### **6.2.4 The Two-Component Measure in Services Contexts**

As outlined earlier, the application of dual components in the IBS context is appropriate. To define PR in these terms is important as it enabled this research to investigate which component of PR has greater explanatory power (Garbarino & Strahilevitz, 2004; Mitchell & Greatorix, 1993). The researcher may then identify which component undermines consumers' certainty in adopting IBS.

Quantitative results from this research have shown that the consequence component was consistently given a greater degree of importance. Also, qualitative results reinforce this

finding and suggest that the consequences component significantly affects Chinese consumers' risk perception of IBS. Furthermore, the qualitative results suggest that uncertainty-related barriers are associated with the inherent characteristic of services and the nature of the Internet. Thus, this level of detailed measurement may, in turn, induce researchers and marketers to give more attention to consumers' specific concerns and develop appropriate strategies to encourage a faster adoption pace.

### **6.2.5 Evaluation of the Additive and Multiplicative Models**

The efficacy of the multiplicative and additive models was evaluated. The current study has found that the multiplicative model is more appropriate in this context. Initially, similar results were displayed between the two models. However, divergence was found in more sophisticated analytical techniques – EFA and stepwise DA. The EFA derived from the multiplicative model produced a cleaner factor solution and provided more parallels between the quantitative and qualitative results in terms of factor order, factor content and variable order. This shows consistency between the two sets of data. Further, when the factors were used to differentiate the Chinese respondents in terms of OPR, the results were found to be robust.

As mentioned earlier, this supports researchers, such as Van den Poel and Leunis (1996) and Yates and Stone (1994), who recommended multiplying uncertainty and consequences in high-risk situations. It reinforces the usefulness of a mixed-method design in approaching the complexities of PR theory; it also indicates the need to differentiate groups within the Chinese IBS market.

### **6.2.6 The Measure of a Self-evaluated OPR**

Given the complexity of PR, an additional 'path' to assess the respondents' OPR was applied – self-evaluated OPR. This measure has a number of advantages when seeking to reduce measurement error. First, self-evaluated OPR helps reduce the difficulty in briefing the respondents about the concept of PR (Mitchell, 1998a). Previous research indicated that it would be helpful to brief respondents before measurement (e.g. Jacoby & Kaplan, 1972). However, when briefing is not possible, the additional evaluation of OPR becomes vital to research.

Secondly, the measure helps researchers minimise the potential measurement error that may be produced by specific risk dimensions (Gemünden, 1985). Also, researchers can evaluate whether the calculated OPR derived from the risk dimensions is correlated (or has 'parallels' to self-evaluated OPR). This offers another opportunity for researchers to

examine measure reliability more broadly. Researchers can compare whether self-evaluated OPR and calculated OPR are measuring what they are supposed to measure. If measured properly, these two variables should be correlated which suggests some internal consistency between the measures. Internal consistency examined at this level is important if multiple risk variables are not applied in a given context. With such an additional approach to OPR measurement, researchers may at least reflect concerns of internal reliability, although the scope of examination might be limited.

### **6.2.7 Suggestions for PR Measurement Approaches**

It is noted that the issue of how to combine various risk dimensions to form consumers' OPR is a challenge to those who are interested in measuring consumers' risk perception. Using Dowling's (1986) review on PR measurement models, this research extends his suggestion and proposes that consumers' OPR could be assessed in different ways according to the context examined.

#### **6.2.7.1 Simple Purchase Situations**

The utilisation of a single measurement at a 'unidimensional' risk level, as well as an OPR measurement, would be appropriate and practical (e.g. how risky is 'X' risk dimension in considering product/brand A?). This approach has been commonly used in previous studies covering a wide variety of risk situations, where it appears to be a rather weak approach in terms of information generation. However, this approach might be applicable in some circumstances: for example, when the use of the PR concept is new to an unexplored situation, such as many non-Western cultures; or to investigate consumers' perception of an unfamiliar product (e.g. a new drug on the market). Alternatively, this approach may also be useful to guide exploratory interviews to find out more specific risk dimensions.

The potential drawbacks in adopting this approach are that firstly, it will focus the investigation at a surface level in terms of risk perceptions. Also, this approach would be restricted to 'simple' analytical methods (e.g. correlation coefficient) and therefore only general results would be generated, such as the relationship between OPR and concept-related elements (e.g. individual risk dimensions, information search, or usage intention). Further, such a measurement approach would apparently limit researchers' ability to examine validity and internal reliability.

Clearly, without the examination of these two important criteria, it is difficult for researchers to reflect fully on whether the PR concept is applicable in a particular context. This could weaken research findings and have implications for generalisability.

#### **6.2.7.2 Fairly Complex Situations**

Researchers may focus on dimensions seen as relatively important (using multiple variables for each dimension as appropriate), as well as an overall risk measure. In general, this approach could 'free' researchers from the long-standing arguments regarding two common PR measurement models: multiplicative vs. additive. Researchers could reflect on the concerns of concept validity and reliability, depending on how specific risk dimensions are considered in the measurement.

Like the overall level measure, if a single-variable in each dimension is adopted, it will also be limited in terms of obtaining detailed information from consumers to fully capture the construct. As consumer decision making often involves elements of complexity, it is unlikely that this approach would adequately address an inquiry of interest. Therefore, researchers need to be aware of this limitation.

However, a multiple-variable in each dimension allows researchers to measure the construct in greater depth. Also, researchers are able to identify which variable is attributed to the dimension, to understand better the structure of consumers' risk perceptions. It is expected that researchers may be in a better position to develop more appropriate strategies. In addition, this approach enables researchers to test more advanced construct validity and reliability, such as criterion-related validity or construct validity (convergent and discriminant validity). Recent studies have begun to respond to these relatively unexplored PR areas (e.g. Hassan et al., 2006). However, this research argues that such an approach could mask and neglect the relevant importance of the risk components. In other words, the question of whether the 'uncertainty' or 'consequences' component plays a more dominant role in consumers' risk perception will not be addressed. These elements could severely impinge on the situation under examination, and any subsequent risk solutions that do not examine these elements are potentially ineffective.

As summarised earlier, in line with other PR reviewers (e.g. Dowling, 1986; Gemünden, 1985), researchers should therefore carefully develop multiple variables to measure individual risk dimensions.



### **6.2.7.3 Complex Purchase Situations**

Researchers may focus on dimensions seen as relatively important, measured using multiple variables for each dimension and utilising component level feedback, as well as an overall risk measure. The advantages of this approach were detailed earlier and therefore are not repeated in full here. In brief, like the second approach to 'fairly complex situations', this approach could also maximise the data's analytical potential, which allows researchers to investigate a wide range of related constructs, such as the relationship between PR and purchase intention.

However, this approach has limitations. For example, it requires a considerable amount of information from consumers; it also relies heavily on a great degree of cooperation from the respondents. This demonstrates that respondents could become tired or discouraged when completing the data collection process. Researchers therefore need to balance the potential advantages and disadvantages of different approaches.

In addition to the different situations examined, researchers are also recommended to consider whether PR is measured at the pre-purchase or post-purchase stage. This is because consumers' perceptions are likely to change at different stages of decision making.

### **6.2.7.4 Measurement of PR in a Pre-Purchase Situation**

As discussed in the literature review chapter, most PR studies measure consumers' risk perception in post-purchase contexts. However, consumers' perception can be 'contaminated' after purchase – it is likely that consumers' risk perception change before and after purchase (Cunningham, et al., 2005b; Mitchell & Boustani, 1993). To clarify this issue and to measure appropriately the relationship between consumers' risk perception and intention, PR can be measured in a pre-purchase/adoption stage (Dowling, 1986; Gemünden, 1985). It was expected that the measurement of the Chinese respondents' risk perception would remain at a 'pure' level. This would help minimise measurement error that may be caused by assessing 'recalled-measures'.

## **6.3 Reflection on the Philosophical Research Position Adopted**

This research adopted a critical realist perspective with a mixed-methods approach to explore a new, growing, and dynamic market – IBS in China. The critical realist perspective provided the researcher with the opportunity to examine Chinese consumers' OPR and to provide insight into the findings. This perspective helps this research to

understand the elements hidden beneath the surface of services contexts because it is important to elaborate the detailed understanding of consumers' risk perception.

As discussed in the Methodology chapter, a pure positivist position may not appropriately identify and adequately measure the complexity of PR. Risk is always associated with the perceiver (Kaplan & Garrick, 1981). A 'direct' dialogue to quantify consumers' perception is therefore problematic. More importantly, researchers could fail to address fully the problems masked by taking a pure postpositivist perspective, which has dominated work in the PR field for almost half a century – the reliance on quantification in social science research. Under such circumstances, misleading interpretation of results could be generated and that can produce serious outcomes, such as ineffective strategies to compete in the Chinese IBS market.

To address these issues, the critical realist position was adopted and found useful. The researcher is aware of the potential benefits and problems of this position, which led to the development of a mixed-method approach. The researcher measured consumers' risk perception and further investigated the connectivity between the social world and the objective world. This approach enables the researcher to meaningfully measure PR, to better understand the respondents' risk factors, to enrich the data and to shed light on the respondents' perspectives on IBS at its early stage of development in China. This also highlights the insufficient work from a cultural and social perspective in the PR field.

### **6.3.1 Research Design and Methods**

Given the lack of relevant literature in the Chinese IBS market, the current study has taken a three-stage approach; exploratory interviews, questionnaire and post-questionnaire interviews. A wide range of consistent results between the data sets were found. This design and data collection approach is useful in the current context; it enabled the researcher to examine the Chinese respondents' risk perception and to provide insights into the perceptions.

This design clearly is not without problems: its limitations are identified in the Methodology chapter. Care should be taken to seek balance between the quantitative and qualitative approaches. Nevertheless, the design has helped the researcher to maximise the potential strengths of the philosophical proposition and to seek balance as much as possible.

## **6.4 The Consideration of Cultural Elements in Risk Perception**

When PR is applied to a less explored culture such as the non-Western market, broad cultural investigation should be carried out to explore whether elements that are associated with a particular context exist. These elements could be useful to examine PR's construct validity and to investigate the inquiry more thoroughly. The current study explored the elements of Internet knowledge/experience, awareness of the product, and gender. Interesting results have emerged, highlighting the commonalities and differences between Western and Chinese IBS markets. More importantly, a cultural and social perspective in risk perception was noted. It therefore helped improve our knowledge regarding how PR influences different consumers' decision making in various contexts.

### **6.4.1 The Relationships between Internet knowledge, Experience and Risk Perception**

Internet knowledge and Internet usage duration appear to be ineffective variables in differentiating the sample. In general, there is no significant difference in terms of self-evaluated OPR and the eight risk dimensions within the various Internet knowledge groups and Internet experience groups respectively. This indicates that within the current context, young Chinese Internet users who have different knowledge of the Internet or experience in using the Internet did not perceive a substantial amount of risk difference concerning IBS.

This finding raises a number of questions: is the non-significant difference caused by the possibility that the respondents appeared to be more willing to tolerate IBS? Or is it caused by the common features that IBS shares with other Internet-related services? How could marketers encourage this group of consumers to become early adopters? These questions are vital to banks seeking to compete and operate in the Chinese IBS market.

### **6.4.2 The Relationship between IBS Awareness and Risk Perception**

IBS awareness appears to be somewhat effective in differentiating the sample. In general, those who are more aware of IBS, perceived less overall risk than those who are less aware of the product. In terms of performance, security, and social dimensions, there is no significant difference between these two groups of respondents. Comparing the other risks (finance, privacy, time, psychological and physical dimensions), there are significant differences between these two groups of young Internet users; less risk is perceived by those who are more aware of IBS.

These results demonstrate a number of issues with marketing implications. Firstly, within this context, at the early stage when the market is relatively underdeveloped, it is vital to raise customers' awareness of IBS. Secondly, the current study supports the suggestion that performance and security are two essential barriers preventing consumers from using the Internet for banking services.

#### **6.4.3 The Relationship between Gender and Risk Perception**

Results demonstrate that gender effectively and consistently differentiates within the sample. Findings from the current research supports some previous research that males and females view and handle risk differently (e.g. Stoddard & Fern, 1999). Among the homogeneous respondents, results have shown that gender differences were found in risk factors and interpretation; however, no significant difference was found in terms of usage intention between the male and female respondents. This is evidenced in both quantitative and qualitative results covering various topics related to IBS. When comparing self-evaluated OPR, the eight risks, and usage intention between females and males, it is found that there are both commonalities and differences. To summarise, gender-related differences are evidenced through: females perceive IBS as riskier than males in terms of OPR, psychological, social and physical risks are viewed differently but not the others. Males and females, however, appear to show similar adoption intentions. This seems to suggest that the gap in terms of significant risk dimensions and usage intention between genders is subtle.

The results have implications for both researchers and marketers. Conceptually, this implies that more research is needed in exploring gender difference in PR areas. For example, why do females perceive greater risks than males but their adoption intention the same? Practically, this suggests that marketers can further divide the current IBS non-users into gender groups and tailor strategies to operate in different sub-markets. Importance of overcoming barriers may be key here. Particularly, banks might target the male young Chinese Internet users first as they generally perceived IBS less risky than the females. Banks could seek to stimulate this group of customers to become IBS early adopters. This might have a positive effect on the females' actual adoption since they express similar intention for IBS adoption. It may be also important if banks respond effectively to reduce perception of other related risks that the females worry more than the males, such as in the psychological and social dimensions. This would demonstrate the usefulness of dividing the IBS non-users into gender groups.

Divergence also appears within factor relationships and in relation to the width and depth of the mini-group discussion. In the qualitative data, apart from the gender split, the respondents were further categorised by their knowledge/understanding of IBS. It is noted that this segment helps identify group difference mostly in relation to security and performance risks. This result also supports the findings that between those who are aware of IBS and who are not, no significant difference is found in relation to performance and security risks. Additionally, this result confirms that banks should primarily address the issues of security and performance otherwise it is unlikely that consumers would effectively manage their risk perceptions. Subsequent results also try to distinguish consistent differences in terms of IBS understanding. However, as demonstrated in the qualitative section, rich evidence confirms that this was less significant than gender split.

### **6.5 Marketing Implications for International Banks**

An important role for this study was to identify any potential differences among IBS non-users. Important risks and various underlying factors are identified to explain the considerable risk perception in relation to IBS. On the basis of strong evidence from the current research indicating that security issues, performance, privacy concerns and financial loss are the significant risks in the context of IBS, other online market research similar to this might expect similar results. The factors extracted from these risks helped classify and predict consumers' risk categories.

The discussion of the findings leads to a number marketing implications for those who are considering entry into the Chinese IBS market. This study's results help banks to understand not only the significant risk dimensions in relation to IBS on the surface, but also the underlying elements in explaining these risks. The current study has shown that IBS is perceived as a new and risky product discouraging Chinese Internet users from adopting. Given the detailed discussion of the findings, it is clear that significant risk dimensions in relation to IBS perceived by the Chinese consumers show some similarities in terms of the dimensions observed in relation to Western consumers. As mentioned, security, performance, privacy and financial risks are viewed as more important in terms of the dimensions and relevant variables. This suggests that established knowledge of Western consumers' concerns about whether to use IBS could be helpful in understanding the Chinese consumers' risk handling behaviour.

However, below the surface, the underlying elements that are elicited from the group interviews, explaining the significant risks, are distinct. These elements also influence

the respondents' risk perceptions differently. Simply 'overlaying' the results from Western consumers would not fully address the specifics of the cultural context, nor would it recognise the uniqueness of the market itself. Therefore, whilst information from Western studies provides a useful foundation, merely to apply it uncritically would fail to understand the situation at a crucial cultural level. Accordingly, marketing strategies must be tailored to help Chinese consumers to surmount the obstacles in this particular market.

As Laforet and Li (2005) have found, Internet banking is still in its infancy in China; many consumers are unaware of product availability. The current study has further identified that many IBS non-users are not entirely aware of the product benefits. The current study suggests that IBS providers need to give Chinese consumers more basic information e.g. acknowledge the availability, service ranges, and benefits of IBS. Impersonal information resources may be appropriate at this stage, such as in-branch booklets and advertising. This is critical as it helps inform potential users of IBS availability, for example, enhancing consumers' awareness of the product and its service range.

The potential benefits of using IBS should also be detailed to consumers. It is noted that such information is essential to attract potential users' attention: the information provision may enhance consumers' awareness about the product. Banks can emphasise the major benefits of using IBS within the Chinese context, including the avoidance of cash carrying risk or time loss due to queuing in physical branches. However, IBS providers perhaps need to consider offering more monetary benefits to attract new customers to this particular market. For example, higher interest and lower charges to banking services are commonly applied in Western markets and found useful to attract new customers. Although interest is still tightly controlled by Chinese central government, banks could offer incentives to potential customers as a short-term strategy.

Secondly, IBS operation should be publicised. IBS is a self-service product in which security is paramount to consumers. As bank staff 'inertia' is frequently mentioned as a main issue inhibiting effective promotion of IBS, personal delivery may be applied here, especially when consumers are not confident with an innovative and high risky product. Instead of 'waiting', bank staff should be proactive in relation to IBS promotion, explaining how IBS operates, showing customers how to use IBS through in-branch illustration and 'educating' them with more specific knowledge. Both in-branch and web-based illustration may be used. However, as many Chinese consumers prefer

physical contact, in-branch illustration through bank staff may be more desirable, while web-based illustration may be welcomed by those who are more confident and knowledgeable about computers and/or the Internet. Through personal interaction, potential users may experience IBS and accumulate relevant knowledge over time. The proactive role is important as personal interaction helps establish credibility, build trust, maintain essential relationships and remove some uncertainty in relation to IBS. Moreover, as indicated in the qualitative results, when encountering an innovative product in an online and service context, consumers are more likely to seek help or assurance from personal contacts. Banks therefore should make this available to customers.

Thirdly, the respondents' concerns about the perceived lack of effective infrastructure, regulation, and system development should not be neglected. Among these, laws and regulations regarding IBS are real 'threats' and far more damaging to consumers' confidence. In particular, it is the potential service consequences of a 'mistake' that appear most critical to consumers. This helps explain the relationship between security issues and performance doubts, privacy concerns and financial loss. In fact, researchers such as Yu (2006) have explicitly stated that laws and regulations are fundamentally affecting EC development in China. The current study suggests that the lack of regulation is one of the largest barriers and one that escalates consumers' fears in relation to IBS. As laws and regulations are more associated with the government's role, banks have little direct effect on the establishment of laws or regulations. However, banks can provide customers with information about the current regulations, such as legitimate protection regarding online banking transaction and demonstrating the rights of IBS users (e.g. the protection of money and personal data). Such information will help customers reduce their uncertainty, which is particularly related to the risk dimensions of security, performance, financial and privacy. Uncertainty reduction also assists to establish more confidence in using IBS.

Moreover, banks should illustrate to customers the existence of technicians who protect IBS systems from hackers, fake IBS websites or computer viruses. These technicians play a crucial role in guarding the bank's IBS system and help to provide customers with certainty. These technicians could be considered as banks' internal 'Internet police'. This facilitates customers to reduce perceptions regarding the risk of system failure and build trust in banks' IBS systems. However, such technical support is essential but insufficient to fully respond to customers' concerns. In the long term, an independent organisation drawn from the banking industry or a governmental department is desirable

and should be established to guard 'crimes at a distance' more effectively. This external organisation should act independently, publicise IBS crimes if detected, provide victims (e.g. IBS users and/or banks) with evidence and support.

Further, banks should demonstrate their effective roles in IBS system development. Practical approaches in relation to IBS system should be provided to customers to reduce their risk perceptions. For example, banks should widen transaction transparency. Banks could strengthen their IBS system by addressing issues concerning security and performance doubt. Suggestions may be given to users regarding how to use IBS appropriately: how to protect one's IBS account, password, etc. Banks may help consumers to achieve the above by providing them with essential training.

The training also helps customers to set up a right level of expectation regarding IBS performance and the role of the bank. This is critical as consumers in China often have high expectations of the government and banks. It is therefore important that customers' expectation should reflect the changing process of economic transformation and understand that the government has less influence in controlling Chinese banks. More importantly, new competitors from abroad are welcomed and expected to shift the balance of government control. As the results indicate, respondents believe that IBS provided by foreign brands is more advanced than Chinese banks. Foreign banks can emphasise their success in home markets IBS development. At this early stage of the Chinese IBS market development, if foreign banks can meet customers' expectation, it is likely that the expansion of the market would continue.

Also, redress system must be set up; a clear and sound set of procedures related to an IBS 'after-sale' policy should be developed and put in practice. This is crucial as a risk reduction strategy in relation to redress issues; being unfamiliar with the product, consumers are uncertain about the product's performance, and if it fails, what action should be taken. Information on how banks respond to IBS problems, and advice should be given to consumers in terms of how they should react when involved in IBS-error. This advice also needs to be related to IBS procedures. As consumers are currently lacking detailed after-sale policy, they are by no means aware of their legal rights and banks' obligation. This also explains why respondents concern the risk of losing personal control of money and personal data. It is therefore important to present clearly the level of protection banks offer IBS customers, how banks deal with problems, in what circumstances a loss might be considered. It is expected that barriers regarding the



difficulty of obtaining redress would be removed. Overcoming barriers is vital if such policies implemented and this may well be the key to customer adoption of IBS.

### **6.5.1 The Importance of Supporting Early IBS Adopters**

Given it is at an early stage of product development, IBS is so new and risky that marketers should pay attention to a number of issues. When introducing a new product, it is important that marketers act proactively to prompt potential customers to become early adopters. Unsurprisingly, results from this research indicate that those who perceive IBS as less risky are more likely to use IBS. If research was conducted using a broader consumer group, other demographic characteristics may be associated with lower risk perceptions. Identifying such group would provide banks with a clearer initial target market.

'Customer education' may be a useful strategy at this stage as consumers usually know little about new products. Online banking settings may be divided into two levels at least. As an attempt to encourage early adopters to consider IBS adoption, online banking setting for 'beginners' may be used to access essential banking services such as balance inquiry and inter-account funds transfer. Here a 'sophisticated' package that contains full access to all banking services (e.g. personal loans, mortgage or foreign currency exchange) may be less attractive to such consumers. These account features and additional services could be perceived as irrelevant or complicated.

Banks may begin to brief consumers about the product at a broad perspective as an introduction, such as what benefits it may produce, how it works etc. This information is deemed as essential to raise or trigger potential users' interest and form their knowledge about the product, particularly when the product is less well known. The introductory package (with essential banking services) may help provide some protection to account holders – assuming fewer banking services are open to perceived third parties who may seek unauthorised access to someone's account. When consumers are confident in using IBS, more professional banking services (e.g. investment, fund management, loans, insurance) can be tailored or customised to their individual needs. In doing so, banks may better allocate their resources and serve their customers more efficiently. These suggestions are associated with customer education which could provide some risk reduction strategies. However, it is challenging for banks to 'teach' those with 'sophisticated needs' but no or little Internet knowledge. It suggests that this group of customers could be one of the most difficult groups for IBS adoption. Banks therefore need to be aware of their personal needs.

Finally, banks could also demonstrate the importance of being IBS early adopters as these consumers could, among other peer members, become opinion leaders, gain social esteem or increase 'face' value. In particular, many Chinese consumers consider 'face' as an important element in their lives. This notion could be applied in advertising strategies, such as highlighting being an IBS customer pioneer or opinion leader. This is of particular importance to male respondents.

## **6.6 Future Research Areas**

A number of areas are identified for further research in the PR area. At a macro level, these areas are associated with generalisability; at a micro level, these are related to the construct's validity and criterion-related validity issues.

Results from this research need to be tested and validated. Cross-validation research within a similar context (e.g. samples from the similar population in the same region) may be applied. This allows researchers to answer the broad question regarding result generalisability, for example, whether the patterns of significant risk factors identified here would hold true in a similar context, whether the significant predictors (i.e. factors 1 and 3) would be useful to differentiate inter-group OPR memberships within a similar sample. Also, confirmatory factor analysis may further test the theoretical relationships between the risk variables, OPR, and/or usage intention. This more sophisticated technique might detect the complicated relationships between risk variables.

Additionally, research regarding PR criterion-related validity is needed. For example, more specific cultural-related elements may be further examined, such as the Chinese IBS regulations and 'after-sales' services. These were frequently identified as barriers to the adoption of IBS in the current research. This could assist researchers in better understanding how barriers be viewed or changed over time, or whether consumers' risk perceptions would be altered (e.g. is risk increased or reduced) at different development stages of IBS, especially in this fast changing and strategically important market. This also helps marketers to review their current strategies in this market, to reflect on their strategies over time and to respond accordingly.

Also, to broaden the strength of a critical realist perspective, researchers could modify the research design. For example, quantitative data may be analysed more fully before qualitative data is collected. This would enable the researcher to investigate the context more deeply.

A wider range of scales (e.g. six-point) could be considered. This would provide data with a wider spread and that could reflect an intention to reduce the risk of mid-range selection among Chinese respondents. If measured appropriately and adequately, this would enable researchers to scrutinise consumers' risk perceptions in greater detail. However, researchers should bear in mind that a larger scale would still have potential problems: e.g. the tendency of mid-range selection may still occur in its own right.

This research demonstrates that the PR construct influences both Western and Chinese consumers' decision making. The construct is complicated. However, it influences Chinese adoption of IBS. With the increasing importance of this market and yet insufficient knowledge of the context, research in the area of how PR can help understand Chinese consumers' decision making and encourage IBS adoption becomes important. To address some of the controversies within the PR field (such as the adoption of a measurement approach), the current research was conducted in response to a number of suggestions through a critical realist approach. The approach sheds light on the application of the PR theory in the Chinese IBS context; the development of a multi-variable instrument within the market; the examination of two common PR measurement models; the in-depth understanding of the risk factors, and the establishment of tailored strategies within this market.

A thorough understanding of consumer behaviour in various purchase situations from a PR perspective is not always straightforward. This is particularly true when a complex situation is encountered and there is a lack of clarity about how to apply and measure the PR construct. This perhaps becomes more problematic when a construct that is developed in a primarily Western context is extended to non-Western one and therefore new or tailored research approaches are needed to approach the inquiry.

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# **Appendices**

## **Appendix 1**

### **Mini Group/Individual Interview Topic Guide (Stage 1)**

1. Introduction
  - a. 'Welcome' and appreciation to the interview
  - b. Interview objectives
  - c. Data confidential assurance
  - d. Response to uncomfortable questions
  - e. The possible length of the interview
  - f. Permission to recording the interview
2. Commence with general discussion on Internet usage and experience
  - a. Internet usage
  - b. Usage location
  - c. Time spend online and major online activities
  - d. Self-evaluation in Internet knowledge
3. The awareness of IBS
  - a. Awareness or non-awareness
  - b. Knowledge about the product (What is IBS about etc.?)
  - c. Do you consider using it or not, and why?
4. Risk dimensions with regards to IBS
  - a. What are your major concerns in relation to IBS (e.g. security issues, privacy concerns, product performance, financial concerns, time/convenience, psychological, social, physical and additional aspects)?
  - b. Could you detail your concerns?
  - c. What are your most concerns, and why?
5. Close
  - a. Anyone anything else to add?
  - b. Thanks for support

**Appendix 2a**

**Questionnaire to Perceived Risk  
in Relation to Internet Banking Services in China  
(English Version)**

Please complete this questionnaire by ticking the most appropriate boxes or by writing in your answer in the space provided. Thank you.

### Part 1 – Your use of the Internet

1. Do you use the Internet?  
 Yes (please continue).  
 No (Now please go straight to Part 6 on Page 4).
2. Have you used Internet banking services provided by your bank? Please tick one answer.  
 Yes (Please go to Part 6 on Page 4).  
 No (Please continue).

### Part 2 – Questions concerning your online experience

3. Where do you *usually* access the Internet? Please tick one box only.  
 At home                       At work                       School/college/university  
 Internet bars/cafes etc.       Public library               Mobile Internet access  
 Other places, please specify: \_\_\_\_\_
4. For how long have you been using the Internet?  
\_\_\_\_\_ years
5. How would you describe yourself in terms of your knowledge of the Internet? Please tick one box.  
 Very knowledgeable                       Not very knowledgeable  
 Knowledgeable                               Not knowledgeable  
 Somewhat knowledgeable
6. On average, in the past 12 months, how many hours a week did you use the Internet? Please tick one answer.  
 Less than 5 hours                $\geq 5$  but  $< 10$  hours                $\geq 10$  but  $< 15$  hours  
  $\geq 15$  but  $< 20$  hours                $\geq 20$  but  $< 25$  hours                $\geq 25$  but  $< 30$  hours  
  $\geq 30$  but  $< 35$  hours                $\geq 35$  hours or over

### Part 3A – Questions about your knowledge of Internet banking services

7. Are you aware of Internet banking services? Please tick one box.  
 Yes. (Please continue)  
 No. (Please skip to Part 4)

8. Which of the following banking services do you believe are available on the Internet? Please tick all that apply.

- Checking account balance                       Bills payment (e.g. credit card payment)  
 Money transfers                                       Loans or mortgage application  
 Other services not listed above, please specify: \_\_\_\_\_  
 I don't know what banking services are available on the Internet.

**Part 3B – Questions about your knowledge of Internet banking services**

The following statements are about Internet banking services (IBS) made by some people. Please indicate your disagreement/agreement by ticking “1” if you strongly disagree, “2” if you disagree, “3” if you agree, and “4” if you strongly agree. For example,

It is difficult to learn how to use IBS.	1	2 ✓	3	4
--	---	-----	---	---

This indicates that you disagree with the statement.

Statements	Strongly disagree	Disagree	Agree	Strongly agree
9. It is convenient to use IBS.	1	2	3	4
10. IBS is good to use because I do not need to interact with other people (e.g. bank staff).	1	2	3	4
11. I can get higher interest rates.	1	2	3	4
12. IBS helps me to control my personal finance.	1	2	3	4
13. IBS is easy to use.	1	2	3	4
14. IBS is more difficult to evaluate than the traditional banking services.	1	2	3	4
15. IBS is subject to a greater degree of uncertainty than the traditional banking services.	1	2	3	4
16. In China, the current Internet banking infrastructure (e.g. server) is excellent.	1	2	3	4
17. In China, the current legal regulation of Internet banking is effective.	1	2	3	4
18. In China, the current Internet banking system is reliable.	1	2	3	4
19. I do not use IBS because I do not have much money to manage.	1	2	3	4

**Part 4 – Questions about consumers’ risk perception of IBS**

A number of opinions exist about the use of IBS. The left column indicates the levels of certainty about the occurrence of the opinion and the right column indicates the degrees of seriousness if the event did happen. Please tick how certain you are about each of the following events (20-43) occurring; in the right column please tick how serious would the consequence be if the event did occur.

Very certain	Certain	Somewhat certain	Not at all certain	Statement	Very serious	Serious	Somewhat serious	Not at all serious
1	2	3 ✓	4	I will suffer physical harm.	1 ✓	2	3	4

This indicates that you are ‘somewhat certain’ about the statement and you think the outcome would be very serious to you.

Very certain	Certain	Somewhat certain	Not at all certain	Statement	Very serious	Serious	Somewhat serious	Not at all serious
					1	2	3	4
1	2	3	4	20. IBS will not work properly.	1	2	3	4
1	2	3	4	21. The Internet banking system is not secure.	1	2	3	4
1	2	3	4	22. I will lose money.	1	2	3	4
1	2	3	4	23. Using IBS will be inconvenient because there are lots of banks on the street.	1	2	3	4
1	2	3	4	24. I will feel frustrated.	1	2	3	4
1	2	3	4	25. I will look foolish to others.	1	2	3	4
1	2	3	4	26. Others will know my personal details.	1	2	3	4
1	2	3	4	27. IBS will not work as well as I expect.	1	2	3	4
1	2	3	4	28. Fake Internet banking web servers may be shown online.	1	2	3	4
1	2	3	4	29. I will lose control of my bank account.	1	2	3	4
1	2	3	4	30. I will have to spend extra time solving problems that using IBS could cause.	1	2	3	4
1	2	3	4	31. I will feel anxious.	1	2	3	4
1	2	3	4	32. My usage of Internet banking will be judged negatively by others.	1	2	3	4
1	2	3	4	33. I will have headache.	1	2	3	4
1	2	3	4	34. Others will misuse my data.	1	2	3	4
1	2	3	4	35. IBS have technical problems.	1	2	3	4
1	2	3	4	36. Internet banking systems can be attacked.	1	2	3	4
1	2	3	4	37. My money loss will not be covered by the bank.	1	2	3	4
1	2	3	4	38. I will not be as efficient as I was when I didn't use Internet banking.	1	2	3	4
1	2	3	4	39. I will feel depressed.	1	2	3	4
1	2	3	4	40. My decision to use Internet banking will not be socially accepted by others.	1	2	3	4
1	2	3	4	41. My eyesight will be affected (e.g. get sore eyes).	1	2	3	4
1	2	3	4	42. I will lose control of my personal data.	1	2	3	4
1	2	3	4	43. I will have to be careful when I use IBS because I need to ensure I don't make mistakes.	1	2	3	4

44. Is there any other issue that might concern you when thinking about using IBS that is not listed here, please write it below.

---

45. In general, how risky would you say it would be for you to use IBS? Please tick one box.

- Very risky     
 Risky     
 Somewhat risky     
 Not at all risky

#### Part 5 – Questions about consumers' adoption behaviour of IBS

46. How likely are you to use IBS in the next 12 months? Please tick one answer.

- Very unlikely to use (go to question 47)     
 Likely to use (go to Part 6)
- Unlikely to use (go to question 47)     
 Very likely to use (go to Part 6)



47. Would you ever consider using IBS in the future?

Yes, I would consider using IBS.

No, I would never consider using IBS.

**Part 6 – Finally, some information about you:**

48. What is your age?

Under 18

18-25

26-30

31-35

36-40

41 or above

49. What is your gender?

Male

Female

50. Please indicate your highest educational qualification (tick one box only):

Pre-high school (e.g. junior middle school graduate)

Graduate high school

Graduate college diploma

Graduate university (e.g. Bachelors Degree)

Post-graduate (e.g. Masters Degree)

Doctoral Degree

Others, please specify: \_\_\_\_\_

51. What is your occupation?

Please specify: \_\_\_\_\_

*If you are a student, are you (please tick one box):*

Full-time

Part-time

52. Which one of the following categories best describes your monthly income?

Under RMB 500

RMB 501 – 1000

RMB 1001 – 1500

RMB 1501 – 2000

RMB 2001 – 2500

RMB 2501 – 3000

RMB 3001 – 4000

RMB 4001 – 5000

RMB 5001 – 6000

RMB 6001 – 10000

Over RMB 10000

No income

53. Please specify which province you come from: \_\_\_\_\_.

**END OF THE QUESTIONNAIRE. THANK YOU FOR YOUR COOPERATION, PLEASE  
HAND THIS QUESTIONNAIRE TO THE INTERVIEWER.**

## **Appendix 2b**

### **Questionnaire to Perceived Risk in Relation to Internet Banking Services in China (Chinese Version)**

敬启者：

本人，赵丽芬，正在攻读博士研究生学位，调查中国年轻网民对网上银行服务的采用情况。这是一个重要的研究领域，该调查希望找出影响年轻网民对是否采用网上银行服务的成因；同时，该调查也希望对学术界及银行业起重要、推进作用。因此，您的答复起关键作用，可以影响该项目的科研成果。

我向您保证，问卷会被保密处理，您的资料不会外泄。

我诚恳请求您花宝贵的时间完成以下问卷，并在完成问卷后，交回工作人员。非常感谢您的协助及参与。

此致

敬礼！

赵丽芬

2005年3月21日

请在这份问卷调查中，选出或填写最合适你的答案。

### 第一部分-你的互联网使用情况

1. 你使用互联网吗？

使用（请继续回答）。

不使用（请跳到第4页第6部分）。

2. 你有使用过你银行提供的网上银行服务吗？

有使用。（请跳到第4页第6部分）。

没有使用过。（请继续）

### 第二部分- 你的互联网经验

3. 你通常在哪里上网？单项选择，请在最合适答案前打“√”。

在家

工作

学校/学院/大学

网吧

公共图书馆

手机上网

其他地方，请注明：\_\_\_\_\_

4. 你使用互联网多长时间了？\_\_\_\_\_ 年

5. 你认为你的互联网知识如何？单项选择，请在最合适答案前打“√”。

非常有知识

不大有知识

有知识

没有知识

有点知识

6. 在过去12个月里，你平均一周使用互联网多少小时？单项选择，请在最合适答案前打“√”。

< 5 小时

≥ 5 但 < 10 小时

≥ 10 但 < 15 小时

≥ 15 但 < 20 小时

≥ 20 但 < 25 小时

≥ 25 但 < 30 小时

≥ 30 但 < 35 小时

≥ 35 小时或以上

### 第三部分 - 关于你对网上银行服务的认识 (A)

7. 你知道网上银行服务吗?

- 我知道 (请继续回答问题 8)
- 我不知道 (请跳到第 2 页, 第 4 部分)

8. 你认为以下哪些银行服务在互联网上是开通的呢? 请选 1 个或以上答案。

- 查帐户余额  付款业务 (如信用卡)
- 转帐  贷款或抵押业务
- 其他服务请注明: \_\_\_\_\_
- 我不知道哪些银行服务是在网上开通的。

### 第三部分 - 关于你对网上银行服务的认识 (B)

下列是一些人对网上银行服务的一些看法 (问题 9-19)。请以“√”表明你是否同意/不同意, “1”代表强烈不同意, “2”表示不同意, “3”表示同意, “4”表示强烈同意。例如:

学习如何使用网上银行服务不容易。	1	2√	3	4
------------------	---	----	---	---

这说明了, 你不同意“学习如何使用网上银行服务不容易”这个观点。

关于网上银行服务的一些看法 (一)	强烈不同意	不同意	同意	强烈同意
9. 使用网上银行服务方便。	1	2	3	4
10. 使用网上银行服务好, 因为我不需要与别人交流 (如: 银行职员)。	1	2	3	4
11. 我可以得到更高的利息。	1	2	3	4
12. 网上银行帮助我个人理财。	1	2	3	4
13. 网上银行服务操作容易。	1	2	3	4
14. 网上银行比传统银行服务更难评估质量。	1	2	3	4
15. 网上银行比传统银行有更多不确定性。	1	2	3	4
16. 在中国, 目前的网上银行基础设备 (如服务器) 是完善的。	1	2	3	4
17. 在中国, 目前的网上银行法制规定是有效的。	1	2	3	4
18. 在中国, 目前的网上银行系统是可靠的。	1	2	3	4
19. 我不使用网上银行, 因为我没有很多钱去管理。	1	2	3	4

### 第四部分 - 关于你对网上银行服务的风险认识

以下是一些关于网上银行可能出现的问题 (问题 20-43), 请在左边栏里表明你对所描述事件发生可能性的肯定程度, “1”为非常肯定, “2”是肯定, “3”是有点肯定, “4”几乎不肯定; 然后请在右边栏里表示该事件的后果对你的严重性, “1”为非常严重, “2”为严重, “3”代表有点严重, “4”代表完全不严重。例:

非常肯定	肯定	有点肯定	完全不肯定	关于网上银行服务的一些看法 (二)	非常严重	严重	有点严重	完全不严重
1	2	3√	4	我会受到身体上的伤害。	1√	2	3	4

这表明了, 你对“我会受到身体上的伤害”这个发生可能性有点肯定, 其发生的后果对你非常严重。

请务必同时填写左右两栏

非常肯定	肯定	有点肯定	完全不肯定	关于网上银行服务的一些看法 (二)	非常严重	严重	有点严重	完全不严重
1	2	3	4	20. 网上银行服务会出现操作不正常。	1	2	3	4
1	2	3	4	21. 网上银行系统不安全。	1	2	3	4
1	2	3	4	22. 我会有金钱损失。	1	2	3	4
1	2	3	4	23. 使用网上银行服务不方便, 因为街上有好多银行。	1	2	3	4
1	2	3	4	24. 我会感到受挫。	1	2	3	4
1	2	3	4	25. 别人会觉得我傻。	1	2	3	4
1	2	3	4	26. 别人会知道我的个人资料。	1	2	3	4
1	2	3	4	27. 网上银行服务与我所期待的有出入。	1	2	3	4
1	2	3	4	28. 网上可能出现假的网上银行服务器。	1	2	3	4
1	2	3	4	29. 我会失去控制我银行帐户的能力。	1	2	3	4
1	2	3	4	30. 我得多花时间去解决使用网上银行服务所引起的问题。	1	2	3	4
1	2	3	4	31. 我会感到焦虑。	1	2	3	4
1	2	3	4	32. 别人会负面地评价我选择使用网上银行服务。	1	2	3	4
1	2	3	4	33. 我会头疼。	1	2	3	4
1	2	3	4	34. 别人会滥用我的数据。	1	2	3	4
1	2	3	4	35. 网上银行服务有技术上的问题。	1	2	3	4
1	2	3	4	36. 网上银行服务系统有可能被入侵或攻击。	1	2	3	4
1	2	3	4	37. 银行不会补偿我的金钱损失。	1	2	3	4
1	2	3	4	38. 我不会提高效率。	1	2	3	4
1	2	3	4	39. 我会感到沮丧。	1	2	3	4
1	2	3	4	40. 别人不会接受或赞同我使用网上银行的决定。	1	2	3	4
1	2	3	4	41. 我的视力会受到影响 (如眼疼)。	1	2	3	4
1	2	3	4	42. 我会失去控制我个人资料的能力。	1	2	3	4
1	2	3	4	43. 要是我使用网上银行服务, 我得小心确保我不会出错。	1	2	3	4

44. 除以上所列的事件外, 如果你还有对考虑使用网上银行服务有其他忧虑, 请注明:

\_\_\_\_\_

45. 总的来说, 你认为使用网上银行服务对于你来说有多大风险呢?

- 非常冒险     
  冒险     
  有些冒险     
  一点也不冒险

#### 第五部分 - 关于你是否使用网上银行服务的问题

46. 在未来 12 个月里, 你会有多大可能使用网上银行服务?

- 十分可能不使用 (请回答问题 56)     
  可能会使用 (请到第 7 部分)  
 不可能使用 (请回答问题 56)     
  十分可能使用 (请到第 7 部分)

47. 你将来会考虑使用网上银行服务吗?

- 我会考虑使用。     
  我绝不考虑使用。

## 第六部分 - 最后, 关于你的一些问题

48. 你的年龄是:

18岁以下

18-25岁

26-30岁

31-35岁

36-40岁

41岁或以上

49. 你的性别是:

男

女

50. 你的最高学历是 (请“√”正确答案):

高中前 (如初中毕业)

高中毕业

大专文凭

大学毕业 (如学士学位)

硕士学位

博士学位

其他, 请说明: \_\_\_\_\_

51. 你的职业是, 请说明: \_\_\_\_\_

如果你是学生, 请问你是:

全日制

非全日制

52. 你平均月收入是多少?

人民币 500 元以下

人民币 501 - 1000 元

人民币 1001 - 1500 元

人民币 1501 - 2000 元

人民币 2001 - 2500 元

人民币 2501 - 3000 元

人民币 3001 - 4000 元

人民币 4001 - 5000 元

人民币 5001 - 6000 元

人民币 6001 - 10000 元

人民币 10000 元以上

没有收入

53. 你来自于\_\_\_\_\_省。

问卷结束, 感谢您的参与! 请把问卷交给工作人员。

## **Appendix 3**

### **Mini Group Topic Guide (Stage 3)**

1. Introduction
  - a. 'Welcome' and appreciation to the interview
  - b. Interview objectives
  - c. Data confidential assurance
  - d. Response to uncomfortable questions
  - e. The possible length of the interview
  - f. Permission to recording the interview
2. Commence with general discussion on Internet experience
  - a. Internet usage
  - b. Major activities
3. The awareness of IBS
  - a. Awareness
  - b. Knowledge in relation to the product
    - i. Types of products
    - ii. Potential benefits
    - iii. Currently, IBS users or not, and why?
4. The respondents' risk dimensions
  - a. What are the major worries?
  - b. Why?
5. Views on the Chinese IBS context
  - a. Current IBS infrastructure
  - b. IBS regulation
  - c. IBS system
  - d. Culture impacts
6. Views on gender's difference
  - a. Any risk difference perceived
  - b. Why
7. Close
  - a. Anyone anything else would like to add
  - b. Thanks for support

## **Appendix 4 – Major Notes of Stage 3**

### **Mini Group Interviews (Female 1)**

**Question:** Do you use the Internet?

**Response(s):** All: Yes.

**Question:** What do you usually use it for?

**Response(s):** A: Online gaming, information search.

B & C: Search information.

C: Watch films and news, instant online conversation.

D: Talk to friends, search information for my dissertation.

**Question:** Are you aware of Internet banking services (IBS)?

**Response(s):** All: Yes.

**Question:** What online banking services are available?

**Response(s):** A: Funds transfer, balance checking, personal finance management, online shopping payment.

**Question:** How do you consider IBS?

**Response(s):** D: I do not see the great benefit of using it.

C: Yes, no need to use it. Not much money for financial management.

**Question:** Why?

**Response(s):** All: We do not use it.

A: I think it is more convenient to go to banks. I suppose you could just get to the street and you will have access to banks.

B: There are many banks on the street, great convenience.

C: It may be quicker to visit a bank than logging on the Internet, I think.

B: The place where I live is close to the city centre and well networked, and it is very convenient to visit a bank.

D: Although I do not live close to the city centre, I often make visits to the central city so that banks are still easy for me to access.

**Question:** Is there any other reason that you do not use IBS?

**Response(s):** B: I think online banking is just another approach to use banking services. But for me, the current IBS market in China is not good enough.

C: I think IBS is not perfect, it has problems.

**Question:** In what way?

**Response(s):** B: The IBS provided by Chinese banks is neither safe nor convenient. Visiting a bank is safer than banking online. It is about security issues.



A: Visiting a bank is more secure than banking online because you can see the real money.

Question: Why is that important?

Response(s): A: That is related to your benefit.

D: I think that money is very important to almost everybody.

A: Yes, I mean it is the importance of the value.

Question: What do you mean?

Response(s): A: Even though I have to stand in a queue, I still feel that [visiting in a bank] is safer. Even I might be robbed after a withdrawn, at least I have touched the money. But if it [the money] is stolen online, I would feel very upset because I had not touched the money. I would consider IBS unless I would feel that IBS could provide me more security.

B: If IBS is more mature, then I think I would try it rather than going to a branch. You know I feel frustrated to spend time queuing. But because IBS is not safe enough, I am not confident to try it.

Question: What do you mean by 'mature'?

Response(s): All: We think that foreign banks would be better and more mature. They would be safer and more experienced.

C: IBS was initially developed abroad and introduced to China later.

A: At least it has been developed for so many years abroad. I think it would be more reliable and secure.

Question: How does that influence you?

Response(s): A: I do not feel confident with [the IBS provided by] the 'big four' banks [four major state-owned banks in China]. If things go wrong, then I will lose everything. ... My major concern is when things go wrong, how capable are banks in terms of protecting customers' personal information etc.

Question: How does your bank introduce IBS to you?

Response(s): A: Not very good. The bank seldom sends me information about new products, unless you want to open an account with them. Once the account is open, you would not be informed any new products unless you go to the bank. I do not often visit my bank's website for new products. ...

B: Yes, I think so. In general, bank staff's service quality is poor. ... Bank staff seldom take the initiative to tell you anything about the new banking services, especially after you open accounts with them.

**Question:** Anything else you would like to add?

**Response(s):** A: We guess bank staff would think that they would waste time if they introduce new services to customers since very few people would use IBS anyway. So, to 'save' some time, staff prefer to do less, hence they do not approach us to promote the product.

C: It [the bank] does not do a good job to encourage customers to use IBS. It [the bank] does not tell you what is right and wrong. This was reported on news. At least banks should let consumers understand how it works. Perhaps banks could demonstrate some information leaflet or tell you more how it operates.

**Question:** Why is it important to understand IBS' operation?

**Response(s):** D: There are fake IBS websites. It was reported on the TV. The website was fake and was designed by hackers, such as fake website of Bank of China. Somehow, hackers got hold of users' ID and logged on the website ... the personal information, account details, and password were all exposed. Then the money was taken. In fact, there are many cheating websites exist online.

A: I still feel unsafe when I am online.

B: If things go wrong, then money loss is my major concern.

A: I do not think it is perfect. ... IBS uses computers for [transaction] recording. I am not quite sure whether my money would be 'edited' by some kind of computer virus. If [the saving figure] is increased, that is good. But if it is decreased, then it is my loss. I will be very depressed and not sure what I shall do. What happens, if [the account] is attacked by hackers? They can remove my money and I will have money loss. I still worry that, when I use IBS, if somebody steals or knows my password, he/she can take my money [out of my account] straightaway, then I will have money loss.

C: Yes, I agree. It will be problematic if hackers attack accounts and steal passwords.

**Question:** Do you know how losses would be handled by your bank?

**Response(s):** A: I am not sure how banks will solve problems, particularly when money loss is involved. There are too many counterfeit products going on. People around you might have the experience of being cheated. [When you know these stories], you would be aware of protecting yourself and the concern would increase.

- Question: Could you explain more, please?
- Response(s): B: Well, this kind of things does not necessarily happen on you; but when you know something bad through your family's or friends' [negative] experience, or through the mass media, you would be cautious. You are alert to the possibility [of such bad things and outcomes].
- A: I think somehow I trust my bank but not the Internet. It could be attacked by hackers at any time.
- Question: How confident are you in terms of your bank's ability to prevent its system from attacks?
- Response(s): A: I am not confident at all; otherwise I would have used [IBS].
- B: Yes, if there is [protection], then I guess that many people would have used it. However, at the moment, too few people touch it.
- A: If banks are capable of managing it properly, I suppose that there would be more Chinese IBS users.
- Question: Why do you think so?
- Response(s): A: If many people are using it, then they would be talking about it [in groups].
- Question: Why?
- Response(s): A: It is like personal recommendation or word-of-mouth. If my friends tell me how good IBS is, then I would not worry so much. I think personal recommendation is better than any other else.
- C: I guess many young people do not use it because they have low income.
- B: Many of my friends do not use it. Overall, it is not popular.
- Question: How would other females influence your usage decision?
- Response(s): C: Too few people use it. If it is good, then there must be many followers. But it is not the case at the moment.
- D: I think I would rather wait until somebody tells me that IBS is good then I would consider.
- B: I worry that I might encounter loss since it is risky [to adopt it now]. I do not want to take this risk.
- Question: Could you explain more [about risk avoidance], please?
- Response(s): All: We think that we are conscious.
- A: It is better that you (banks) lose rather than me. ... This (i.e. by not using IBS) can protect myself – avoid getting possible loss.

B: Yes, this [delay the adoption] can protect myself.

A: I am sure that I will wait for others' opinions. I would not wish to be the guinea pig (i.e. to try this new banking approach right now). It is stupid.

Question: How would you describe the males' perspective in relation to IBS in your peer group?

Response(s): B: They might prefer to try new things.

Question: That is interesting. Could you explain, please?

Response(s): A: I guess that males would be more likely to be guinea pigs [i.e. to try IBS this new product].

Question: Why?

Response(s): A: I suspect that males would be less sensitive about money loss.

B: Yes, perhaps the perspectives [between males and females] would be different; males might be less concerned about money loss while females may be more cautious on details.