USAGE AND PREFERENCE OF TRADITIONAL AND ALTERNATIVE PAYMENT METHODS BY ONLINE CONSUMERS IN THE AUSTRALIAN MARKETPLACE

Submitted by

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Submitted in fulfilment of the requirements of the degree of

Doctor of Philosophy

May 2010

Abstract

The e-Commerce environment has been dominated by methods of payment customary in offline businesses, and online consumers have, over the years, had to adapt to the use of credit cards and Internet bank accounts to pay for goods and services. However, market, technological and legal developments in recent years have contributed to a surge of innovations and changes in payment methods being offered over the Internet, including the development of new means of making payments and the alteration of existing ones. These alternative ways of paying for goods online have begun to make inroads in the online payments marketplace and given consumers and merchants new options over the traditional methods of payments.

Current literature offers few answers to the problems associated with the adoption of alternative payment methods by Australian consumers and businesses. Innovation adoption literature is too generalized to take into account the specific product characteristics inherent in payments products. Many of these characteristics are embodied within the broad construct of 'relative product advantage' which, as is argued in this study, does not provide the level of detail required for analyzing the unique attributes of payment methods.

This thesis examines the influences and challenges associated with the evaluation and selection of methods for paying for goods and services, specifically within the context of traditional and alternative payment methods and the Internet environment. It analyses the nature and extent of the usage of payment methods and identifies and integrates variables that have the potential to determine or influence consumer payment attitudes, experiences and behaviour.

A number of perspectives on the adoption of innovations and theories on consumer behaviour are assessed in terms of their ability to inform payment method acceptance. From this a framework was proposed that attempted to capture the complexities associated with payment systems and methods and to help understand and study the payment behaviour of online consumers. This assessment is done in the light of the unique characteristics of payment methods and the factors that influence their adoption.

Initially, a Delphi study was carried out to help identify the salient attributes of payment methods. A survey was then conducted of online consumers who had purchased online and/or paid for goods and services using the Internet. The responses from 260 participants were statistically analyzed to assess their usage and preferences of payment methods alongside updated results from a purposeful interview of selected online consumers.

Online merchants and consumers demonstrate conflicting demands when it comes to payment methods. To gain a more holistic understanding of how these demands are met a qualitative study was also carried out on a small group of online merchants.

Amongst the significant findings is the fact that, despite the number of payment systems for online purchase that have been proposed and are currently available, credit cards are at present by far the most popular within the Australian market.

While most consumers appear to assume that credit cards are the only way to pay at online websites, alternative payment methods offer new opportunities to both merchants and consumers. These methods have the potential to appeal to specific consumer demographics. With PayPal's broadening range of options, the promotion of debit cards for online purchases and the growing set of other payment services, online merchants and consumers now have new options and new ways to pay and get paid. The supply and demand for micro-payments and mobile payments is likely to grow but will, however, depend upon a number of factors including consumer preferences, ease of use and industry agreements and public policy.

The following position is argued in conclusion, namely, that there is need for widespread take-up of trusted, secure, privacy-protected and low-cost electronic payment methods by Australian consumers, organizations and businesses which in turn will provide opportunities to help drive online payments and produce significant productivity gains that benefit the Australian economy. Furthermore, this study provides a contribution to future research into the development and deployment of new and innovative online payment methods. Using the payment framework developed for the purposes of this research, it is envisaged that the payment card associations, payment service developers and providers, financial institutions, merchants and other stakeholders will be better equipped to understand the consumer and business imperatives of online payment methods as they evolve over the coming years, and hence increase the more widespread adoption and diffusion of online payment methods. In summary, this thesis provides new perspectives on online payment methods, specifically addressing the issues, opportunities and challenges facing merchants and consumers.

Certification of Thesis

I certify that the ideas, analysis, results and conclusions reported in this thesis are entirely my own effort, except where otherwise acknowledged. This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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Signature of Candidate **Date**

ENDORSEMENT

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Signature of Supervisor **Date**

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Signature of Supervisor **Date**

ACKNOWLEDGEMNTS

I would like to sincerely thank my principal supervisor, Professor Mark Toleman, whose assistance, guidance, research expertise, patience and encouragement throughout the preparation of this dissertation was highly motivating.

Special thanks to my Associate Supervisor, Associate Professor Aileen Cater-Steel for her positive encouragement and constructive comments throughout.

I would also like to acknowledge the assistance of Mr Michael Gardiner, Dr Amirul Islam and Dr Ray Gordon for their invaluable help with the analysis of the survey data, and Ms Rae Jones who organized my meetings and helped ‘clean up’ this thesis.

Finally, my thanks go out to my wife, Nazima, for her unstinting support and encouragement she offered me over the years.

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CHAPTER 1 - **INTRODUCTION**

1.1 Research Agenda

This thesis reports on the attempt to determine the usage and preferences of traditional and alternative payment methods by online consumers. The study investigates consumer perceptions of the salient attributes of payment methods and determines how attitudes towards payment methods are associated with external influences.

This chapter provides the foundation and backdrop to the subject of the thesis. Firstly, the context in which this study is undertaken is explained by describing the state of e-Commerce in Australia and providing a background and understanding of the role of payment systems in facilitating e-Commerce and the importance and need for research in this area. Next, the research problem is stated and the research is justified on theoretical and practical grounds. The format of the thesis is then outlined and definitions of the terms are provided in the context of their usage in the payments industry and in this thesis. The final section provides the scope of the research and describes the key set of assumptions that have been made towards this end.

1.2 Background to the research

The growth of the information economy is dependent upon improving productivity and developing new products and services through the innovative use of information and communications technologies (ICT).

In July 2004, the Australian Government released *Australia's Strategic Framework for the Information Economy* (2004, p. 36). This framework explored the challenges and opportunities that the emerging information economy poses for Australia. It stated that "the global shift in the way information, knowledge and ICT is used is moving the emphasis away from individual enterprises and agencies towards much more advanced and efficient ICT systems that cross company, agency and sectoral boundaries".

The impact of the dynamics of the information economy has been most evident in the areas of electronic commerce (e-Commerce) and electronic business (e-Business). E-Commerce technologies have led to improved communications (Wu, Mahajan &

Balasubramanian 2003), increased revenue (Beck, Wigand & König 2005) and decreased costs (Bakos 2001) and have impacted on the way consumers purchase goods and services, and merchants conduct business.

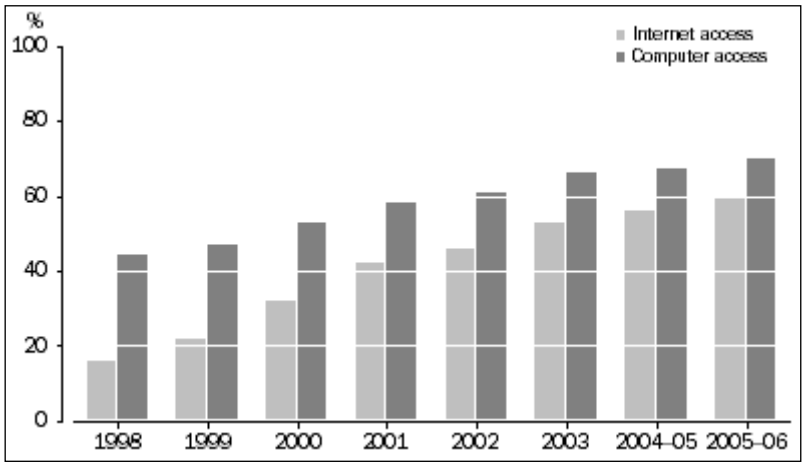
The Development of e-Commerce in Australia

In Australia the use of the Internet as a channel for communicating, accessing information and undertaking commerce has been on a significant rise in the last decade between 2001 and 2008.

The use of the Internet by individuals

In 2001, 35 percent of Australian homes had access to the Internet. In 2006, 63 percent of homes had access to the Internet (see Figure 1-1) (ABS 2006a).

Figure 1-1: Household Home Internet or Computer Access - 1998 to 2005-06 (Source: (ABS 2006a))



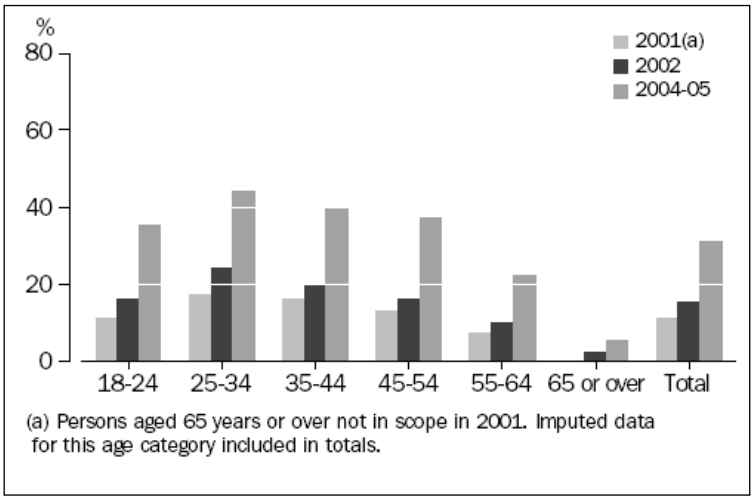
The Multi-Purpose Household Survey (MPHS) for 2007-08 by the Australian Bureau of Statistics (ABS) found that 67 percent of Australian households had home Internet access and 75 percent of households had access to a computer (ABS 2008). Between 1998 to 2007-08, household access to the Internet at home had more than quadrupled from 16 percent to 67 percent, while access to computers had increased by 31 percentage points to 75 percent. Australia's history of rapid technology uptake suggests that the proportion of households with Internet access will continue this trend.

More Australian adults are using the Internet to purchase or order goods or services each year. The 2004-05 ABS data indicated that 31 percent of Australian adults with home Internet access purchased or ordered goods or services via the Internet for private use – up from 7 percent in 2000 (ABS 2005).

As with past ABS data, during this period, adults within the age group of 25 to 34 years old were most likely to purchase or order goods or services via the Internet. The 2004-05 survey indicated that adults over 65 years or more were least likely to purchase or order goods or services via the Internet.

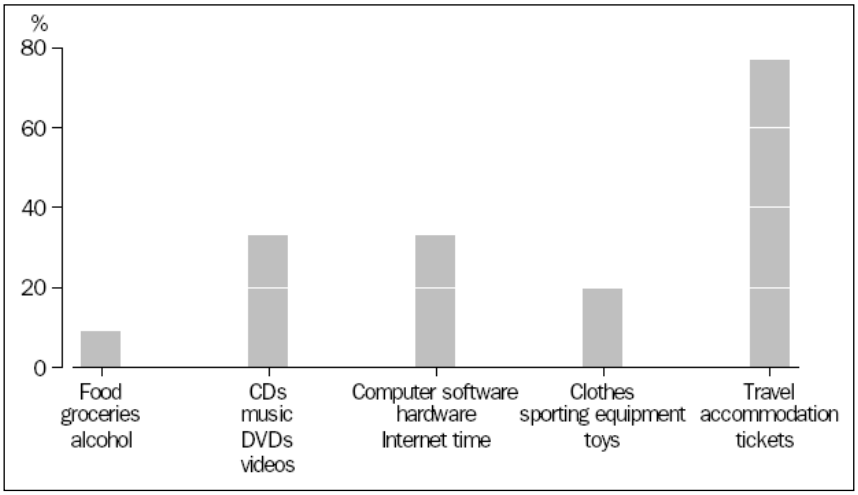
However, all age groups have seen strong growth in the proportion of people buying online, with the strongest growth among those aged 25 to 34 years (see Figure 1-2). This is likely to be related to income as well as an age related propensity to shop online – the proportion of people shopping online rises from 23 percent of those earning less than $40,000 p.a. to 73 percent of those earning $120,000 p.a. or more (Toth 2006).

Figure 1-2: Purchasing Or Ordering via the Internet For Private Use, by age group (Source: (ABS 2005))



During 2004-05, travel, accommodation or tickets of any kind was the most common product group purchased or ordered via the Internet with 77 percent of persons who ordered goods or services via the Internet purchasing or ordering these products (see Figure 1-3).

Figure 1-3: Products Purchased Via The Internet, by broad product groups (Source: (ABS 2005))



Of the 4.7 million persons purchasing or ordering goods or services via the Internet in 2004-05, the ABS survey data showed that 94 percent spent less than $5,000 and 42 percent spent less than $500. Younger adults within the age group of 18 to 24 years reported the highest proportion for expenditure on Internet purchases or orders in the $1 to $499 category. A higher proportion of persons aged 45 years or over spent $1,000 or more on Internet purchases or orders.

However, while the ABS data revealed increasing household access to the Internet and growing use of the Internet for purchasing goods and services, during 2004-05, of the 9.5 million persons accessing the Internet from any site, 4.9 million did not purchase or order via the Internet. Many studies on e-Commerce adoption by individuals have been conducted over the years (for example, Bhattacherjee 2002; Chang, M. K., Cheung & Lai 2004; Lee, P. C. B., Yuen & Lee 2006; Pavlou 2003) to identify the reasons for people's unwillingness to transact online. These reasons included concerns about security and other risk factors, lack of trust and unwillingness to pay for purchases over the Internet. More specifically, Lee, Yuen and Lee (2006, p. 376) found that an understanding of the relationship between 'trust' and 'adoption of e-Commerce' should take into consideration the interactive effect of an individual's 'willingness to use credit cards in e-Commerce transactions'. The growth in spending on the Internet, together with the underlying need for secure transactions, has increased the importance of online payment methods. A comprehensive understanding

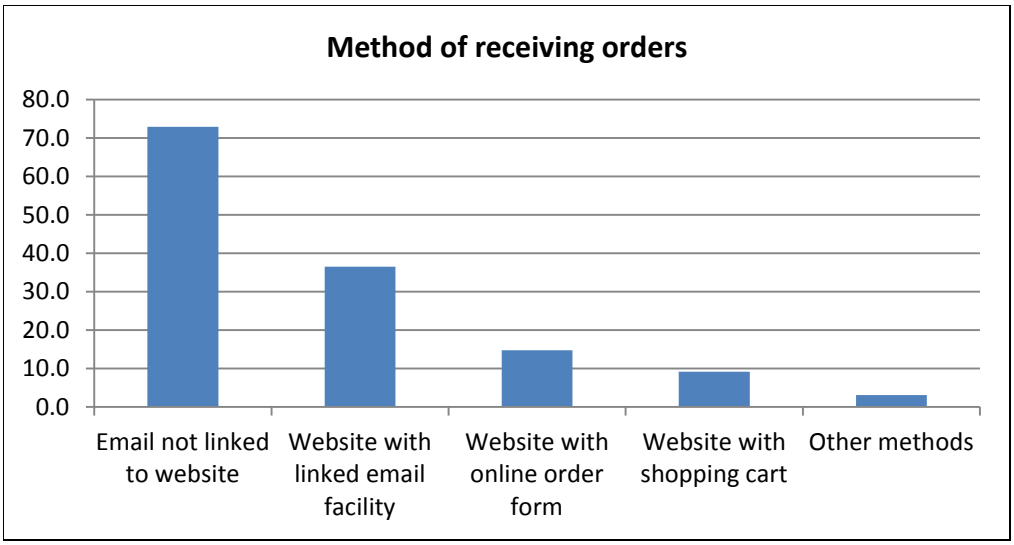
of the factors that drive their usage will help consumers and merchants further exploit the benefits inherent in online payment methods.

Business use of the Internet

In 2005–06 the ABS surveyed Australian businesses (ABS 2006b) to measure the extent of their web presence and engagement in e-Commerce and the challenges and issues they faced while conducting business over the Internet. The survey found that the proportion of businesses reported having a web presence, either on their own dedicated website or as a presence on another entity's website, was continuing to grow, reaching 30 percent (ABS 2007a).

The proportion of businesses reporting receipt of orders via the Internet or web had increased from 12 percent in 2004–05 to 21 percent in 2005–06. The value of Internet income associated with the receipt of orders grew by approximately 40 percent from $40 billion in 2004–05 to $57 billion in 2005–06. The survey found that only 9 percent of those businesses with an Internet presence (see Figure **1-4**) had online payment capabilities, suggesting a continued reliance on off-line means of payments such as COD, cheque, manual/off-line credit card processing and money order.

Figure 1-4: Methods of receiving orders by increasing levels of sophistication (adapted from (ABS 2007a))



While these statistics suggest that there is a progressive move to increased online purchasing by consumers, the rate of this progress could be accelerated to the benefit

of merchants and consumers (OFT (UK) 2007) and the Australian economy by identifying the patterns of usage of payment methods, the barriers and drivers associated with them and the possible actions that can be taken to encourage their greater adoption and diffusion in Australia.

In relation to Australian businesses, the data above indicates high rates of use of the Internet and web presence, but relatively low rates of e-Commerce generated income suggesting that Australian businesses are not harnessing the full efficiency and productivity benefits of the digital economy. Once again, understanding the challenges that the payment transaction component of e-Commerce poses to businesses will help facilitate more widespread usage and adoption.

Traditional and Alternative Online Payment Methods

In Australia, online consumers have traditionally been accustomed to paying for goods and services using either credit cards, with transactions processed through online payment gateways or offline via telephone, fax or email communication; Internet bank accounts for electronic funds transfers, direct debits and BPAY; or offline payment methods like Cash on Delivery (COD), money orders and cheques. These payment options have been in existence since before the advent of e-Commerce websites and have matured over the years with both consumers and merchants becoming increasingly familiar with their use.

However, the methods that online consumers and merchants use for paying and receiving payments for goods and services purchased or sold either offline or over the Internet have been evolving over the years. In addition, the increase in online shopping and the development of new online business models has raised a number of issues with merchants, consumers, governments, financial institutions and their stakeholders. Among these concerns include the level of convenience, security and privacy afforded by these traditional methods of payments. This has prompted the development of alternative payment products, services and protocols to help facilitate the payment process with the intention of offering significant advances over traditional means of payments that aim to improve processing efficiency, functionality and reduce transaction costs (Forner 2003).

Although credit cards and Internet bank accounts have been the most commonly accepted methods of payment in the Australian payments marketplace to date, their dominance does not imply that they are necessarily regarded by consumers and merchants as the ideal ways to pay or be paid on the Internet (Walczuch & Duppen 2002). Online merchants and payment providers are beginning to offer a variety of alternative online payment methods including online debit cards, person-to-person payment (P2P) solutions, pre-paid cards and mobile payments.

The P2P payment model, of which PayPal is a prime example, is an account-based system that lets anyone with an email address securely send and receive online payments using their credit card or bank account. It is the most popular way to electronically pay for eBay auctions and it is becoming a relatively cheap way for merchants to accept credit cards on their on-line storefronts instead of using a traditional payment gateway. In 2009 there were more than 78 million active PayPal users worldwide in different languages and at least 24 currencies, and in Australia, where PayPal was introduced in 2005, there were over 5 million active users and around 18,000 merchant customers (BuddeComm 2010).

The Visa Debit and Debit MasterCard debit payment cards have been recently promoted in the Australian marketplace as an alternative to the use of credit cards for local and international online payments. It has a particular appeal for those teenagers and consumers who are ineligible for, or who elect not to use, credit cards and bank accounts for online transactions, or who prefer to ‘buy now, pay now’.

With the seamless diffusion and acceptance of mobile phones into people's everyday lives as trusted communication devices, businesses have begun exploring their potential as payment devices. One such example in the Australian payments marketplace is the PayPal Mobile which allows iPhone and iPod Touch users to send money via their PayPal accounts, and PayPal Mobile works on any device that has WAP 2.0, a secure connection and allows cookies. Using the mobile phone to make payments also allows people who have no access to bank accounts to make long distance transactions.

While not a new invention, pre-paid cards have become increasingly popular over recent years by consumers concerned about security, fraud and surcharges on online credit and debit card payments. Pre-paid and gift cards can be purchased by anyone and used for shopping online by entering the card number, expiry date, and the last three digits printed on the signature panel on the back of the card. Many of the Australian banks have begun to offer some type of general prepaid card and prepaid gift card providing Australian consumers with a variety of prepaid options.

These alternative payment methods have been developed in response to both consumer demand for an improved online payment experience and merchant need to lower shopping cart abandonment rates, payment processing fees, and raising the appeal of online shopping to specific consumer demographics (Mercator Advisory Group 2007). As consumers shopping and payment habits evolve, the number of online shoppers looking for alternative payment solutions is expected to grow with consumers opting for innovative solutions that offer convenience, ease of use, security from fraud and enhanced buyer protection and greater choice and control (eBillMe 2009).

However, it usually takes time to build trust in any payment system and the speed with which any new payment instrument is eventually adopted depends, to a large extent, on the perceptions of the distributions of risks, costs and benefits of the market participants. In Sienkiewicz and Bochicchio (2002), Dr Santomero suggests that to gain widespread use, payment innovations must represent considerable advantage over existing mechanisms and successfully address concerns over such issues as privacy, security and convenience.

Several of these payment systems and protocols that have emerged in recent years (for example, SET, Beenz, CyberCash, Cybercent, Cybercoin, Digicash, eCharge, FirstVirtual, Flooz, and MicroMint) exited the market because they failed to address the commercial requirements of both consumers (Walczuch & Duppen 2002) and merchants. Concerns about their continued stability and risks stemming from their availability and use also contributed to their demise (Forder & Quirk 2001). While Burns (2000) argues that e-Commerce growth may be hindered unless new payment systems are successfully adopted soon, some of the systems that have appeared on the

market were accompanied by exaggerated claims and unrealistic expectations (Bohle 2001a; Forder & Quirk 2001) or have been largely inappropriate for the existing and emerging business models.

To a large extent many of these failures could be attributed to the lack of a comprehensive understanding of why consumers make the payment choices they do and how their perceptions of individual-specific payment characteristics impact on their decisions. A key gap in the understanding of consumer behaviour and payment choice is a shortage of fundamental research on the topic (Benton et al. 2007), and the following section identifies the broad issues that require addressing.

1.3 Research problem and research questions

Banks, credit card providers, payment service providers, merchants, clearing houses, regulators, governments, businesses, non-government organizations and consumers all have an interest in ensuring the successful and efficient completion of payment transactions. With increasingly powerful information and communications technologies, alternatives to traditional payments processes are emerging which promise not only convenience but improved value at lower cost. This development is accompanied by end-users who are seeking lower fees and transaction costs as well as demanding greater innovation, flexibility, security and simplicity in payments facilities. Consumers are seeking options that include the use of online payments, micropayments, remote and secure authentication, access anywhere and integrated loyalty schemes. At the same time, payment methods enable merchants and businesses to realise the potential economic gains from shifting to more efficient electronic payments such as improved cash flow efficiencies, reduced costs and protection from fraud.

The goal of this research is to provide insights into the usage of traditional and alternative payment methods within the Australian context and to inform online merchants and consumers, as well as the other stakeholders in the industry, about the issues and challenges likely to impact adoption and diffusion of the alternative online payment systems in the marketplace.

The underlying premise is that merchants and consumers perceive payment systems to be composed of different levels of attributes and characteristics. For example, some payment systems might be considered more user-friendly than others, some more widely accepted than others and some more secure than others.

The relative utility of the attributes therefore gives rise to the following overall research problem:

> ***What are consumers' perceptions and experiences of payment methods and the payment process, and are their payment method preferences affected by particular external influences.***

Essentially, the position taken is that there is a wide variation in online consumer perceptions about traditional and alternative payment methods that are used for the settlement of purchases of goods and service, and that an understanding of the complex set of issues involved will provide guidance to Australian stakeholders attempting to promote, offer, implement or use products that fit the consumer market requirements.

General Plan and Objectives for the Research

The intention of the study is two-fold:

1. To determine differences and similarities in attitudes and perceptions between traditional and alternative payment method users in relation to the salient attributes of payment methods arising from their current payment method usage.
2. To examine the impact of external factors on the payment method preferences and adoption of online consumers.

An exploratory study examined the available academic and practitioner literature on innovation adoption, consumer behaviour, information technology and e-Commerce literature to arrive at factors that have consistently influenced adoption behaviour in other studies.

Academic and practitioner literature on payment systems was then studied to examine the specific technical features and social aspects of payment methods. A modified Delphi process was conducted in order to answer the following question:

> ***Research Question 1.*** *What are the salient attributes and characteristics of payment methods?*

The second stage of the study was carried out to analyze the payment behaviour of online consumers. The following research questions were investigated using purposeful interviews and online survey data:

> ***Research Question 2a.*** *How do consumers' perceptions of the salient attributes of payment methods vary across traditional and alternative payment type users?*
>
> ***Research Question 2b.*** *To what extent are particular external factors related to consumers' preferences for traditional and alternative payment types?*

To this end a preliminary conceptual usage and adoption model was developed to provide a framework to guide the research on consumer payment behaviour. The framework was based on the strongest and most consistent facilitators found in the research taking into account the unique characteristics of payment methods.

In summary, this research makes several specific contributions. Firstly, it provides an understanding and explanation of the problems surrounding the adoption of payment methods for online and offline transactions and the online payment of goods and services. Secondly, it extends the current theories on payment methods by identifying and integrating independent variables that are associated with the adoption decisions of online merchants and organizations and their consumers. This research also provides both theoretical explanations and empirical validation on the adoption of traditional and alternative payment methods in e-Commerce, and the payments usage and adoption model, derived in this research, could serve as the basis for analysing the potential of future payment methods.

1.4 Justification for the research

The proposed research can be justified by a number of factors including the current gaps in the literature; the importance of online payment methods to the growth of e-Commerce; and the potential benefits to theory and practice.

Gaps in the Literature

Despite the growth and importance of online payments in the current global economy, the treatment of the subject by information systems (IS) researchers has been, at best, sporadic (Lowry et al. 2006). Current research focuses on general e-Commerce adoption and usage by businesses and consumers and a significant gap exists in the understanding of the demand side of the payments market (Federal Reserve Bank of Boston 2007b). In fact there is little in the way of current research to explain the decision of businesses and consumers to use or not to use particular online payment methods at the point of payment (Crowe, Schuh & Stavins 2006).

With the development of many new payment schemes and methods over the past decade, there has been limited empirical research on the topic in the IS literature. As an emerging and complex technology, the study of the adoption and diffusion of Internet payment methods *per se* has also had little benefit from empirical research, particularly in relation to consumer and business behaviour. Much of the current research in the area of payments over the Internet has come from computer science, and financial and economics fields where the role of payments systems is addressed from largely different perspectives, ranging from mathematical models, payment protocols and payment architectures to general equilibrium payment models that miss answering the question of how or why consumers choose which payment method to use at the point of sale (Schreft 2005).

To our knowledge, this study has been one of the first attempts to develop a broad framework and an agenda for research into online payment methods and their usage; and, in particular, one that focuses on the factors that could have an impact on their success or failure in the Australian marketplace. Also, given the unique Australian regulatory system, its banking environment and spread of population and the diversity of payment culture and payment methods between countries (Committee on Payment

and Settlement Systems 2005a), it would be inappropriate to apply knowledge from international studies directly to the Australian situation. While international experiences can inform our understanding of the broad issues, a study focussed on domestic issues and locally available payment products can better assist local stakeholders and aid providers in tailoring systems for the domestic market's needs.

The Importance of Payment Systems in e-Commerce

There is significant and growing use of electronic payments in the Australian system, but there is considerable room for their increased use (DCITA 2006). There are areas in real-time purchases that businesses and consumers can potentially exploit by co-ordinating their payment preferences, removing barriers to their use and providing appropriate choices. As has been stated above, the accelerated use of alternative online payment methods is predicted to bring substantial gains to the Australian economy. The speed and ease with which payments can be processed and executed will in general affect economic activities, consumer confidence, output, and price levels (Emmons 1996). This can best be achieved by understanding how consumers' behaviour governs the selection of payment methods while at the same time identifying the key business drivers that will increase their use.

Benefits to Theory and Practice

Hitherto, the discussion of payment systems for e-Commerce has been dominated by industry trade associations, market research and consulting firms, business magazines, payment service providers (Federal Reserve Bank of Boston 2007a) and engineering and computer science research. Furthermore, the current theoretical models of innovation adoption/diffusion do not adequately cater for this type of innovation because, in the main, they do not reflect the levels of complexity and diversity found in practice (Benton et al. 2007). For example, the widely used Technology Acceptance Model developed by Davis (1986) excludes the possibility of influence from institutional, social and personal control factors.

An extension to the model is required because adoption of a payment system necessitates adoption of new processes and technologies, requiring new thinking on how organizations and individuals adopt innovations. In addition, online payment methods are both interactive and inter-organizational and necessitate the concurrent

participation of different stakeholders (financial institutions, payment system providers and consumers) co-operating in real-time to provide a service to businesses.

Using a review of prior interdisciplinary literature, as well as group and individual interviews, a set of propositions was developed and tested to determine the relationships between the preferred usage of traditional and alternative payment methods and (1) consumer characteristics, (2) external factors and (3) the salient attributes of payment methods. The framework developed for this thesis will better inform optimal public policies towards the payment system as well as the supply side of the online payments industry allowing providers to make appropriate investment and product development choices.

1.5 Research Approach and Methodology

The consumers' decision-making process concerning payment choice can be very complex involving a wide range of factors such as costs, benefits, risks, convenience and many others. In order to determine how and why consumers choose the payment methods they do, a number of different strategies are necessary to obtain such data (Schreft 2005). Therefore this research study draws on a range of analytical tools, outlined below.

Literature Review

An extensive review of local and international literature on innovation adoption, the payments industry and the unique characteristics of payment systems was undertaken to inform our understanding of organizational and consumer behaviour.

Delphi Study

Use was made of the Delphi methodology to arrive at the salient characteristics of payment methods. A Delphi study offers a systematic way to reach a consensus based on the judgment of experts or professionals in a given field. A preliminary model was then constructed based on these attributes as well as the constructs derived from the literature on innovation, IT and e-Commerce adoption, payment systems, consumer behaviour and organizational characteristics.

Pre-Testing

The next phase of the research comprised of pre-testing the usage and preference payments framework in order to include and/or remove constructs, refine the research problem and questions, and to test the interview protocols and online survey instruments for reliability and validity,

Consumer Survey and Interviews

While there have been various surveys of consumer and business behaviour in the payments marketplace in other countries (DCITA 2006), information about such behaviour appropriate to our study in Australia was non-existent.

This phase of the research involved an online survey of consumers of e-Commerce goods and services (discussed in Chapter 3). Surveys are considered a feasible means of providing data for any study wanting to determine behaviour about a population (Zikmund 2003). In addition to the use of the online survey data, a purposeful sample of consumers was selected for interviews using a semi-structured interview protocol. While the aim here was to re-visit, refresh and confirm the survey data that had been collected over the period of the study, the interviews also helped ensure confirmation about who was providing answers to questions and allowed for the clarification of terms (Zikmund 2003).

The survey results were then assessed using various statistical methods including the calculations of percentages, mean scores and tests of differences. The survey provides the following:

1. An understanding of the nature and extent of traditional and alternative payment method usage by online consumers;
2. An understanding of the consumer perceptions of the salient attributes of traditional and alternative payment methods.
3. An increase in understanding about the relationship of external facilitators and payment method preferences.

The survey insights, together with information obtained through interviews with consumers, further facilitated our insights into consumer payment behaviour in the online environment.

Case Study Interviews of Online Merchants

Five online merchants were interviewed to explore the payments environment from their perspective, and to provide a more holistic understanding of the competing requirements of merchants and consumers when it comes to offering and using payment methods.

1.6 Outline of the thesis

The format of the thesis is as follows:.

Chapter One provides a brief overview of the role and importance of Internet payments to e-Commerce and in the context of innovative business processes and technology. It also identifies the research problem which was addressed in this study together with the way in which the problem was investigated. The research is justified by highlighting the need for a comprehensive treatment of the subject area. Delimitations of the scope of the research and key assumptions are discussed.

Chapter Two provides an extensive literature review that examines theoretical frameworks which are appropriate to the area of online payment methods in terms of explaining and/or predicting consumer behaviour. It starts with understanding the theoretical foundations that underpin innovation adoption and behavioural intentions by individuals, and identifies the factors that are likely to impact on them. Drawing from a variety of sources the chapter also presents a detailed analysis of key attributes and characteristics inherent in payment systems including their technical and systemic features. From this a consolidated list of salient attributes is derived and, together with the insight provided from the theoretical models, the preliminary customer payment usage and preference framework is developed for testing a set of hypotheses that will explore the research questions posed in Chapter 1.

Chapter Three provides detailed descriptions of the methodologies used in the research model, firstly describing the research paradigm and then the approach and method used. The data collection methods, case studies and surveys are introduced and justified.

Chapter Four outlines the data analysis from the online consumer survey which was conducted to test the hypotheses outlined in the methodology chapter. The data analysis from the survey responses is reported. A demographic profile of respondents is presented, followed by an analysis of the survey data, with particular emphasis on the extent of the adoption and usage of traditional, alternative and offline payment methods, and the associations between them and various determinants identified for the purposes of this study. Finally, the results of the hypothesis tests relating to the research questions are summarized.

Chapter Five incorporates a summary of the merchant case study results and a cross-case analysis of key themes.

Chapter Six summarizes the key research results and conclusions drawn from Chapter 4 alongside the findings of Chapter 5, as well as their implications for theory, practice and policy. An examination of the limitations of the research is presented and recommendations for future research are suggested.

1.7 Delimitations of scope and key assumptions

Since the studies reported in this dissertation were conducted within an Australian context (Australian merchants and consumers) care must be taken in attempting to generalize the results to other countries where payment culture, regulatory frameworks and consumer behaviour can be distinctly different from the Australian experience.

The payments landscape is in a continuous state of flux. New systems, protocols and methods of payment continue to appear on the market while others evolve or disappear with equal frequency. The introduction of the Secure Electronic Transaction

(SET) protocol, and its many subsequent variations in the space of a decade, is a case in point. So has been the abandonment of many digital cash models and solutions. Company buy outs, mergers and consolidations have also re-positioned many payment products on the market over this short space of time. The results, attitudes and recommendations reflected in this study should be viewed within this context.

It must also be noted that the results are indicative of the perceptions of the participants and not necessarily a reflection on the actual strengths and weaknesses of the products themselves. Hence a limitation of this study is that it examines the perceived product characteristics and preferences, rather than any actual shortcomings in the product itself. However, in view of the prominence given in adoption literature to 'attitude toward technology' as a significant antecedent to technology adoption and usage, this limitation may not be substantial.

Construct validity issues may have come into play in certain cases as several of the items in the survey instruments had to be developed because no proven survey instruments that would adequately satisfy the intent of this study were available for the empirical evaluation of online payment methods.

1.8 Summary and Conclusion

In introducing the research problem in this chapter within the context of the role payment systems play in the economy of the country, and the research questions arising from it, a foundation has been laid for this thesis. The research was also justified and an overview of the methodologies used in this study was provided. followed by a general implementation plan and an explanation of the scope of the research within the constraints imposed by the limitations of the study.

The next chapter provides the empirical and theoretical backdrop against which this study is set. The consumer payments framework proposed conceptualizes the issues influencing consumer usage and adoption using theories of consumer behaviour to explain consumer payment preferences for traditional and alternative payment methods.

CHAPTER 2 - **LITERATURE REVIEW**

2.1 Introduction

Chapter 1 provided an overview of the research problem under investigation, namely, to determine what the perceptions, preferences and usage of Internet payment methods were by consumers of traditional and alternative payment types; and the external factors that were likely to influence consumer payment behaviour.

The purpose of this chapter is to review literature with a focus on theoretical frameworks that investigate the adoption of innovations by individuals. It sets the foundation for understanding the issues pertaining to the adoption and diffusion of innovations and consumer behaviour and their relevance to the problem of payment method usage by consumers. From this, antecedents that are more likely to explain and/or predict consumer behaviour are identified, described and justified.

Using academic and non-academic sources, this chapter provides a brief overview of the evolution and development of payment systems leading up to the current state of the field. It identifies various payment methods and presents a number of useful classifications of payment methods to help better understand the particular problems associated with the different systems. This is followed by an assessment of the important technical, systemic, user-related and market-oriented characteristics and attributes inherent in payment methods.

A consolidated list of salient attributes is derived from this list of characteristics and, together with the insight provided from the studies of adoption and consumer behaviour, the customer payment usage and preference framework is developed for testing the set of hypotheses that will explore the research questions posed in Chapter 1.

The process for developing the hypotheses for this study is mapped out in Figure 2-1. The referent and immediate disciplines related to innovation adoption and behavioural theory are discussed from three perspectives along with the respective factors that influence the adoption of online payment methods:

- those pertaining to individuals and their adoption contexts (Section 2.4); and
- those pertaining to payment methods and their characteristics (Section 2.5)

Finally, the salient attributes (developed through the Delphi Study for the purposes of this study) are established along with the consumer payment model that is used to develop the hypotheses.

2.2 Existing literature sources

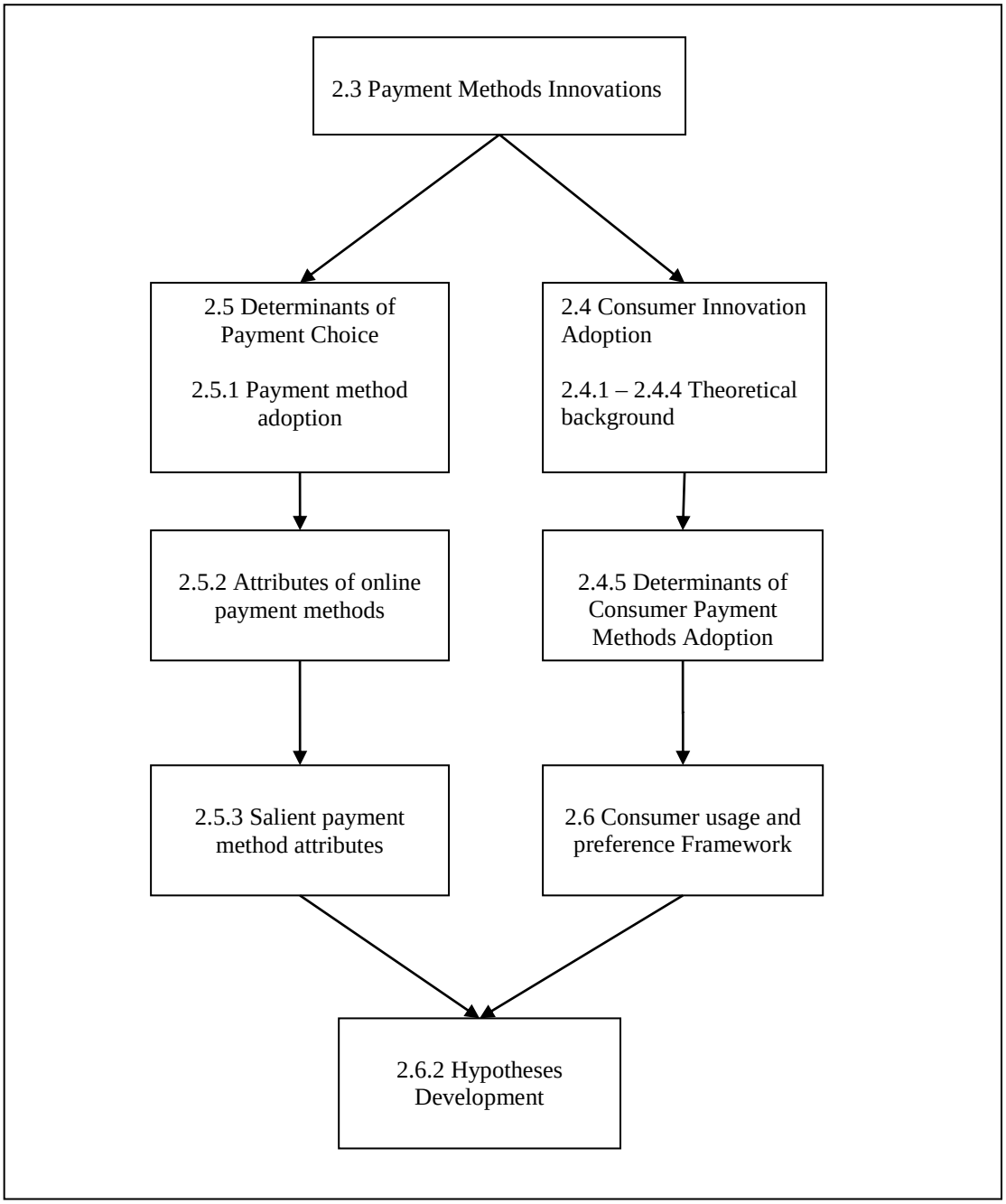
The search for literature related to theoretical and empirical academic research identified a number of potentially relevant disciplines and sources. The theoretical foundations on which this study is built benefitted from a rich source of inter-disciplinary research. However, being a relatively new and emerging field, studies specific to online payment systems and methods proved a lot rarer and the use of commercial and media sources had to be considered in order to fill the gaps in the literature. Also, while theoretical models and frameworks help us understand many of the drivers of attitudes and behaviour, they remain relatively undeveloped in the field of Internet shopping and more so in the area of online payment adoption. As a result, some reliance, for this aspect of the literature support, has been placed on disparate data from numerous sources to help build a clearer picture of the factors driving consumer attitudes, behaviours and experiences. As a result, the literature on the subject of this research can be classified by the source or the academic field as follows:

- Theoretical psychological, sociological, marketing science, IT and business science perspectives. This comprised a theoretical body of work concerned with innovation adoption, organizational and consumer behaviour and the effects of technology on the individual and society.
- The payments industry, marketing companies, government agencies, consultants and the media provided both subjective and empirical information on various aspects of the payments through reports, position papers and discussion forums.

In addition to the sources on the Internet, a number of electronic index databases such as Business Source Premier, Proquest, PsycINFO, Social Science Index, ABI/INFORM Global, EBSCO Host and Google Scholar provided a varied selection of academic literature through journal articles and conference papers. Use of commercial research was also made where the research originated from major surveys and/or reputable research companies.

Networking methods were also used. Networking was conducted with merchants, payment product developers, payment service providers and members of the Computer Crime Investigation Unit of the Queensland Police Service.

Figure 2-1: Literature Review: The Roadmap



2.3 Online payment methods as Innovations

There has been a great deal of empirical work in the field of innovation which spans many disciplines and focuses on both organizational and individual levels. Researchers in the field of innovation adoption agree that an innovation is an idea, a product, a technology or a practice that is perceived as new by members of a social system (Cooper, R. B. & Zmud 1990; Mahajan & Peterson 1985; Rogers, E.M. & Shoemaker 1971; Zaltman, Duncan & Holbeck 1973).

Some Information System (IS) innovations are confined to supporting only technical tasks while others may be deployed in a strategic way such that they affect the overall organization. Swanson (1994) classified IS innovations into three types: Type I innovations are confined to the technical tasks; Type II innovations support business administration; and Type III innovations are embedded in the core of the business. According to this typology, online payment methods satisfy the criteria of a Type III innovation in the sense that payment methods are typically embedded in a firm's core business processes streamlining the transaction process between the various accounting functions of the business. Payment methods can also extend basic business products and services by leveraging Internet-enabled two-way connectivity to offer real-time customer service; and online payment methods can streamline the integration with the customer purchases and the payment process by using communications to increase the ability of exchanging invoice and payment information online between the company and the customer.

Furthermore, Swanson's (1994) typology of Type III innovations can be extended to the Internet domain where online payment methods are being enabled by technology development (Kauffman & Walden, 2001); require organizational enablers and ongoing business and organization reconfiguration (Chatterjee, Grewal & Sambamurthy 2002); and shape (and are shaped by) the industry environments (Kauffman & Walden 2001; Kowtha & Choon 2001).

Zmud (1982, p. 1424) differentiates between product and process innovations. Product innovations, he argues, refer to the introduction of new products or services "that shift or expand an organization's domain". On the other hand, a process

innovation refers to the "introduction of new methods, procedures or responsibilities within existing domains".

Using Zmud's classifications, the introduction of a new Internet payment method can be defined as a process innovation serving the interests of both technical and administrative requirements. In addition, as innovations, online payment methods are considered interactive (requiring different organizations to perform in real-time to provide a service to the consumer) and inter-organizational (requiring the co-operation of one or more external parties in finalizing the payment transaction). The term 'interactive' also helps to distinguish these systems from other inter-organizational systems in which cooperation may take place over extended periods (Elliot & Loebbecke 2000).

Lyytinen and Rose (2003) identifies two streams of innovation literature: theories of industrial innovation and secondly, the diffusion of innovation literature. The first stream deals with types of innovations: artifacts and ideas that are new to the community or industry. Industrial innovation research has examined the structural *characteristics of the innovations*, their settings and their impact (Abernathy & Clark 1985; Christensen 1992b, 1992a). The diffusion of innovation stream has focused on the *adoption of the innovation*, that is, the innovation demand side and the characteristics of organizations and individuals as accelerating or decelerating forces (Rogers, E.M. 1995).

The next section focuses on the latter stream of research as they relate to individual adoption, followed by an examination of the characteristics of online payment methods.

2.4 Consumer Innovation Adoption

Adoption of an innovation by a company, particularly an interactive service such as is online payments, cannot be done in isolation from the needs and concerns of its consumers at the individual level (Fichman 2004). If there is little or no uptake of an innovation by the individuals to whom it was intended then it will pose minimal or no value to the organization, notwithstanding how favourable it might be to the latter.

Any innovation must be accepted by its target 'user' group in order to attain the benefits the organization intends to realize (for example, Bhattacherjee 1998; Leonard-Barton & Deschamps 1988). A payment method is a typical example of an innovation that only succeeds with the acceptance of the target group. The effect of a decision to invest in a payment method should consider the impact the adoption might have on the perceptions and behaviours of those who interact with the organization or business, that is, their customers.

Consumer behaviour is the study of individuals with the aim of determining how and why they purchase goods and services. The term covers the decision-making processes from those that precede the purchase of goods or services to the final experience of using the product or service (Kotler, P. et al. 2004). The disciplines of Psychology, Sociology, Marketing, IT and Business studies have developed a number of theoretical and methodological models which help explore the different ways in which consumer online purchasing is understood, viewed and approached. These models not only provide the framework to study this phenomenon, but also an insight into some of the factors which impact upon online shopping and payment, as well as an assessment of the ways in which these variables interrelate.

2.4.1 Theoretical and methodological background

Studies of Internet shopping fall into two groups: (1) those that use approaches that have traditionally also been applied to offline consumer behaviour, and (2) those that have been developed or adapted specifically to study the behaviour of online shoppers (OFT (UK) 2007). The latter group of studies uses theoretical approaches which are specific to online shopping while the former employ universal behavioural models (such as the Theory of Reasoned Action) and take the view that online shopping is based upon the same cognitive and social factors that affect offline shopping.

Figure 2-2 and Figure 2-3 map out these two families of theories that will be used to highlight the kinds of variables that need to be conceptualized and observed.

Figure 2-2: Theoretical models traditionally applied to consumer behaviour (Source: (Brown, Dora, Oleksik & Bisdee 2007))

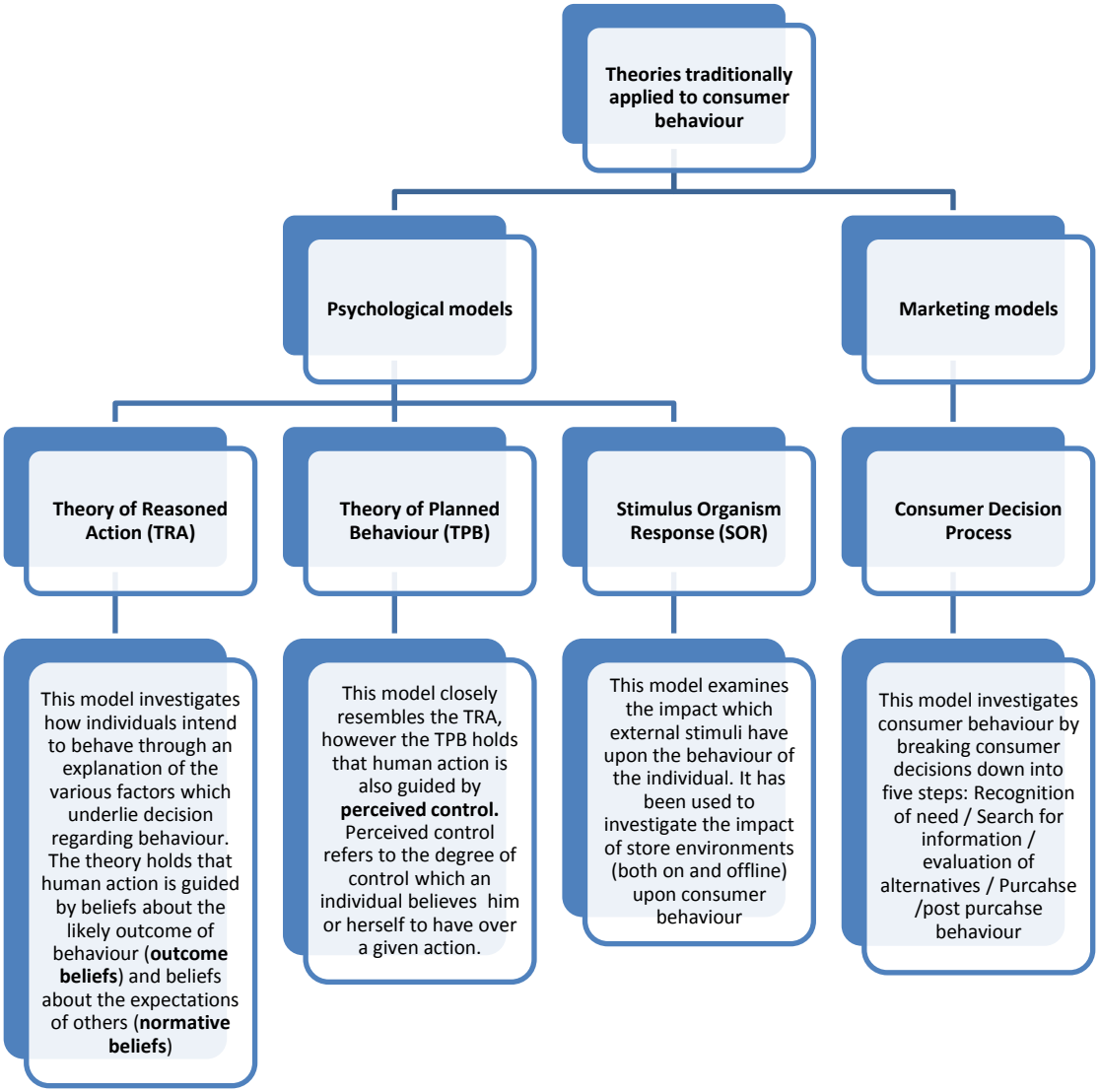
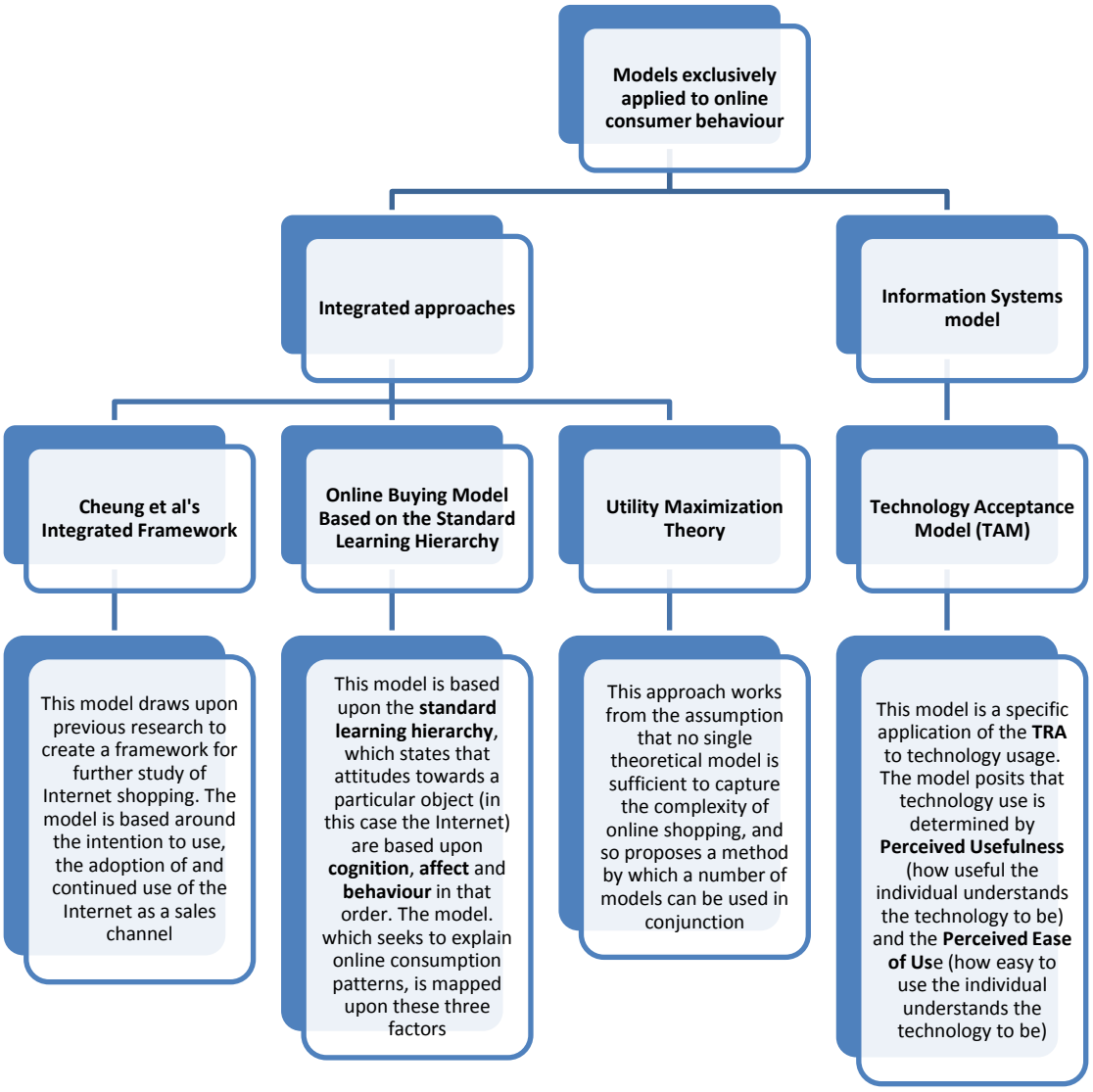


Figure 2-3: Theoretical models exclusively applied to online consumer behaviour (Source: (Brown, Duncan, Kasica & Bassanese 2000))



The essential thrust of this thesis is that various factors external to the product itself can be associated with its usage. Although perceptions and attitudes are relatively stable, they change and can be influenced over time. The Technology Adoption Model (TAM) hypothesizes that beliefs are affected by external influences (Davis, F. D., Bagozzi & Warshaw 1989). Consequently, the effect of the external influences (for example, organizational facilitators, personal innovativeness and social usage) is modeled as indirect through the perception of the innovation's attributes and characteristics.

2.4.2 Traditional theories of consumer behaviour

The four main theories traditionally applied to offline consumer behaviour (and used to analyze online shopping behaviour as well) are:

- The Theory of Reasoned Action
- The Theory of Planned Behaviour
- Stimulus Organism Response
- Decision Making Models of consumer behaviour

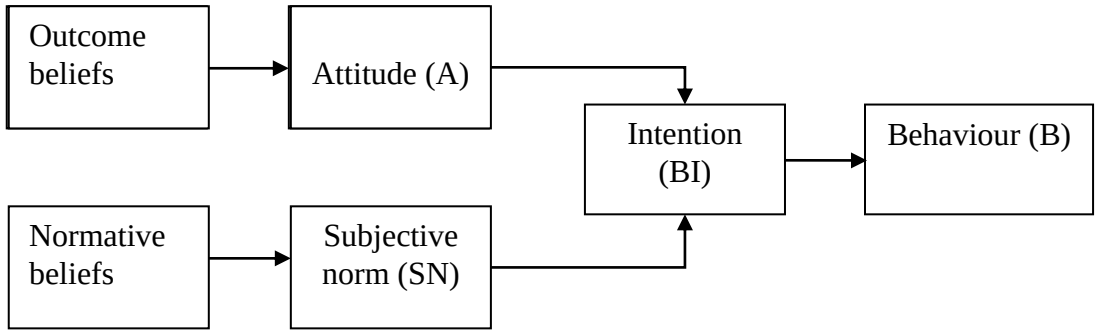
The **Theory of Reasoned Action (TRA)** has its roots in social psychology and was formulated by Ajzen and Fishbein (1980) to explain a variety of consciously intended behaviours. TRA states that a person's **behaviour** (B) is determined by his or her **behavioural intentions** (BI), and BI is determined by the person's weighted attitude (A) and the subjective norm (SN) concerning the behaviour (see Figure 2-4). The model is expressed as:

$$B = BI$$

$$BI = A + SN$$

TRA states that **attitude** (A) is defined as '*an individual's either positive or negative feelings towards a behaviour*' and **subjective norm** (SN) is defined as '*the person's perception that most people who are important to him think he should or should not perform the behaviour in question*' (Fishbein & Ajzen 1975, p. 302). The theory posits the view that human action is guided by (i) beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes (**outcome beliefs**) and (ii) beliefs about the normative expectations of others and motivation to comply with these expectations (**normative beliefs**).

Figure 2-4: The Theory of Reasoned Action (Source: (Ajzen & Fishbein 1980))



The first of these considerations, outcome beliefs, deals with the perceived gains and losses resulting from a given line of action. If a person perceives that the result of a given action will be mostly positive then he or she will, in general, hold a favourable attitude toward the action; if, on the other hand, he or she perceives that the outcome will have largely negative consequences, then he or she will hold a less than positive attitude toward it. Outcome beliefs, therefore, influence the attitude which an individual has towards an action which in turn determines an individual's intention to perform that action.

Intention to perform an action is also determined by a person's normative beliefs, that is, the social influences or norms that bear on his or her decision making. Essentially, normative beliefs refer to the influence of the social pressure perceived by the individual to perform, or not perform, certain behaviour. If people who are important to the individual see performing the behaviour as positive, and the individual is motivated to meet the expectations of these social peers, then the individual will be more inclined to perform the action. In contrast, if relevant others see the behaviour as negative, and the individual wants to meet the expectations of these others, then the individual will be less likely to perform the action.

As TRA is a general theory no particular methods for measuring either outcome or normative beliefs are specified. Instead the relevant issues to be tested are largely dependent on the context in which the phenomenon is being investigated. For example, outcome beliefs, in the case of online payment methods, may concern perceptions of the relative trust one has on one payment method as opposed to

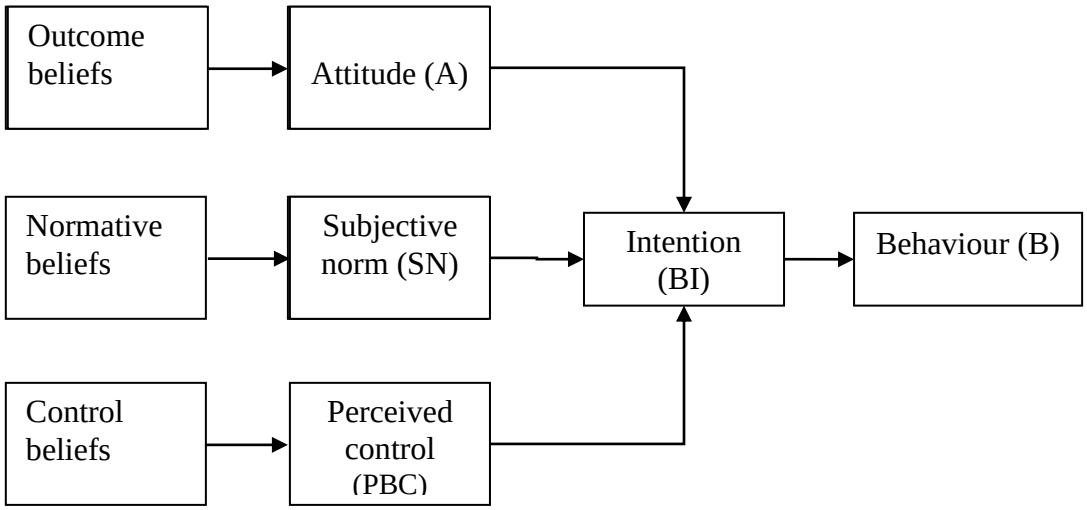
another. The TRA would provide a framework for testing whether these beliefs and attitudes were indeed related to the intention to use a particular payment method or not.

Sheppard, Hartwick and Warshaw (2001) completed a meta-analysis of TRA studies and found that the predictive power of the model was consistent and strong in different types of situations. In a study of 335 academic papers on Internet shopping, drawn mainly from the fields of Marketing, Business and IT, Cheung et al. (2005), found that approaches using TRA, and adaptations of TRA, dominated the study of online consumer behaviour. The TRA has been applied and validated extensively in the study of online shopping. Vijayasarathy (2002) applied the TRA to an empirical study on online shopping and found that not only did the tangibility of the product (or lack of it) influence his research participants' intention to shop, but that their normative beliefs (that is, the perception of what relevant others thought of the action) also affected their decision. Verhoef and Langerak (2001), who also, employed the TRA, found that outcome beliefs had a significant influence on the intention to shop online. This intention was positively influenced by the perceived 'relative advantage' of shopping online, compared to other forms of shopping and negatively influenced by the degree of complexity which these consumers perceived would be involved in the process.

In terms of the use of online payment methods, this theory therefore suggests that an individual's decision whether to use one payment method over another is influenced by what they consider they will gain (or lose), and how others will see them.

The **Theory of Planned Behaviour (TPB)** extends the TRA to explain behaviours in situations that were seen as outside the original model, specifically situations where an individual does not have complete control over his or her behaviour. The TPB adds the important factor of **perceived behavioural control** (PBC) which influences both B and BI (see Figure 2-5).

Figure 2-5: The Theory of Planned Behaviour (Source: (Davis, F. D. 1989))



Perceived control is defined as an individual's '*perceived ease or difficulty of performing the behaviour*' (Ajzen 1991, p. 188) or performing a given action. The theory contends that if an individual has a high degree of confidence that he or she can perform the activity, then he or she will be more likely to perform the action.

Hansen et al. (2000) applied both the TRA and the TPB to two studies of Internet users in order to test the ability of the two models to predict online consumer buying intention. In each of the studies TRA and TPB explained a high proportion of the variation in future online grocery buying intention. The study also revealed that the TPB had the greatest predictive power regarding consumer intention to use the Internet for grocery shopping. The authors found that perceived control (that is, the expected difficulty, or ease, of purchasing grocery online) did not significantly impact upon intention to use the Internet for online grocery shopping, indicating that consumers do not perceive major obstacles in performing this task and suggesting that because consumers are more comfortable with using the Internet, control beliefs do not have a significant impact upon behaviour anymore.

In a study using the TPB, George (2004) found that beliefs about the trustworthiness of the Internet (outcome belief) had a significant impact upon attitudes towards online shopping, while privacy beliefs about unauthorized use of personal information did not. Attitudes about the Internet as a sales channel were shown to affect actual purchasing behaviour. In contrast to Hansen et al. (2000), this study found that while

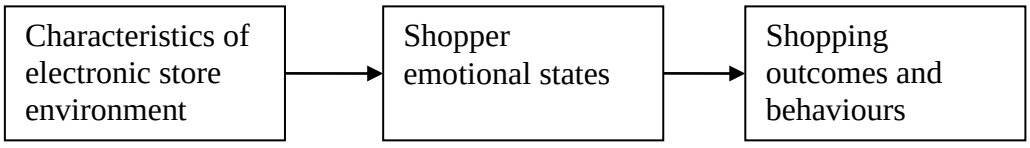
control beliefs did have a significant impact on purchasing behaviour, normative beliefs played little part in online shopping acceptance. George (2004, p. 202) concluded that 'respondents who believe in the trustworthiness of the Internet and in their own abilities to successfully engage in online buying behaviour actually engaged in Internet purchasing'.

While the TRA and the TBC models have provided a robust theoretical framework for measuring intention to purchase over the Internet, the mixed and contradictory results could well reflect on the fact that the complexity of online shopping does not lend itself to generalized, universal behavioural models that are not sensitive enough to measure or model the phenomenon with a greater degree of accuracy.

The **Stimulus Organism Response (SOR)** model, originally proposed by Mehrabian and Russell (1974), has been another approach to conceptualizing consumer behaviour and has been applied to both online and offline shopping as well.

Used to study consumption from an environmental psychology perspective, the SOR model provides a framework for studying the impact which a particular environment has upon individual behaviour. The model (see Figure 2-6) developed by Mummalaneni (2005) proposes that the store environment arouses the basic emotional states of pleasure/arousal in the individual, and it is these aroused states that affect the buying behaviours of these customers.

Figure 2-6: Effects of online shop environmental characteristics on shopping behaviours (Source: (Mummalaneni 2005))



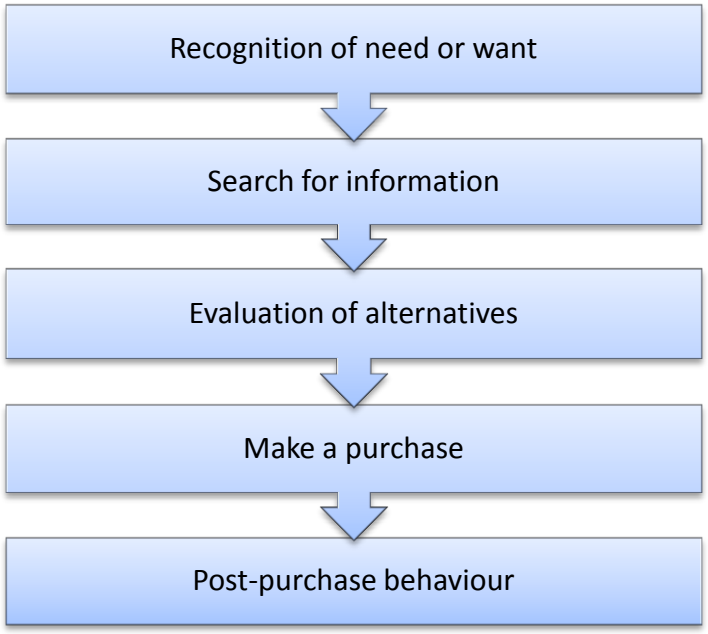
Mummalaneni found that the web site environmental characteristics (its organization, its design and ambience, and its ability to excite the senses and generate a feeling of satisfaction) were directly related to the amount of pleasure and arousal that individuals felt upon using the Internet for shopping. McKinney (2004) also adopted a SOR approach to empirically investigate how different elements (for example, special

offers, descriptions of products, order confirmation via email and graphics and images) of an online store's electronic environment appealed to different types of Internet shoppers (for example, highly involved, apathetic, apprehensive, and confident shoppers). Some variables contributed more to the satisfaction of one type of shopper than they did with the other types. For example, the ability to shop by merchandise department, the option to ship to another address, and the ability to store personal information (such as address and credit card details) satisfied the needs of 3Cs Shoppers (Confident, Convenience-Oriented, Comparison Shoppers) while Store-Preferred Shoppers were influenced by these variables plus the ability to shop by brand name and the placement of information, including text and images.

The results of Mummalaneni's and Mc Kinney's studies reveal the usefulness of the Stimulus Organism Response framework in understanding the impact of Internet store design upon consumer satisfaction and intention to shop online.

The simplified model of **consumer decision making** developed by Lamb et al. (2000) was applied to the practice of online consumption by mapping out the consumer decision process (see Figure 2-7).

Figure 2-7: Five step model of consumer decision process (Source: (Lamb et al. 2000))



The five step process is influenced in each of the stages by the following three variables:

- Individual Characteristics (Motives, Values, Life-style and Personality)
- Social Influences (Culture, Reference Group and Family)
- Situational influences (Communications, Purchase situations, Usage situations, Disposal situations)

Hardaker and Graham (2001, p. 182) state that this model 'provides a platform for further consideration of the impact of e-Commerce', and has been applied in a number of studies on Internet shopping (Cole, Robert & O'Keefe 2000; Gundepudi, Rudi & Seidman 2001; Huang & Christopher 2003; Kwong et al. 2001; Maklan, Knox & Watson 2001) with a variety of consumers and with confirmatory results (OFT (UK) 2007).

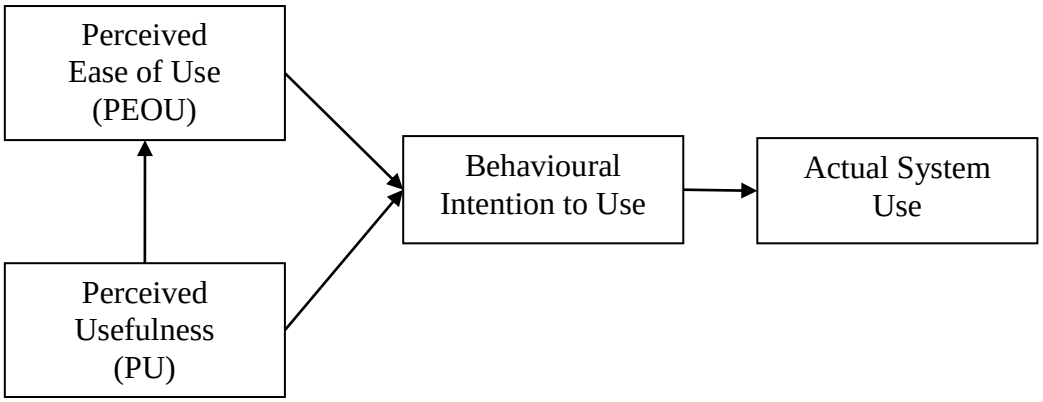
Huang and Christopher (2003) investigated the design features of online stores and how they supported each of the stages of the consumer design process. They recommended that web designers should seek to understand the consumer decision process more thoroughly and design websites accordingly.

2.4.3 Technology specific theories of consumer behaviour

The assumption that online shopping behaviour and experience are fundamentally different from their offline counterparts called for theories that also took into account the characteristics of the relevant technologies in use. For example, the nature of the Internet means that decision making during online shopping is largely carried out in isolation with little or no interaction with others; that the online shopping environment can be relatively unfamiliar and complex for consumers; that there is an absence of the stimuli of touch, taste and smell; and because the shopping takes place in a virtual environment, the consumer is free to complete the purchase or discontinue it at any point, without any social influences from either other customers or sales staff (Nelmapius et al. 2005). Also learning to shop on the Internet requires a specific set of skills and competencies that are applied to a specific set of technologies.

In recent years the dominant theory that explores the relationship between attitudes towards technology and the actual use of those technologies has been the **Technology Acceptance Model** (TAM) (Davis, F. D. 1986, 1989). Since Davis first developed TAM, it has been one of the most widely cited behavioural intention models and usually explains between 40-60% of the variance in use (King, W. R. & He 2006; Venkatesh et al. 2003)). TAM uses the Theory of Reasoned Action (see Figure 2-8) as a theoretical starting point for modeling the relationship between *Perceived Ease of Use* ('the degree to which a person believes that using a particular system would enhance his or her job performance') and *Perceived Usefulness* ('the particular degree to which a person believes that using a particular system would be free of effort') (Davis, F. D. 1989, p. 320).

Figure 2-8: The Technology Acceptance Model (Source: (Davis, F. D. 1986))



Davis found that TAM, unlike TRA, was generalizable. TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use. Researchers have simplified TAM by removing the attitude construct found in TRA from the current specification (Venkatesh et al. 2003). Attempts to extend TAM have generally taken one of three approaches: by introducing factors from related models, by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom & Todd 2005).

Cao and Mokhtarian (2005) listed a number of empirical studies that have applied the TAM to online shopping, demonstrating a wide range of factors that may influence

consumers in their adoption of the technology for Internet shopping, including their perceptions of how easy and useful it will be; the perceived risks involved; trust; prior experience; and the views of others. However, these studies have employed the TAM using the premise that the online shopping experience is only mediated by a set of technologies and software, giving little consideration to the wider social and experiential factors of shopping online (OFT (UK) 2007).

2.4.4 Integrated models of consumer behaviour

As has already been mentioned, theoretical approaches to explaining online shopping have not been consistent or comprehensive enough to fully understand consumer behaviour in this domain of research. However, recent studies have attempted to overcome this by offering new frameworks in which to study online shopping.

Drawing from a review of recent empirical work on online shopping, Cheung, Chan and Limayem (2005) argue that the determinants of online consumer behaviour can be separated into five major domain areas:

- *individual/consumer characteristics*, referring to internal individual factors and behavioural characteristics (lifestyle, motivation, knowledge, innovativeness, involvement, demographics, flow, satisfaction, experience, trust, attitude, values)
- *environmental influences*, referring to structural influences, including market-related issues (uncertainty, competition, and concentration), national and international issues (legal structure, trade restriction, and culture)
- *product/service characteristics*, referring to knowledge about the product, product type, layout, price, frequency of purchase, tangibility, and product quality
- *medium characteristics*, referring to both traditional Internet shopping attributes (ease of use, quality, security and reliability) and Web specific factors (navigation, interface, and network speed), and

- *online merchant characteristics*, referring to the key attributes of the online stores (service quality, privacy and security control, brand reputation, delivery/logistics, after sale service, incentive)

This framework brings together a number of empirically tested variables, and while it has not yet been used in empirical studies itself, it provides a cohesive view of online consumer behaviour and a guideline for researchers in this area (Cheung, Chan & Limayem 2005).

Another integrated approach was suggested by Cao and Mokhtarian (2005, p. 9) who arrived at the conclusion that because online shopping was a highly complex and complicated decision making process, incorporating economic, social and technical issues, no single theory was capable of capturing the associated complexities of behaviour and that a 'a comprehensive integration of several theories' was necessary. They suggested the **Utility Maximization Theory (UMT)**, an economic theory which states that individuals will always pursue utility maximization by choosing between alternative means, and they will always choose alternatives which maximize their utility. The theory states that the utility of an alternative is positively associated with its benefits and negatively associated with its cost. Therefore, each alternative can be thought of in terms of advantages and disadvantages, or pros and cons. In short, UMT states that a person will always try to get the most output from the least amount of input and will make rational decisions on this basis (OFT (UK) 2007).

Cao and Mokhtarian state that by using the UMT, and the key factors from a range of model based approaches to online shopping, a comprehensive list of the costs and benefits associated with online shopping can be identified. According to the UMT, if the aggregate costs outweigh the aggregate benefits, then we would expect the consumer to engage in online purchasing.

Martinez-Lopez, Luna and Martinez (2005) introduced the **standard learning hierarchy** model which is an integrated framework created specifically to explore the behaviour of online shoppers. Based on the classical attitudes model that states that attitudes towards a particular entity are comprised of *cognitions* (that is, belief, theory, expectancies and perceptions relative to the phenomenon in question), *affect* (that is,

feelings with respect to the entity in question such as fear, liking or anger) and *behavioural intentions* (that is, goals, aspirations and expected responses to the phenomenon). When applied to the use of online payment methods, this suggests that the consumer will develop a series of opinions or belief (cognition) regarding the use of the Internet that will determine his or her overall feelings towards the medium. This opinion will determine the consumer's use of the Internet as a means of paying online (behaviour). In particular, it is suggested that this general feeling will also introduce consumer trust in the Internet as a way to pay online, which in turn will determine whether any payment will take place via the Internet.

The first stage of their model (consumer beliefs) is based on a number of factors from other studies which Martinez-Lopez, Luna and Martinez (2005) contend will influence the attitude of consumers:

- *web design aspects* (defined by Martinez-Lopez, Luna and Martinez (2005) as 'related to the consumer's opinion about the availability, design attractiveness and structure of information on the web, and especially on the web sites')
- *interaction speed/time of response* (defined by Martinez-Lopez, Luna and Martinez (2005) as 'the Internet's capacity in general, and, more particularly, of different web sites, to give a response that an individual may receive when holding a conversation with another')
- *perceived social benefits* (defined by Martinez-Lopez, Luna and Martinez (2005) as 'the consumer's opinion about the Internet's contribution to society as a whole')
- *privacy* (defined by Martinez-Lopez, Luna and Martinez (2005) as 'the consumer's opinion regarding the respect of confidentiality of personal information and the maintenance of privacy by the various agents, fundamentally companies, with which he interacts in Internet applications')

The next component of the model (consumer affective response) is concerned with the consumer's feelings towards the Internet as a shopping channel. Martinez-Lopez, Luna and Martinez (2005) state that these are influenced by both the elements of consumer beliefs as well as the 'perceived usefulness of in-home shopping'. The main thrust of the argument here is that all prior beliefs, feelings and attitudes, in relation to

Internet and online shopping, will combine to form the level of trust which the individual has in the practice of online shopping, culminating in the completion of the purchase, finalization of the transaction and payment of the goods or service. The third and final component of the model (on-line buying related responses) refers to the actual purchasing behaviour over the Internet. The level of trust which consumers have in the internet as a shopping medium is influenced by the credibility and reliability of shopping over the Internet. In bringing together a number of theoretical perspectives, this model also suggests that consumers with high level of prior experience of Internet use are more likely to be influenced at the 'consumer beliefs' stage and those with less experience are more likely to be influenced by the perceived usefulness and trust in Internet shopping.

2.4.5 Determinants of Consumer Payment Acceptance

Brown et al. (2007) regard the extent to which the above models can be relied on for a complete picture of online shopping consumer behaviour as questionable. They go on to quote Cheung et al. (2005, p. 11) who state that:

> Classic consumer behavioural theories provide researchers with a good starting point in understanding online consumer behaviour. However, we should take the IT component into serious consideration when doing research in online consumer behaviour. Instead of blindly borrowing theories and models from other disciplines, we as IS (Information Systems) researchers should work out our own behavioural models, declaring what is unique and specific to the context of consumer based electronic commerce.

In addition, while the theoretical models on general consumer behaviour and online shopping help us to understand the drivers of attitudes and behaviour, the field of consumer payment behaviour has not received much attention in academic research literature, and nor had it received much attention in the trade or business press before the recent surge in electronic payment usage (Crowe, Schuh & Stavins 2006). Goldfinger (1999) argued that the main problem of the first generation of Internet payment methods was that they have not focused on consumer behaviour and attitudes.

As a result, reliance has been placed on disparate data from different sources to help build a clearer and more comprehensive picture of the factors driving consumer

attitudes, behaviours and experiences when it comes to choosing online payment methods over the Internet. These factors are investigated within the context of **consumer characteristics**, **institutional facilitators** and **social influences**.

Consumer characteristics

Among the more important factors in consumer behaviour research has been that of the personal characteristics of the consumer and the influence that they have on adoption behaviour. The impact of demographic variables, consumer innovativeness and past experience as personality characteristics are explored below in general and justified in the context of online payment method adoption

Demographics. Previous research suggests that socio-demographics affect an individual's propensity to adopt innovations (Gatignon & Robertson 1991; Robertson & Wind 1980; Rogers, E.M. 1995; Steenkamp, ter Hofstede & Wedel 1999; Venkatraman & Price 1990). Typical personal characteristics that relate to an individual include age, gender, and education and income levels. Age affects people's attitudes and behaviour (Beatty & Smith 1987; Klippel & Sweeny 1974). As people age, they show greater degree of reluctance to adopt new technologies (Gilly & Ziethaml 1985), become more cautious, and seek greater certainty in their decisions (Botwinick 1973), thus increasing their commitment to their existing behavioral patterns. The elderly also exhibit more negative perceptions toward new technologies (Pommer, Berkowitz & Walton 1980). The UK based study on online shopping behaviour (OFT (UK) 2007) found that generally, younger respondents, those in paid employment and high spenders were more likely to have used the Internet for online shopping, price comparison and online auctions. More relevantly, it also found that older respondents (35 years and over) were more likely to use credit cards when purchasing online than those aged under 25 years. Also, young people may have fewer concerns about particular attributes of the innovation compared to older consumers; and higher income users are likely to accept more risks. Bigne (2005) found that the higher the level of education and income the more favourable the perception towards online shopping was.

Personal innovativeness. Consumer innovativeness as a personal characteristic has been found to be a good determinant of new product adoption. The subject has been a well-

researched topic in consumer literature (for example, Blythe 1999; Citrin et al. 2000; Goldsmith, R.E., d'Hauteville & Flynn 1998; Goldsmith, R.E. & Flynn 1992). Innovativeness is an individual level construct that measures a person's reactions to the new and different (Goldsmith, R. E., Flynn & Goldsmith 2003). While organizations can try to influence consumer attitudes towards favouring the adoption of an innovation, some individuals readily accept certain innovations while others do not. The concept of personal dispositional innovativeness (PDI) has been applied by Midgley and Dowling (1993) in a consumer setting; and refers to the disposition of an individual to accept any innovation within a certain product class, independently of the communicated experience of others. Here, the innovativeness characteristic is inherent to the individual. Some 'technologically oriented' consumers will readily take up new technologies while others will be less inclined to use such technologies.

Note further that PDI is domain-specific or, in other words, related to a specific group of products (Flynn & Goldsmith 1993; Goldsmith, R.E. & Hofacker 1991). This specification is based on the assumption that domain-specific innovativeness exerts stronger influence on acceptance within a precise set of products, as opposed to global innovativeness. Most studies of innovativeness are conducted within a specific product field and thus the measures used are designed for this same level of specificity (Goldsmith, R.E. & Flynn 1992). Domain- or product category-specific innovation reflects the tendency to learn about and adopt innovations within a specific domain of interest, and therefore taps a deeper construct of innovativeness that is more specific to an area of interest (Citrin et al. 2000). This implies that consumers who are likely to adopt the latest new product in one field may be laggards in another (Goldsmith, R.E., d'Hauteville & Flynn 1998). It can also be expected that individuals who are innovative in a specific product group, will exhibit more positive attitudes towards particular innovations. According to Citrin et al. (2000), the level of consumer innovativeness could help marketers identify early adopters of their products who are then likely to help with the initial sales and provide word-of-mouth communication about the new product/service to later adopters.

With reference to the use of online payment methods, and in the context of this study, it is expected that domain-specific measures of innovation have the potential to influence individual acceptance of alternative payment methods.

Past product and related experiences. Often used as a foundation for one's perception and in turn attitude towards an innovation, is past experience. A study by Gardner, Dukes and Discenza (1993) identified a positive correlation between experiences with computers and beliefs towards them. Not surprisingly, negative experiences with computers correlated with negative beliefs and attitudes toward the technology. Individuals who had positive experiences also espoused positive beliefs and attitudes. On the other hand past negative experiences Studies have shown that direct previous experience with an innovation is likely to influence an individual's perceptions of an innovation over those who have had little or no experience with the product (Citrin et al. 2000; Dickerson & Gentry 1983; Robertson 1971; Taylor 1977). In general, the research data from these studies indicate that heavy users within a product category or those with significant experience in similar product categories are more likely to innovate and adopt related new products. This is because heavy users have acquired the ability and knowledge structure to predict outcomes for closely related products. Hence, it is likely that prior knowledge of the product class may lead to an increased ability to detect superior new products in that class and contribute to probability of adoption (Citrin et al. 2000). In the context of online payment method usage, this would suggest that higher levels of prior experience with using the Internet or purchasing online or paying for goods and services over the Internet will impact positively on users' perceptions of online payment methods.can be a strong disincentive to future adoption and negative experiences, even those that occurred many years ago, are remembered. Therefore, personal experience plays a strong role in forming an individual's attitude towards technology acceptance and innovation adoption.

An influential factor in consumer attitude towards online shopping is exposure to technology and experience with the Internet, since it has been demonstrated that increased exposure to technology increases the probability of developing favourable attitudes towards new shopping channels (Bigne 2005). Internet-savvy consumers are more likely to view an innovation in a more positive light than compared to less savvy ones.

Studies have shown that direct previous experience with an innovation is likely to influence an individual's perceptions of an innovation over those who have had little or no experience with the product (Citrin et al. 2000; Dickerson & Gentry 1983; Robertson 1971; Taylor 1977). In general, the research data from these studies

indicate that heavy users within a product category or those with significant experience in similar product categories are more likely to innovate and adopt related new products. This is because heavy users have acquired the ability and knowledge structure to predict outcomes for closely related products. Hence, it is likely that prior knowledge of the product class may lead to an increased ability to detect superior new products in that class and contribute to probability of adoption (Citrin et al. 2000). In the context of online payment method usage, this would suggest that higher levels of prior experience with using the Internet or purchasing online or paying for goods and services over the Internet will impact positively on users' perceptions of online payment methods.

Institutional Facilitators

Several studies indicate that individual usage of innovations not only depends upon attitudes but also on institutional strategies, policies and actions (Ives 1984; Leonard-Barton & Deschamps 1988; Lucas 1978). Depending upon the relevance of the innovation under consideration, these factors embrace internal marketing variables such as *training* and *education* (for example, Clegg et al. 1997; Igbaria 1993; Igbaria, Pavri & Huff 1989; Mirvis, Sales & Hackett 1991); *organizational technical support* (for example, Davis, F. D., Bagozzi & Warshaw 1989; Igbaria, Parasuraman & Baroudi 1996; Thompson, Higgins & Howell 1991); and *incentives* and *control structures* (Bhattacherjee 1998). An innovation may be given on trial to the consumer for a certain period of time (Fisher & Price 1992; Ram & Jung 1991) or the supplier may decide to absorb risks of adoption by offering the potential adopter the innovation at a low introductory price (Kotler, Philip 1998). Exposing individuals to these influences will enhance their awareness of the functioning and application of innovations, their usefulness and fit with their requirements, so gaining market acceptance.

Consumer incentives. The initiatives of merchants and other stakeholders in the payments arena can impact significantly on how the individual consumer perceives a payment instrument. Van den Poel and Leunis (1999) found a money-back guarantee to be the most powerful risk reliever. Most reputable vendors now go well beyond their basic legal obligations with their satisfaction guarantee, also providing easy and convenient mechanisms for the return of unwanted products. Under the conditions of

credit card usage in Australia (and elsewhere), issuing banks cannot hold a consumer liable for more than $AU50.00 of a fraudulent transaction. To instil confidence in their payment security measures, some merchants even offer to cover this amount in the event that the bank holds the consumer liable for all or any part of it.

Security Assurances. Zhou et al (2007) found that the privacy and security of personal and financial information were key concerns of online shoppers and Laroche et al (2005) and Xie et al (2006) argued that this was a reason why some consumers avoided using the Internet to make online purchases. According to Kukar-Kinney and Close (2010) when e-Commerce sites do not meet consumers' privacy and security expectations, this concern may become especially prevalent during the checkout process during which consumers are required to enter personal and financial information, and this in turn could influence consumers to abort purchasing the items in the shopping cart.

An industry survey conducted found that 64 percent of online shoppers abandoned a shopping cart or failed to complete an online purchase because they did not get a sense of security and trust when it came time to provide payment information (VeriSign 2004).

According to Kauffman (2001) trust determines whether electronic transactions take place, and, because the Internet hides valuable information about the trustworthiness of the participants, it is often necessary to use non-traditional methods to assure trust, such as a third party trust provider.

Stewart (1999) argued that there are two objects to be trusted in Internet transactions: the channel and the target firm. In the case of Internet payments, the two objects to be trusted are the payment method (which includes its underlying infrastructure) and the merchant from whom the consumer intends to make a purchase. In both instances, the consumer's attitudes, and hence acceptance behaviour, can be influenced markedly by the trusting mechanisms that have been enabled. These can take various forms such as trust seals, privacy and security policy statements and the use of anti-fraud tools etc. A consumer's perceptions of the assurances given by these mechanisms can increase the confidence in the online shopper. For example, the TNS study also found that 69

percent of Australian consumers (64 percent worldwide) who have terminated an online transaction due to a lack of security felt that they would have gone through with the original purchase if the site had included a recognized trust mark, and that about three-quarters of online shoppers indicated that they would only make purchases through sites that included a trust mark.

Social Influences

Perceptions are also affected by the social norms. The individual acceptance of innovations is driven by the degree of innovation usage within the social environment of the focal individual. The influence of social usage may originate from the innovation's availability and observability and the effect of network externalities as well as the extent of its usage among the user's peers.

Market reach and presence. The observability of an innovation is related positively to its rate of adoption (Rogers, E.M. 1995). This means that the more visible the results of an innovation are, the more likely the innovation will be adopted and implemented quickly (Tornatzky & Klein 1982). Network externalities, also, may increase the value of the innovation. Many authors have emphasized the importance of critical mass of users for the acceptance of interactive information and communication technologies (Katz & Shapiro 1994; Kraut et al. 1998; Markus 1990; Rice 1990; Rogers, E.M. 1991). The general rationale behind network effect is that the utility of communication mediums increase with the total number of users connected to the medium. Several of the authors cited above provide the important finding that network externalities seem to be most prevalent when there is a critical mass of users within a person's reference or work group.

Market reach and presence represents the customer's perceptions of the number of merchants offering a payment method as an option, and their awareness of the existence and availability of these products. This research issue considers whether the perception of, and attitude towards, the availability, reach and presence of a payment method affects the adoption of alternative payment methods.

Peer usage. Social norms or pressures have also been theorized as determinants of acceptance behaviour (Davis, F. D., Bagozzi & Warshaw 1989). Social norms relate

to "a person's perception that most people who are important think that he should or should not perform the behaviour in question" (Fishbein & Ajzen 1975, p. 302). The innovation usage of a focal individual's peers (e.g. superiors, colleagues and consumers) may signal the importance and advantages of the innovation and motivate the individual to imitate and adopt the innovation. For example, if 'important others' rely on the Internet for their information gathering or for making online payments, a focal individual may decide to comply in order to keep up with his/her peers (Frambach & Schillewaert 1999). Hence, the argument is put forward that individuals will exhibit more positive attitudes if people in their social environment also use the specific innovation. The effects of social norms are considered to influence innovation adoption indirectly through perceptions of the attributes of the innovation.

2.5 Determinants of Online Payment Choice

When it comes to merchants and consumers making decisions about which payment methods to use for the payment of goods and services over the Internet, it is useful to determine to what extent their perceptions of the intrinsic characteristics embodied within each of them affect their decisions. While these decisions are essentially no different from choices made to use or buy any other type of good or service, very little attention has been paid to date to the study of payment characteristics and the role they play in consumers' and merchant's choices of payment methods (Benton et al. 2007).

2.5.1 Payment method adoption

The recent years have seen a number of payment method innovations entering the e-Commerce market. Some initial methods placed a heavy emphasis on technological capabilities and did not succeed on a commercial basis while others have had mixed results. In attempting to identify the characteristics of payment methods it is useful to first understand the importance that an innovation's attributes has on the adoption intentions of merchants and their customers.

Rogers' (1995) Diffusion of Innovation (DOI) theory has been widely applied to the study of Information Technology (IT) innovations and has provided insight into the adoption, implementation, infusion and diffusion of IT innovations. In DOI research, the perceived innovation characteristics as presented by Rogers (1995) have been

discussed extensively. Rogers (1995) identifies five perceived innovation characteristics that influence the adoption decision, namely, relative advantage, compatibility, complexity, observability and trialability. Others, such as Nooteboom (1989), have added uncertainty as a sixth characteristic.

Relative advantage. Relative advantage is the degree to which an innovation is perceived as providing more benefits than some other technology/innovation (Rogers, E.M. 1995, p. 212). These benefits may be measured in economic terms, or in terms of convenience or satisfaction. Research has shown that the relative advantage of an innovation is one of the best predictors of the extent of adoption (Robinson 1990). Especially for organizations, the differential advantage of using an innovation over alternatives could impact on the productivity of its business and enhance its competitive advantage.

Compatibility. The compatibility of an innovation refers to the extent to which an innovation conforms with the potential adopter's existing values, previous experience and needs (Rogers, E.M. 1995, p. 224). In general, compatibility has a positive influence on the acceptance of the innovation.

Complexity. Complexity refers to the extent to which an innovation is perceived as difficult to understand and use (Rogers, E.M. 1995, p. 242). Complexity is a multi-dimensional construct.

Within the organizational context it refers to

(a) the extent that the innovation can be implemented on a limited basis,
(b) the sophistication or intellectual difficulty associated with understanding the innovation, and
(c) the extent of the newness of the innovation (Gopalakrishnan & Damanpour 1994)

The perceived complexity of innovations negatively affects its speed and probability of adoption.

Trialability. Trialability is the extent to which an innovation can be evaluated on a limited scale (Rogers, E.M. 1995, p. 243). Research has shown that trialability is more important for innovators and early adopters than for those who purchase the

innovation later. The latter have less uncertainty with regard to the innovation because they know from the early innovators how effective the innovation is (Rogers, E.M. 1995).

Observability. Observability is the extent to which the results of an innovation are visible to others (Rogers, E.M. 1995, p. 244). Innovations with a clearly visible (positive) result are more likely to be adopted than innovations with poor visible results. According to Abrahamson (1996), the more organizations that adopt a technique, the greater will be the knowledge about the innovation's efficiency and benefits throughout that business sector. As a result, more and more non-adopters will rationally adopt the new practice through technology diffusion because of its demonstrated benefits (Mansfield 1985; Rogers, E.M. 1995).

Risk and Uncertainty. When an innovation is associated with a high level of uncertainty, people and organizations will be less inclined to use or purchase it.
Gerwin (in: Rogers, E.M. 1995) distinguishes three types of uncertainty:

1. *Technical uncertainty*: the extent to which it is difficult for a potential adopter to determine how reliable an innovation is and how well it will function. Technical uncertainty also includes the extent to which potential consumers anticipate that better solutions will soon be available. If they expect this, they will be inclined to delay adoption (Gatignon & Robertson 1991). Companies that offer products in technologically volatile markets face this problem frequently;

2. *Financial uncertainty*: the extent to which the potential adopter has difficulty determining whether the implementation of an innovation is financially attractive. In other words, how certain is the adopter that the implementation of the innovation will not bring about any unexpected costs; and
3. *Social uncertainty*: the extent to which it is acceptable that conflict will occur in the immediate environment of the potential adopter with regard to the purchase and implementation of an innovation.

While the Perceived Characteristics of Innovation model developed by Rogers (1995) aims to be generalizable across all innovations, in specific applications it is more appropriate to study perceived benefits in terms of features particular to that innovation using a multi-attribute model (Roberts, J. & Urban 1988).

Forecasting the acceptance of a new product or process is difficult and numerous failures have been observed (for example, e-Cash models, SET protocols and several smart card applications in the electronic payments field). According to Roberts and Urban (1988) some of the difficulties result from the complexities that underlie the products themselves. They suggest that the success or otherwise of a payment product will be dependent on the strength and weaknesses of the many attributes that characterize them, many of which are known only approximately by the consumer. In concert with external influences, the inherent variability of these attributes between products will underlie the responses of merchant and consumers to them.

The perceptions that members of an organization or individuals have about an innovation affect their value assessment of and propensity to adopt a new product (Holak, Lehmann & Sultan 1987; Ostlund 1974; Rogers, E.M. 1995; Tornatzky & Klein 1982). In addition to adopter characteristics, these factors drive the adoption process and are, in turn, influenced by external variables such as the environment, the supplier of the innovation and others considered in this study. The perceived innovation characteristics can be considered as cognitive indices (or beliefs) of an attitude towards the innovation (Le Bon & Merunka 1998; Rosenberg & Hovland 1960). According to Frambach, Ruud and Schillewaert (1999), there is conceptual and empirical evidence to believe that, in organizational settings, attitudinal components mediate the influence of external variables on behavioural intentions (Le Bon & Merunka 1998). Similarly, attitude theory (for example, Fishbein & Ajzen 1975; Triandis 1971) hypothesizes that beliefs mediate the impact of external influences on behavioural decisions. For instance, attitudes can be formed through motivation (Le Bon & Merunka 1998), persuasive communication and/or active participation (Fishbein & Ajzen 1975; Triandis 1971).

Roberts and Urban (1988) also argue that these interpersonal communication and diffusion of innovation phenomena affect the dynamics of adoption. Based on these

assertions, Frambach, Ruud and Schillewaert (1999) posit that there is sufficient support to propose that perceived innovation characteristics mediate external influences on organizational and individual adoption behaviours.

The DOI model, as a general explanatory theory, provides a useful delineation in understanding innovation adoption and implementation as a broad phase between initiation and institutionalization. Rogers' classification of the attributes of innovation provides wide spectrum information to the barriers of Internet payment methods in general. Unfortunately, the lack of detail in Rogers' model would not permit meaningful distinctions between innovations in order to analyze why some payment innovations are successful and others not.

In fact, Lyytinen and Damsgaard (1998) argue that DOI theory disregards several key facets in the case of complex and networked technologies. For example, they criticise the premise in DOI theory that regards technology innovation as a 'black box' or 'discrete package' with a standard set of measurable attributes (as claimed, for example, by Tornatzky & Klein 1982). Several researchers (such as Kling 1991; Monteiro & Hanseth 1995; Prescott & Conger 1995) have called for a focus on the specific technology when studying its adoption and implementation.

Kling (1991, p. 356) calls it a 'convenient fiction' to equate computer-based technologies generically and to disregard the specific technical and social aspects of such technologies when conceptualizing their application. He argues that the "nuances of technical differences and social organization" associated with a particular technology often have a crucial influence in conceptualizing its organizational application.

The level of complexity involved in multi-organizational interactive innovation is an order of magnitude greater for each additional participant and Rogers' classification of attributes does not cater for analysis or research at this level (Elliot & Loebbecke 2000). For example, Rogers provides no grounds for determining relative advantage between competing systems even though there are system characteristics that offer relative advantage of one over another. In proposing his classification scheme, Rogers acknowledged the significance of this difficulty: "Diffusion researchers in the past

tended to regard all innovations as equivalent units from the viewpoint of their analysis. This is an oversimplification, and a dangerous one" (Rogers, E.M. 1995).

In similar vein, Prescott and Conger (1995) suggest that research on diffusion of IT-related innovations in organizations should not only be specific about the technology under study but should also position its impact. They point out that there are significant differences in the diffusion of information technology, depending on whether the locus of impact is mainly within one unit of the organization (e.g. the IS Unit with CASE technology), intra-organizational (impacting one or more units e.g. intranets, e-mail) or inter-organizational (e.g. EDI). They conclude that the features of an information technology impact significantly on its diffusion process. Monteiro and Hanseth (1995) similarly argue that in order to understand the interwoven relationship between an information technology and its organizational context, it is crucial to be concrete with respect to the specifics of the technology under study.

Lyytinen and Damsgaard (1998) also put forward the case that such technologies evolve in terms of their features and attributes and further argue that they exhibit an 'interpretive flexibility' and gain more meaning to stakeholders (merchants and consumers in the case of Internet payment methods) as the technology evolves over time. The meaning ascribed to such technologies by these actors is also highly context-specific (i.e. affected by such factors as the supporting infrastructure and the local organizational culture). Scheepers (1999) points out that researchers generally agree that perspectives which ignore the underlying features of the focal information technology (which may in itself contain a vast array of interconnected components) will suffer from lack of precision.

These arguments, therefore, call into question the broad applicability of a DOI perspective to study complex networked technologies such as Internet payment methods that are reliant on network externalities, standards, established telecommunication infrastructures, payment service providers and many other elements.

2.5.2 Attributes of payment methods

The decision to adopt and use a particular payment method by a merchant or consumer is, to a significant extent, likely to be based on the fundamental characteristics embodied by that payment method (Federal Reserve Bank of Boston 2007c). Several studies have analysed the general properties of payment methods and have attempted to classify and provide descriptions of their characteristics (Abrazhevich 2001; Asokan et al. 1998; Crocker & Stevenson Jr. 1998; Jayawardhena & Foley 1998; Lynch & Lundquist 1996; MacKie-Mason & White 1997; Peffers & Ma 2003; Pfitzmann & Waidner 1996; Shon & Swatman 1997; Winn 1999).

Many of them have described the features of payment methods, mainly taking a technological perspective (Asokan et al. 1997; Medvinsky & Neuman 1993). However, other factors also determine the success or failure of payment systems and not all of them are technical in nature. Technical excellence and successful implementation alone do not guarantee widespread adoption. Consumer and merchant acceptance also depends on many user-related and market-related issues which the developers of a payment method need to consider. In an attempt at understanding the medium term development of Internet payment methods, Bohle (2001b) took a problem-oriented approach by defining the Internet payment problem and distinguishing its main parameters and using them as a basis for assessing the advancements and drawbacks of new payment methods. His criteria for assessing online payment methods included the type of goods sold (physical or digital); the level of trust and risk; the anonymity of the payment process; the payment value; and the convenience and ease of use of the method.

Therefore, to better understand how payment methods are perceived by the various stakeholders and the features that impact on these perceptions, it is essential that all these aspects be considered for a more comprehensive understanding of the problems and challenges facing payment methods. The characteristics that describe these systems can also be defined from various points of view that include user-related, technical, market, legal and other categorizations (Abrazhevich 2001).

The literature review identified several candidate attributes, features and services of payment methods (see **Error! Reference source not found.**). It must be pointed out that not all the characteristics identified in this table are necessarily found to the same

degree in all payment methods, if at all. Some of these characteristics, like anonymity, are more important in some communities, or for certain kinds of transactions, than they are in other communities (Abrazhevich 2001).

When users interact with a payment method they are directly influenced by certain characteristics of the system, typically ones such as ease of use, trust and cost, and indirectly influenced by those that are generally transparent to them. Many of the technology related characteristics like scalability, divisibility, interoperability and encryption, for example, are not immediately obvious and usually transparent to the user. In many cases users have little in-depth knowledge or direct experience with these characteristics. Many of the attitudes of users in this area are based on assumptions usually obtained from second hand sources, such as the media and anecdotal evidence.

While generally applicable across the full spectrum of payment systems, this section discusses each of the attributes in the context of, and their relevance to, Internet payment methods specifically.

Table 2-1: Attributes, characteristics and services of Payment Methods (developed for this study)

Payment Method Attribute	Descriptions	References	Major Focus on*
User Related			
Security (Authentication, Integrity, Non-repudiation, Fraud susceptibility)	This relates to the *privacy* of the consumer, *integrity* of the payment transaction, *authentication* of the parties engaged in the transaction and *non-repudiation* of transactions. Also associated with security is the degree to which a payment method is vulnerable to fraud and fraudulent activity, that is, its *fraud susceptibility*.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Peffers & Ma 2003); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993)	C&M
Reliability (and Availability)	Reliability concerns how well the system maintains its service and service quality, often measured by the number of failures that occur in a given time period.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993)	C&M
Anonymity	There are instances when a user would prefer not to be identified through the money that they spend, wishing to remain anonymous from the merchant and others.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Peffers & Ma 2003)	C
Flexibility, Applicability & Acceptability	A flexible payment method can be adapted for use under different conditions depending on technological, economic and geographical circumstances.	(Neuman & Medvinsky 1995); (Peffers & Ma 2003); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993); (Mantel, B. & McHugh 2001); (Bohle 2001b)	C&M
Transferability	When funds can be received and spent again without the need to first deposit or clear the funds with a central entity, then value in the system is considered to be transferable.	(Research Group into Law Enforcement 1999); (Chaum & Pedersen 1992)	C&M
Convertibility	This refers to the ability to use funds from one payment system to transact in another	(Abrazhevich 2001); (Lynch & Lundquist 1996)	C&M
Efficiency	One aspect of payment efficiency relates to the ability of the payment method to service small payments or micro-payments without performance degradation or posing high transaction costs. Another aspect of efficiency concerns the processing of payments in real-time.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993)	C&M
Ease of use / Usability	Usability relates to the ease with which the system can be used and the absence of complex procedural requirements before, during and after the processing of the transaction.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Godschalk & Krueger 2000); (Plouffe, Hulland & Vandenbosch 2001); (Peffers & Ma 2003); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993)	C
Trust	Mayer et al (1995) explained trust generically as the willingness of an entity to be vulnerable to the actions of another. Extending this to payment methods, this can be viewed from three perspectives, namely, trust in the means of payment; trust in the payment instruments, and trust in the environment in which the payment instrument is used.	(Abrazhevich 2001); (Godschalk & Krueger 2000); (Mantel, B. & McHugh 2001); (Plouffe, Hulland & Vandenbosch 2001); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993); (Bohle 2001b); (Mayer, Davis & Schoorman 1995); (McKnight & Chervany 2002); (McKnight, Choudhury & Kacmer 2002); (Gefen et al. 2004); (Pavlou 2003); (Lowry et al. 2006)	C&M

Table 2-1 (continued)

Payment Method Attribute	Descriptions	References	Major Focus on*
Relative Price Advantage (Transaction Costs (fixed, variable, buyer), Cost of ownership)	This represents the savings a payment product has over its alternatives. There are fixed and variable transaction costs that have to be borne by the merchant and similarly, in some cases, by the consumer.	(Deutsche Bundesbank 2006); (Godschalk & Krueger 2000); (McHugh 2002); (Pippow & Schoder 2001); (Shy & Tarkka 2002); (Peffers & Ma 2003)	C&M
Exitbility/ Reversibility / Payment Cancellation	This refers to the option provided by the payment method to allow a user to suspend a payment instruction at various stages of the payment process and/or to reverse or cancel the complete transaction with relative ease and no financial consequences.	(Neuman & Medvinsky 1995)	C
Person to Person (P2P)	P2P schemes allow for money transfers from one person to another particularly in cases where a consumer has no access to credit card or bank account facilities.	(Walczuch & Duppen 2002)	C
Cross-border payment capability	The capability of a payment method to conduct cross-border or international payment transactions.	(Bohle et al. 2000)	M
Traceability	This refers to the monitoring of transaction activities and the ability to use the system to trace money flows to their source.	(Abrazhevich 2001); (Lynch & Lundquist 1996); (Medvinsky & Neuman 1993)	C
Technology Related			
Scalability	A payment method that scales effectively can handle a large number of consumer transactions without degrading performance or coming to an abrupt halt.	(Neuman & Medvinsky 1995); (Abrazhevich 2001); (Foo 2000)	M
Divisibility	This is a characteristic that enables a payment amount to be spent in any combination of payments.	(Abrazhevich 2001); (Foo 2000)	C
Atomicity	When a technical defect occurs during the processing of a payment transaction, the transaction must not be completed from either side.	(Lee, M. & Kim 2002)	C&M
Ease of integration with applications	This refers to the ease with which payment methods can be integrated into the back-end accounting systems of merchants. From the consumer's perspective integration entails the ability to use different payment instruments seamlessly to manage their payments with existing accounts.	(Neuman & Medvinsky 1995)	M
Relative Feature Advantage (Float, multicurrency, payment size)	This represents the added functionality provided by the payment method when compared to others in the same class, for example shorter float, support for multi-currencies and ability to handle different transaction sizes.	(Abrazhevich 2001); (Craig 1999); (Deutsche Bundesbank 2006); (Godschalk & Krueger 2000); (Mantel, B. 2001); (Mantel, B. & McHugh 2001); (McHugh 2002); (Plouffe, Hulland & Vandenbosch 2001); (Peffers & Ma 2003)	C&M

Table 2-1 (continued)

Payment Method Attribute	Descriptions	References	Major Focus on*
Risk Management	The uncertainty concerning payment methods stems from the financial, operational, reputational and legal risks that consumers, merchants and other stakeholders are likely to encounter. Risk management refers to the ability of a payment method to support the mitigation of the risks that arise from loss of money, deficiencies in systems reliability and integrity, damage to reputations and violations of, or non-conformance with laws, rules, regulations, or prescribed practices.		C&M
Interoperability	This refers to the capability of a payment method to run transparently on a variety of hardware configurations and on different software systems within the context of an industry-wide set of standards and protocols.	(Abrazhevich 2001)	C&M
Legal & Market Related			
Incentives	Incentives such as payment guarantees, limited fraud liability and reduced liability for chargebacks can be offered to allay consumers' and merchants' fears, and thereby encouraging usage	(Mantel, B. & McHugh 2001)	C&M
Market Presence	This represents the extent to which consumers and merchants are aware of the existence of the payment option and/or the benefits that it offers.	(Abrazhevich 2001); (Chakravorti 2000); (Deutsche Bundesbank 2006); (Mantel, B. 2001); (Mantel, B. & McHugh 2001); (Plouffe, Hulland & Vandenbosch 2001); (Winn 1999)	C&M
Market Reach (Consumer Base, Network Effects)	Market reach represents the merchant's perception of the number of consumers using the product. It is closely associated with the impact of network externalities and critical mass.	(Neuman & Medvinsky 1995); (Chakravorti 2000); (Deutsche Bundesbank 2006); (Peffers & Ma 2003); (Abrazhevich 2001)	C&M
Rules, Regulations & Policies	This refers to the legal frameworks, practice guidelines, procedures and mechanisms needed to support new, innovative payment instruments that are not catered for by the rules and regulations established for traditional payment methods.	(Allen 2003; Committee on Payment and Settlement Systems 2005b; Craig 1999; King, J. L. et al. 1994)	C&M

*Note: (C=Consumer, M=Merchant C&M= Both Consumer and Merchant)

2.5.3 Salient attributes of payment methods

The types of payments accepted by merchants influence whether or not consumers will shop on their web sites. A 2008 study by Jupiter Research showed that more than half of online shoppers think about the payment method they will use before they click on the merchant's checkout button (Payment News 2008).

The characteristics of payment methods, therefore, reflect the needs of businesses and individuals when it comes to a merchant making a decision to offer a payment method or an online customer selecting a payment option. In attempting to obtain an assessment of the perceptions of consumers in relation to alternative payment methods, it would be impractical to subject them to a list of attributes as fine grained as the ones discussed and listed in **Error! Reference source not found.**. It is also highly unlikely that users would be in a position to provide useful insight at this level. Also, certain of the attributes discussed can overlap with each other. For example, authentication may be seen as a security solution alleviating risk concerns while at the same time impacting on ease of use. This research seeks to determine consumers' perceptions of the salient attributes of payment methods and how they are associated with their usage of the different payment methods available on the market.

Six salient attributes were identified for the purposes of this study as encompassing the majority of the characteristics of payment methods described above. Starting with a preliminary list from the DCITA study on payment methods (2006), these attributes were refined and further justified using focus group meetings, interviews with payment service providers, and an analysis of payment product offerings from the literature.

The next step in the process was to obtain agreement on the most appropriate salient attribute to associate with the ones derived from the literature survey. A simplified Delphi procedure was conducted with a group of experts in e-Commerce and payments systems to help classify and consolidate these attributes into the derived group of salient attributes (see Table 2-2). A detailed description of the process used to arrive at these attributes is provided in Chapter 3 of this thesis.

The final list was distilled into a framework of six influential and mutually reinforcing salient attributes to be used in this study:

- **Confidence:** A term used in this study to describe the users' belief that a payment method can be trusted to successfully and reliably execute and complete a payment, and that there are adequate rules and regulations to oversee all the steps in the process to minimise non-repudiation and likelihood of fraud and other security breaches.

- **Confidentiality:** A term used in this study to describe the integrity of the payment method in maintaining the security and privacy of users' information through adequate authentication mechanisms.

- **Convenience:** A term used in this study to describe the ease of use of a payment method and the availability of useful payment features and functionalities.

- **Cost:** A term used in this study to describe the cost of the payment method to users via set-up and transactional charges, and savings to merchants derived from payment efficiencies, financial incentives, etc.

- **Coverage:** A term used in this study to describe how widely a payment method is made available to consumers and merchants and the level of its awareness among the population.

- **Control:** A term used in this study to describe the ability of the user of a payment method is able to control, monitor and regulate the payment process.

The relationship between these salient attributes and current payment methods is further explored next. The question items regarding the salient attributes that were used in the online survey of consumers were derived from a study of the following analysis of the attributes.

Confidence

Some of the most significant challenges to online payments are related to concerns about fraud and the security of transactions (Roberts, S. 2004b, 2004a; Valentine 2003). In a Forrester Research (2005) study it was found that about 65 percent of e-Commerce shoppers abandoned their shopping carts or failed to complete online transactions over, among other factors, security concerns, while 83 percent of consumers wanted more assurance that their information was secure and looked for assurances such as SSL certificates, the closed padlock and "https" in the URL address (Verisign 2007).

As criminals find ways to exploit the vulnerabilities of online payment methods the payments industry has had to develop new methods and procedures to ensure the security of both consumers and merchants and, in so doing, enhance their confidence and trust in online payments. Attempts have been made to mitigate the concerns of security and fraud through improved security mechanisms. For example, credit card companies have developed enhanced user authentication processes through 3-D

Secure protocols during the transaction authorization stage. The primary aim here is to ensure the integrity of the transaction and, as a consequence, confidence in the process. Payment service providers also reduce the financial risks associated with transacting over the Internet by guaranteeing transactions (Wright 2002). For example, PayPal implements a 'seller protection' policy that allows eligible parties to obtain a PayPal refund of up to $5 000 for successfully repudiated claims such as unauthorized use of credit cards or false claims that goods were not sent.

The concept of trust can be treated as one's perception of the privacy and security of the online transaction. Trust has been shown to be essential for the success of online transactions. Among a number of other indicators, the level of trust engendered can be affected by the recognition of the merchant's name and its reputation and size (Jarvenpaa, Tractinsky & Vitale 2000). In their study on experienced repeat online shoppers Gefen et al. (2003) showed that consumer trust was as important to online commerce as the widely accepted TAM use-antecedents, perceived usefulness and perceived ease of use. Together these variables explained a considerable proportion of variance in intended behaviour. The study also provided evidence that online trust is built through (1) a belief that the vendor has nothing to gain by cheating, (2) a belief that there are safety mechanisms built into the Web site, and (3) by having a typical interface, (4) one that is, moreover, easy to use. Other methods of consumer reassurance have been the use of 'trustmarks' such as 'Internet Shopping is Safe' (ISIS). Such seals of approval demand codes of conduct with respect to online transactions that require merchants and payment service providers to provide clear and unambiguous information on the different accepted payment methods and their usage and implications. However, evidence in the market place suggests that trustmarks have had difficulties in achieving brand recognition by consumers and in becoming commercially viable and sustainable operations (de Bruin et al. 2005).

Another risk faced by users of online payment services is the possibility of a payment service failure through a systemic error, a misappropriation of funds or going out of business altogether (Sorkin 2001). Over the past few years several online payment services have in fact ceased operating. Therefore, payment methods that provide secure, reliable online transaction experiences are necessary to increase consumer and merchant trust and facilitate the growth of e-Commerce (Lowry et al. 2006).

Confidentiality

A number of perceived risks which are particular to online transactions have been identified in the literature (Jarvenpaa & Todd 1997). In particular, personal and privacy risks are considered to be specifically related to online transactions and payments. Personal risk lies, for example, in the fear of giving one's credit card number over the Internet while privacy risk corresponds with the fear that personal information will be collected without the consumer's knowledge or exploited for purposes other than it was originally intended.

While unregulated online payment services are generally free of legal constraints on the collection and use of personal data they generally provide at least some privacy protections voluntarily, either in their general terms of service or in a separate privacy policy. However, a provider could engage in selling off personal information, including the sale of contact data, transaction records, and other information to third parties for marketing purposes and without the knowledge of the buyer (Sorkin 2001). Sorkin (2001) also points out that these payment services may well share personal data with one another and with other financial service providers for other purposes, such as minimizing credit risk and preventing fraud.

This invasion of privacy is defined as "the unauthorized collection, disclosure, or other use of personal information as a direct result of e-Commerce transactions" (Fazio Maruca 1999, p. 160). According to the TechTarget website (TechTarget n.d.), an annual survey conducted by the Graphics, Visualization and Usability Center of the Georgia Institute of Technology showed that 70 percent of the Web users surveyed cited concerns about privacy as the main reason for not registering information with Web sites and 86 percent indicated that they wanted to be able to control their personal information. Privacy concerns and fear of insecure transaction have been argued to be the biggest inhibitors to online shopping (Wang, Lee & Wang 1998) and a major factor influencing consumer views about online payments (DCITA 2006).

An issue particularly related to account-based payments generally is the lack of anonymity. As opposed to transfers involving paper currency, this form of payment allows for the possibility to trace consumer purchases, an issue which raises substantial questions on privacy protection (Paunov & Vickery n.d.). The current absence of online equivalents to cash payments means that consumers leave more

'traces' on purchasing habits in the online world than in the offline one. On the other hand merchants are continually faced with dealing with the tradeoffs between anonymity and traceability for payment support.

Convenience

A distinct characteristic of online shopping, compared to traditional shopping, is its convenience. According to a study of online shoppers Jarvenpaa and Todd (1997) found this to be a major motive for consumers to shop online, as did later studies (Burke 1998; Chiang & Dholakia 2003; Dutton & di Gennaro 2005; Dutton, Helsper & Gerber 2009; Richards 2005).

It is hypothesised that convenience, with its many dimensions, can also be related to use of payment methods. The ability to pay for goods and services from the comfort of the home, office or, these days, practically anywhere can be a significant plus factor for the adoption of online methods of payment. To be competitive with offline and traditional methods of payments, online systems must offer a high level of convenience to both merchants and consumers. This includes such value propositions as the option to pay in very small amounts (micro-payments); to be able to use different payment channels (for example, mobile payments); and to be able to pay other individuals (person-to-person payments).

Payment methods must also ensure ease of use and associated with this is the aspect of immediacy or the timeliness of the assurance of value. In many instances payers expect immediate certainty that their payment has been received, or at the least, confirmation payment receipt within a reasonable time. While a cheque does not have certainty of payment until the cheque clears a credit card provides immediate assurance, because the issuer, scheme and acquirer agree to assure the merchant that an authorised transaction will be honoured.

Merchants have a different perspective on convenience to consumers. They are likely to seek payment products and services that integrate into their broader business processes such as their accounting, invoicing and statement production systems and more importantly into their business revenue model.

Cost

An important objective for all payment systems is to allow easy access to merchants and consumers with minimal entry and ongoing costs. Traditional offline payment mechanisms are generally less efficient than online payment methods, primarily because they require physical delivery of a payment instrument from the buyer to the seller. The cost of using traditional payment mechanisms varies from trivial to substantial, and they also involve varying levels of risk. Online payments, on the other hand, help to reduce costs for both merchants and consumers by reducing paper work, processing time and human resources needed to complete the transaction (Rob & Opara 2003).

From the perspective of the merchant, there are setup, maintenance and transaction costs to contend with. For example, in addition to meeting qualification requirements for a merchant credit card account, a merchant who wishes to accept credit cards may also have to pay substantial startup and periodic costs. The per-transaction costs are relatively low—typically $0.35 plus 2.3% to 2.9% of the transaction amount, but for low-volume sellers the other costs may be prohibitive.

A combination of switching costs together with factors such as general satisfaction with current practices, inertia, and lack of knowledge and possible distrust of new mechanisms may be contributing to the reluctance of some merchants and consumers to adopt alternate payment methods (Sorkin 2001).

Coverage

The aspect of reach, within the context of coverage, embodies the network effect. Consumers are much more likely to use a payment method that is widely accepted (or at least accepted wherever they are likely to shop online), and merchants are much more likely to offer a payment method widely used by their customers (APCA 2009).

Making payment methods accessible to a wide audience and readily available through different channels and outlets is an important outcome for successful payment methods. The coverage of credit cards is mixed. While the credit card system enjoys a well-established network of users and merchants there are some like the American Express and Diners cards that are not accepted by certain retailers.

Innovative forms of payment specifically developed and tailored for consumer e-Commerce and niche markets will continue to evolve to support new business revenue models. Providing them with broad coverage and access will pose a challenge, but is essential if they are to influence consumers to adopt them. Payment services must be capable of quickly developing domestic reach through critical mass of use by Australian consumers and acceptance by Australian merchants.

According to the Australian Payments Clearing Association Limited (APCA) discussion paper (2009) an industry requirement of a payment method is that it should support (1) all Australian personal financial institution (FI) account-holders with Internet access, and all Australian businesses; (2) all e-merchants with an Australian FI account and registered address; (3) all payments to Federal and State Governments made through their respective websites, by both private individuals and businesses; (4) payments to individuals (P2P services) as a potential added-value service; (5) customers who are not necessarily registered with the merchant in advance; and (6) partly anonymous usage in certain applications.

Control

Web based interfaces and technologies can obfuscate complex linkages and subsume various underlying processes. In a typical online shopping interaction the search for a product; placing it in a shopping cart; logging in; entering payment details and then making the payment involve a number of players and processes. These include the web site host, the Internet service provider, the payment verification services and shipping services as well as third party service processes that are mostly hidden from the consumer. This lack of control leads to a lack of process transparency (Chatterjee, Grewal & Sambamurthy 2002). Process transparency refers to consumer perceptions of visibility and verifiability of the underlying operation and execution process in any transaction (Williamson 1975). Whereas transactions in the physical markets allow customers to maintain a degree of control over the transaction process, in e-Commerce, the control drastically shifts to the underlying technologies of the web.

In examining the inefficiencies and consumer uncertainties in e-Commerce, Chatterjee and Datta (2002) argue that the lack of process transparency in relation to

online payments leave consumers with little control over the payment process. They make the case that a typical buyer has little or idea of how correctly their transaction has been routed, or who picked the payment or how it was processed. Nor is the buyer certain that their payment information was received intact by the intended party or was forwarded onto unknown third parties. In e-Commerce, web interfaces and technologies preclude consumers from monitoring the process mechanisms. As a result, buyer concerns about identity theft and credit card theft, spyware and malware, phishing, packet sniffing, and spamming abound (Chatterjee, Grewal & Sambamurthy 2002). Reduced process transparency therefore remains an inefficiency specific to e-Commerce transactions, leading to greater consumer perceptions of uncertainty (Federal Trade Commission 2000). Legislative protection and provisions and coverage of potential losses can help alleviate these concerns.

Table 2-2: Salient Payment Method Attributes and encompassing factors (developed for this study)

Salient Internet Payment Methods Attributes	User Related factors	Technology Related factors	Legal & Market Related factors
Confidence: A term used in this study to describe the users' belief that a payment method can be trusted to successfully and reliably execute and complete a payment, and that there are adequate rules and regulations to oversee all the steps in the process to minimise non-repudiation and likelihood of fraud and other security breaches.	▪ Reliability ▪ Availability ▪ Trust	▪ Atomicity ▪ Non-repudiation	▪ Rules, regulations and public policies ▪ Fraud susceptibility
Confidentiality: A term used in this study to describe the integrity of the payment method in maintaining the security and privacy of users' information through adequate authentication mechanisms.	▪ Anonymity ▪ Traceability	▪ Authentication ▪ Integrity ▪ Privacy	
Convenience: A term used in this study to describe the ease of use of a payment method.	▪ Flexibility ▪ Applicability ▪ Ease of use ▪ Speed ▪ Convertibility ▪ Transferability ▪ Person-to-person	▪ Divisibility ▪ Ease of integration	▪ Interoperability ▪ Multicurrency ▪ Float
Cost: A term used in this study to describe the cost of the payment method to users via transactional charges and savings derived from payment efficiencies etc.	▪ Transaction costs (fixed and variable) ▪ Cost of ownership ▪ Cost effectiveness ▪ Payment efficiencies ▪ Float	▪ Scalability	▪ Financial incentives ▪ Payment size
Coverage: A term used in this study to describe how widely a payment method is accepted by merchants and consumers.	▪ Cross-border capability ▪ Acceptability		▪ Market reach ▪ Market presence
Control: A term used in this study to describe the extent to which the user is able to control, monitor and regulate the payment process.	▪ Payment cancellation ▪ Transaction reversibility ▪ Exitability	▪ Risk and fraud management	

2.5.4 Summary

The above discussion makes it clear that payment systems are complex. They involve a significant number of interrelated issues associated with commercial relationships, technology, the law and business practices, and involve coordination among a variety of parties with different and sometimes competing interests (Mantel, B. 2001). For these reasons there have been a variety of payment products on the market in recent years each providing different tradeoffs with respect to the characteristics described above.

Adding to the complexity of these relationships, payment methods involve long-term infrastructure investments, which evolve slowly over time. As a result, it is critical to evaluate payment method changes in a broader context, which recognizes the various component factors, including the nature of the commercial relationship as well as the nature of the payment methods used. The unique attributes and characteristics of Internet payment methods and their increasingly important influence to the ongoing success of e-Commerce therefore merit particular attention.

This research acknowledges the necessity for a classification of attributes which will enable clear distinctions to be made between more complex, multi-participant interactive payment methods. The value that an adopter places on the characteristics and attributes of an innovation will be determined by the nature of the potential adopter (merchant and consumer) and when and how much the adopter learns about the innovation. The perceptions of these attributes will predict the rate at which and innovation is adopted (Rogers, E.M. 1995).

From this analysis it is evident that there is a need to understand the payment needs of merchants and consumers as well as the factors that inhibit and encourage their usage. It is also the contention of this study that merchant and consumer perceptions of many attributes of payment methods discussed in this chapter, while being diametrically opposed in many areas, can be influenced by particular external factors.

2.6 Construction of Conceptual Framework to explain Internet Payment Usage and Preferences

Despite the growth and importance of online payment in the current global economy, little academic literature exists in this area that integrates the disparate research streams about online payments (Lowry et al. 2006). A secure, efficient payment method is considered to be one of the key drivers of e-Commerce. One of the important issues payment system developers face is how to obtain critical mass, firstly with the merchants who will install their systems, and secondly with consumers who will make use of their payment systems.

In analysing the acceptance of credit cards and the failure of stored-value cards to achieve similar critical mass, Chakravorti (2000) suggests that there are necessary conditions for a payment instrument to be successful, namely, consumers and merchants need to be convinced of its advantages over existing payment alternatives for at least some types of transactions; payment providers must convince consumers and merchants *simultaneously* of its benefits to achieve critical mass; and they must be assured that adequate safety and security measures have been implemented. A central finding of this research is that many of the payment methods failed to succeed due to their inability to fulfill the needs of either merchants or consumers, or both; or the relative superiority of traditional and established systems.

Therefore, a consumer's preference for an innovation is governed by his/her perceived utility of the innovation (Soo-Jiuan 1994). This perceived utility is determined jointly by the consumer's evaluation of the product attributes (perceived product attributes) and the external influences exerting on the consumer. Under conditions of risk aversion and information uncertainty, the consumer will choose to adopt the innovation with maximum expected utility.

Thus, in order for a payment method to succeed in the market, payment system developers need a thorough understanding of their potential users (merchants and consumers). They also need a means of analyzing both the process and the factors influencing the decision of potential users to adopt or not to adopt the payment

method. In this respect, research on the adoption and diffusion of innovations offers significant contributions to the payment system domain.

Based on the literature drawn from technological innovation adoption and diffusion, the present research is guided by the conceptual model developed by Frambach, Ruud and Schillewaert (1999) and the theoretical framework from the innovation theory of Rogers (1995).

Studies on organizational innovation adoption in different disciplines have been analyzed and factors that have been found to influence the acceptance of new products by organizations and their consumers have been identified and incorporated in the models. As indicated in the previous section, the two main levels of adoption have to be distinguished. First, determinants of innovation adoption at the organizational (merchant) level have been identified. Subsequently, a payment method (innovation) acceptance process at the level of the consumer (individual) is coupled to this decision to adopt by the merchant. Both models were addressed consecutively in the context of theoretical underpinnings.

Note that, although the adoption process is depicted to consist of different stages (awareness, consideration, intention, adoption decision, and continued use), Frambach, Ruud and Schillewaert (1999) have found that most studies have focused on the dichotomous adoption/non-adoption decision in the main. They go on to point out that there is limited insight into the extent to which the variables that influence adoption at the organizational level affect the different stages in the adoption process differently. Also, it should be noted that previous studies on innovation adoption have focused on different factors that influence adoption. Here, many of their findings have been integrated within one framework.

As most studies focus on empirically testing first order determinants of the adoption decision, frameworks generally depict direct effects of adoption determinants. According to Frambach, Rudd and Schillewaert (1999) an integration of the variables that are found to directly or indirectly affect the innovation adoption process within one conceptual framework requires a more comprehensive representation of effects

than a first order model. The conceptual models proposed in this research place the perceived innovation characteristics at the heart of the model.

The components of this framework on the organizational adoption decision process are also in line with the classical models of organizational buying behaviour (Choffray & Lilien 1980; Sheth 1973; Webster & Wind 1972). These models include individual characteristics, interpersonal and organizational elements as important variables in the organizational buying decision process. Note that the perceived innovation characteristics are depicted as a mediating factor in the model developed for this study, unlike in previous adoption research where these variables are considered directly in relation to the adoption decision.

2.6.1 The Research Framework

As stated in Chapter 1, the main problem and question in this research is to identify the usage and preferences of the different payment options that are available to online consumers for the payment of goods and services over the Internet; the external factors that influence these choices; and the attitudes towards these payment methods in the context of their salient attributes.

Based on the innovation literature discussed above, and the salient attributes and characteristics of payment methods discussed and developed here, the research framework for this study have been designed to take into consideration external factors likely to shape an individual's, perceptions of these attributes (see Figure 2-9).

In view of the fact that the use of online payment methods is a relatively new phenomenon and newer methods are continually evolving, the literature reviewed in this chapter began with theories on innovation and adoption followed by consumer behavioural and adoption studies as they relate to Internet shopping and payment method usage. An analysis of the attributes associated with payment methods led to the development of a list of salient attributes that would be used in this study.

Very little empirical research on the payment method adoption decision has been carried out to date that examine the choice of payment method by consumers at the

point of payment. While previous studies have addressed the issues of online shopping to gain an overall understanding of online purchasing behaviour this research examines the factors and unique characteristics of payment methods that influence payment method choice after a decision to make an online purchase has been made.

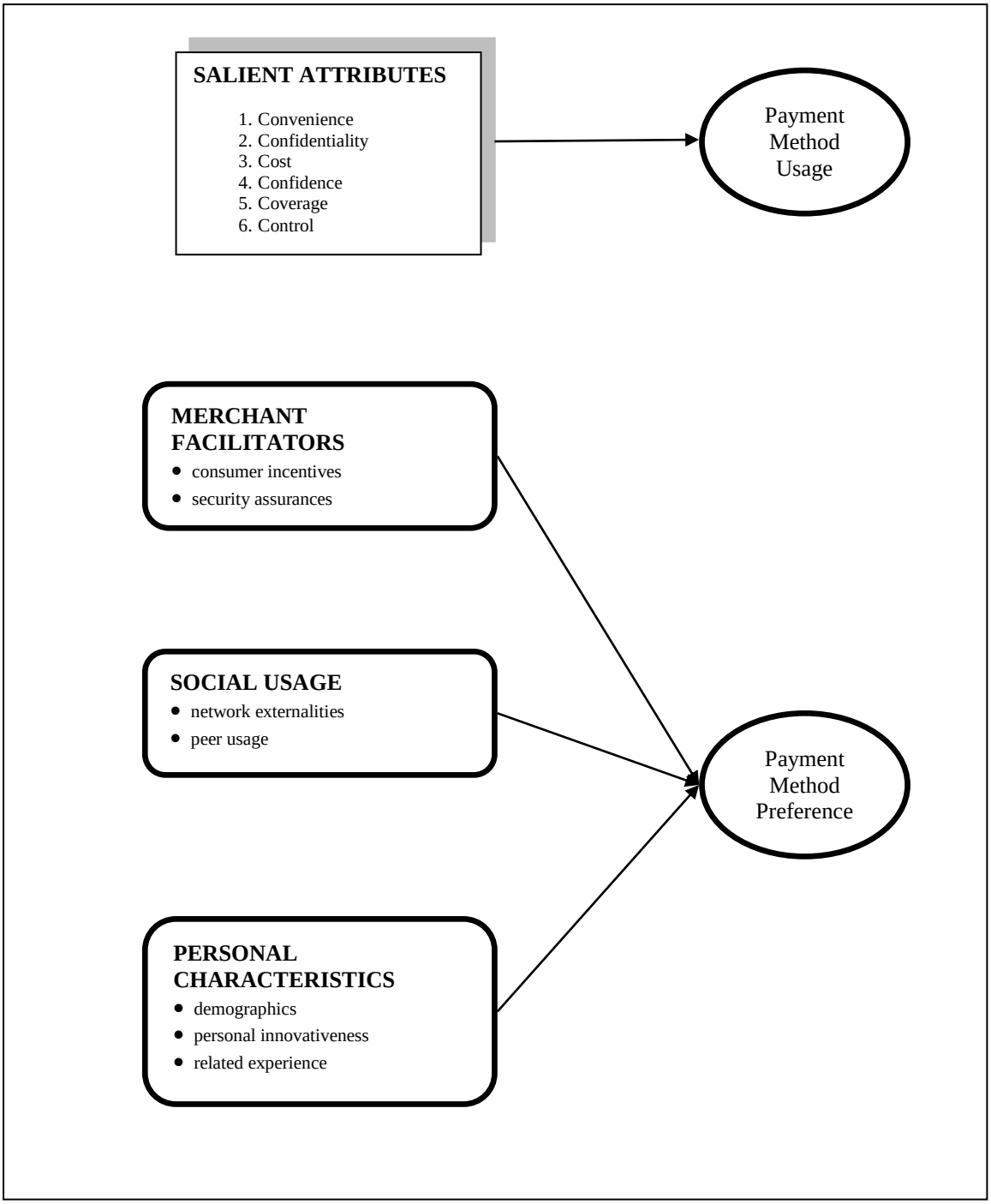
When reviewing the facilitators of adoption and usage in all of the studies from the perspectives of consumers, a number of factors stood out consistently and with the potential to significantly explain behavioural intentions to adopt particular payment methods. A summary of the most relevant factors in each instance is shown in Table 2-3.

In general, the framework within which this study is undertaken suggests that factors external to online consumers act as a stimulus for their payment method adoption behaviour, and that their perceptions about the salient attributes of a payment method will also impact on this behavioural response.

Table 2-3: Proposed external factors affecting payment method adoption

Consumers and contextual factors that influence adoption decisions	
Context	*Variables*
Merchant Facilitators	Consumer incentives Trust mechanisms
Social Usage	Market reach and presence Peer usage
Personal Characteristics	Demographics Personal innovativeness Product experience

Figure 2-9: Conceptual Framework for Online Consumer Payment Usage and Preference



2.6.2 Development of Hypotheses

In order to determine whether differences exist between the two independent online consumer groups, namely, traditional payment users and alternative payment users this section presents the research hypotheses derived from the research questions posed in Chapter 1.

These hypotheses examine differences and similarities in traditional and alternative payment type users in relation to their attitudes and perceptions of the six salient attributes of payment methods formed through current payment method usage. They also explore the impact of external factors on the payment method preferences and intended use by online consumers.

The main research questions that were introduced in Chapter 1 are restated here for the convenience of the reader.

> ***Research Question 1.*** *What are the salient attributes and characteristics of payment methods?*
>
> ***Research Question 2a.*** *How do consumers' perceptions of the salient attributes of payment methods vary across traditional and alternative payment types?*
>
> ***Research Question 2b.*** *To what extent are particular external factors related to consumers' preferences for traditional and alternative payment types?*

2.6.3 Research Question 1 – Salient attributes

Exploring characteristics of Internet payment methods is central to this study. In this chapter a detailed analysis of these attributes was made utilizing existing literature on payment systems, practitioner journals and reports, focus groups and interviews with payment service providers, payment system specialists and academics in the field.

These characteristics were consolidated into six salient attributes that were considered pertinent to assessing the various types of payment methods on the market.

They six attributes are:

- Convenience
- Confidentiality
- Cost
- Confidence
- Coverage
- Control

2.6.4 Research Question 2 – Consumer Perceptions and External Influences

The first set of hypotheses (2a) in Table 2-4 determines the extent of consumers' perceptions of each of the salient attributes of payment methods. The second set (2b) determines if preferences for traditional and alternative payment methods are related to particular external factors.

Table 2-4: The Research Questions and Research Hypotheses (Consumers)

No.	Research Questions	Hypotheses
3a	How do consumers' perceptions of the salient attributes of payment methods vary across traditional and alternative payment type usage?	**RI1:** *There is a significant difference in perceptions of CONFIDENCE in payment methods across traditional and alternative payment type users.* **RI2:** *There is a significant difference in perceptions of CONFIDENTIALITY in payment methods across traditional and alternative payment type users.* **RI3:** *There is a significant difference in perceptions of CONVENIENCE in payment methods across traditional and alternative payment type users.* **RI4:** *There is a significant difference in perceptions of COST in payment methods across traditional and alternative payment type users.* **RI5:** *There is a significant difference in perceptions of CONTROL in payment methods across traditional and alternative payment type users.* **RI6:** *There is a significant difference in perceptions of COVERAGE in payment methods across traditional and alternative payment type users.*
3b	To what extent are particular external factors related to consumers' preferences for traditional and alternative payment types?	*Payment type preference is positively associated with external factors:* **RI7.1:** *Demographics* **RI7.2:** *Personal innovativeness* **RI7.3:** *Past experiences* **R18.1:** *Incentives* **R18.2:** *Security assurances* **R19.1:** *Availability* **RI9.2:** *Peer Usage and acceptance*

2.7 Conclusion

This chapter provided the underlying theories of innovation adoption and diffusion. These theories, together with the salient attributes of Internet payment methods, were used to develop a conceptual framework within which to assess consumer perceptions of alternative payment methods.

The literature review also served to highlight the contention that while these perspectives independently make important contributions to understanding various facets of payment systems and methods, there is a need to study more holistically the different payment methods and the factors facilitating their adoption and implementation by online consumers.

The research questions introduced in Chapter 1 were extended into specific, testable hypotheses to determine why consumers prefer some payment types over others; their views and attitude towards the payment methods they out of choice or out of lack of available options; and to how these views and attitudes are shaped by external influences.

The next chapter will describe and justify the overall research approach.

CHAPTER 3 - **RESEARCH METHODOLOGY**

3.1 Introduction

The previous chapter identified several research issues through a review of the literature. A consumer payments framework was developed to understand the relationships between salient payment method attributes and usage and external factors and preferences for particular payment method types. This chapter discusses the research approaches and methodologies (introduced in Section 1.5 of Chapter 1) that were followed throughout the study including the procedures followed in testing the proposed consumer payments model.

In Section 3.2 the three main schools of thought in the information systems research arena are discussed and the research paradigm that serves as the building block for the research design of this study is justified. This is followed in Section 3.3 by an overview of the research procedures and the key methodologies employed at each stage of the research, from the development of the payments framework through to the testing of the hypotheses arising from it. The chapter then examines, in further detail, each of the research methods (literature and empirical studies, Delphi study, survey pre-tests, online consumer survey questionnaire and interviews with online consumers and merchants).

3.2 Main schools of thought in IS research

All research is based on some underlying assumptions about what constitutes valid research and the appropriate methods of conducting such research. As shown by the research questions and issues, this research is testing the hypothesis that there are differences in attitudes, perceptions and beliefs with respect to online payment systems between those who adopt them and those who do not. The underlying assumptions in a research approach concern the researcher's basic beliefs about the answers to three mutually interdependent questions: the *ontological* question, the *epistemological* question and the *methodological* question (Guba & Lincoln 1994).

The ontological question deals with the form and nature of reality and what can be known about it. The epistemological question relates to what the 'posture' of the

researcher should be in acquiring knowledge (e.g. objectivist, subjectivist). The methodological question concerns how the researcher should go about finding out whatever he or she believes can be known (e.g. which methods are appropriate, given the researcher's ontological and epistemological beliefs).

The answers to these questions manifest in a number of different schools of thought. In the context of organizational research and information systems research in particular, three main schools of thought which have been widely debated in the Information Systems (IS) research literature are discussed here (for example by Galliers 1991; Lyytinen & Klein 1985; Myers 1999; Ngwenyama & Lee 1997; Orlikowski & Baroudi 1991; Walsham 1993).

The interpretivist school of thought maintains that social phenomena cannot be studied objectively, since the researcher often interacts with the human actors during the inquiry, and in the process the perceptions of both parties are altered. The interpretivist school's answer to the ontological question is that 'reality' itself is a social construction by human actors (Walsham 1993) and that the meanings and manifested behaviour of the observed human actors form a crucial part of the study matter (Lee, A. S. 1991). The epistemological position acknowledges the inter-subjectivity between the interpretivist researcher and the observed. Access to social reality is gained through constructions such as language, consciousness and shared meanings (Myers 1999). Interpretivist research methodologies should therefore encompass the full complexity of human sense making and deal not only with the collection of objective facts and data, but also with interpreting the meanings and behaviour of the observed human actors (Lee, A. S. 1991; Myers 1999).

The critical social theory school takes the ontological position that reality is historically constituted and incorporates various forms of social, cultural, political, ethnic and gender domination. The epistemological position is that the researcher and investigated object are interactively linked, and knowledge of the social world is value laden (Guba & Lincoln 1994; Ngwenyama 1991). In contrast to the positivist and interpretative schools, critical social theorists believe that truth is defined through a discourse (Lyytinen & Klein 1985). The task of the researcher is not only to explain or understand the social phenomenon, but also expose and critique unjust and

inequitable conditions in society from which people require emancipation (Lee, A. S. 1991). Critical social theory adapts the research methodology of the interpretivist school, to meet certain requirements (e.g. must be collaborative and sensitive to individual and organizational needs, etc.) (Ngwenyama 1991).

In the positivist school of thought, the answer to the ontological question is that reality is objectively given and that it can be discovered by researchers and replicated by others (Myers 1999; Walsham 1993). The positivist paradigm can be described as the 'natural-science' model of conducting social-science research (Lee, A. S. 1991). Positivists maintain the epistemological position that the only valid way of studying reality is for the researcher to remain objective and detached. The researcher maintains her objectivity via natural science methodology (i.e. formal propositions and testing hypotheses), and by relying on the rules of formal logic and statistical inference to test theories and draw conclusions in an independent and unbiased manner (Myers 1999). Due to its rooting in the natural science research tradition, positivist research typically isolates dependent and independent variables (quantitative and qualitative) and aims to explain and predict the phenomenon under study (Ngwenyama & Lee 1997).

For this study the positivist paradigm is employed to develop and test online payment models that could be used to predict online payment methods adoption as well as the extent of their adoption by consumers and merchants. The IS discipline has demonstrated a strong positivist tradition with IS research in the United States and Australia conforming largely to a positivist epistemology (Alavi & Carlson 1992; Orlikowski & Baroudi 1991). Fossey et al. (2002) state that research conducted using this paradigm serves to discover natural laws that enable prediction or control of events.

3.3 Research procedures

The previous section detailed the selection of the research paradigm and the approach adopted in this thesis. The research methods that may be considered in the information systems field has been a topic of much debate, discussion and controversy (as reflected e.g. in Mumford et al. (1985) and Nissen et al. (1991)). Klein et al.

(1991) point out that there is no 'universal' research method in IS that is applicable in all situations. It will be argued here why the particular choices of research methods that were followed in this study to collect empirical data were deemed appropriate, given the research approach, purpose and questions.

In this section the use of a mixed- or multi-mode strategy to data collection is justified and the methods used within are introduced and explained.

3.3.1 Mixed-Mode approach

With increasing demand for research to inform policy and for more practical rather than scientific research, the case for a convergence of qualitative or quantitative research has become more compelling (Hammersley 2000). The use of multiple research methods to collect data has been found by a number of researchers to provide a richer, contextualized basis for interpreting and validating results (Brewer & Hunter 1989; Gable 1994; Gallivan 1997; Jick 1979; Kaplan & Duchon 1988; Lee, A. S. 1991; Mingers 2001; Sawyer 2001; Wood et al. 1999). IS researchers have been encouraged to use quantitative analysis focusing on statistical analysis of numerical data, as well as qualitative analysis focusing on textual and numerical data (Carver 2003). According to Brannen, the inclusion of a qualitative approach in the research process:

> '……. allows interviewers to probe and the interviewees to give narratives of incidents and experiences (which) is likely to result in a more holistic picture of people's understandings than a conventional survey analysis would provide and elucidate the meanings that research participants attribute to their practices and actions' (2005, p. 184)

This research meets the criteria of mixed methods research as defined by Gallivan (1997) as it is empirical research using at least two different methods for collecting data: in-depth semi-structured interviews of a selection of merchants and consumers and a survey of consumers. Also, both the qualitative and quantitative data are presented and analysed and, in using the developed consumer adoption model as the framework for study, the research addresses the theoretical questions posed rather than providing description alone.

3.3.2 Research methods

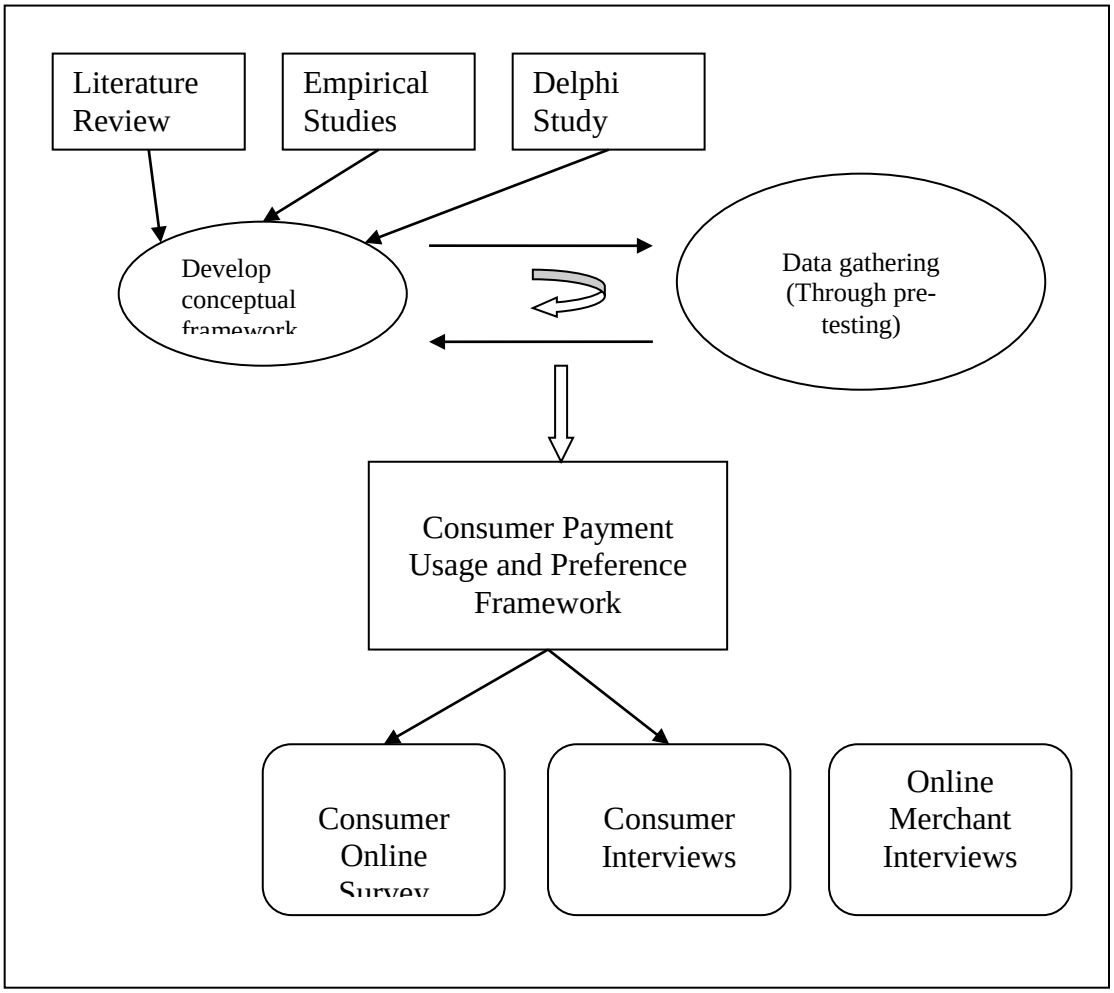
The process of developing an appropriate framework for the purposes of this study is illustrated in Figure 3-1, where the literature, empirical studies and the results of a Delphi study to determine the salient attributes of payment methods were used as a basis for the model. Through the use of pre-testing procedures the consumer model was refined continuously to develop a comprehensive and realistic framework that represents the situation in real world online payment methods' adoption. This framework would be used in developing the online survey and interview protocols for the study of consumer preferences and payment behaviour.

The following is an examination of how the qualitative and quantitative approaches are in practice woven into the research process.

Literature Review and Empirical Studies: The review began with a wide range of readings on research related to innovation, technology adoption, IT, IS, payment systems and e-Commerce using business and information technology databases, journals and research material. A preliminary model to explain the intention of consumers to adopt online payment methods and the extent of this adoption was then constructed using research on innovation and technology adoption as the base. Specific factors from research related to consumer behaviour were added.

Delphi Study: Using the Delphi method of data gathering, the model was extended to include the salient attributes of online payment methods from an exhaustive list of attributes associated with payment systems in general **(Research Question 1)**. The Delphi Study research methodology and the process of developing the final list of salient attributes are discussed in detail below.

Figure 3-1: Development and usage of consumer payments framework for this study



Pre-testing: Pre-tests consist of conducting a relatively small number of interviews or survey completions with a fairly well-developed version of the instruments. With the initial adoption framework developed from the literature study and the research problem and research questions, a pre-testing of the online consumer survey instrument and the consumer interview protocol was carried out. The pre-test processes assisted in the acceptance, rejection and revision of the preliminary research questions posed in the literature review chapter. They also helped in further defining the preliminary model and assisted in identifying how the payment methods should be classified in the context of the Australian e-Commerce environment. At the end of this stage of the research the research questions and the proposed framework was either confirmed or modified.

Survey and Semi-structured Interviews of Consumers: An online self-administered survey of a range of consumers and potential consumers was conducted to gain insight into their perceptions regarding the salient attributes of online Internet-enabled payment methods and how these perceptions were associated with particular consumer characteristics **(Research Question 2)**. This was followed with a semi-structured in-depth interview schedule of consumers selected on the basis of gender, age, level of education and occupational status. The ultimate purpose of the interview phase was to explore in depth consumer attitudes towards specific payment methods. Also, the online survey had been conducted over a three year period, during which time the landscape of online payments had evolved significantly. In arguing for a mixed-method approach to the research process Brannen (2005) suggested that the inclusion of in-depth interviews to a quantitative study would serve to corroborate, exemplify, contradict and/or complement the two findings in places.

Case Studies of Online Merchants: This part of the study involved the use of interviews and case studies of Australian online merchants to (1) provide a snapshot of the payments landscape from a merchant perspective and (2) understand some of the competing requirements of merchants and consumers.

In summary, the research methodologies comprised (1) a detailed literature review and construction of a consumer payments framework; (2) the use of a Delphi Study to develop a list of salient attributes of online payment methods; (3) an online survey and semi-structured interviews of consumers to analyse the consumer adoption framework developed for this study, and (4) case studies of a selected number of online merchants.

3.4 Literature and empirical studies

The research outputs produced in this study stem from three main sources: published sources (practitioner and academic), national studies and surveys, and empirical evidence from a field survey and interviews of merchant and consumers.

Published sources. From the inception of the study in 2000, most merchants were only beginning to discover the benefits of online payments and to implement them in

their Web sites. This meant that while there was adequate empirical evidence on payment systems in general, hardly any systematic research was available on the topic of online internet-based payment methods *per se*. The scant literature that was available was in the form of product brochures focused on particular payment methods. This background posed some challenges for the research. On the one hand, the research landscape was short on literature sources dealing with online payment methods, while on the other hand a plethora of payment schemes was flooding the market. To meet the challenges associated with this background, it was necessary to turn to related research and secondary data.

Related research. The body of published information systems adoption and consumer behaviour literature formed the major sources of learning throughout the study. As more systematic research pertaining to online payments came to hand, these also became sources of learning.

3.5 Identifying salient attributes using a Delphi Study

The first part of the study sought to identify the salient attributes of online payment methods for incorporation into the adoption models that were to be developed for merchants and consumers. To this end a modified Delphi process was employed.

3.5.1 Delphi Studies

The Delphi approach is a survey technique, widely used in the field of information systems when it is desirable to collect and combine the opinions of many experts. A Delphi panel offers a systematic way to reach a consensus based on the judgment of experts or professionals in a given field. Literature studies provide various definitions of the Delphi method. Adler and Ziglio (1996) state that it is a structured process for collecting and distilling knowledge from a group of experts interspersed with controlled opinion feedback. Duval, Fontela and Gabus (1975) emphasize the value of expert opinions for decision–makers in a situation of permanent lack of full scientific knowledge in their daily routine. Helmer (1977) adds that Delphi studies represent useful communication devices among a group of experts and thus facilitate the formation of a group judgment. According to Gawlik (2009), the Delphi method is a

tool of group evaluation of a given complex problem or task by a panel of independent experts, based on a set of criteria, common for all the questioned people.

According to Fowles (1978) the classical Delphi process consists of the following phases: 1. Team formation; 2. Panel and experts selection; 3. Development of first round Delphi questionnaire; 4. Questionnaire tests (formulation of questions, proper wording, etc.); 5. Expert answers for first round questionnaire; 6. First round response analysis; 7. Preparation and testing of second round questionnaires; 8. Expert answers for second round questionnaires; 9. Second round response analysis and repetition of steps 7 to 9 – if necessary; 10. Final report elaboration.

3.5.2 Implementation of the Delphi Process

This section discusses the application of the Delphi technique to identify the most salient attributes of online payment methods to be incorporated in the conceptual framework developed for this study. The Delphi application includes the design and administration of the questionnaire, the selection of respondents and the analysis of the data.

The Delphi technique is a method of reaching a properly thought-through consensus among experts. One of the advantages of the Delphi technique is that it compiles several judgements from different experts from various backgrounds (Best 1974; Delbecq, Ven & Gustafon 1975; Franklin & Hart 2007; Linstone & Turoff 1975). Later, the information obtained from consensus of these experts will provide strong basis and contribution in further decision making processes (Toward & Ostwald 2002).

The application of Delphi technique in this study comprises of the following steps:

(i) identification of panelists

(ii) design of the matrix questionnaire

(iii) administration of the process

(iv) analysis of the results

Each of the steps is discussed below.

Identification of panelists

One of the critical steps in the Delphi application is the identification the panel of experts who could contribute meaningfully to the process. In this study the experts were identified from four different categories: academics, e-Commerce consultants, merchants and payment providers. These were considered to represent stakeholders with strong interests and understanding of e-Commerce and/or the payments field. For Round One of the process, about 15 potential experts were targeted to represent the four categories. They were then contacted via email or phone. The eight that agreed to participate comprised three payment service providers, an academic, two consultants and two online merchants.

Design of the matrix questionnaire

An initial list of attributes associated with payment systems was developed from an extensive literature review of papers considering payment systems, methods and attributes, as well as suggestions from payments professionals. These criteria for developing the initial list of attributes were essential to reduce the bias of the researcher.

An online matrix was then developed using the SurveyMonkey online survey application. The matrix comprised the list of suggested attributes along the rows with the salient attributes and the definitions (as described in Section 2.6.4) and the three categories of factors (user, technology, and legal and market-related) along the columns of the matrix.

Administration of the Delphi process

In Round One the panelists were asked to determine where these attributes were most likely to be mapped within (1) the context of the generalized set of six salient attributes (confidence, confidentiality, convenience, cost, coverage and control) and (2) the three categories (user, technology and legal and marketing related). Respondents were allowed to add to or modify the attributes list, if necessary.

Each expert was sent an email with the link to the online matrix. For each of the attributes in the rows, the experts were asked to select the category and salient attribute that, in their opinion, most closed matched the corresponding attribute.

Analysis of the results

The responses were consolidated, and consensus was determined to have been reached where at least two-thirds of the panelists were in agreement on the location of the salient attribute and category. The threshold used has been justified in several papers applying Delphi questionnaires (Alexandrov et al. 1996; Chang, W. L., Lo & Hong 2009; Lehmann, Kuhn & Lehner 2004). In statistical term, the 67 percent is considered significant to be used as decision thresholds (Alexandrov et al. 1996). Thus, consensus is considered reached when least 67 percent of the respondents were in agreement on the location of the salient attribute and category.

In Round One, consensus had been reached for 73 percent of the attributes. In Round Two, the attributes in contention were then sent back to the panel to justify and/or reconsider their earlier positions if it was considered necessary. Where agreement could not be reached a final decision as to where to place the attribute was made by the researcher based on the strength of the justification of the panel members. The final results are set out in Table 2-2.

3.6 The Pre-testing Process

According to Zikmund (2003) and Cooper and Schindler (2001) small scale research projects help modify and finalize research questions, assist in pre-testing questionnaires and allow for some initial statistical analysis to ensure that the proposed data analysis techniques are appropriate for the study. Pre-tests are useful in "qualitatively establishing the reliability, construct validity and content validity of measure" (Straub 1989, p. 162). The pilot studies conducted in the early stages of the research helped with an examination of the research objectives, the variables in the models and with pre-testing the online consumer survey questionnaire.

3.6.1 Consumer Interview protocols:

Following on from the recommendations of Cooper and Schindler (1998, 2001) and Tull and Hawkins (1997), the interview questions to be administered to the online consumers were tested and refined. The online consumer survey questions were adapted to develop a more focused semi-structured interview protocol for consumers and similarly pre-tested with five students (2 undergraduate and 3 postgraduate students) before using it in the follow up study of consumer online payment

behaviour. In each instance, upon review of the interview notes and the comments and suggestions made by the participants, the interview protocols were finalized for administering on the target cases.

3.6.2 Consumer survey instrument

Upon conclusion of the interviews and the development of the initial models a preliminary online survey of consumers was developed based on questions developed for this study and ones adapted from previous r that included empirical studies on adoption and consumer behaviour. The survey developed for assessing consumer behaviour and attitudes towards online payment methods was also pre-tested in this way in order to identify potential errors in the instrument. A pre-test of the survey was administered to two colleagues, one of whom had collaborated with the researcher on previous e-Commerce studies and the other who was well acquainted with survey construction, as well a group of 8 postgraduate students who were part of the researcher's student cohort undertaking a postgraduate course on Information Systems for Managers. The questionnaire was subsequently revised based on information gained from this process.

The following checklist (adapted from (Dillman 1978; QuestionPro 2009; Varkevisser, Pathmanathan & Brownlee 2003)) was used to review the survey instrument to help determine whether it would allow the information needed to be collected and whether it was reliable:

- The sequence of questions is logical and not misplaced.
- The wording of the questions is clear, specific and focused.
- There is a uniform and consistent understanding of the terminology used.
- Multiple choice response categories are mutually exclusive so that clear choices can be made.
- The questions are technically accurate.
- The feature in online surveys that forces responses is used appropriately.
- Change closed questions into open-ended questions if necessary.

- The options lists are developed to cater for the majority of respondents answers.

During the pre-test the participants were provided a link to the online questionnaire and were asked to make notes of any difficulties they experienced with navigating the questionnaire and interpreting the questions. They were also asked to comment on the aesthetics and user-friendliness of the online survey; the design, layout and presentation format of the questions; the length of the survey; their understanding of the terms used and questions asked; and the sequencing of the questions.

An example of a concern that was highlighted by the respondents related to scrolling the matrix questions and, as a consequence, the response option columns were narrowed in size to reduce the amount of horizontal scrolling required. In order to leverage the advantages that web surveys offer, some questions were re-worded to make optimum use of radio buttons, check boxes and pull down lists, and textboxes for open ended questions.

The outcomes from the pilot studies and pre-tests resulted in a narrowing of the scope of the research and a reduction in the number of research questions that were initially proposed. The outcome from this stage was the finalization of the adoption payment models and a confirmation of the reliability and construct validity of the two instruments. The pre-tests also served as 'dry runs' for the final administration of the interview questions and online survey instrument (Straub 1989).

3.7 Data collection methods: Consumers

As illustrated in Figure 3-1 two research methods were employed for collecting data to analyse the consumer behaviour with respect to the adoption of online payment methods, namely, an online survey of online consumers and in-depth semi-structured interviews of consumers selected on the basis of gender, age, education level and occupational status. This survey explores differences in certain characteristics and attitudes between online consumers and their usage and preferences for traditional and alternative payment method types.

3.7.1 Online survey

After reviewing the research objectives and models in the pilot studies, the consumer questionnaire was finalized. Surveys were chosen for this aspect of the study because they can provide a cross-sectional picture and quality data about current practices as well as accurately documenting the norm, identifying extreme outcomes and delineating associations between variables (Cornford & Smithson 1996; Gable 1994). Surveys provide a quick, inexpensive and efficient means of gathering required information, allowing respondents to remain anonymous and thereby encouraging more truthful responses. Survey data usually allows for the administration of various statistical tests, including the testing of theoretical models (Zikmund 2003).

A web based online survey was developed and used because while it did require that respondents have at least basic computer skills and access to the Internet in order to complete the survey the impact of bias in sampling was minimal given the nature of this study. Also, the number of people with Internet access in Australia and most modern countries is fast approaching a representative cross sampling of those societies. The rate of access has quadrupled in recent years, from 16 percent of Australian households in 1998 to 67 percent in 2007–08 (ABS 2008).

The web-based survey service provider, SurveyMonkey[1], was selected to develop and administer the questionnaire. With this online survey instrument respondents were able to complete the survey at a time and place convenient for them. Online surveys also have a number of other advantages over mail based ones such as the ability of the web-based system to validate the data on entry, returning error messages, ensuring required information is completed, randomization of question order and handling complicated skip patterns. With online surveys, respondents' privacy and confidentiality can be protected by electing to remain anonymous.

Survey instrument: The questionnaire was developed and pre-tested by faculty colleagues and students and e-Commerce consultants. Because of situational specificity of this research, the unique characteristics of payment methods and the limited empirical and academic research in this field many of the survey questions

[1] SurveyMonkey (www.surveymonkey.com) is an online survey tool that enables the creation, development and administration of online surveys.

were modified from existing research in allied fields or created for the first time and then pre-tested. This enabled measures of attitudes, perceptions and characteristics to reflect specifically within the domain of e-Commerce, online shopping and payment methods rather than general traits and characteristics.

The final questionnaire contained closed questions consisting of simple-dichotomy, determinant-choice and attitude questions. Likert-scale questions were used to measure attitudes and are appropriate for measuring the intensity of the value or belief about various items, such as the predictors used in this research (Oppenheim 1992). Likert scales offer a number of advantages, including their simplicity to administer and construct (Zikmund 2003), and their increased reliability compared to other scales with the same number of items. The final survey instrument, found in Appendix A, gathered several types of information from the participants to the survey that included (1) the demographics of the respondents; (2) their usage and preferences of payment methods; (3) their experiences with online shopping and paying for goods and services; (4) how they perceived the six different salient attributes of payment methods; and (5) questions related to the impact of external factors on their payment preferences as identified in the conceptual framework for this study.

Sample population: The purpose of this part of the study is to analyse the payment method choices of consumers. The unit of analysis for this aspect of the study is an individual who has paid for goods and services purchased online via a website or offline (for example, a utility bill). The target population were consumers who had either used the Internet to purchase and pay for goods and services using online or offline payment methods, or paid for goods or services using the Internet for offline purchases. Therefore, for this study, any respondent who had not used the Internet for shopping or paying for goods and services was removed from the data analysis.

Survey administration: An invitation to take part in the study was posted out via email on online networks, student cohorts and community groups with invitations to complete the online survey to which a link was provided. The respondents were assured of their anonymity and the SurveyMonkey guaranteed the secure transmission of responses through the use of Secure Sockets layer encryption. An incentive to

complete the questionnaire was provided by offering respondents the option to enter a draw for a $100 shopping voucher.

Data analysis: The raw data was extracted directly from the SurveyMonkey database for analysis. The survey data was entered into a spreadsheet (Microsoft Excel) and then into the computer program SPSS (Statistical Package for the Social Sciences). The online data collection instrument was closed and deleted from the site. The results of the analysis of the data collected are detailed in Chapter 4.

Prior to undertaking any analysis to statistically prove significant differences between payment type usage and preferences, the characteristics of the data were explored in order to ensure the correct statistical approach was selected. Descriptive statistics such as calculations of means and standard deviations, and cross tabulations were performed. These included frequency distributions for variables such as age, income group, educational qualifications and Internet usage. A percentage distribution is presented to show the percentage of respondents in each category. Charts are also used to present this data where appropriate.

The major hypotheses or research questions in the study relates to consumers' usage and preferences for traditional and alternative payment types. It examines the two payment type users in terms of (1) their perceptions of the salient attributes of payment methods and (2) the impact of particular external factors, within a payment adoption theoretical framework. In order to conduct this analysis the respondents were categorised into traditional and alternative payment type groups based on responses to usage and preferences for identified payment methods.

Statistical tests were employed to analyse the survey data and confirm the hypotheses. As many of the variables used in these analyses were not normally distributed, nonparametric tests were used except where otherwise indicated. This analysis also consisted of calculating the mean and standard deviation for each attitudinal question that made up each construct/variable to gain further insight into participants' thoughts about payment methods.

3.7.2 Semi-structured interviews

The interviews with consumers followed a semi-structured in-depth interview schedule of Internet users selected on the basis of gender, age, education level and occupational status. The ultimate purpose of the interview phase was to provide a holistic framework for understanding the behaviour of shoppers in general with the aim of addressing, in depth, their choice of payment methods, their attitude towards particular online payment methods and the factors that influenced their perception of them. Such a judgment sample would provide a richer base of information than random sampling and voluntary respondents, and provide opportunities to further probe the participants on online payment methods in ways that the online survey could not. A semi-structured interview protocol was developed with open ended and closed questions, pre-tested and administered and analysed using the same strategies and procedures as employed in the case study interviews of the online merchants. Using a purposive sampling method, key informants were selected, with the aim of capturing a wide spectrum of relevant perspectives.

3.8 Limitations

Although limitations to each of the various data collection methods used in this study existed, altogether they provided a significant amount of useful data and information relevant for the purposes of this research. By using more than one method to gather the data the research was strengthened by obtaining a more accurate and complete picture from the perspectives of the online consumer. Where possible, the methods were triangulated to ensure consistency of the findings obtained by the different research methods, such as the data collected through the online survey with the consumer interviews.

As regards surveys, Zikmund (2003) identifies two major sources of error. The first, random sampling, includes statistical errors due to chance variation. To ensure that the sample is representative of the population of online shoppers, the demographics of the respondents are compared with studies conducted by the Australian Bureau of Statistics (2007b) on individuals who use the Internet to purchase or order goods or services.

The second error source is systemic errors due to imperfect design of the questionnaire or its execution. Respondent errors occur if survey recipients are not truthful or fail to complete or ignore significant questions. To ensure that questions were not unintentionally omitted validation checks were put in place in the online survey not allowing respondents to proceed to the next question without completing the question at hand.

3.9 Ethics

Ethical considerations are paramount to all research, from its design to its conclusion. "Ethics are important to all parties involved in research as they affect the rights of individuals and ultimately the quality of the data obtained from inquiry" (Davis, D. L. 2000, p. 502). Generally speaking, the researcher must ensure the respondents do not suffer any harm, pain or loss of privacy (Cooper, D. R. & Schindler 2001). In order to protect the rights of the respondents, the researcher paid close attention to the ethical guidelines established by O'Sullivan and Rassel (1989).

Online Survey: Respondents were fully informed about the survey and its purpose. The request was worded as simply as possible and stressed the respondent's rights in the research process. Participation was completely voluntary and the survey responses remain confidential. Respondents were informed that they were free to withdraw from the survey at any time and, in addition, could skip any questions that they felt uncomfortable answering. Participants were assured that their privacy would be protected at all times and, as an added assurance, they could complete the survey anonymously without having to provide their names or email addresses. The respondents were also told that their IP (Internet Protocol) addresses would not be stored in the survey results. All respondents were told that the findings would be available on request. This was explained to respondents in the introduction to the online survey. The researcher's full contact details were provided at the start of the survey to allow respondents to ask questions or verify the legitimacy of the survey. The survey was reviewed by the ethics board at the University and received ethical clearance.

The survey results are securely stored at the SurveyMonkey website and downloaded and securely stored on the researcher's computer both of which can only be accessed through a user name and password. Results were presented in such a way as to ensure the complete anonymity of the respondents. The study strictly adhered to all general guidelines for business research.

Interviews: Care was taken to avoid sensitive questions that were likely to cause any emotional harm or violate the informants' right to privacy. These issues were dealt with by obtaining informed consent before the interview began; assuring the interviewee of the confidential nature of the proceedings and that all data collected would be secured and reported on without direct reference to either the organization or the respondent.

3.10 Summary

A description and justification for the research methods employed in this study was provided in this chapter. The chapter first discussed the research paradigm that were used and then described the Delphi process that would determine the salient attributes of online payment methods. Then the part played by pre-testing the interview protocols and survey instruments to further examine the research objectives and questions was explained. Next, the development of the consumer survey instrument was justified and described, including a discussion on the key aspects of the interviews and questionnaire and how that data was analysed. Limitations of the research methods used and the ethical considerations employed in the administration of the survey and interviews were also discussed. In the next chapter, a data analysis of the consumer survey questionnaire and interviews and the statistical analysis undertaken to test the hypotheses related to the research questions posed in this study.

CHAPTER 4 - **CONSUMER SURVEY RESULTS**

4.1 Introduction

This chapter focuses on presenting the results and data analysis of the online survey detailed in Chapter 3. As discussed in Chapters 1-3, the primary goal of this study is to determine the usage of traditional and alternative payment methods by determining whether there are systematic differences in consumer choice behaviour between traditional and alternative payment type users, and if there are differences, to understand the reasons for these differences. A general conceptual framework was developed to articulate (1) the perceptions and attitudes of online consumers towards the salient attributes of payment methods and (2) the various factors that have the potential to impact on payment preferences. In Chapter 3, the research design and survey methodology were provided along with a description of the data analysis techniques.

This chapter starts with a discussion of the survey responses in Section 4.2 and then a profile of the respondents is presented in Section 4.3 along with their shopping characteristics and payment usage and preferences in Sections 4.4 and 4.5 respectively. Section 4.6 reviews the survey participants' perceptions of the six salient attributes of payment methods and in Section 4.7 the constructs identified in the consumer payment adoption model, developed for this study, are examined to determine if they can explain significant differences between respondents who prefer traditional methods from those who prefer alternative online methods.

The interpretation and implications of the findings presented in this chapter, together with those from the merchant case studies presented in Chapter 5, are discussed fully in Chapter 6.

4.2 Survey response

All completed questionnaires were downloaded into a MS Excel spreadsheet, and after a preliminary check for completeness, transferred into the statistical package PASW (formerly SPSS). This software was used to provide descriptive statistics, assess normality and reliability, and perform statistical analysis.

As detailed in Chapter 3, the survey was developed online using SurveyMonkey and invitations to complete the survey were emailed out to individuals and posted on online forums. There were 291 respondents who attempted the survey over a three week period. Examples of groups and forums to which the invitations went out included the Australian Mystery Shoppers Forum, undergraduate and postgraduate student cohorts, social networking sites (Facebook), community groups and faculty staff. In selecting these groups it was intended that they would represent a sufficiently diverse set of demographics of income groups, gender, ages, experiences and educational levels.

The survey completion results showed that 91% (264) of total participants completed the survey and 9% (27) partially completed and abandoned the survey. The latter who had abandoned the survey and the 4 respondents who completed the survey but stated that they had never used the Internet either to make a purchase or to pay for goods and services were excluded from further analysis as they did not represent the unit of analysis, namely, individuals who had, at some time, used the Internet to purchase and/or pay for goods or services.

To ensure that respondents did not complete the questionnaire more than once from the same computer (where the intention might have been to increase their chances in the draw for the $100 shopping voucher), the option to restrict more than one response from the same computer was selected during the development of the online instrument.

Non-response bias: Non-response error is always a potential problem in mail surveys as it is to invitations to an online survey via emails and community forums. To emphasize the fact that this was an academic research study (and not a market research study) the University logo and the name and title of this researcher's supervisor were used in the introductory page of the survey to lend creditability to the survey. Recipients of the request to take the survey were also told that they might find the questions posed, and the issues that were being investigated, informative, educational and useful in their future online shopping and payment choices. Several

direct emails from respondents indicated that they had gained new insight into and greater awareness of some of the issues raised through completing the questionnaire.

Generally the use of an Internet-based survey for studying a population could present some skewing of results based on the fact that only people with access to the Internet and who are comfortable filling out an online survey are likely to respond. The nature of this study, which investigates online shoppers and their payment method behaviour, ensured that these pre-requisites would not pose a concern to the response rate in this respect.

The call to complete the questionnaire would have reached an audience, based on estimates of membership, of about 4 500 potential respondents. As the sample of respondents was self-selecting there was little control that could be exercised over the representativeness of the sample demographics.

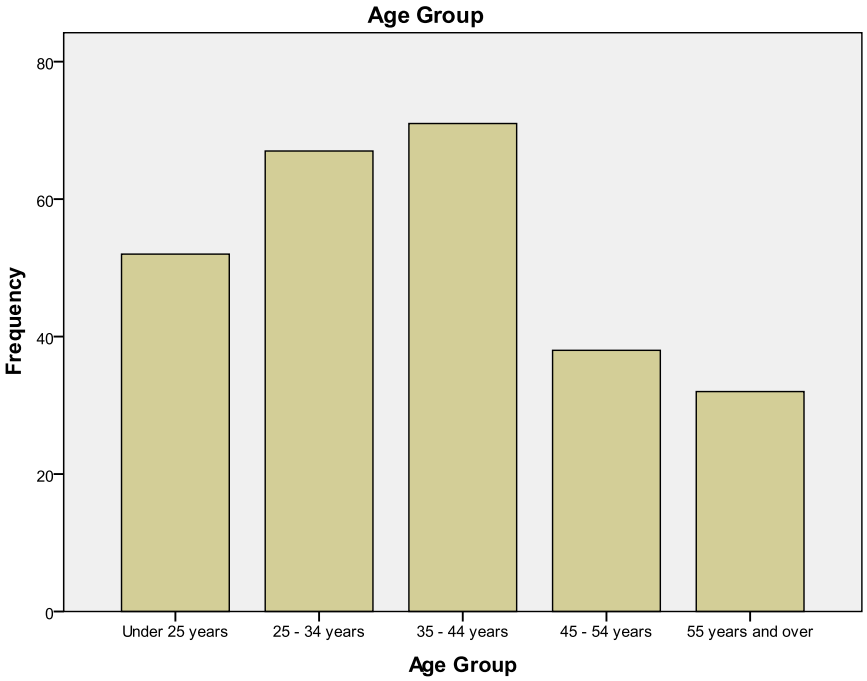
4.3 Respondent profile

This section outlines the demographic and shopping characteristics of the respondents to the online survey. The respondents are described here in terms of their age, income group, gender, education level and Internet usage. Their online shopping profile is described in terms of their past shopping experiences and shopping frequency. A list of all the data relating to the characteristics of the respondents is provided in Appendix D.

4.3.1 Demographics

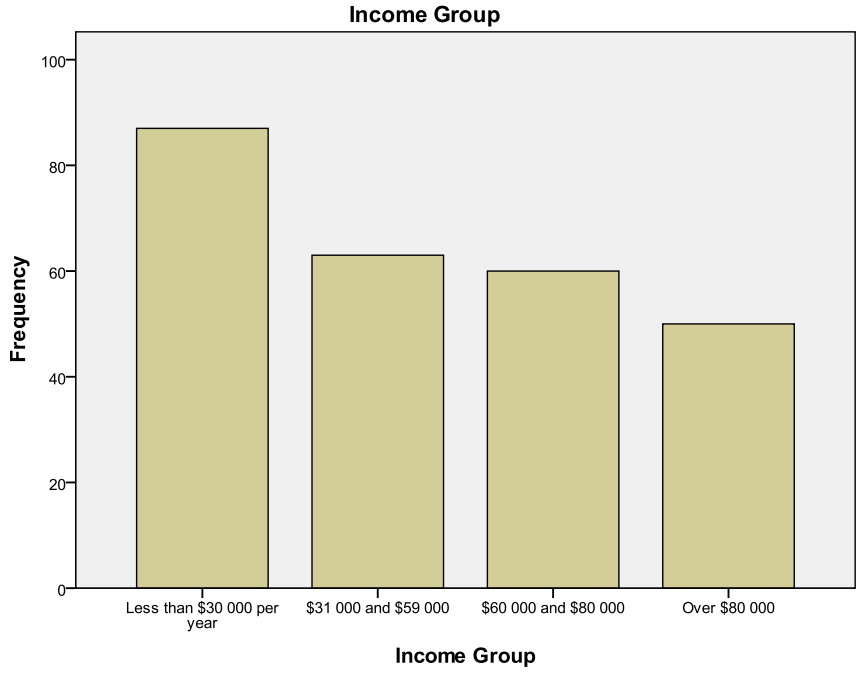
Age. The number of respondents who were under 16 years was low with only two respondents. As a result a new "Under 25" category was created and the two groups were consolidated into one after ensuring the responses were mostly similar. As can be seen in Figure 4-1 the 35-44 age grouping with 71 respondents represents 27 percent of the survey size (see Table D-1 in Appendix D for a summary of the frequencies).

Figure 4-1: Age groups



Income. As shown in Table D-2 the number of respondents who earned an annual income of under $60 000 was above half (58 percent). Just over 19 percent earned over $80 000. Figure 4-2 shows the breakdown of responses for each income group.

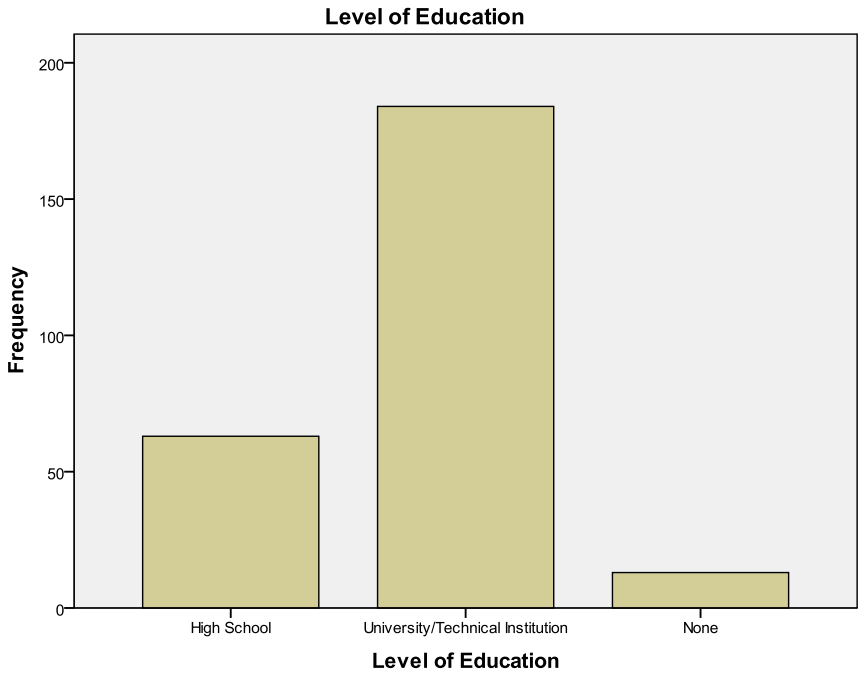
Figure 4-2: Income groups of respondents



Gender. Males and females were nearly equally represented in this study with 129 (49.6 percent) males and 131 (50.4 percent) females responding to the survey (see Table D-3).

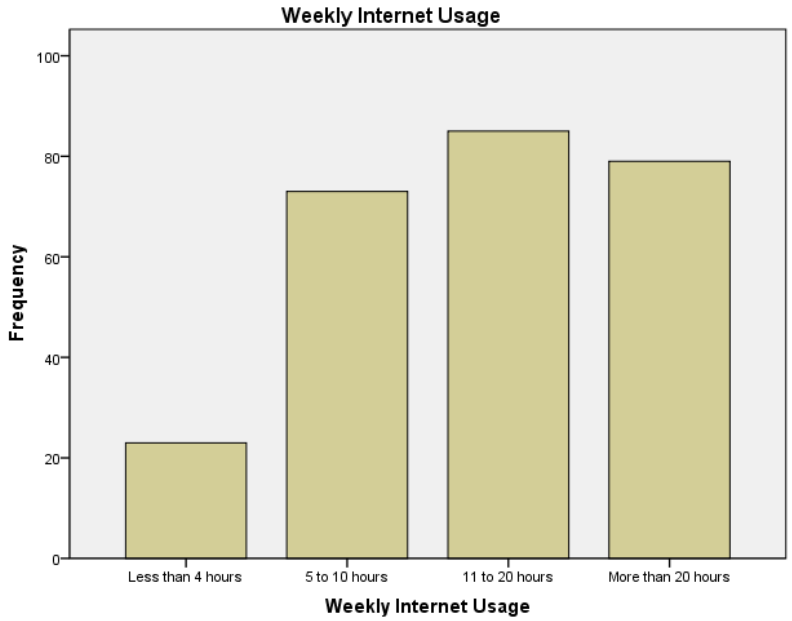
Education. Figure 4-3 shows the breakdown of the educational status of the survey participants. The majority of the respondents indicated that they had some form of formal education beyond high school, with 71 percent stating that they possessed a tertiary qualification from a university or technical college. Only five percent reported they had no previous formal education. See Table D-4 for a summary of the responses.

Figure 4-3: Education level distribution of respondents



Internet usage. Figure 4-4 shows the breakdown of the Internet usage of the survey participants. The majority of respondents (60 percent) in the sample population spend in excess of 10 hours on the Internet in a week. Of these users 30 percent of the survey sample was made up of relatively heavy Internet users spending more than 20 hours a week. Just 9 percent spend less than 4 hours a week. See 101Table D-5 for the distribution of Internet usage.

Figure 4-4: Weekly Internet Usage



4.4 Online shopping profile

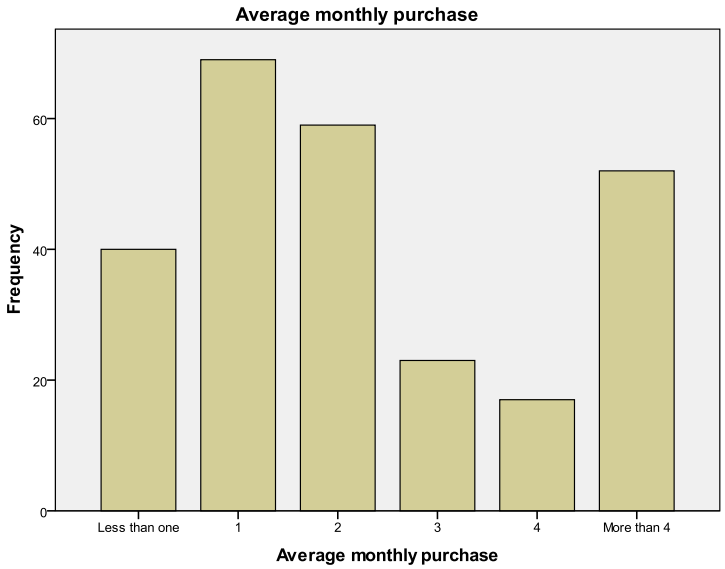
To gain further insight into the nature and extent of their shopping practices, participants in the survey were asked questions related to their usage of the Internet for purchasing and paying for goods and services, and their experiences while shopping online.

Online shopping experience. Respondents were asked to state the number of years they had been shopping and/or paying for goods and services using the Internet. As expected, respondents were more likely to have been shopping online for a relatively long time (see Figure 4-5). Nearly 68 percent of the respondents indicated that they had been shopping online for more than 3 years (see Table D-6). Of these users, there were some 20 percent who had in excess of 6 years of experience with shopping over the Internet.

Figure 4-5: Years respondents have shopped online

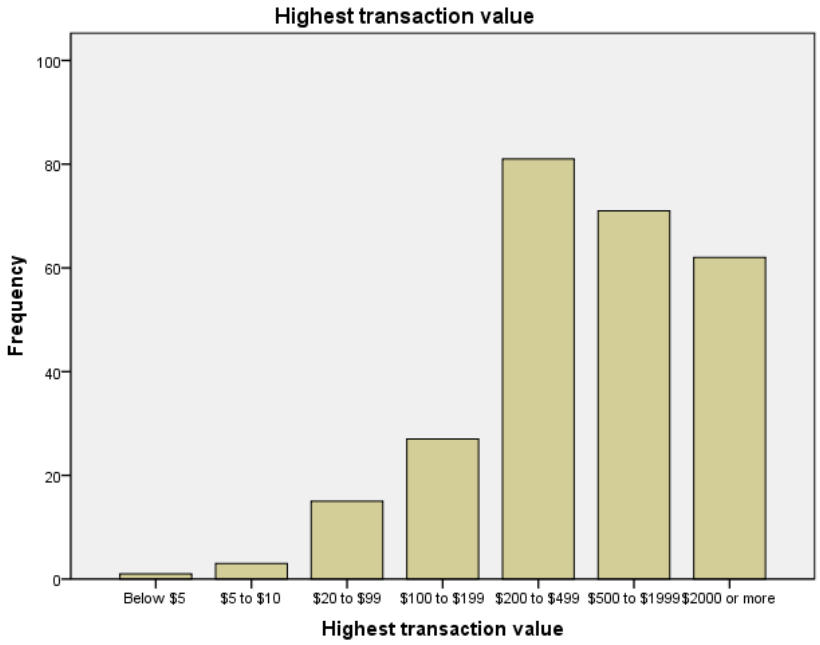
Online shopping frequency. Overall, the majority of the respondents (85 percent) in this sample population have averaged at least one online purchase a month (see Figure 4-6). Among this group of frequent shoppers, almost half (49 percent) had made at least two online purchases a month and 20 percent had made in excess of four purchases a month on average (see Table D-7).

Figure 4-6: Average month purchase



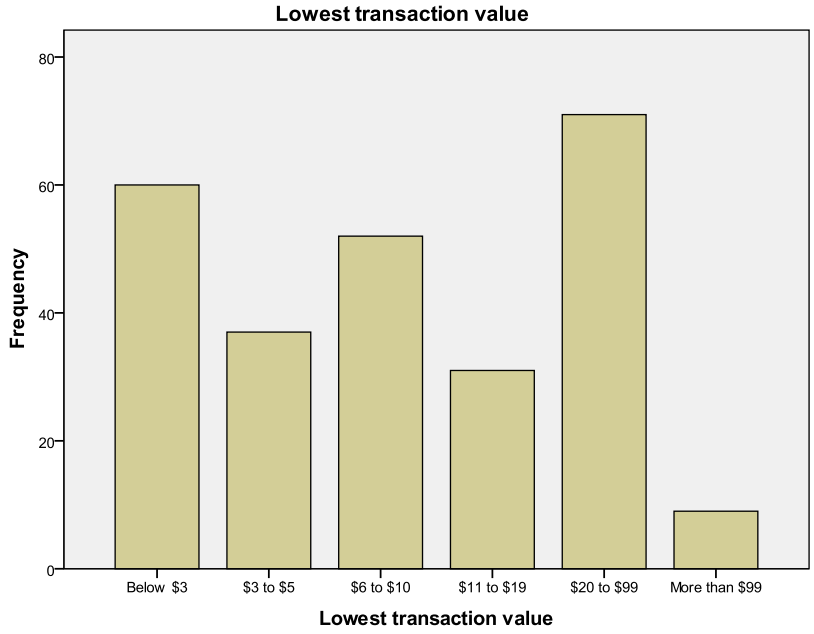
Highest single online payment amount. The ability of payment instruments to process large transaction value amounts cost effectively varies across different payment methods. Respondents were asked about the largest amount they had settled over the Internet in a single transaction. The results in Figure 4-7 and in Table D-8 show that over half had made payments of $500 or more and just under half of these were amounts to the value of $2000 and more.

Figure 4-7: Highest single online payment amount



Lowest single online payment amount. With the sale of items such as cell phone displays, ringtones and research papers over the Internet that cost, in many case, only a few dollars, the current payment methods, such as credit card, bank transfers, and COD payment, have proved cumbersome for consumers and impractical for businesses because of the processing charges which can be more expensive than the actual product purchased. While the majority of respondents, as shown in Figure 4-8Figure 4-7, had made payments of $6 and above, just less than half had used their payment options to pay for small ticket items. Table D-8 provides the breakdown of the responses.

Figure 4-8 Lowest single online payment amount



General concerns about paying online. Based in part on their online shopping and payments experience, respondents were asked to state their overall concerns about paying online for goods and services. The items were measured using the following Likert scale: 1) Very concerned, 2) Somewhat concerned, 3) Neither concerned nor unconcerned, 4) Somewhat unconcerned, and 5) Very unconcerned.

A study of Table 4-1 shows that over 70 percent of the respondents expressed some degree of concern (with mean responses ranging from 1.83 to 2.20) for each of the issues related to security, privacy and fraud, namely items C1 to C6 and C9 to C11.

Table 4-1: Online payment concerns

		Very concerned	Somewhat concerned	Neither concerned nor unconcerned	Somewhat unconcerned	Very unconcerned	
label	**item**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**mean**
C1	Retention of credit card details	95 (37)	133 (51)	12 (5)	13 (5)	7 (3)	1.86
C2	Interception of payment details during transmission	92 (35)	121 (47)	18 (7)	18 (7)	19 (4)	1.98
C3	Loss of privacy	98 (38)	110 (42)	21 (8)	20 (8)	11 (4)	1.98
C4	Theft of details from merchants	118 (45)	107 (41)	8 (3)	15 (6)	12 (5)	1.83
C5	Identity theft	107 (41)	112 (43)	16 (6)	13 (5)	12 (5)	1.89
C6	Lack of security assurances	101 (39)	122 (47)	13 (5)	14 (5)	10 (4)	1.88
C7	Limited payment options	42 (16)	102 (39)	76 (29)	26 (10)	14 (5)	2.49
C8	Payment of small valued items	27 (10)	88 (34)	93 (36)	29 (11)	23 (9)	2.74
C9	Inadequate authentication	62 (24)	128 (49)	41 (16)	15 (6)	14 (5)	2.20
C10	Guarantees against fraud	107 (41)	110 (42)	23 (9)	13 (5)	7 (3)	1.86
C11	Untrustworthy websites	21 (8)	201 (77)	35 (14)	3 (1)	0 (0)	2.08
C12	Lack of currency conversion	6 (2)	102 (39)	151 (58)	1 (1)	0 (0)	3.57

4.5 Payment Methods: Usage and preferences

This section presents a summary of participants' main method of payment and their preferences for particular payment methods. As not all websites offer all payment options to a potential consumer, consumers are often obliged to use available methods. An indication of their preferred payment method would suggest either (1)

given a choice, which option they would take up and (2) an intention to adopt a different payment type.

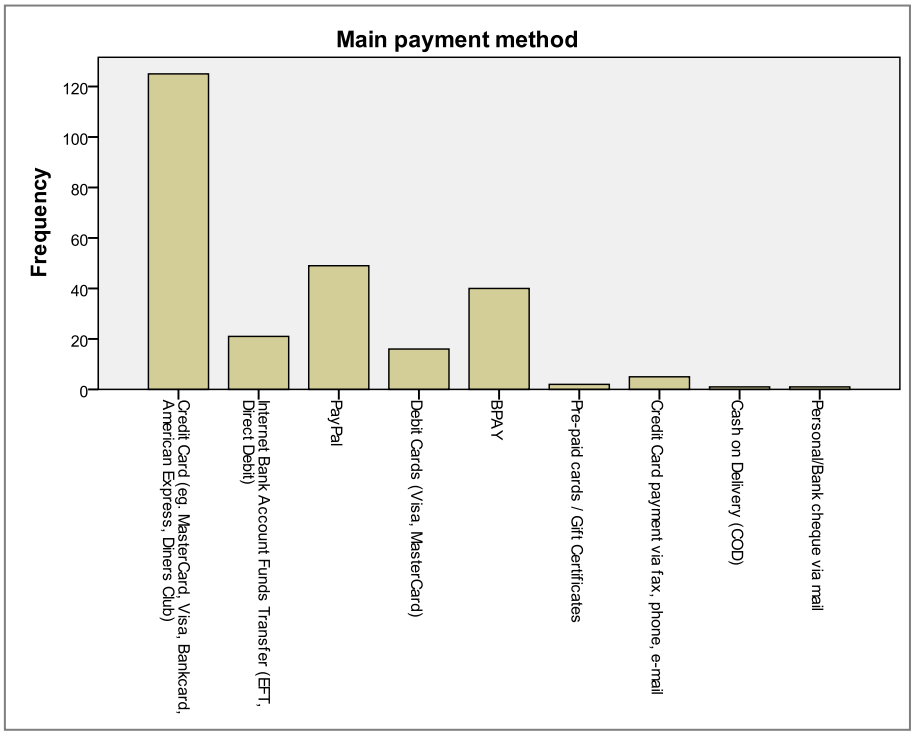
4.5.1 Main/most frequently used payment method

Respondents were asked about the payment method they used most often. Forty-eight percent of the respondents (see Table 4-2 and Figure 4-9) stated that paying online using their credit card was the method they used most often for paying for goods and services. Users who made payments via their Internet bank accounts (including BPAY payments) constituted the next most popular payment method (24 percent). This was followed by 19 percent who said they mainly used PayPal. A very small number, less than half a percent, of those surveyed relied on COD and cheques as their main means of payment for online purchases.

Table 4-2: Payment method most used by respondents

	Number	Percent
Credit Card (online)	125	48.1
PayPal	49	18.8
BPAY	40	15.4
Internet Bank Account Funds Transfer (EFT, Direct Debit)	21	8.1
Debit Cards (Visa, MasterCard)	16	6.2
Credit Card payment via fax, phone, e-mail	5	1.9
Pre-paid cards / Gift Certificates	2	0.8
Personal/Bank cheque via mail	1	0.4
Cash on Delivery (COD)	1	0.4
Total	260	100

Figure 4-9: Payment method most used by respondents



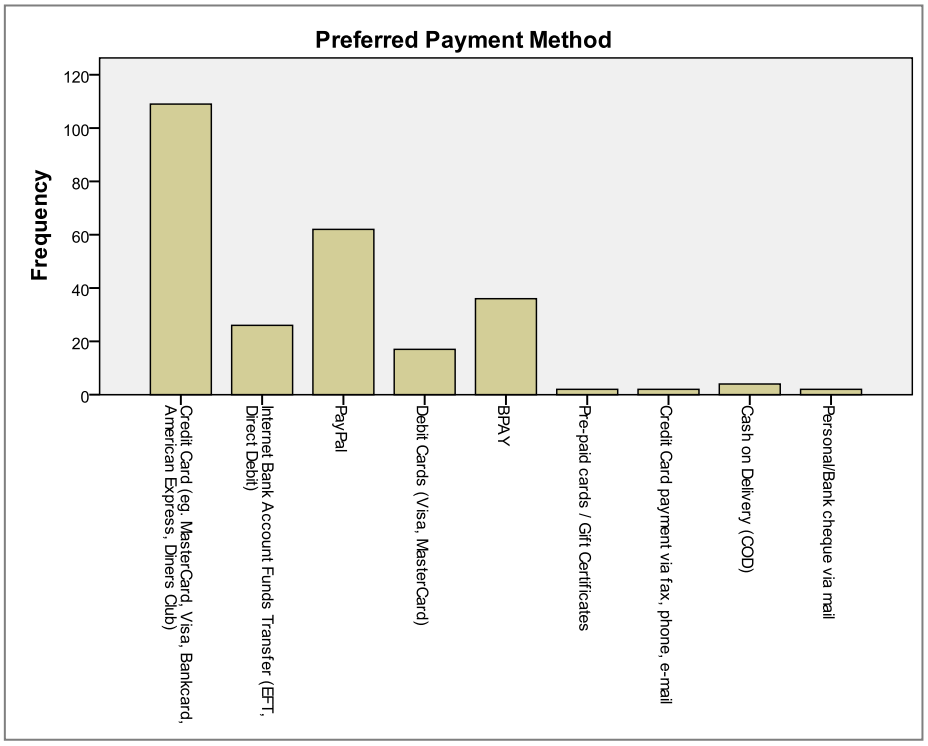
4.5.2 Preferred payment method

Asked about their preferred payment method, 42 percent of the respondents stated that they would prefer to pay online using their credit card. Just as many (24 percent) stated a preference for Internet bank account and BPAY as for PayPal. The preference for offline methods (COD, offline credit cards and cheques) for the payment of goods and services was low (under 4 percent). See Table 4-3 and Figure 4-10 for a distribution of the preferred payment methods.

Table 4-3: Respondents' preferred payment method

	Number	Percent
Credit Cards (online)	109	42.0
PayPal	62	23.8
BPAY	36	13.8
Internet Bank Account Funds Transfer (EFT, Direct Debit)	26	10.0
Debit Cards (Visa, MasterCard)	17	6.5
Cash on Delivery (COD)	4	1.5
Pre-paid cards / Gift Certificates	2	0.8
Credit Card payment via fax, phone, e-mail	2	0.8
Personal/Bank cheque via mail	2	0.8
Total	260	100

Figure 4-10: Respondents' preferred payment method



4.5.3 Traditional and Alternative (TA) Payment Methods

The main goal of this research is to understand the usage of traditional and alternative payment methods by determining the extent of the differences in consumer choice behaviour in relation to traditional and alternative payment type usage and preferences. In Chapter 1, the difference between traditional and alternative payment types (TA) was discussed. The primary objective of the data analysis is to analyse traditional and alternative payment types with respect to (1) the perceptions and attitudes of consumers towards the salient attributes of payment methods, and (2) the propensity of consumers to adopt alternative payment methods.

The intention of the study, therefore, is two-fold:

1. To determine differences and similarities in traditional and alternative payment type users in relation to their attitudes and perceptions of the six salient attributes of payment methods formed through current payment method usage. The dependent variable, *main payment type*, provides respondents with an opportunity to assess the attributes based on their first-hand experiences.

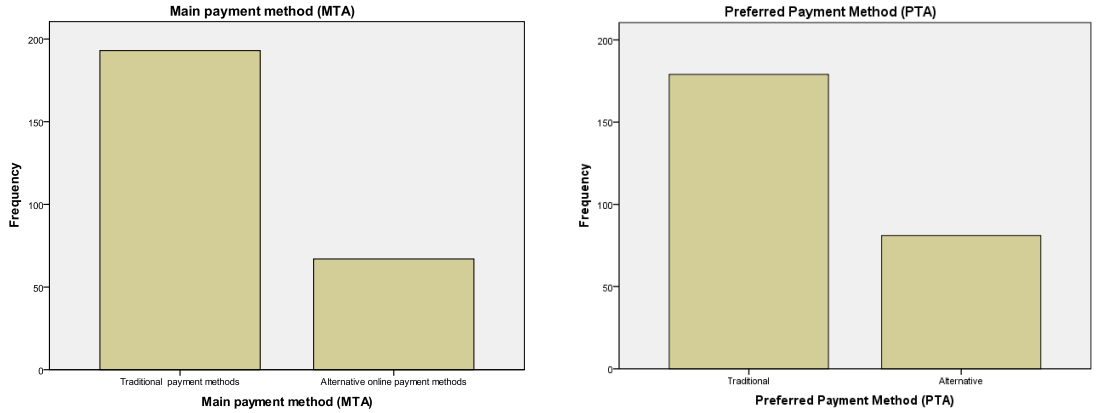
2. To examine the impact of external factors on the payment method preferences and intended use by online consumers. The dependent variable, *preferred payment type*, reflects the intention that, all things being equal, a user would prefer to use now or in the future given a choice.

Respondents were asked to state (1) their current main payment method usage and (2) their preferred payment method. To these ends, and for the purposes of future analysis, the responses to the questions - *Which method of payment do you use most often?* and *Which is your most preferred method of payment?* - were recoded and categorized into two groups: **traditional** (credit cards, Internet bank accounts, BPAY, money order, COD and cheques), and **alternative** (PayPal, Debit Cards, mobile payments, pre-paid and gift cards). The results are presented in Table 4-4 and Figure 4-11.

Table 4-4: Traditional and Alternative Payment types (TA)

Payment Type (TA)	Main Payment Type (MTA)			Preferred Payment Type (PTA)	
	n	%		n	%
Traditional	193	74		179	69
Alternative	67	26		81	31
Total	260	100		260	100

Figure 4-11: Traditional and Alternative payment types – Main (MTA) and Preferred (PTA)



Main payment type (MTA) and preferred payment type (PTA)

An analysis of usage and preference for the two payment types in Table 4-5 shows that there is a significant difference between the respondents' current usage of payment methods and their preferred payment method, $\chi^2(1, N = 260) = 102.9, p < .05$.

In examining the observed cell frequencies, it can be concluded that the majority of respondents (over 80 percent in each case) prefer to use the type of payment method that they currently use.

Table 4-5: Main (MTA) and Preferred (PTA)

Preferred payment type (PTA)			Main payment type used (MTA)		
	Total		Traditional	Alternative	p*
	N=260		N=193	N=67	
	n (%)		n (%)	n (%)	
					.001***
Traditional	179 (69)		166 (86)	13 (19)	
Alternative	81 (31)		27 (14)	54 (81)	

*p-value based on chi-square, comparing usage and preferences for payment method types
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

4.6 Salient attributes of payment methods

This section addresses the Research Question: *Do consumers' perceptions of the salient attributes of payment methods vary across traditional and alternative payment type usage?*

Respondents were asked a series of questions related to each of the six salient attributes to determine to what extent users of alternative payment types differed from users of traditional payment types in their perceptions of the salient attributes of their payment methods. Each attribute was measured using the following Likert scale: 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree somewhat, and 5) Strongly agree.

The six salient attributes identified for the purposes of this study and described in Chapter 2 are:

- Confidence
- Confidentiality
- Convenience
- Cost
- Control
- Coverage

4.6.1 Reliability of items

Reliability analysis allows the study of the properties of measurement scales and the items that compose the scales. It addresses the degree to which measures are free from error and the extent to which they produce consistent and stable results (Cooper, D. R. & Schindler 2001; Zikmund 2003). As several of the items were developed for the first time and specifically for this research it was decided to assess the internal reliability of the items measuring each of the salient attributes using Cronbach's Alpha, which is the accepted test to ensure reliability. The tests result in a coefficient ranging from zero to one, with reliability being higher as the coefficient approaches 1. The results are compared to the generally accepted guideline for a minimum of 0.7 for preliminary research (Churchill 1979; Nunnally 1978). If the alpha coefficient is above 0.7, it is assumed that the items capture the construct being measured. If the alpha coefficient is below 0.7, further analysis is conducted to determine if dropping particular items, would improve the reliability of the measures.

The results from the Cronbach's Alpha tests (see Table 4-6) produced high alpha scores for items within the measures for Confidence, Convenience and Coverage and over 0.70 for Confidentiality. An analysis of results for the Control measure suggested that dropping the question: "*Once the payment has been sent and the goods received there is little else I can do*" would improve the alpha value. This is the only reverse coded question for this measure and, as the item was not highly correlated with most of the others, it was decided to drop the question.

The Cost attribute with two items resulted in a score of just below 0.70, that is, 0.678. It was decided to retain the measure in the analysis, taking into consideration that consumers have largely been shielded from the direct costs of using payment methods (these costs usually being assigned to sellers) making the attribute of cost less relevant to consumers. In so doing, any conclusions arising from the analysis should be treated with caution. Table 4-6 presents a summary of the results from the tests.

Table 4-6: Descriptive Statistics and Reliability Analysis for Scaled Items

Label	Salient Attribute Measure	Survey Questions	Number of Items	Mean	Std. Deviation	Cronbach's Alpha
PA1	Confidence	PA11-PA19	9	3.807	5.484	.83
PA2	Confidentiality	PA21-PA210	10	3.182	5.935	.80
PA3	Convenience	PA31-PA312	12	3.824	7.637	.88
PA4	Cost	PA41-PA42	2	3.833	1.781	.68
PA5	Control	PA51-PA58	8	4.103	4.344	.74 (.68 without PA53)
PA6	Coverage	PA6-PA66	6	3.868	4.539	.84

Size N=260

4.7 Salient attributes and main payment type (MTA)

In examining the perceptions of the respondents towards the salient attributes of payment methods the non-parametric Mann-Whitney U test was used to identify significant differences between users of traditional and alternative payment methods. This test uses a chi-square statistic to evaluate differences in mean ranks in order to assess the null hypothesis that the medians are equal across groups.

4.7.1 Confidence (PA1) and payment type (MTA)

To address Research Issue 1 (RI1), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment types with respect to the attribute of ***confidence*** associated with payment methods:

RI1: *Do consumers who prefer alternative payment types differ from those who prefer traditional payment types in terms of their confidence in their payment method?*

Consumers' perceived confidence in their payment method was measured by asking the respondents to indicate their extent of agreement to 9 items developed for this salient attribute. The items used to determine confidence related to payment method *execution and completion* (PA11), *availability* (PA12), *reliability* (PA13), *trust*

(PA14), *non-repudiation* (PA15), *fraud* (PA16), *policies and regulations* (PA17), *process* (PA18) and *processing time* (PA19).

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 10 items were summed and averaged and an *overall confidence rating* (C2PA1) for the attribute was computed. Table 4-7 presents the results for the confidence attribute and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

When examining the confidence rating variable (C2PA1) a strong significant difference ($Z = -3.090$, $p = .002$) between traditional and alternative payment type users is indicated. Therefore the null hypothesis that the distribution of both groups is the same is rejected.

Users of alternative payment types had a higher average response of 4.0, suggesting that they tended to be more confident in the payment methods they used than those who used traditional payment methods.

When examining the mean responses for the individual survey items, where significant differences in the two groups are indicated, alternative payment type users were more likely to agree that the overall payment system they used was reliable, that they could trust the system and that they felt confident in the way the system worked overall. The reverse coded items (PA16 and PA19) indicate a likelihood of alternative payment users disagreeing with the statements that it would be easy for someone to use their payment details to make fraudulent payments or that they considered their payments took too long to process.

Table 4-7: Hypothesis testing: Confidence attributes and main payment methods

Label	ITEM	Main Payment Type (MTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
PA11	The payment is always executed and completed successfully	Traditional	193	4.24	0.851	-1.835	.067
		Alternative	67	4.45	0.784		
PA12	The system is always available when I want to use it	Traditional	193	4.10	0.820	-1.427	.154
		Alternative	67	4.21	0.946		
PA13	The system is reliable	Traditional	193	4.12	0.824	-1.986	.047*
		Alternative	67	4.34	0.750		
PA14	I can trust the system	Traditional	193	3.88	0.902	-2.880	.004**
		Alternative	67	4.24	0.818		
PA15	Using this method of payment, a merchant can deny receiving the payment	Traditional	193	3.42	1.178	-0.573	.567
		Alternative	67	3.49	1.157		
PA16	It is easy for someone to use my details to make payments fraudulently	Traditional	193	3.11	1.212	-2.683	.007**
		Alternative	67	3.54	1.257		
PA17	There are adequate rules, regulations and government policies to protect me when I use this payment method	Traditional	193	3.37	0.894	-2.262	.024*
		Alternative	67	3.60	1.188		
PA18	The way the payment system works on the whole instils confidence in me	Traditional	193	3.64	0.843	-3.947	.000***
		Alternative	67	4.10	0.945		
PA19	The payment takes too long to process	Traditional	193	3.78	0.917	-2.215	.027*
		Alternative	67	4.03	0.982		
C2PA1	CONFIDENCE summary variable	Traditional	193	3.74	0.588	-3.090	.002**
		Alternative	67	4.00	0.633		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Items PA15, PA16 and PA19 are reverse coded

4.7.2 Confidentiality (PA2) and payment type (MTA)

To address Research Issue 2 (RI2), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment types with respect to the attribute of ***confidentiality*** associated with payment methods:

RI2: *Do consumers who prefer alternative payment types differ from those who prefer traditional payment types in terms of their confidentiality in their payment method?*

Ten items were used to measure respondents' perceptions of the extent of confidentiality and privacy in their payment method. The confidentiality attribute related to payment methods and *anonymity* (PA21), *privacy* (PA22), *overall security* (PA23), *authentication* (PA24), *transmission security* (PA25), *collection of personal information* (PA26), *unauthorized use of personal information* (PA27), *merchant retention of payment details* (PA28), *theft of information* (PA29), and *offline payment methods* (PA210).

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 10 items were summed and averaged and an *overall confidentiality rating* (C2PA2) for the attribute was computed. Table 4-8 presents the results for the confidentiality attribute and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

When examining the confidentiality rating variable (C2PA2) a very strong significant difference ($Z = -3.509$, $p = .000$) between traditional and alternative payment type users is indicated. Therefore the null hypothesis that the distribution of both groups is the same is rejected.

Users of alternative payment types had a higher average response of 3.41, suggesting that they tended to have greater overall belief in the ability of their payment method to protect their confidentiality and privacy than did users of traditional payment types.

When examining the mean responses for the individual survey items, where significant differences in the two groups are indicated, alternative payment type users were likely to agree that their payment system offered a secure means for making a payment and that the system protected their details during transmission of their transaction. With the reverse coded items (PA26, PA27 and PA28) there was also a tendency by alternative payment type user to disagree with the statements that suggested that their payment system was collecting more information than they considered necessary; that their information would be shared with other companies without their authorization; or that their payment details would be retained and used by the merchant in the future.

4.7.1 Convenience (PA3) and payment type (MTA)

To address Research Issue 3 (RI3), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment types with respect to the attribute of ***convenience*** associated with payment methods:

RI3: *Do consumers who prefer alternative payment types differ from those who prefer traditional payment types in relation to the convenience of a payment method?*

The extent to which respondents find their payment method convenient to use was measured by 12 items related to this salient attribute. The statements related to payment methods and *ease of use* (PA31), *time-saving* (PA32), *compatibility* (PA33), *online and offline usage* (PA34), *speed* (PA35), *flexibility* (PA36), *P2P and B2C usage* (PA37), *transferability* (PA38), *set-up and registration time* (PA39), *small value payments* (PA310), *payment functions and features* (PA311) and *all value payments* (PA312).

Table 4-9 presents the results for the convenience attribute and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

Table 4-8: Hypothesis testing: Confidentiality attributes and main payment type

Label	ITEM	Main Payment Type (MTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
PA21	The payment cannot be traced back to me	Traditional	193	2.25	1.037	-0.163	.871
		Alternative	67	2.33	1.173		
PA22	My identity is kept from others	Traditional	193	3.00	0.984	-1.318	.187
		Alternative	67	3.19	1.222		
PA23	The system is a secure way of making a payment	Traditional	193	3.78	0.827	-2.151	.031*
		Alternative	67	4.01	0.913		
PA24	The system uses an effective means for establishing my identity	Traditional	193	3.58	0.820	-1.695	.090
		Alternative	67	3.76	1.046		
PA25	The system protects my details from being compromised during transmission	Traditional	193	3.58	0.832	-2.594	.009**
		Alternative	67	3.88	0.962		
PA26	The system is collecting more personal information from me than is necessary	Traditional	193	3.15	0.909	-3.193	.001***
		Alternative	67	3.58	0.972		
PA27	My personal information will be shared with other companies without my authorization	Traditional	193	3.16	1.005	-3.555	.000***
		Alternative	67	3.66	0.962		
PA28	I am concerned that my data will be retained by the merchant for future use	Traditional	193	2.73	1.047	-3.750	.000***
		Alternative	67	3.30	1.101		
PA29	I am concerned that unauthorized people (hackers) may have access to my personal information	Traditional	193	2.67	1.012	-1.869	.062
		Alternative	67	2.96	1.107		
PA210	Offline payment methods protect privacy and confidentiality better than online methods	Traditional	193	3.13	1.187	-1.842	.065
		Alternative	67	3.43	1.305		
C2PA2	CONFIDENTIALITY summary variable	Traditional	193	3.10	0.522	-3.509	.000***
		Alternative	67	3.41	0.721		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Items PA26 to PA210 are reverse coded

When examining the convenience rating variable (C2PA3) a significant difference ($Z = -3.055$, $p = .002$) between traditional and alternative payment type users is indicated. Therefore the null hypothesis that the distribution of both groups is the same is rejected.

When examining the mean responses for the individual survey items, where significant differences in the two groups are reported, alternative payment type users were likely to disagree that the payment method they used could be used for both online and offline purchases. They were tended to agree that the account setup and registration process was easy; that the system allowed them to use it with other payment methods and they could transfer funds easily to other accounts; that they could use their payment method to pay both individuals and merchants just as easily, as well as use their payment method for all value payments including make small payments of under $5.

4.7.1 Cost (PA4) and payment type (MTA)

To address Research Issue 4 (RI4), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment methods with respect to the attribute of ***cost*** associated with using the payment method:

RI4: *Do consumers who prefer alternative payment methods differ from those who prefer traditional payment methods in terms of the cost of using their payment method?*

Consumers' perceptions about the cost of using their payment methods were measured by 2 items developed for this salient attribute. The statements related to payment methods with respect to *set-up costs* (PA41) and *transactional costs* (PA42).

Table 4-9: Hypothesis testing: Convenience attributes and main payment type

Label	ITEMS	Main Payment Type (MTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
PA31	I find the payment method easy to use	Traditional	193	4.28	0.807	-1.087	.277
		Alternative	67	4.40	0.760		
PA32	Using this payment method saves me time	Traditional	193	4.25	0.831	-0.434	.664
		Alternative	67	4.30	0.835		
PA33	The system suits the way I prefer payments to be made	Traditional	193	4.07	0.927	-1.612	.107
		Alternative	67	4.28	0.849		
PA34	It allows me to use it for both offline and online purchases	Traditional	193	4.00	0.842	-5.289	.000***
		Alternative	67	3.12	1.262		
PA35	The response time is quick enough for my needs	Traditional	193	4.10	0.845	-3.204	.373
		Alternative	67	4.22	0.735		
PA36	The system is flexible. I can use it with other payment methods (e.g. Internet banking, mobile phone)	Traditional	193	3.78	1.028	-2.491	.013*
		Alternative	67	4.15	0.584		
PA37	I can use it to pay other individuals just as easily as merchants	Traditional	193	3.39	1.229	-4.320	.000***
		Alternative	67	4.13	0.757		
PA38	I can easily transfer funds between my accounts using this payment method	Traditional	193	3.41	1.007	-5.135	.000***
		Alternative	67	4.03	0.696		
PA39	The account setup and registration process is easy	Traditional	193	3.65	0.952	-1.962	.050*
		Alternative	67	3.91	0.917		
PA310	I can use it to make small payments of under $5	Traditional	193	3.44	1.025	-4.088	.000***
		Alternative	67	4.03	0.870		
PA311	The system has all the functionality and features that I require	Traditional	193	3.81	0.878	-1.813	.070
		Alternative	67	4.03	0.834		
PA312	I can use it to make any size payments	Traditional	193	3.58	0.987	-3.603	.000***
		Alternative	67	4.07	0.841		
C2PA3	CONVENIENCE summary variable	Traditional	193	3.81	0.625	-2.422	.002**
		Alternative	67	4.01	0.606		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 2 items were summed and averaged and an *overall cost rating* (C2PA4) for the attribute was computed. Table 4-10 presents the results for the cost items and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

When examining the cost rating variable (C2PA4) no significant difference ($Z = -0.750$, $p = .453$) between traditional and alternative payment type users is indicated.
Therefore the null hypothesis that the distribution of both groups is the same cannot be rejected. The suggestion drawn from this is that neither of the groups differs to any great extent over their perceptions regarding the cost implications of using their payment method.

An examination of the mean responses of the two reverse coded survey items (PA41 and PA42) indicate that both alternative and traditional payment type users were likely to disagree with the statements that the set-up and transactional costs were high.

4.7.1 Control (PA5) and payment type (MTA)

To address Research Issue 5 (RI5), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment methods with respect to the salient attribute of ***control*** associated with payment methods:

RI5: *Do consumers who prefer alternative payment types differ from those who prefer traditional payment types in relation to their perceived degree of control over the payment process?*

Consumers' perceived belief in the degree to which they have control over various aspects of the payment process was measured by 7 items developed for this salient attribute. The statements relate to *payment process awareness* (PA51), *processing*

control (PA52), *payment cancellation* (PA54), *payment reversal* (PA55), *risk control* (PA56), *payment abandonment* (PA57), and *payment predictability* (PA58).

Table 4-10: Hypothesis testing: Cost attributes and preferred payment methods

Label	ITEMS	Main Payment Type (MTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
PA41	The cost of setting up and using this payment method is unacceptably high	Traditional	193	3.90	0.998	-1.418	.156
		Alternative	67	4.09	0.981		
PA42	The transaction costs are high	Traditional	193	3.71	1.075	-0.059	.953
		Alternative	67	3.73	0.994		
C2PA4	COST summary variable	Traditional	193	3.81	0.907	-0.750	.453
		Alternative	67	3.91	0.844		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Items PA42 and PA44 are reverse coded

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 7 items were summed and averaged and an *overall control rating* (C2PA5) for the attribute was computed. Table 4-11 presents the results for the control items and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

When examining the confidentiality rating variable (C2PA5) a very strong significant difference ($Z = -4.404$, $p = .000$) between traditional and alternative payment type users is indicated. Therefore the null hypothesis that the distribution of both groups is the same is rejected and the implication is that the two groups perceive the degree to which they can control their payment method and the payment process very differently.

Users of alternative payment types had a higher average response, indicating that there was greater overall agreement that the payment method they used offered them

the ability to control various aspects of the payment process than did traditional payment type users.

When examining the mean responses for the individual survey items, where significant differences in the two groups are indicated, alternative payment type users were likely to disagree that they could reverse a payment transaction. However, they were likely to agree that they could control the risks associated with using their payment method as well as the fact that they could abandon the payment process at any time without fear of adverse consequences.

4.7.1 Coverage (PA6) and payment type (MTA)

To address Research Issue 6 (RI6), the Mann-Whitney U test was carried out to test for differences between users of traditional and alternative payment types with respect to the ***coverage*** attribute associated with payment methods:

RI6: *Do consumers who prefer alternative payment types differ from those who prefer traditional payment types in terms of their perception of payment method coverage and availability?*

Consumers' belief about various aspects concerning the perceived coverage of their payment method (such as usage, spread and availability) was measured using 6 items developed for this salient attribute. The statements addressed such issues as *cross-border availability* (PA61), *merchant acceptance* (PA62), *consumer familiarity* (PA63), *merchant coverage* (PA64), *consumer usage* (PA65), and *widespread acceptance* (PA66).

Table 4-11: Hypothesis testing: Control attribute and main payment type

Label	ITEMS	Main Payment Type (MTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
PA51	I am aware of the exact steps involving the operation and execution when I make a payment	Traditional	193	3.87	0.883	-1.136	.256
		Alternative	67	4.01	0.879		
PA52	I can control the way my information and transactions are processed when I make a payment	Traditional	193	3.36	0.964	-1.815	.070
		Alternative	67	3.61	0.887		
PA54	I can cancel a payment anytime during the payment process	Traditional	193	3.71	1.017	-1.425	.154
		Alternative	67	3.37	0.918		
PA55	I can reverse a payment easily after I have made the payment	Traditional	193	2.59	0.959	-9.969	.000***
		Alternative	67	4.01	0.408		
PA56	I can control the risks and uncertainty associated with using this payment method	Traditional	193	2.89	0.970	-1.265	.206
		Alternative	67	2.78	0.832		
PA57	I can abandon the payment steps at anytime before I click the pay button	Traditional	193	3.16	1.019	-0.589	.556
		Alternative	67	3.42	0.907		
PA58	I find the payment steps predictable	Traditional	193	3.96	0.602	-0.656	.512
		Alternative	67	4.01	0.728		
C2PA5	CONTROL summary variable	Traditional	193	3.40	0.509	-4.404	.000***
		Alternative	67	3.69	0.512		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 6 items were summed and averaged and an *overall coverage rating* (C2PA6) for the attribute was computed. Table 4-12 presents the results for the perceived coverage attributes and includes the mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value.

When examining the coverage rating variable (C2PA4) no significant difference ($Z = 1.644$, $p = .100$) between traditional and alternative payment type users is

indicated. Therefore the null hypothesis that the distribution of both groups is the same cannot be rejected. Both groups indicate an overall agreement (over 3.5) over the extent of the coverage and availability of their respective payment methods.

When examining the mean responses for individual survey items, where significant differences in the two groups are reported, alternative payment type users were likely to agree that they could use their payment method for cross-border transactions and that they would use their payment method more often if it was offered by more merchants.

Table 4-12: Hypothesis testing: Coverage attributes and preferred payment methods

Label	ITEMS	Main Payment Type (MTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
PA61	I can use this payment method to pay for overseas purchases	Traditional	193	3.88	1.116	-2.798	.005**
		Alternative	67	4.33	0.911		
PA62	I can use it to pay most merchants	Traditional	193	3.95	0.967	-0.443	.658
		Alternative	67	3.97	1.058		
PA63	People are very familiar with this method of payment	Traditional	193	4.04	0.904	-0.305	.760
		Alternative	67	3.94	1.085		
PA64	I use this payment method because most merchants offer it as an option	Traditional	193	3.90	0.950	-0.070	.944
		Alternative	67	3.88	1.052		
PA65	I use this payment method because other people are also using it	Traditional	193	3.47	1.080	-1.049	.294
		Alternative	67	3.64	1.055		
PA66	I would use this payment method more often if more merchants offered it as an option	Traditional	193	3.76	0.994	-2.214	.027*
		Alternative	67	4.07	0.926		
C2PA6	COVERAGE summary variable	Traditional	193	3.69	0.734	-1.644	.100
		Alternative	67	3.85	0.741		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

4.7.2 Summary of results (salient attributes)

The survey responses were used to compare the attitudes and perceptions of respondents towards the salient attributes of payment methods between those who used traditional methods of payments with those who used alternative methods. Table 4-13 summarizes the findings for each of the research issues related to the salient attributes and whether any significant differences were found between the two payment type users. The implication of the differences in attitudes and perceptions of traditional and alternative payment type users will be discussed in detail in Chapter 6.

Table 4-13: Summary of research issues related to the salient attributes

Research Issue	Significance of difference
RI1: Confidence	**
RI2: Confidentiality	***
RI3: Convenience	**
RI4: Cost	NS
RI5: Control	***
RI6: Coverage	NS

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

4.8 External factors and preferred payment type (PTA)

This section explores the relationships between external factors and consumer's preferences for a payment type. Adopters are characterized by whether they prefer traditional or alternative payment types. This study presents a conceptual model of factors affecting online consumer payment behaviour. As diagrammed in **Error! eference source not found.**, the second research question examines the extent to which particular external factors affect a consumer's preferences for different payment types, that is, do consumers who prefer traditional types of payment methods differ from those who prefer alternative payment types in terms of these external influences, and is an online consumer's use of different payment types dependent on external influences? The preferred payment type (PTA) re-coded variable is used to differentiate between online consumers who prefer traditional and alternative types of payment methods.

Respondents were asked a series of questions throughout the survey instrument that related to the areas of consumer characteristics, institutional facilitators and social influences.

The dependent variable is *preferred payment method* and the variable, PTA, is used to differentiate between respondents who prefer traditional types of payment methods from those who prefer alternative types of payment methods.

4.8.1 Consumer characteristics

Demographics (age, gender, income and education)
This research issue looks for differences in demographic characteristics between those who prefer traditional payment types to those who prefer alternative types of payment:

RI7: *How consumers who prefer alternative payment types differ from those who prefer traditional types of payment methods in terms of their age, gender, income and education?*

The chi-square test and Fisher's Exact Test (when the cell count is less than 5) are used on these contingency tables to test for differences in the distribution of responses for the survey participants who prefer traditional and alternative payment types across each of the variables. This test identifies areas where those who prefer traditional types of payment method differ from those who prefer to pay by alternative payment methods. For example, the age category of the respondents is tested to see if they vary significantly between traditional and alternative payment groups. Table 4-14 shows a summary and breakdown of responses to the questions on respondents' demographic characteristics. See Figure D-13 to Figure D-16 in Appendix D for a graphical distribution of the demographic characteristics for the two groups of payment types.

Based on the chi-square test results, respondents who preferred alternative types from traditional payment types differed significantly from each other with respect to age,

income and education, while no significant preference patterns were found when grouped by gender.

Respondents who preferred alternative payment types tended to fall in the younger age groups with more than half (64 percent) below the age of 35, while more than half of respondents who preferred traditional payment types were 35 years or above.

A little under half of the respondent in the alternative group earned less than $30 000 per annum while those in the traditional group were spread similarly across all income groups.

The majority of respondents in both groups had some form of tertiary education.

Table 4-14: Demographic characteristics

Demographics		**Preferred payment type (PTA)**				
	Total	**Traditional**	**Alternative**	**$\chi 2$**	**d.f.**	**p[a]**
	N=260	**N=179**	**N=81**			
	n (%)	**n (%)**	**n (%)**			
Age category				24.30	4	.000***
Under 25	52 (20)	27 (15)	25 (31)			
25-34	67 (26)	41 (23)	26 (32)			
35-44	71 (27)	48 (27)	23 (28)			
45-54	38 (15)	36 (20)	2 (3)			
55 and over	32 (12)	27 (15)	5 (6)			
Income group				12.81	3	.010**
< $30 000	87 (34)	48 (27)	39 (48)			
$31 000 - $59 000	63 (24)	47 (26)	16 (20)			
$60 000 - $80 000	60 (23)	43 (24)	17 (21)			
> $80 000	50 (19)	41 (23)	9 (11)			
Gender				0.73	1	.390
Male	129 (50)	92 (51)	37 (46)			
Female	131 (50)	87 (49)	44 (54)			
Education				10.19	2	.010**[b]
None	13 (5)	13 (7)	0 (0)			
High School	63 (24)	36 (20)	27 (33)			
University/Technical	184 (71)	130 (73)	54 (67)			

[a] p-value based on chi-square, comparing demographic characteristics of respondents with traditional and alternative payment type preferences. Results are shown as number and proportion in different categories of characteristics.

[b] Fisher's Exact Test

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Personal innovativeness (general, domain-specific)

The eight research issue tests for differences between users who prefer traditional methods over alternative payment methods with respect to their degree of innovativeness.

RI8: *How do consumers who prefer alternative types of payment methods differ from those who prefer traditional types of payment methods with respect to their personal and domain-specific innovativeness?*

Respondents were asked to indicate their extent of agreement (1 = strongly disagree, 5 = strongly agree) on two aspects of personal innovativeness adapted from previous research that measured their perceptions and behaviours: the first related to their general innovativeness (4 items), and the second addressed innovativeness with particular reference to payment methods (6 items). Items reflecting low innovativeness were reverse coded so that higher scores on the index represented greater innovativeness. The Cronbach's Alpha test for reliability of the measures showed a standardized $\alpha = 0.821$ and $\alpha = 0.761$ (above the average of 0.70 recommended to establish a scale's reliability) for each of the two variables, general innovativeness and domain-specific innovativeness, respectively. Responses were summed and averaged to create a summary overall innovativeness rating for each of two dimensions of innovation.

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). For each variable the response values (1 to 5) for the items were summed and averaged and *overall ratings* (GISUM and DISUM) for the two variables were computed. Results of the Mann-Whitney U tests are summarized in Table 4-15 and Table 4-16. The mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value are presented in each of the tables.

Upon examining the summary of variables that determine the degree of personal innovativeness it was found that the research issue was not supported as no significant difference was found in the payment preference patterns between the alternative and traditional groups. However, overall, the alternative payment group tended to indicate a slightly greater degree of personal innovativeness than the traditional group.

An inspection of the mean responses for the individual items, where significant differences are shown for the two groups, indicates that respondents in the alternative group were likely to experiment with new technologies and to seek out ways of experimenting with new technologies.

Table 4-15: Respondents' general innovativeness

Label	ITEMS	Preferred Payment Type (PTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
G11	In general, I am hesitant to try out new technologies	Traditional	179	3.84	1.082	-0.863	.388
		Alternative	82	3.99	0.929		
G12	If I heard about a new technology, I would look for ways to experiment with it	Traditional	179	3.58	1.080	-1.964	.050*
		Alternative	82	3.86	0.959		
G13	I like to experiment with new technologies	Traditional	179	3.56	1.086	-2.437	.015*
		Alternative	82	3.90	1.032		
G14	Among my peers, I am usually the first to try out new technologies	Traditional	179	2.95	1.172	-0.757	.449
		Alternative	82	3.05	1.083		
GISUM	GENERAL INNOVATIVENESS Summary variable	Traditional	179	3.48	0.916	-1.683	.092
		Alternative	82	3.68	0.769		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Item GI1 is reverse coded

As regards their domain-specific innovativeness with respect to the preference for payment method, the two groups were significantly different ($Z = -7.313$, $p = .000$) and indicated a propensity of the alternative payment group to be willing to adopt new payment methods.

Respondents in the alternative group were likely to be (1) aware of new payment methods ahead of others; (2) the first to hear about new payment methods, and (3) amongst the first to adopt a new payment method.

Table 4-16: Respondents' domain-specific innovativeness

Label	ITEMS	Preferred Payment Type (PTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
D11	In general, I am amongst the last in my circle of friends to use a new payment method when it becomes available	Traditional	179	3.58	0.994	-3.241	.000***
		Alternative	82	3.95	0.934		
D12	If I heard that a new payment method was available on the Web, I would not be interested in using it to pay for online purchase	Traditional	179	3.38	0.989	-3.797	.000***
		Alternative	82	3.80	0.928		
D13	Compared to my friends, I seek out relatively little information about new payment methods	Traditional	179	3.42	1.038	-2.387	.017**
		Alternative	82	3.73	1.013		
D14	In general, I am the last in my circle of friends to know of any new payment methods	Traditional	179	3.65	1.013	-2.015	.044*
		Alternative	82	3.93	0.755		
D15	I will use a payment method even if I have not heard of it before	Traditional	179	2.11	0.923	--6.467	.000***
		Alternative	82	3.07	1.104		
D16	I know about new payment methods before most other people in my circle do	Traditional	179	2.79	1.042	-7.942	.000***
		Alternative	82	4.00	0.962		
DISUM	DOMAIN-SPECIFIC INNOVATIVENESS Summary variable	Traditional	179	3.16	0.627	-7.313	.000***
		Alternative	82	3.75	0.681		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Items DI1, DI2, DI3 and DI4 are reverse coded

Online shopping characteristics

This research issue tests for differences between users who prefer traditional types of payment methods over alternative type with regards to their online shopping characteristics.

RI9: *How do consumers who prefer alternative types of payment methods differ from those who prefer traditional types of payment methods in terms of their Internet usage, shopping experience and online purchase frequency?*

Participants were asked about the number of hours they spent on the Internet on average per week, how long they had been shopping online for, and what was the average number of online purchases they made in a month.

The chi-square test and Fisher's Exact Test (when the cell count is less than 5) are used on these contingency tables to test for differences in the distribution of responses for respondents who prefer traditional and alternative payment types across each of the variables. Table 4-17 shows a summary and breakdown of responses to the questions on respondents' shopping characteristics. See Figure D-17 to Figure D-19 in Appendix D for a graphical distribution of the shopping characteristics for the two groups of payment types.

The research issue was not supported as no significant differences were found in the payment preference patterns between the alternative and traditional groups with respect to their Internet usage, online shopping experience or average monthly purchases.

The majority in both the traditional and alternative payment groups have (a) spent more that 10 hours a week on the Internet (66 percent and 58 percent respectively), (b) shopped online for at least 3 years (76 percent and 78 percent respectively), and (c) made on average two or more online purchases a month (55 percent and 66 percent respectively).

Table 4-17: Online shopping characteristics

Online shopping characteristics		Preferred payment type (PTA)				
	Total	Traditional	Alternative	$\chi 2$	d.f.	p[a]
	N=260	N=179	N=81			
	n (%)	n (%)	n (%)			
Internet Usage (average weekly)				4.138	3	.247
< 4 hrs	23 (9)	18 (10)	5 (6)			
5-10 hrs	73 (28)	44 (25)	29 (36)			
11-20 hrs	85 (33)	62 (35)	23 (28)			
> 20 hrs	79 (30)	55 (31)	24 (30)			
Online Shopping experience				2.652	4	.618
< 1 year	20 (8)	15 (8)	5 (6)			
1-2 years	42 (16)	29 (16)	13 (16)			
3-4 years	86 (33)	55 (31)	31 (38)			
5-6 years	61 (24)	46 (26)	15 (19)			
> 6 years	51 (20)	34 (19)	17 (21)			
Monthly purchases (average)				6.320	5	.275 [b]
< 1	40 (15)	31 (17)	9 (11)			
1	69 (27)	50 (28)	19 (24)			
2	59 (23)	35 (20)	24 (30)			
3	23 (9)	13 (7)	10 (12)			
4	17 (7)	13 (7)	4 (5)			
> 4	52 (20)	37 (21)	15 (19)			

[a] p-value based on chi-square, comparing online shopping characteristics of respondents with traditional and alternative payment type preferences. Results are shown as number and proportion in different categories of characteristics.

[b] Fisher's Exact Test

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

4.8.2 Institutional facilitators

Payment Method Adoption Incentives

The tenth research issue compares consumers who prefer traditional types of payment methods with those who prefer alternative payment types and the influence of incentives offered by merchants and payment suppliers to consumers to adopt a payment method.

RI10: *How do consumers who prefer alternative types of payment methods differ from those who prefer traditional types of payment methods in terms of the influence of incentives to use a payment method?*

The effect of incentives to adopt a payment method on consumer payment preferences was measured by 3 items developed for this variable. The statements relate to *discounts and loyalty points* (I2), *money back guarantees* (I6), and *limited liability* (I7). The questions were coded so that a high score reflected higher levels of importance placed on the availability of incentives on payment choice. The Cronbach's Alpha test for reliability of the measures showed a standardized $\alpha = 0.965$ (above the average of 0.70 recommended to establish a scale's reliability).

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 3 items were summed and averaged and an *overall incentives rating* (INSUM) for the variable was computed. Table 4-18 presents the results for the items. The mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value are presented in each of the tables.

The research issue was not supported as no significant difference was found in payment preferences between the alternative and traditional groups with respect to the offer of incentives to use payment methods.

An inspection of the mean responses for the individual items, where significant differences are shown for the two groups, indicates that respondents in the traditional group are likely to agree that they would choose a payment method that limited their liability in the event of the fraudulent use of their payment details.

The impact of security assurances and mechanisms on consumer payment preferences was measured by 4 items developed for this variable. The statements relate to *webpage encryption* (I1), *authentication* (I8), *trust mechanisms* (I9) and *security and privacy policies* (I0). The questions were coded so that a high score reflected higher levels of importance placed on security assurances on payment choice. The Cronbach's Alpha test for reliability of the measures showed a standardized $\alpha = 0.893$ (above the average of 0.70 recommended to establish a scale's reliability).

Table 4-18: Payment method incentives and preferred payment types

Label	ITEMS	Preferred Payment Type (PTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
I2	I would choose a payment method that offered me rewards, discounts, loyalty points and other incentives	Traditional	179	3.68	1.009	-1.747	.081
		Alternative	82	3.42	1.071		
I6	I would choose a payment method that offered me a money back guarantee if I returned any goods purchased	Traditional	179	3.68	1.009	-0.400	.689
		Alternative	82	3.69	1.190		
I7	I would choose a payment method that limited my liability in the event of fraud	Traditional	179	3.56	0.906	-2.896	.004**
		Alternative	82	3.25	1.043		
INSUM	INCENTIVE Summary variable	Traditional	179	3.64	0.964	-1.343	.179
		Alternative	82	3.45	1.029		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

Security Assurances

Security assurances in the form of trust marks, payer authentication processes and security and privacy policies can enhance consumer confidence in the payment process. This research issue investigates the importance that consumers attach to these mechanisms in relation to their payment type preferences.

RI11: *Do consumers who prefer alternative payment methods differ from those who prefer traditional payment methods with regard to the need for security assurances?*

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 4 items were summed and averaged and an *overall security assurances rating* (ISSUM) for the variable was computed. Table 4-19 presents the results for the items. The mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value are presented in each of the tables.

The results indicate that there is a significant difference (Z = -2.523, p = .012) in the impact of security assurances between the alternative and traditional payment groups.

An inspection of the mean responses for the individual items, where significant differences are shown for the two groups, indicates that respondents in the alternative group are influenced by effective authentication methods and the presence of security assurances, and security and privacy policies.

4.8.1 Availability and Usage

Market reach and presence

The market performance of an innovation is an increasing function of that innovation's installed base. This research issue considers whether the perceptions of, and attitudes towards, the availability of a payment method differs between users who prefer traditional payment methods over alternative methods.

RI12: *Do consumers who prefer alternative payment methods differ from those who prefer traditional payment methods in their perception of the availability of payment methods?*

Participants' responses to the importance to them of the increased availability of payment methods was measured by 4 items developed for this variable. The statements relate to *website availability* (I3), *device availability* (I11), *cross-border payments* (I12) and *24/7 ubiquitous availability* (I13). The questions were coded so that a high score reflected higher levels of importance placed on the influence of payment method availability on payment choice. The Cronbach's Alpha test for

reliability of the measures showed a standardized α = 0.84 (above the average of 0.70 recommended to establish a scale's reliability).

Table 4-19: Security assurances and preferred payment types

Label	ITEMS	Preferred Payment Type (PTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
I1	I would not use a payment method if the payments page did not demonstrate it was secured using SSL and https	Traditional	179	3.99	0.835	-.0864	.388
		Alternative	82	4.09	0.762		
I8	I would choose a payment method if there were effective steps in verifying my identity	Traditional	179	3.79	0.880	-2.593	.010**
		Alternative	82	4.09	0.762		
I9	I would choose a payment method if the website displayed trust marks and other security seals	Traditional	179	3.77	0.727	-3.327	.001***
		Alternative	82	4.09	0.762		
I10	I would use a payment method if I was satisfied with the website's security and privacy policy	Traditional	179	3.76	0.745	-3.460	.001***
		Alternative	82	4.11	0.707		
ISSUM	SECURITY ASSURANCES Summary variable	Traditional	179	3.83	0.649	-2.523	.012*
		Alternative	82	4.09	0.745		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 4 items were summed and averaged and an *overall availability rating* (AVSUM) for the variable was computed. Table 4-20 presents the results for the items. The mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value are presented in each of the tables.

The results indicate that there is a significant difference ($Z = -3.544$, $p = .000$) in the choice of payment method in relation to its availability between the alternative and traditional payment groups.

An inspection of the mean responses for the individual items, where significant differences are shown for the two groups, indicates that the impact on the respondent's choice of payment method varies across the two payment type groups and, in particular, where the payment method was more readily available all the time in online stores and devices as well as for overseas purchases.

Peer usage

This research issue considers whether the extent of the influence of the usage of payment methods by a consumer's peers and their social network is different across those who prefer traditional and alternative payment types.

RI13: *Do consumers who prefer alternative types of payment types differ from those who prefer traditional payment types with regard to the influence of peer usage?*

Peer influence is measured by 2 items adapted from previous research. The statements relate to *social network* (SI1) and *peer* influence (SI2). The questions were coded so that a high score reflected higher levels of importance placed on peer influence on payment choice. The Cronbach's Alpha test for reliability of the measures showed a standardized $\alpha = 0.703$ (above the average of 0.70 recommended to establish a scale's reliability).

Table 4-20: Payment method availability and payment preferences

Label	ITEMS	Preferred Payment Type (PTA)	N= 260 n	Mean	Std. Dev.	Z-score	Sig.
I3	I would choose a payment method that was more readily available in more online stores	Traditional	179	3.88	0.913	-2.016	.044*
		Alternative	82	4.14	0.754		
I11	It is important to me that I should also be able to use the payment method on smartphones and other devices	Traditional	179	3.72	0.913	-3.843	.000***
		Alternative	82	4.17	0.787		
I12	I should be able to use the payment method to make overseas purchases	Traditional	179	3.81	0.935	-2.595	.009**
		Alternative	82	4.14	0.818		
I13	The payment method should be available whenever and wherever I want to make a payment	Traditional	179	3.79	0.848	-4.109	.000***
		Alternative	82	4.25	0.699		
AVSUM	AVAILABILITY Summary variable	Traditional	179	3.80	0.764	-3.544	.000***
		Alternative	82	4.17	0.718		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

These items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). All the response values (1 to 5) for the 2 items were summed and averaged and an *overall peer usage rating* (PUSUM) for the variable was computed. Table 4-21 presents the results for the items. The mean and standard deviation for each survey item, as well as the Z-score and the two-tailed p-value are presented in each of the tables.

The results indicate that there is a significant difference ($Z = -3.265$, $p = .001$) in the choice of payment method in relation to the influence of peers on choice of payment methods between the traditional and alternative payment groups.

An inspection of the mean responses for the individual items indicates that there is a greater likelihood of agreement amongst the alternative payment type group as to the influence of social networks and peers on payment method preferences.

Table 4-21: Peer usage and preferred payment type

Label	ITEMS	Preferred Payment Type (PTA)	N= 260	Mean	Std. Dev.	Z-score	Sig.
			n				
SI1	Most people in my social network use the Internet to make payments	Traditional	179	3.56	0.930	-2.022	.043*
		Alternative	82	3.75	0.994		
SI2	I would choose a payment method that my peers were using	Traditional	179	3.12	0.990	-3.646	.000***
		Alternative	82	3.56	0.806		
PUSUM	PEER USAGE Summary variable	Traditional	179	3.34	0.840	-3.265	.001***
		Alternative	82	3.65	0.797		
* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$							

4.8.1 Summary of results (external factors)

The survey responses were used to compare the impact of demographic and shopping characteristics and other external factors between those who preferred traditional methods of payments and those who preferred alternative methods. Table 4-22 summarizes the findings for each of the research issues related to these external factors and whether any significant differences were found between the two groups. The implications of these differences will be discussed in detail in Chapter 6.

Table 4-22: Summary of research issues related to external factors

Research Issue	Significance of difference
RI7: Demographics	
Age	***
Income group	**
Gender	NS
Education	**
RI8: Personal Innovativeness	
General innovativeness	NS
Domain-specific innovativeness	***
RI9: Shopping characteristics	
Internet usage	NS
Online shopping experience	NS
Monthly purchases	NS
Institutional facilitators	
RI10: Payment method adoption incentives	NS
RI11: Security assurances	*
Usage and Availability	
RI12: Market reach and presence	***
RI13: Peer usage	***

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

4.9 Respondents' comments

In the last part of the questionnaire respondents were asked to express any comments they had about the questionnaire and about any aspect of paying online that they felt they wished to add. For this question, five respondents provided comments which are included here:

> *Confidentiality, security and privacy protection are very important when doing online shopping or payments*
>
> *Security of information is extremely important*

I have heard of PayPal, but I don't actually know what it is, or how to use it.

It has opened up my mind to things to consider in an online transaction

When more secure ways become available to make purchases online (ie. secure sites microchip facilities for the public to use) more people will use it. But because a majority of the population is only 60% convinced it's safe not as many people will use it for fear of identity theft, online bank theft and guarantee the items will arrive

4.10 Interviews

In addition to the online survey, interviews were conducted over a period of two months during 2009 with a selection of consumers who had shopped and/or paid for goods and services over the Internet. The questions were open-ended and largely focused on their use of specific payment methods, addressing their awareness of the online methods, their reasons for using/not using them, the types of purchases that they made, their understanding of the basic principles underpinning the payment process and technology, and the strengths and weaknesses of the payment method from their perspectives. Of the 13 males and 10 females who were interviewed 4 were teenagers below 18 years; 13 were under 50 years and 3 were 50 years and over.

The comments and views of the interviewees are categorized and summarized below:

PayPal

Seven of the 23 interviewees had never heard of PayPal. Those that had, but had never used it, said that it sounded complicated; they did not understand what the process entailed; how it worked; or what it could be used for. When told that they could use PayPal to send money to a child at University, send money out of the country or split the cost of a meal with family members, co-workers or friends, most of the interviewees identified a potential use for the payment service and expressed an interest in looking into it.

Among the interviewees who had used PayPal, the majority had made PayPal payments for eBay purchases. When asked why they used this method to pay for

purchases, one interviewee said that once enrolled "you just use your email address and a password and you never have to remember your credit card details again".

The following comments were recorded:
"I feel safe paying for purchases from merchants who I have never come across before"
"I wish it was available on more websites"
"It's so much easier than having to remember my credit card number each time"
"I prefer to pay from my bank account……I can do it with PayPal"
"….it's very convenient and private"
"I wanted to dispute a PayPal payment but I found it hard to get any customer service (from the company) over the phone"
"I tried creating an account but I found it too hard"

Online Debit Cards

All of the interviewees were aware of how debit cards operated through their banking facilities and their use in EFTPOS transactions but less than half knew they could use debit cards from payment card providers to pay for goods online as they would a credit card.

When asked how they paid for purchases online, two of the four teenagers who were interviewed stated that they had used the credit card of their parent or sibling to make an online purchase. The reason given was that many websites only accepted credit cards and, as they did not have access to a credit card of their own, they had little choice. They also complained that their inability to use their own funds to make payments was a stumbling block to making personal purchases.

Other interviewees commented that the debit card gave them the best of both worlds – the accessibility of a credit card while allowing them to spend their own money. However, none of the interviewees was aware of the extent of their liability in the event their card was used fraudulently.

The following comments were recorded:
"My dad says I can get a Visa Debit Card for Christmas".
"I want to manage my own money and buy stuff when and where I like".
".... can control my spending if I only spend the money I have"

Credit Cards

When asked about sites that offered credit cards two interviewees believed that a Web merchant who accepted major credit cards was trustworthy. On the other hand, another said she was reluctant to turn over her credit card details to a site that was not well-known. One interviewee said he had heard some "horror stories" about stolen credits cards and would only pay online if there was another option that was more secure. Another had responded to a side advertisement on a website she was visiting offering slimming pills for the price of the postage. She signed on and paid using her credit card. On inspecting her credit card statements over the next few months she discovered transactions from overseas that she had not commissioned. They ranged in value from $45 to $95. She contacted her issuing bank, cancelled her card and had her money refunded after completing and submitting a payments dispute application. However, only 12 of the interviewees were aware that there were laws that protected them from the fraudulent use of their credit cards or that their maximum liability was $50.

The following comments were recorded:

"I thought that you could only pay by credit card at a website"

"I already knew how to use a credit card ……. paying online with it was easy"

"*The credit card fees and interest rates are too high for me"*

4.11 Conclusion

This chapter reported on the analysis of the survey data resulting in a description of the use of payment methods by online consumers and provided an insight into what factors facilitate their use. The chapter started with a descriptive analysis of demographic and shopping characteristics and identified the two groups of respondents in terms of their usage and preferences for traditional and alternative types of payment methods. The two groups of payment types were compared based on the 14 research issues identified in Chapter 2. A series of statistical tests was conducted to identify differences in perceptions towards the salient attributes of payment methods and the factors that were likely to influence the acceptance of

alternative payment methods. Chapter 6 provides further discussion about the implications of the findings and the significances of the differences between the traditional and alternative payment type groups.

CHAPTER 5 - **MERCHANT CASE STUDIES**

5.1 Introduction

In light of the competing interests of online merchants and consumers arising out of the payment of purchases, a separate, exploratory research project was undertaken to gain insight into the nature and extent of the usage of different payment methods by online businesses and some of the challenges they face as a consequence.

Case study interviews of five online merchants were carried out with a representative from each of the businesses. The representatives included an owner, a development manager, a website manager, an accountant and a strategic planning manager. The merchant websites represented distinctly different business models and levels of e-Commerce sophistication.

5.2 Case study participants

The search for participants was started by identifying potential online businesses that the researcher had either personal dealings with as a customer; previous contact through a representative of the company; acted as a consultant to the business; or encountered through email campaigns and other media. An introductory email was sent to the list of 78 potential participants explaining the intent of research and that the email be forwarded to the person most appropriate and competent to respond to the invitation to participate in an interview. The nine that responded favourably were sent a sample of the types of questions by email and four of the respondents decided that they did not feel qualified enough to answer the questions. The remaining five were requested to specify a time convenient to them to be interviewed by phone. All participants wanted their identity to be confidential and have been labelled A to E to respect their wishes. Table 5-1 lists the participating online businesses in this study. The level of e-Commerce maturity was rated based on the number of website features identified by the respondents ranging from basic information about the business through to automated links to back-end systems.

Table 5-1: Case study participants

Case	Business Type	Main Product/Service	Type of goods/services	e-Commerce sophistication
A	Retailer	Grocer	Physical	High
B	Charity	Donations	Service	Medium
C	Manufacturer	Mobility devices	Physical	High
D	Retailer	Books & Software	Physical	Low
E	Retailer	Small goods	Physical	High

5.3 Case study questions

The interview questions followed a semi-structured format (see Appendix B) to ensure that key areas of the research were covered. As suggested by Sutcliffe (1999) and Patmore (1998) the questions were prepared in advance to minimize bias and eliminate asking leading questions on the part of the interviewer. Open-ended questions were used to encourage free participation in the interview process as recommended by Zikmund (2003) and Cooper and Schindler (2001) and closed questions were used to collect demographic information. The interview protocol included questions about the organization, the company's current usage, the challenges faced and their future payment plans.

5.4 Interview and transcription process

The interviews were all started with an introduction followed by a brief overview of the objectives of the study. Questions from the interview protocol were asked and, where necessary, the participants were prompted with related key words and phrases to probe for relevant responses and ensure that the interviewees were kept on track. The interviews ranged in length from 35 to 60 minutes. Some of the sessions were tape recorded and, where the respondents were not comfortable with being taped, the interviews were recorded by hand. In some instances further clarification to responses was obtained via email.

5.5 Synopsis of interviews

This section provides an overview of the results of the case study interviews, including a description of the businesses. The focus of the interviews was to determine the types of payment methods being offered, the benefits and challenges they have for the business, and plans to adopt alternative payment methods.

A short description of the organization is provided followed by a discussion on the firm's payment method usage. Any information that is likely to make the identification of the business possible is omitted. The cases are presented in the order in which they were interviewed. It must also be noted that a significant shortcoming in conducting a comprehensive study of online merchants, particularly with respect to security, transaction volumes, fraud and chargeback statistics, and future plans, is the reluctance of businesses to divulge such information outside of a select few key employees within the organization. The threats of the possible loss of trust, reputation, and competitive advantage have been cited as reasons for reticence on the part of the interviewees. Several of the merchants who were invited to be interviewed and declined had offered similar reasons for not wishing to participate at all. Direct quotations from interviewees are presented in italics to support the discussion where relevant.

Firm A

Firm A is an extension of its grocery stores that have branches in and around Queensland. It provides an online service to households, businesses and other retailers in selected suburbs in the major metropolitan areas. Customers order their groceries through the website and the goods are picked at the company's warehouses and delivered to the customer's delivery address by refrigerated trucks. The company has been in operation for some 10 years. There are around 500 personnel supporting the online service in various capacities that include personal shoppers who pick the products off the warehouse shelves and customer service representatives who deliver the goods to the door. The purpose of establishing an online presence was to offer an alternative distribution channel for customers who cannot or prefer not to visit the physical stores.

Typical individual purchases are in the range of $200 to $300 and the company processes an average of 75 000 transactions in a month. A small (and currently, not significant) percentage of orders come from overseas usually on behalf of families based in Australia.

Payment fraud is relatively low largely because the physical address of the customer is known and the delivery of the goods is made in person. Denial of receipt of goods, therefore, is difficult. Also, payment is finalized before delivery or at the time of delivery after in-house identity checks are conducted.

The website displays a privacy and security policy link predominantly on its homepage. The policy explains why customer information is being captured, how the information would be used, who has access to this information and how customers can access their personal details if they wished to. It provides the facility to opt out of direct marketing campaigns and explains the use of cookies and the information they hold. Also on the website are details of the security measures in place regarding encryption, SSL, and the use and storage of credit card numbers.

The website currently supports online ordering through a shopping cart with online payment capabilities and customers are able to register their account details through the website. The need to allow customers to track orders was not considered necessary at this stage, but the payment facility is automatically linked with their back-end accounting systems.

Presently the dominant method of payment is via credit cards. Customers enter their credit card details during the ordering process, but the card authorization and settlement is handled manually after in-house checks and the final picking is completed. The transaction is completed this way because the final bill can vary depending on the availability of certain items. Another option is through mobile EFTPOS (MEFTPOS) where customers pay on receipt of the goods. Credit cards dominate the payment method usage followed by MEFTPOS and accounts based payments.

According to Firm A, its choice of a payment method is primarily based on the needs and demands of customers and the payment instruments with which they are most comfortable or have available to them. These are usually based on the most popular ones in the marketplace.

Other factors that play a part in the choice of methods are the costs associated with implementing and managing the payment infrastructure and the issues of security that impact on their use by customers. "*Ensuring that the transactions can be completed easily, quickly and securely is of paramount concern when it comes to choosing a payment method."*

On the issue of the importance to the company to offer online and alternative payment methods Firms A's response was: "*Ensuring that the company is paid for the goods it delivers efficiently, reliably and securely is a requirement for any business and providing the payment options that suit the company's and its customers' needs is vital to the survival of the business. The payment options that are provided currently are fairly broad to cover the vast majority of the existing customer base. There are other options that are gaining traction in the marketplace and these are being investigated to determine their viability."*

Among the alternative payment options Firm A has considered PayPal for the long term, but *"the lack of demand from the existing customer based and the infrastructure costs do not make it an imperative for the short term."* The potential for Visa and MasterCard Debit card as a payment option was not considered at this point in time, but Verified by Visa and SecureCode were under investigation. *"While there is currently a strong media campaign for the Visa and MasterCard Debit Cards targeted to the young, it will be a while before it gets anywhere near the level of credit card usage."*

In response to the question on problems related to online payments Firm A said that because there is a time lag between the order and the delivery of the goods the payment details are verified using in-house developed checks which to a large extent have mitigated the potential for fraud to a relatively insignificant level. The company is in the final stages of complying with the Payment Card Industry Data Security

Standard (PCI-DSS) requirements. The company complies with the provisions of the Privacy Act.

While the number of chargebacks that the firm experiences is relatively low, mainly attributed to the fact that the catalogue items are usually familiar to customers, care is taken to ensure that customers are aware of the redress mechanisms in place and the contact details are prominently displayed on the website. The delivery of the goods takes place within a day or two and first time customers have a $750 limit placed on their first order and their personal details are scrutinized and verified before their order is approved. The characteristics of the order are also checked to see if they are not, for example, mainly orders for liquor or cigarettes.

The processes are in place, and were expected to be completed soon, to make the company PCI complaint. The compliance could also impact on customer's confidence in the company's website and business processes and militate against any future risks of legal claims by conforming with any regulatory requirements set out by government, industry and financial bodies. "*The tokenization of credit card details will help minimize the risk of internal fraud."*

The credit card processing system in place handles a very large volume of transactions. The average payment value of $200 poses no problem for the card processing systems to handle economically.

As regards innovativeness and keeping up with technological developments the company sees itself as early adopters of proven technology. "*The use of MEFTPOS is a case in point where our company was amongst the first to implement this as a solution to the problems of offline payments. Compared to our competitors, we consider ourselves ahead in terms of technology uptake, its website features and functionalities, and its implementation of business processes."* Both the company and its major competitor offer the same payment options to their customers. Some of the smaller competitors offer PayPal for the reason that PayPal's brand name may help mitigate any consumer confidence fallout that may arise from the absence of the kind of trust that the larger, well-establish competitors enjoy.

As regards market reach and presence of payment methods Firm A's response was that the existing large customer base of credit card users has made it essential to provide this option from the outset. *"However, any shift in attitudes towards alternative payment methods is being monitored closely and the company is prepared to investigate alternatives as they become more and more popular in the marketplace."* Competitors are also being monitored for anything that they are offering that could give them a competitive advantage.

Firm A aims to raise consumer confidence through upgrading the back-end of the business to ensure PCI DSS compliance. Merchant guidelines on online transactions provided by the Australian Competition and Consumer Commission (ACCC) have been studied to ensure that the company's website adheres to recommended best practice procedures.

Being a virtual part of the whole company structure, the online business has had to *"ride on the coattails of the credit card payment agreements forged by the company."* The influence of banks, payment service providers and card associations on payment method decisions has been minimal. The MEFTPOS payment option has provided opportunities to investigate various options with service providers.

Firm B

Firm B is a not-for-profit incorporated charity organization engaged in humanitarian relief projects in Australia and overseas. It receives hundreds of donations a month over the Internet, the telephone, through online bank transfers, postal orders and cash. Established in 1994, the organization's website has been in operation since 2000. There are 12 employee based at their offices in New South Wales and one of the employees was trained to maintain the website.

While the main objective of setting up the website was to communicate their work, the website also proved to be a very efficient and convenient way for people around Australia and overseas to make donations. Donations via the website range from as little as $2 to thousands of dollars, and they receive an average of some 500 online donations a month which varies over the year depending on the occurrence of disasters, religious festivals and the impact of their marketing campaigns. *"Some*

months we get a high volume of donations and small donation amounts and other months it's the reverse – low volumes but large donations."

Until recently donors submitted their payment details into a website form which was then processed manually offline using an EFTPOS terminal. *"From what we hear some people were worried about handing their credit card details to us – it's also a big responsibility keeping their credit card numbers safe".* The new revamped website now supports secure credit card donations via a payment gateway directly from their website. *"Whereas in the past we had to re-enter the credit card details and follow up the donor when a transaction was declined this system saves us heaps of work – it's a huge burden off our shoulders."* However, Firm B found that the technical skills required to integrate the payment gateway into their website was quite considerable and beyond their capabilities and they were required to call in a web developer. Firm B was looking at ways to process small donations online and more cost effectively. *"The credit card transaction fees for small donations are too high and we have to look for a way to reduce these costs."*

Another urgent issue that is being addressed is providing donors with the capability of making recurring payments online and securely. Donors currently phone in their credit card details and the payments are processed manually at each payment period. *"We have an urgent need to automate this side of the business because many of our donors wish to make monthly donations using their credit cards."*

Plans are underway to incorporate a PayPal donation button as an additional payment option and to take advantage of the discounted rates that PayPal offers for non-profit organizations. *"We also want to encourage other organizations and individuals to incorporate PayPal donation buttons on their websites to collect monies on our behalf".* It was felt that by offering PayPal and other payment methods the firm could widen its potential audience to include those who already have PayPal accounts as well as those who did not have credit cards or did not want to use credit cards over the Internet.

Being able to provide payment methods that were easily at hand, easy to use and convenient to donors is very important to the organization. *"Many donations are*

emotional decisions made on the spur of the moment – these can easily disappear with time".

Firm C

Firm C is a designer and developer of mobility healthcare products for the physically challenged. The company is a sole proprietorship with a single owner-manager who, along with his son, makes both the firm's day-to-day and management decisions. The company began in a small warehouse located in Queensland marketing to re-sellers such as chemists and heath care stores. To date, Firm C has commissioned a number of companies in Asia and Australia to manufacture products designed to their specifications and standards.

The initial idea was to service the local area but the demand for its products from individuals, hospitals and medical practitioners from around the country and overseas forced the company to review its business strategies and to consider selling directly to the public while continuing its business relationships with its existing re-sellers. The company took the initiative in 2005 to develop their existing brochure-styled website into a relatively sophisticated e-Commerce site that includes the capability of processing online payments, allowing for product customization and tracking of orders, and marketing parts, products and services to other businesses.

Firm C accepts customer payments via a number of means including COD, cheques, and credit cards over the telephone and online credit cards payments. While credit card payments via email are also accepted and processed manually this method is not encouraged. *"Many people are unhappy giving us their credit card details by email so we accept their orders by email, but then phone them to get their card details"*.

The online credit card processing facility has recently been implemented using the services of a payment gateway. Customers enter their credit card information on a secure hosted page, the credit card transaction is authorized automatically and monies deposited directly into the company's bank account. *"It was quick and easy to set up and we don't have to worry about keeping our customer's credit card details"*.

About 45 percent of their total revenue is consumer business and the rest is business-to-business (B2B) with an increasing number of overseas (mainly from New Zealand, Fiji and the Pacific Islands). Re-sellers get an individualized interface where purchasing managers log on and view catalogues with wholesale pricings. These orders generate transactions of high value ranging from $2 000 to $50 000 and the business is currently relying on credit cards and offline payment methods, such as cheques, for these online business transactions, resulting in delays in receiving funds. There has been a recent shift to Internet bank deposits, direct debits and BPAY but all of these methods require the payer to leave the website to conclude the transaction. A payment option that is currently under investigation allows customers to pay for purchases using their Internet banking facilities without having to leave the firm's website.

The number of fraudulent credit card transactions is considered low (as a percentage of their online sales) but with predicted online revenue growth this might become a concern for the business. Concern was also expressed about the vulnerability of the computer systems and steps were in place to solicit the advice of consultants to audit the security of the systems. Firm C has noticed no significant demand from customers to introduce alternative payment methods. *"Our customers seem to be happy with the way things are"*.

Firm D

Firm D is a campus book store supplying university books and stationery mainly to the student population locally and overseas. The website is managed by the store manager but decisions regarding major enhancements to the operational aspects of the website need higher approval.

Online orders are taken via a shopping cart and a secure payment page. Customers are given the option to either enter their credit card number on the form or fax or phone in their credit card details. The credit card details are processed manually. Freight charges do not show up on the shopping cart and are computed at the point of sale. Customers are given assurances that no credit card details are stored on the company's database. A downloadable order form provides payment options via cheque, money order and bank draft.

While only selected staff members are granted access to information submitted by the online order process, Firm D is concerned about having to handle credit card and other personal details so a business case is being prepared for implementing an independent payment gateway. PayPal, as an alternative payment method, is also under consideration. These moves will help in speeding up and automating the payment handling and processing part of the order processing, and provide options, especially for its customers who might be reluctant to provide their credit card details to the book store or do not have access to credit cards.

There are no provisions for customers to register at the website or to create an account. Returning customers have to enter all their details each time they make a purchase. The website would benefit from more comprehensive assurances about the security mechanisms in place when payment is being made by credit card and what payment guarantees are in place in the event of the fraudulent use of the customer's credit card arising out of transactions made at the shop's website.

Firm E

Firm E is a discount retailer selling a range of merchandise exclusively online. The items for sale include electrical and electronic appliances, stationery, beauty products, tools, DVDs, and related merchandise.

The company offers a range of payment options both offline and online that include popular credit cards, BPAY and Direct Deposits. Cheques are not accepted. All online payments are conducted using digital certificates and customers are assured that their credit card numbers are not stored by the company. *"We are proactive about security - we pay a company to attempt to breach our server security every day"*.

For online credit card payments the customer's details are entered into a secure page at the firm's website and submitted directly and securely via a payment gateway. *"It was a steep learning curve getting this up and running – choosing a provider, setting up and integrating the facility (and) obtaining a merchant account – not even taking into account the fees for each transaction – all part of the cost of doing business, I*

guess". By opting for a hosted payment scheme, the company removed all payment data interaction within their environment.

To pay for an order with BPAY, the customer selects BPAY as their payment method and the company sends the customer an email with a Biller Code and Reference Number. Once the payment is made through the customer's bank, the company is automatically notified and the order is processed.

The website displays the McAfee trust seal to indicate that they abide by best practice procedures in protecting their servers from hackers and other threats, and the TRUSTe trust mark to assure customers that their information and privacy practices are being regularly reviewed for compliance.

The company also offers pre-approved customers the option to purchase goods at its website interest free for 90 days so that they can "buy now, receive goods now, and pay later" without the need for a credit card.

As a solely online company, Firm E sees the need to build long term relationships and trust with its customers as essential to its survival in the e-Commerce environment. Through its security and privacy policies the company has gone to great lengths to assure its customers of the safety and security procedures it has put in place.

Firm E was reluctant to discuss the extent of fraud and chargebacks they were experiencing other than to say that they were constantly reviewing their risk management strategies in order to reduce losses in revenue and goods. To further reduce chargebacks, the company is investigating the implementation of 3D security schemes, Verified by Visa and MasterCard SecureCode.

While currently focussing on the Australian and New Zealand markets the company sees opportunities in expanding their reach to other overseas countries. *"This presents a new set of problems for us – new fraud and payment challenges, national laws, currency issues and language barriers"*.

5.6 Cross-case summary of interviews

Cross-case analysis was used to examine the main themes that emerged from the interviews. Table 5-2 summarizes the key issues related to payment methods from the merchants' perspective.

Other than Firm B all the other businesses were selling tangible products that had to be delivered to a physical address. In the case of Firm B, there was no exchange of money for goods purchased. Also, there is a time lag between payment and delivery, giving these companies an opportunity to authenticate and obtain authorization for the payment before executing the order. A company selling immediately downloadable digital goods (eBooks, music, games, software etc.) would have a more restrictive choice of payment methods to ensure that payment is received soon after the order is placed and before the product is consumed.

All firms had as a minimum a secure order form and shopping cart. Those firms that offered online credit cards as a payment option used the services of a payment gateway, thereby averting the responsibility of securing credit card details on their premises. Firms who opt for managing most of the payment processing themselves would have the added responsibility of obtaining PCI DSS compliance.

Although credit cards are the dominant payment instrument Firm E reported an increasing use of PayPal among its customers. Most of the businesses reported low levels of fraud and chargebacks as a percentage of total online sales. Actual figures related to fraud and chargebacks were difficult to obtain from the interviewees, but concerns about fraud and chargebacks were specifically raised by three of the five firms.

Overseas sales were relatively low compared to domestic purchases and the potential impact on their payment strategies was highlighted by Firm E who were looking to expand into this market. Only Firm A retained credit card details on their premises but was well aware of the risks of doing so. The other firms preferred to devolve this responsibility to the payment service providers. PayPal was being investigated by

three of the four firms who were not currently offering it as an alternative payment option.

5.7 Conclusions

This chapter presented the findings of the case study interviews with five online merchants. The primary aim of the interviews was to understand the payments environment from the perspective of the merchant. There are often competing requirements between merchants and consumers when it comes to offering and using payment methods. For example, a delicate balance must be developed between (1) the merchant's need to implement safeguards to protect themselves from fraud and the customer's desire for a quick and user-friendly payment process, and (2) a merchant's need for as much information about its customer as possible for security and marketing purposes and the customer's wish for privacy and, in some cases, anonymity. The discussion of consumer survey results in Chapter 6 must be understood within this context.

Table 5-2: Payments profiles of case study interviews

	FIRM A	FIRM B	FIRM C	FIRM D	FIRM E
Business Type	Retailer Online grocer	Charity Donations	Manufacturer Mobility devices	Retailer Books & Software	Retailer Small goods
Website payments capability	1. Shopping cart 2. Secure order form 3. Customer registration 4. Back end integration	1. Shopping cart 2. Secure order form 3. Payment service provider	1. Account registration 2. Shopping cart 3. Secure order form 4. Hosted payment gateway	1. Shopping cart 2. Secure order form	1. Account registration 2. Shopping cart 3. Hosted payment gateway 4. Order tracking 5. Back end integration
Volume of online transactions per month	75 000	500	800-1200	Seasonal	Millions
Type of goods/service	Physical	Service	Service	Physical	Physical
Payment Options	1. Credit cards (Store card, MasterCard, Visa, Diners, American Express) – processed offline 2. Mobile EFTPOS	1. Credit cards (MasterCard, Visa) – processed online by payment service provider 2. Telephone 3. Direct bank deposit 4. Postal order 5. Cash	1. Credit cards (MasterCard, Visa) – processed online by payment gateway 2. Credit cards via telephone and email 3. Cheques 4. Postal orders 5. International and local bank transfers	1. Credit cards (MasterCard, Visa, American Express) – processed manually 2. Credit cards via telephone and email 3. Cheques 4. Money order 5. Bank draft	1. Credit cards (MasterCard, Visa) – hosted payments 3. BPAY 4. Direct deposits 5. Pay later
Most popular payment method/s	Credit cards	Credit cards	Direct deposit, credit cards	Credit cards	Credit cards, PayPal
Range of payment values	$10 to $1000	From $ 2 to around $5000	$250 - $10 000+	$20-$800	$5-$5000
Average payment value	$200-$300	$250	$500	$150	$50

Table 5-2 (continued)

	FIRM A	FIRM B	FIRM C	FIRM D	FIRM E
Online vs. offline payments	100 percent	50 percent online	30-40 percent online	30 percent online	100 percent online
Overseas sales volume	Low	10 percent	15 percent (and increasing annually)	20 percent	5 percent
Privacy and security policies	Adequate	Minimal	Adequate	Minimal	Comprehensive
PCI DSS compliance	In progress	No	No	N/A	N/A
Fraud	Low	Very low	Low	Low	?
Chargebacks	Low	Very low	Low	Low	?
Storage of payment details (including credit card information)	Secure in-house database	Payment service provider	Payment service provider	On print	Payment service provider
Payment options and mechanisms under consideration	PayPal, Mobile, VbV and SecureCode, online debit cards	Recurring payments, PayPal, Mobile, pre-paid cards	Direct Internet transfers from website	Payment gateway, PayPal	VbV and SecureCode, online debit cards

CHAPTER 6 - **CONCLUSIONS AND IMPLICATIONS OF CONSUMER SURVEY FINDINGS**

6.1 Introduction

This chapter discusses and integrates the research findings from the online consumer survey and interviews that were summarized and reported in Chapter 4, as well as, where appropriate, the findings of the online merchants from Chapter 5.

As previously outlined in Chapter 1 the overall research problem identified in this thesis reads as:

> *What are attitudes and perceptions of online consumers as they relate to payment methods and are payment method preferences associated with particular external influences?*

In summary the focus of this aspect of the research is to provide:

1. An understanding of the consumer attitudes towards, and perceptions of, the salient attributes of traditional and alternative payment types.
2. An increase in understanding about the relationship between external facilitators and payment method preferences.

Chapter 2 opened with a comprehensive review of the literature on consumer innovation adoption, consumer online shopping behaviour and the attributes of payment methods. The unique characteristics of payment methods and payment systems were discussed. From this review, a preliminary framework for analysis was developed to explore the issues identified above.

In Chapter 3 the research methodology was discussed and justified and the online survey that was administered to online consumers was examined.

Chapter 4 presented the findings from the consumer survey data, including tables and charts that summarized the demographic information and nature and extent of payment method usage. The chapter then reported the results of the statistical tests.

Chapter 5 presented the findings of a selected sample of online merchants arising out of a preliminary study that examined the challenges and benefits of payment methods from the merchant perspective.

This chapter is structured as follows. Section 6.2 will discuss the conclusions drawn from the research questions, including theoretical implications, followed by Section 6.3 which examines the implications for policy making and practice. Section 6.4 will examine the limitations of the research, followed by an identification of areas for further research in Section 6.5 and then conclude with some final remarks in Section 6.6.

6.2 Conclusions about research questions

Findings for each research issue are summarised from Chapter 4 and explained within the context of this and prior research examined in Chapter 2

6.2.1 Nature and extent of payment method usage

While the cost of shipping, long delivery times and uncertainty around returns policies have prevented some consumers from shopping online, the results from the survey show that concerns around the security of transactions remains the primary barrier to consumers paying online. This lack of confidence and trust can be key factors in lost online sales. Over half of all the respondents to the survey were concerned about the security of paying for goods and services online. One of the main reasons given is fear of providing personal financial information over the Internet. Basic trust in the legitimacy of a site and its ability to safeguard customers' information, deliver the goods or services requested, and offer clear policies to accept returned or damaged merchandise were other reasons cited. From the merchant side the findings from the case studies show that online merchants are also mindful of the need to secure their customer's personal data and attempt to do this either by conforming to the industry standards for data protection or entrusting the responsibility of handling the processing of transactions to third party payment processors or service providers.

6.2.2 Consumer perceptions of the salient attributes

While previous studies (Gerdes et al. 2005; Gerdes & Walton II 2002) on payment methods have contributed to an improved understanding of how consumers pay, less is understood about their attitudes and perceptions of the payment methods they use. Schuh and Stavins (2007) have shown that the fundamental characteristics of payment methods are important determinants of payment usage. Through past experience and usage, a consumer can reflect on how, and to what extent, the attributes of the payment method meets his/her needs. Drawing together from the literature on payment systems and the taxonomy of payment characteristics (developed for this research through the Delphi study), this section discusses the relative assessments of survey participants of each of the six salient attributes embodied in payment methods, namely, confidence, confidentiality, convenience, cost, control and coverage.

Confidence in payment methods

As described in Chapter 2, confidence in a payment method refers to the expectation on the part of the consumer that any payment transaction they initiate will be executed and completed securely and successfully every time they use it to make a payment. Trust and confidence are closely linked to a consumer's choice of payment method and providers of new payment methods face a challenge that their products are trustworthy, efficient and reliable. This includes convincing the online consumer that their system is secure and that, by using their products, users are less likely to fall victims to identity theft and fraud. As one of their primary objectives, developers of new and innovative payment products have had, in their sights, over and above lowering transaction costs and offering convenience to consumers, the building of trust through enhanced security mechanisms and the mitigation of risks arising from breaches in the payment process.

Research by Jupiter Research, as reported in Payment News (2008), suggested that consumers' confidence in a payment method also greatly influenced merchant selection – often outranking promotions, discounts, and bonuses such as frequent shopper credits, free shipping, and other inducements that retailers typically use.

The results of the survey showed that a significant difference in overall confidence in their respective payment methods existed between those who used traditional payment methods and those who used alternative methods to pay for goods and services in the

online environment. In particular, users of alternative payment methods were in agreement in their response to statements that related to the reliability and trustworthiness of their payment methods, as well as in the payment process itself.

They also were more likely to agree that there were adequate rules, regulations and policies inherent in the system to protect them from any risks associated with the use of the payment method, and disagreed with the statement that suggested that their payment details could easily be used for fraudulent payments. Payment service providers, such as PayPal, have developed consumer protection programs to promote consumer confidence both in the merchants who offer the services as well as in the services themselves. Such programmes have helped reassure users that they are able to recover funds in the event of non-delivery of goods or services or any significant misrepresentation on the part of the merchant. In addition, the increasing use of anti-fraud protection tools by merchants and payment providers and the protection of private information from merchants help to reduce the fraud and loss rate and instil greater confidence in the payment system. The survey responses also suggest that the offer of 'payment guarantees' and the ability on the part of the consumer to dispute a transaction, when necessary, will enhance confidence in the payment method.

With respect to the processing time of their payments, users of alternative payment methods appeared satisfied with the length of time it takes to process their payments. The issue of time can be attributed to perceptions related to the sign-on and authentication process, the response time for authorization and acceptance of the payment, and the actual transfer of the funds to the appropriate accounts where the consumer has full and immediate use of the monies. In contrast to traditional methods, new payment methods increasingly seek to enhance the payment experience by reducing the friction generated in the movement of funds from the authentication phase through to the transfer and the final depositing of the funds. Online credit card processing, for example, goes through 10 payment points compared to iTunes (3) and PayPal (7) (Wired 2010).

However, there were no significant differences between both groups of users concerning the execution of the payment method or its availability and both tended to be satisfied with these aspects of their payment methods. While systemic risks and processing failures are inherent in any computer-based system, traditional and established alternative payment methods (particularly the ones based on traditional

payment instruments) have been on the market sufficiently long to have ensured that such problems from the user's perspective are not commonplace.

For all of the stakeholders in the payments industry, maintaining confidence in the payment system is of paramount importance. Because payment is such a critical function, payment systems have to be fully reliable. Systems that could suffer from any significant compromises in security are bound to erode confidence in e-Commerce in general and in online payments in particular.

Confidentiality of payment methods

In the context of this study, the salient payment attribute, *confidentiality*, is related to the amount of personal and private details considered necessary to finalize a payment transaction; the storage and security of this information; and the subsequent usage of these details.

The survey results showed that alternative payment type users and traditional payment users differed very significantly overall in their attitudes towards the extent of confidentiality afforded by their respective payment methods. The results also showed that the groups differed in their perceptions about how secure their payment methods were and the extent to which the system protected their personal and payment details from being compromised during the transmission of transaction details. The use of two-factor authentication (for example, SMS verification and security keys) in recent payment methods and other standard and emerging security mechanisms (for example, SSL and trust marks and seals) have served to enhance security and the protection of privacy and confidentiality of payment information.

The survey results also showed that users of alternative payment methods were less inclined to believe that their payment methods required more personal information from them than they considered necessary, and were less concerned than users of traditional methods that their financial information would be retained by the merchant for future use and shared with other companies without authority. Instead of entering credit card and bank details each time a payment transaction is initiated, some alternative payment methods request an email address and password (after an initial sign-on) to start the payment process. Also, alternative payment service providers typically do not share financial information with third parties and do not allow merchants to see or retain credit card or bank account details. In the Jupiter Research survey more than half of the survey respondents considered the security of their

financial information as the deciding factor before making a purchase and felt more secure not having to enter their financial information at a merchant's web site, and at even the ones they trusted (Payment News 2008).

Both traditional and alternative payment method users were equally concerned about hackers and unauthorized persons gaining access to their stored personal and financial details. A 2007 Citrix publication reported that more than half of all Australians stated that their top security fears were about people accessing or misusing their personal details and about credit and debit card fraud (Citrix 2007). Supporting previous findings, a recent Sensis study reported that the most serious concern businesses have about e-Commerce is the security issue of people hacking into their computer systems (Sensis 2009). In response to these growing fears, the Payment Card Industry Data Security Standard (PCI-DSS), a global standard governed by the major credit card companies, established directives for entities that handle credit cards, with the goal of reducing fraud and protecting sensitive cardholder and authentication data.

There were no significant differences in the two groups regarding the perceptions of respondents to the survey on the belief that offline payment methods better protect privacy and confidentiality than did online methods. One implication that can be drawn from this is that, whereas in the past the offline use of credit cards was considered safer and more private and confidential than its equivalent online use (largely based on its card-not-present characteristic), greater confidence in online shopping and online payments is serving to dispel this perception.

Both groups, on average, were neutral as to whether their identities were being kept from others indicating a lack of awareness as to the extent that their personal details were being protected by the merchants and the payment service provider. They both did agree that their payments could be traced back to them suggesting that they did realize that they could not make anonymous payments as they would have in the offline world using, for example, cash.

It is expected that confidentiality is a major factor influencing consumer views about online payments and, in particular, the use of new, innovative payment solutions. Previous studies about attitudes towards the use of e-Commerce consistently find this to be a significant factor in payment adoption (DCITA 2006). Against this backdrop must be balanced the competing needs of merchants who may seek as much information as possible from their customers in order to reduce fraud, facilitate swift

and easy completion of the payment steps and enhance customer relationships against the consumer's desire for a more transparent payment process.

Convenience of payment methods

The convenience of online shopping is closely associated with the ease with which consumers can pay for their purchases. The convenience factor of a payment method refers to the perceived ease with which the payment can be made by the consumer as well as valued-added features and functionalities that enhance the payment experience. A payment method's usability relates to the absence of complex procedural requirements before, during and after the processing of the transaction and the success of a payment method in the marketplace is largely dependent on its compatibility with the needs of the user.

The survey results showed that the traditional and the alternative payment method groups differed significantly on the issue of overall convenience with the latter more likely to agree that they found that their payment method suited most of their requirements with regards to its functional features.

As expected, while users of traditional payment methods, on average, agreed that they could also make offline payments with their payment methods, the alternative group disagreed. On the other hand users of alternative payment methods tended to agree that they could use their payment methods to pay individuals just as easily as well as merchants. Alternative payment methods have typically been developed to serve the online community of consumers rather than for offline over-the-counter usage. In contrast to traditional payment methods, such as credit cards and online banking, payments made to individuals using some alternative payment methods are relatively easier to make. P2P services, such as PayPal, have been designed specifically to facilitate this process.

The alternative payment group, in contrast to users of traditional payments, were more likely to agree that they could easily transfer funds between their accounts using their payment method. Payment services, such as PayPal, in addition to being able to facilitate the transfer of funds between users' bank, credit card and other accounts, can also be used on devices such as smart phones for mobile payments.

There were differences in responses as to the extent to which the two groups in the study believed they could use their payment methods to make different size payments from large to small value payments. The credit card was designed to cater for

medium-value payments and the cost of processing single low-value transactions (usually borne by the seller) do not make it suitable for business models that are based on small or micro-payments. The Australian Payments Clearing Association discussion paper (APCA 2009) on the online payments industry suggests that a payment method should, ideally, be able to handle a wide range of transaction values (from "low" to "high") and that while it may not be intended to handle high-value transactions, they could potentially permit these transactions to take place. Alternative payment services have been developed recently that can aggregate small-value transactions into larger value credit or debit card transactions for more economically viable processing. Payment methods designed to handle micro-payments efficiently are yet to gain traction in Australia.

Survey respondents who used alternative payment methods were likely to agree that the initial account setup and registration process required to use the payment method was relatively easy. In P2P systems, for example, the process typically involves entering the user's personal details, choosing one or more payment instruments and activating the account. Thereafter, access to the account usually requires entering an email address and a password. In many cases consumers who opt to use credit cards and bank facilities are also required to register with a merchant before advancing to the payment phase of the process. However, generally the requirement to pre-register or download additional software to use a payment method has often proved to be a major barrier to its widespread adoption. To be viable in the long run the payment steps should require a minimal number of keystrokes or clicks to complete a transaction and there should be a simple, if any, sign-up process.

Both the traditional and alternative groups of users found their payment methods easy to use, a time saver and compatible with the way they preferred to make payments while alternative payment users were likely to be satisfied with the features and functionally of their payment method. Payment methods that offer quicker response and are simpler to operate can improve the payment experience at the point of sale by reducing the time it takes to authorize a transaction. The ability to pay for goods and services from any location can be a significant plus factor for the adoption of online methods of payment. To be competitive with offline and traditional methods of payments, online systems must offer a high level of convenience to both merchants and consumers. However, the need for such convenience and ease-of-use on the part of the consumer can sometimes be in conflict with the merchants' desire to capture as

much customer personal and financial information as possible for marketing, personalization and verification purposes. From the consumer perspective, this has the potential to slow the payment process or, as seen from some of the case studies, limit the payment options that some merchants can offer.

Cost of payment methods

All payment methods involve some costs both to buyers and sellers. Consumers are likely to seek out lower cost payment options that minimise the cost of ownership, and so many payment service vendors often provide their services for free to buyers while charging the seller for the use of the service instead. In the case of credit cards, the effective price of using a credit card to make a payment is negative (once the consumer has decided to hold the card). Users of credit cards are effectively paid by their financial institutions to use the card through a combination of interest-free credit and reward points.

The survey results showed no differences between the groups in perceptions about costs arising from using their payment methods. Both groups did not consider the cost of setting up and using the payment methods and the cost of a payment transaction as being unacceptably high. Buyers are generally shielded from the direct costs associated with using a payment method but, in recent months, more online businesses are including a percentage surcharge to payments being made with credit cards to offset their costs. It is likely that this could impact on consumer perceptions about the costs of using credit cards to pay for goods and services, and as a result influence their choice of payment methods in the future.

Control over the payment process

Previous established theories in planned behaviour can be extended to this study to conclude that a user's perception as to the degree of control an individual has over a payment method and the payment process can influence his/her usage of the method. These perceptions are governed by factors that may impede or facilitate its use such as self-efficacy, which is the conviction that one can perform the payment process successfully and usually without any adverse consequences.

The survey results showed a significant difference between the two groups over the extent to which they believed they are able to control the payment process overall using their payment method. The alternative group were of the belief that they could

easily reverse a payment after they have made a payment to someone while traditional users tended to disagree they could do so. While users of PayPal, for example, can reverse payments online (if the monies remain in the payer's account and are unclaimed), the process to reclaim funds that have been finalized is usually a lengthy one notwithstanding the type of payment methods used.

Neither group believed that they could control any of the risks associated with using their payment method. The implication is that such control was outside of their hands placing reliance on the merchant and the payment service provider to mitigate any risks associated with using the payment method.

Both groups were likely to agree that steps involved to process a payment were predictable and that they were aware of what the process entailed. However, they did not believe that their payment method would allow them to cancel a payment once it was being processed.

Coverage of payment methods

Coverage, or reach, refers to how widely a payment method or system is accepted by merchants and others who receive payments. It involves a critical mass of consumers and merchants. If a payment method is seen by consumers to be readily available at the websites they visit and/or purchase from, then they are more inclined to want to use it.

Results from the survey indicate no significant difference between the traditional and alternative payment groups in terms of their perceptions about the extent of coverage and reach of their payment methods. As e-Commerce developed globally, the credit card, as the only existing consumer payment mechanism capable of being readily adapted to the online environment captured the bulk of online transactional activity. In recent years, however, payment services developed to support the expanding marketplace. PayPal, for example, attracted over 3 million active users and 30,000 Australian businesses in the five years of its operations in Australia. In addition to domestic growth, PayPal experienced growth in cross-border sales in 2009 with an increase of 32 per cent in cross-border payments as Australians increasingly shopped with overseas merchants.

The cross-border nature of e-Commerce activity and the growth in overseas purchases by Australian consumers has ensured that any viable payment method has to be capable of reaching beyond the domestic market. While credit and debit cards and

PayPal are widely available online payment methods for cross-border purchases traditional payment options that entail bank transfers, BPAY and EFTPOS are, if at all possible, mostly difficult and inefficient for overseas payments. The problem is that the funds transfer process often takes up to a week, or longer and can be expensive. Transferring foreign funds into local banks may require import/export documentation in many countries as well as trigger tax considerations and the changing international banking regulations can create administrative problems for payers and payees. This is borne out by the results of the survey which highlighted significant differences in responses to the question of overseas payments between the two groups of users. It should also be noted that, in reality, while PayPal can be accessed in over 190 countries and regions, there are countries, for example Pakistan, Bangladesh and some Middle Eastern countries, which are not as yet serviced by this provider.

The results from the survey also indicated that users of alternative payment methods would use their payment methods more often if they were offered by more merchants as an option. Greater reach and availability embody the network effect. Consumers are much more inclined to use a payment method that is widely accepted (or at least accepted wherever they are likely to shop online), and merchants are much more likely to offer a payment method widely used by their customers. The conclusion to be drawn here is that alternative payment methods will only be capable of quickly developing domestic reach through gaining a critical mass of use by Australian consumers and greater acceptance by Australian merchants. The alternative payment methods used mostly by respondents to the survey are variants on pre-existing card or account-based schemes with which most online consumers are familiar or have access to. New alternative payment schemes that do not require the use of credit/debit cards or pre-registration, and in some cases bypassing the banks and credit card companies altogether, have struggled to attain reach. For this and other reasons, an account-based service that uses existing financial institution accounts and existing payments infrastructure would have the best prospects of success in gaining widespread traction.

Summary

This section discussed the Australian payments landscape in the context of the results of the consumer survey and, where appropriate, the merchant case studies conducted for this research. While differences in perception and attitudes towards their payment

methods were highlighted there was commonality in response from the users of the traditional and alternative methods of payment on a number of the issues raised, implying a similar agreement/disagreement across the two groups.

6.2.3 External factors and payment method preferences

Previous researchers on innovation adoption and consumer behaviour (see Chapter 2) have identified a number of potential drivers of attitudes and behaviour. Alternative payment methods have been developed to cater for both consumer demand for an improved online payment experience and merchant need to lower shopping cart abandonment rates, payment processing fees, and raising the appeal of online shopping to specific consumer demographics (Mercator Advisory Group 2007). This section discusses the results from the survey to determine how respondents' demographics and external factors are associated with their preferences for traditional and alternative payment methods.

Consumer demographics and payment preferences

Socio-demographics have been known to affect an individual's propensity and intention to adopt new innovations. The results of the survey indicated that preferences for traditional and alternative payment methods differed significantly across the age, income and education groups.

The interest by younger consumers and lower income earners in the use of alternative payment methods such as pre-paid cards and debit cards can be attributed to a number of factors related to not being able to qualify for a credit card; not having a bank account (unbanked) or not having sufficient funds or easy access to a bank account (underbanked). Also, access to debit and pre-paid cards is relatively easier than applying for credit cards or opening bank accounts. Older people have become familiar and comfortable with credit cards through offline usage and are more likely to continue trusting in them for online payments. Greater awareness of the risks that are associated with online payments and the precautions that they can take to protect themselves, together with a better understanding of their legal rights in the event of disputes and fraud are also factors that may contribute to their reluctance to change to new alternative payment methods. While males and females were largely distributed

evenly across the two payment groups, the majority of respondents in both groups indicated some form of tertiary education.

Personal innovativeness (general, domain-specific)

Personal Innovativeness refers to the willingness of an individual to try out any new information technologies (Agarwal & Prasad 1998). Previous research (for example, Lu, Yao & Yua 2005; Parveen & Sulaiman 2008) has shown that the more innovative people are the more likely they are to accept new ideas, processes and technologies. While no significant differences were found between the two payment groups with regards respondents' general innovativeness, those in the alternative payments group reported a greater degree of innovativeness compared to the traditional payments group, particularly with regard to trying out and experimenting with new technologies.

On the other hand, responses related to their propensity to try out and use new payment products (that is, domain-specific innovativeness) was significantly different between the two payment groups with those with a preference for alternative payment methods indicating a greater awareness of new payment products and a greater willingness to use them. A domain-specific measure of innovation may also be an indicator of the adoption of a particular payment method, that is, any increases in domain-specific innovativeness are likely to result in increases in consumer adoption. Any conclusions arising out of these differences in responses would suggest that marketers should exploit these characteristics to enhance new payment product adoption as they will have implications for the promotion and communication aspects of any new product marketing.

Online shopping characteristics and payment preferences

Numerous studies have shown that heavy users of a technology or those with significant experience in similar technologies are more likely to innovate and adopt related new products. This is an expected outcome since heavy users of a product have acquired the ability or knowledge structure to predict outcomes for closely related products. In the context of our research, we would expect that shopping characteristics (Internet usage, shopping experience and number of online purchases) would be significantly different across the users who prefer traditional payment methods and those who prefer alternative methods of payment. However, while the

survey results revealed no differences between the two groups with respect to these characteristics, in our face-to-face interviews participants claimed that as their Internet skills developed, and the longer they used the Internet and the more they shopped online, the more confident they became about what they were doing, were less and less concerned about the safety issues with paying online and were willing to experiment with payment methods other than credit cards.

Payment method adoption incentives and payment preferences

Incentives to adopt an innovation can play a significant part on how an individual perceives the innovation. Incentives can be direct or indirect payments of cash or kind that are given to an individual in order to encourage behavioural change (Rogers, E.M. 1995). Offering incentives is one diffusion strategy that affects the perceived attributes of innovations, especially relative advantage, and thus an innovation's rate of adoption. Rogers (1973) drew the conclusion that incentives to use an innovation increases the rate of adoption of that innovation.

With regards to payment methods an online consumer who has several options to pay with has a powerful incentive to choose the payment method that provides the most rewards or, particularly in the case of online payments, offers the best guarantees against the risks of using the payment method.

While the survey results showed no difference in response to the influence of incentives on payment choice overall users of traditional payment methods indicated a tendency to be influenced by assurances of limited liability in the event of the fraudulent use of their payment method. PayPal offers consumers the opportunity to purchase a money back guarantee on certain transactions giving the consumer the option to return merchandise to PayPal in exchange for a reimbursement. Some financial institutions offer to credit a user's account with the amount of the loss in the event of a fraudulent transaction on their credit card. Payment service providers and card institutions have offered discounts and promotions to encourage usage. Buyers and sellers who indicate their preference for PayPal earn one percent cash back on every purchase they make with their PayPal debit card.

The use of incentives in the form of guarantees and promotional rewards and discounts are some of the strategies employed by payment method providers to encourage greater diffusion of their products.

Security Assurances and payment preferences

The perceptions of online consumers towards a payment method can be influenced positively by the assurances they are given through a variety of different signals that include industry oversight programs such as trust marks and trust seals, the rigour of the authentication process and security and privacy policies.

The survey results showed that security assurances were likely to encourage payment method usage across those who prefer traditional payment methods over alternative methods of payment. Respondents who prefer alternative payment methods tend to seek greater reassurances than their counterparts. The survey results indicate a significant difference in response to the extent to which the users of alternative payment methods sought out security indicators, possibly as an additional precaution arising out of the comparative newness of these payment methods in the marketplace. Trust marks and seals have been shown to enhance consumer confidence among online shoppers while best practice guidelines have encouraged online merchants to develop and display security and privacy policies that explain the payment process in order to assure consumers of the safety of shopping and paying online.

6.3 Conclusions about the research problem

The previous section discussed the findings of each of the research issues and, in so doing, addressed the research problem identified in this study, namely, to increase our understanding of consumer attitudes towards, and perceptions of, the salient attributes of traditional and alternative payment types and the relationship between external facilitators and payment method preferences. Factors identified in previous related research as well as new ones proposed for this study were used to develop a consumer payment usage and preference framework on which differences between users of alternative and traditional payment methods were studied.

6.4 Research contributions

This study has established the basis for a framework to study the payment behaviour of online consumers who pay for goods and services using various payment options. It reports on the differences that exist between users of traditional and alternative

payment methods with respect to (1) their perceptions of the salient attributes of payment methods, and (2) the external factors that influence their payment preferences.

The findings indicated that there are significant differences between traditional and alternative payment users over the extent of confidence and control they have in payment methods they use and their perceptions about the degree confidentiality and convenience inherent in them.

The findings also revealed that traditional and alternative payment users significantly differed in age income, education, domain-specific innovativeness, security assurances and usage and availability.

In addition, the merchant case studies provided valuable insight, from the merchant's perspective, into issues related to fraud, security, the viability of offering different payment methods, and business and marketing imperatives that can be compared and contrasted with competing consumer needs.

The implications that these findings have for theory and policy and practice are addressed in the following sections.

6.5 Implications for theory

This study identified and integrated variables that have been found to determine or influence consumer online payment attitudes, experiences and behaviour alongside the challenges and issues that merchants encounter in accepting online payments. A number of theoretical perspectives on the organizational and innovation adoption of computer-based Information Technology (IT) were assessed in Chapter 2 in terms of their ability to inform online payment method adoption. Many of the current adoption theories exhibited key shortcomings in capturing the complexities associated with online payments and their individual and organizational application. This assessment was done in the light of the unique characteristics of online payment methods.

This thesis also provided new perspectives on online payment methods, specifically addressing the issues, opportunities and challenges facing merchants and consumers. It took a multi-level approach because while a merchant's decision to adopt a payment method must take into consideration its own requirements it cannot be made independently of the impact any decisions it makes on its consumers as well. It also took a multi-dimensional approach because current acceptance models are too parsimonious to consider the richness of factors specific to online payment methods and the resultant merchant-consumer relationship. This research provides empirical support for factors such as confidentiality, convenience, security and privacy which have, in earlier e-Commerce studies proved to be barriers to e-Commerce adoption in general, to be just as applicable to payment method usage.

6.6 Implications for policy and practice

The growing trend in online shopping and online payments indicates a major shift in consumer behaviour. This change in human behaviour indicates that online consumer behavior is an important area of research. Understanding factors that distinguish between purchasers and non-purchasers may well be vital to retailers; both traditional and online. Internet retailers who zealously profile individuals' purchasing habits should be aware of population characteristics in order to retain their market and draw in consumers who do not make online purchases. Companies engaged in e Commerce will want to use strategies that influence Internet shoppers to change their behaviour from Internet shopping (searching online but purchasing elsewhere) to Internet purchasing. These strategies need to include user-friendly purchasing and payment processes to ensure success during initial purchasing attempts as well as measures to increase consumer trust.

Getting consumers to complete a transaction as the final step in the purchasing process requires addressing the factors that influence their perceptions about paying online and payment methods. A viable e Commerce website, therefore, should not only have an aesthetically pleasing and easily navigable interface and a well-designed merchandizing of its goods or services, but it should also provide payment options that are compatible with the needs of the consumer. As consumers' shopping and payment habits evolve, the number of online shoppers looking for alternative payment

solutions is expected to grow with consumers opting for innovative solutions that offer convenience, ease of use, security from fraud and enhanced buyer protection and greater choice and control (eBillMe 2009). As more online payment methods become available to consumers online payment providers will need to be more targeted and emphasize key benefits and differentiations to compete for their share of online consumer payments marketplace.

The results from the study identify a number of key areas that online merchants can address to improve consumer confidence and encourage them to complete the payment transaction process. Among the strategies that will help gain them a greater share of the domestic and international online market merchants will need to

- develop comprehensive security and privacy policies that are readily accessible to their customers,
- engender trust through mechanisms such as trustmarks, customer testimonials, and reliable and efficient payment processes,
- guarantee payments,
- develop effective dispute resolution processes; and
- provide payment options that address the varied needs of their target consumer markets.

6.7 Limitations

While the multi-mode methodology approach adopted in this research provided varied sources of empirical data, like any research, the present study has certain weaknesses. With limited academically sound research on payment systems available it was necessary to identify constructs that could be associated with this field of study from theory-based literature from a variety of related disciplines. The study, therefore, faced potential construct validity issues. As no proven survey instruments existed for the empirical examination of payment methods, it was possible that questions answered by subjects did not measure the constructs for which they were intended. Some multi-item scales seem to be less reliable than was expected due in part to the extent to which the salient attributes and constructs were developed. Although the study adopts items from previous studies, new sets of items had to be developed

specifically for the online consumer, some of which may need to be re-phrased for measuring certain of the salient attributes and external influences. While a pilot study and a rigorous Delphi study reduced this threat significantly, it still remains a potential weakness and future research would benefit from extending the validity of the constructs by establishing their face, content and criterion-related validity within the context of the payments field. In some instances the labels for the constructs used were selected from several options used in earlier literature which, while reflecting the constructs as defined in the study framework, may, in some cases, vary somewhat from prior uses of the same terms. Also, more variables, for example, payment cultural differences, the impact of government regulations on payment options and usage, and the influence of the media could be included in future research for a better understanding of this increasingly important behaviour of consumers in electronic commerce.

The dynamic nature of the payments landscape and the rapidly changing demands of online consumers and merchants make any findings arising from research in this field subject to interpretation within the context of the study time-frame. By 2012, the estimate is that online payments will gross US$355 billion in value with alternative payments holding a 30 percent market share (Janakiraman 2009). With increased market acceptance, alternative payments may no longer be 'alternative' but could become mainstream consumer payment methods in the future. However, the challenges, facilitators and underlying theories identified in this research, in relation to the adoption of payment solutions as innovations, should continue to hold true.

Surveys also have a number of limitations. The most serious weakness concerns the self-reporting nature of the instrument and the validity and reliability of responses obtained to questions. Responses cannot always be taken as accurate descriptions of what the respondents actually do or really feel about something. Any interpretation of the results should take cognisance of this limitation.

Another limitation to be considered is that due to lack of census data about online consumers who shop and pay online for goods and services online, it was difficult to discern the appropriate sampling size. The study could well have benefited from a larger sample of respondents distributed across the country.

With respect to the merchant case studies, there proved to be much reluctance on the part of the interviewees to reveal or discuss, in any specific detail, issues related to security, transaction volumes, fraud and chargeback statistics, and future plans. Also, the low response rate from the businesses to the call for participation in the study can be attributed to the sensitive nature of the subject matter. Also, in order to protect the identity of the firms used in this part of the study, certain information could not be published in this dissertation.

Finally, it must be noted that the results are indicative of participants' perceptions of the payment products, and not necessarily the products themselves. The study examines the perceived, rather than the actual, product characteristics and external influences. Given the critical role that the perceptions of a technology play in its adoption this may or may not be a significant limitation, and any decisions regarding the promotion of the diffusion of payment products should take this into consideration.

However, these limitations do not detract from the strengths of this study but have the potential to provide platforms for future research.

6.8 Recommendations for further research

There are several recommendations for further research. Firstly, the replication of the study internationally will enable further testing of the model and lead to a better understanding of the use of online payment methods. This will advance the literature on payment method adoption and, by incorporating different payment cultures, provide a more accurate benchmark to assess online payment activity.

Secondly, while the study introduced a set of variables used consistently throughout the literature to explain and predict innovation adoption, factors such as the role of governments and payment service providers should be investigated as facilitators of adoption behaviour to help further develop the theory and practical implications. Also, the study of online merchants, which was initiated as part of this research, can be further developed with the potential to produce findings with important implications for consumers and other stakeholders through the development of a merchant adoption model and factors that can be empirically tested.

Thirdly, the study could be extended to include consumers who do not make payments and purchases over the Internet to determine what factors deter them from doing so. In this way merchants and other stakeholders can develop strategies that could influence shoppers to change their perceptions about shopping online. It is worth noting that online surveys usually show consistent higher percentages of online buyers and usage of the Internet largely because online survey participants are more likely to be active Internet users. To capture the behaviour of those who avoid or fear using the Internet for shopping, conventional telephone and mail surveys may be needed to understand shopping and payment behaviour of this segment of the population.

Lastly, with the rapidly changing payments landscape, increased use of security mechanisms by merchants and greater use and trust in the Internet by consumers, a longitudinal study will help determine the changing attitudes and behaviour of online shoppers.

6.9 Conclusion

In summary, this research established the nature and extent to which respondents to the survey of online consumers made use of payment methods for the purchase of goods and services. It empirically assessed attitudes towards payment methods in relation to their salient attributes and identified and explained the relationships between particular external facilitators and consumer payment method preferences. Using a selection of case studies, the research also investigated some of the challenges of adopting payment methods by online merchants.

Through the use of relevant and related theories from a number of different disciplines, this study has advanced the position of previous research on online shopping in the context of payment method usage and preferences, resulting in a clearer understanding of the issues and challenges that they pose to consumers as well as to merchants, financial institutions and regulators. As a result, this research has made valuable contribution to theory and practice and presents further opportunities for research on a number of other fronts.

The objectives of this research have been achieved, and insights have been provided on online consumer payment behaviour. The dissemination of this research will better equip payment method developers and providers and other stakeholders with

knowledge about consumer attributes that could help them gain increased market share for new and existing payment products.

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APPENDIX A: **EXPLANANTION & GLOSSARY OF TERMS**

Introduction

This appendix explains some of the terms and acronyms used in this dissertation in order to clarify their meaning in the context of this study.

Firstly, to ensure that there is no confusion and ambiguity in understanding the scope and focus of this research the terms relating to payment systems, payment instruments, payment mechanisms and other closely related terminology is examined to show how they are to be interpreted for the purposes of this thesis.

This is followed by a selected list of terms that are commonly encountered in the payments industry. Where a term has more than one possible interpretation or definition in the literature or in practice then the one appropriate for the purposes of this study is provided and cited.

Payments Nomenclature

A study of the payments literature, industry reports and journals and related websites has revealed a distinct lack of consistency in the use of a number of terms associated with payments. What follows is an attempt to settle on the terminology and to explain the terms as they are used this research.

While there is no precise legal definition of a **payment** (Tyree & Beatty 2000), the approach adopted in this research is to view a payment as the transfer or exchange of value between parties. In the case of an electronic payment the definition of a payment is expanded to encompass the transfer of an electronic means of payment from the payer to the payee using an electronic payment instrument (Soramaki & Hanssens 2003). When this is done over the Internet then the term Internet payment refers to the electronic movement and settlement of funds to support online e Commerce transactions.

A **payment system** is a system incorporating one or more payment instruments for the purpose of facilitating a payment through a particular means of payment, all of these instruments and mechanisms being underpinned by standardized and legally documented procedures governing the finality of the payment. An **Internet payment system** uses any conventional or new payment system to enable a financial transaction to be made securely, from one organization or individual to another over the Internet (Shon & Swatman 1997).

The transfer of value from the payer to the payee is facilitated through the use of a **payment instrument** (Committee on Payment and Settlement Systems 2003). Payment instruments comprise currency, cheques, other debit transfer instructions, credit transfer instructions, credit and debit cards, and electronic money (Fry et al. 1999). The value of an electronic payment product relies purely in the information transmitted when making a payment and not in the value of the payment instrument or the medium of exchange (DCITA 2006). In some cases, a physical payment instrument exists (for example, credit or debit card) while in other instances there is no physical instrument (as when making a direct credit using Internet banking or paying for goods and services using a P2P method like PayPal). Typically, the payment instrument takes the form of banknotes or deposit balances held at a financial institution or at a central bank (Committee on Payment and Settlement Systems 2003). Credit cards, debit cards, and cheques are the leading payment instruments today. Each, when used in exchange, generates instructions that direct the movement of deposits.

In the area of retail payments, it is also important to distinguish between the **means of payment** and payment instruments, since only payment instruments are cleared and settled via the payments infrastructure. A means of payment, for example, banknotes and coins, can be transferred between two parties without the use of an infrastructure. A payment instrument, on the other hand, is linked directly to an account and has no value in itself. Thus, a payment instrument can be seen as the account holder's access key to the account. In order for the account holder to gain access to the means of payment, a payments infrastructure or payment system is required (Danmarks Nationalbank 2005, p. 125).

Every payment requires a payment instrument to hold value and a **payment channel** through which to conduct the transfer either with cash or the information required to exchange balances in the form of a payment instrument. Payment channels facilitate the use of a payment product by providing a means by which a payer and a payee can transact and can be grouped into electronic channels (for example, ATMS, the Internet and the telephone), over-the-counter facilities (for example, bank branches, mail and retailer outlets) and emerging channels (for example, radio frequency identification (RFID) and mobile phones) (DCITA 2006).

A **payment method** or **payment product** embodies the use of payment instruments such as cash, paper cheques, and credit, debit and stored-value cards.

An **Internet payment service** is generally used to address: (i) a payment service that uses a bank account and the Internet as a means of moving funds to or from a bank account (for example Automatic Clearing House (ACH), Internet banking, BPAY, POSTbillpay and Bill Express); and (ii) payment services provided by non-bank institutions operating exclusively on the Internet and that are only indirectly associated with a bank account (for example, PayPal) (FATF (Financial Action Task Force) 2006). In the former case, Internet payment services refer to traditional payment methods where the Internet is only an innovative channel to exchange the information that is needed to move the funds from one account to another. Where Internet payment services do not rely directly on a bank account, such as PayPal, individuals can transfer funds and shop online using a pre-funded account.

Researchers and the payments industry often use the terms *Internet payment method**,*** *payment product* and *payment service* interchangeable and no consensus has emerged yet on their usage (Federal Reserve Bank of Boston 2007c).

For the purposes of this study we have elected to encompass the three terms under the single designation ***online payment methods*** to describe the various means that merchants and organizations offer, and consumers can use, to effect payment of goods and services over the Internet.

This means that we treat such payment services as BPAY and PayPal as payment methods, despite the fact that they are not payment methods *per se* but rather electronic means for settling payments that can be initiated by various payment instruments and methods.

Payment Method Terminology and Definitions

Automated clearing house (ACH): An electronic clearing system in which payment orders are exchanged among financial institutions, primarily via magnetic media or telecommunications networks, and handled by a data processing centre (Committee on Payment and Settlement Systems 2003).

Acquiring Bank: In the online payment environment, an acquiring bank provides Internet Merchant Accounts. A merchant must open an Internet Merchant Account to enable online credit card authorization and payment processing. Examples of acquiring banks in Australia are National Australia Bank, Commonwealth Bank and Westpac Banking Corporation.

Authorization: The process by which a consumer's payment card is verified as active and that they have the funds available to make a transaction. Authorization can also verify that the billing information the consumer has provided matches up with the information on record with the issuing bank.

Bill Express: An Australian intermediary payments method that allows customers to pay bills at any participating newsagency or other retail outlet (DCITA 2006).

BPAY: An Australian intermediary payments method that allows customers to pay bills, and billers to present bills, through Internet banking or phone banking services (DCITA 2006).

Card Not Present Transaction (CNP): A transaction where the merchant, retailer or other service provider does not have physical access to the payment card, examples are transactions by telephone, mail order or Internet.

Chargeback: A process whereby money deposited in a merchant account after finalization of a transaction is refunded to a consumer when he/she successfully contests a charge. Generally, a merchant is held liable for such chargebacks.

Clearing and Settlement: This refers to the processes and systems by which an acquiring bank provides transaction funds to a merchant. Clearing is the process of transmitting and reconciling payment or transfer instructions and in some instances confirming payment orders or the security of the instructions prior to settlement. Settlement is the discharge of obligations with respect to the transfer of funds between two or more parties (Committee on Payment and Settlement Systems 2003). In other words, settlement is a procedure that causes all funds from captured transactions to be routed to the merchant's acquiring bank for deposit to the merchant's settlement bank account.

Consumer/Customer: The term is used to refer to a private individual who makes payment decisions when buying goods and services for personal or household use (Federal Reserve Bank of Boston 2007c).

Credit Card Association: An organization that provides credit card services that are branded by consumer issuing banks. Examples include Visa™ and MasterCard™.

eCommerce Transaction: *see Internet Transaction*

Debit Card: A card enabling the holder to have his purchases directly charged to funds on his account at a deposit-taking institution (Committee on Payment and Settlement Systems 2003).

EFTPOS (Electronic Funds Transfer at point-of-sale): Payment made using a payment card (such as debit, credit or charge card) at a physical point-of-sale by transferring the value of the transaction from the account of the customer to that of the merchant (DCITA 2006).

Electronic Money: Also referred to e-money, e-cash or digital cash, electronic money is a non-cash payment instrument where the value of the money is stored

electronically on chipped cards. The use of e-money does not require authorization like card-based payments instruments. E-money can be used to replace a number of small-value transactions that are typically carried out with cash or payment cards.

Electronic Transaction: *see Internet Transaction*

Internet Bank Funds Transfer: The transfer of funds from an Internet banking account to another banking account, for example, to pay for goods and/or services.

Internet Transaction: The Organization for Economic Co-operation and Development (OECD) defines an e-Commerce or Internet transaction as: "the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organizations, conducted over the Internet. The goods and services are ordered over the Internet, but the payment and the ultimate delivery of the good or service may be connected on or off line" (OECD 2001). Internet income is, therefore, defined as income resulting from goods and services ordered over the Internet.

Issuer: A person or institution that makes available to someone a payment instrument pursuant to a contract being concluded with that person. An issuing bank, for example, is a financial institution that provides a consumer with a payment card. During a purchase, the issuing bank verifies that the payment information submitted to the merchant is valid and the consumer has the necessary funds to make the purchase.

Mail Order Telephone Order (MOTO): MOTO transactions are payment card transactions during which the payment card is not present at the merchant. Originating from the time when this typically occurred when a cardholder ordered using the mail or the telephone, the term as used nowadays also refers to Internet payment card transactions that are carried out by simply stating the card number and expiry date.

Merchant Account: A special account with an acquiring bank that allows the merchant to accept payment cards over the Internet (Lowry et al. 2006). The merchant

usually pays a processing fee for each transaction process, also known as a merchant service fee.

Mobile payments: The use of a mobile phone to make payments for goods and services through SMS, direct billing or mobile web applications.

Non-repudiation: The ability to prevent denial or repudiation by the sender or receiver of a payment message (Committee on Payment and Settlement Systems 2003).

Payment Gateway: A service that provides connectivity between a merchant, the consumer, the acquiring bank (merchant's bank) and the issuing bank (consumer's bank) to process authorizations and payments and is the key link in an online transaction (Lowry et al. 2006).

Payment Processor: A large data centre that processes credit card transactions and settles funds to merchants. The processor is connected to a merchant's site on behalf of an acquiring bank via a payment gateway.

Payment Service Provider (PSP): A payment service provider (PSP) offers the service of handling payments to Internet merchants. It is a data centre that provides the infrastructure between the issuer and the acquirer and ensures exchange of information between the parties. Merchants redirect their consumers to the PSP's site. The PSP typically offers a range of payment methods. After payment is completed and the transaction cleared, the PSP informs the merchant accordingly.

PCI-DSS: The Payment Card Industry Data Security Standard is a global standard governed by the major credit card companies and has established directives for entities that handle credit cards, with the goal of reducing fraud and protecting sensitive cardholder and authentication data.

Person-to-Person (P2P): A non-cash payment (transfer) from one subscriber (consumer) to another subscriber of a compatible system. It is often referred to as a Peer-to-Peer payment (transfer). A popular example of a P2P system is PayPal.

PostBilPay: A method of making bill payments through Australia Post

SET: The Secure Electronic Transaction (SET) protocol specifications were defined by the credit card industry to facilitate credit card purchases over the Internet. The objective was to allow a cardholder to pay for items or services purchased from an Internet-based merchant with a transaction protocol that was more secure than the traditional 'card-not-present' transaction. SET designers sought to make over-the-Internet purchases safer for cardholders and to lower risks for financial institutions and merchants associated with current Mail-Order/Telephone-Order (MOTO) transactions.

SSL: Secure Sockets Layer is a widely used protocol for encrypting data travelling over the Internet.

APPENDIX B: **MERCHANT INTERVIEW PROTOCOL**

The Adoption and Usage of Online Payment Methods for the Sale of Goods and Services over the Internet

Thank you for agreeing to take part in this study which is part of a research project on the adoption of Internet-based Payment Methods by online merchants and service providers.

The interview will examine your usage of payments methods, the challenges they pose to your organization and your future plans to offer other payment options.

The questions will include general information about your company, the methods of payment you offer and what your views are on different payment methods.

The interview will take about 60 minutes to complete. With your permission, we would also like to record the interview. You are not obliged to answer any questions you consider sensitive or privileged.

Participation in this research is entirely voluntary and you amy withdraw your participation at any time.

All responses will be treated with complete confidence and security. Only group and aggregated data will be reported in all publications and reports. You have our assurance that no personal information that could identify you or your company in any way will be published in any reports without your express and written permission.

Mustafa Ally and Prof. Mark Toleman, from the School of Information Systems at the University of Southern Queensland, are conducting this study. You can contact either of them at Mustafa.Ally@usq.edu.au (07 4631 1232 / 0402026786) or Mark.Toleman@usq.edu.au (07 4631 5593).

STATEMENT OF CONSENT BY INTERVIEWEE

Consent to be Interviewed

I voluntarily agree to take part in this study on Internet Online Payment Methods in terms of the information provided to me. I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Interviewee's Name: _____

Interviewee's Signature: _____

Date: _____

Signature of the Researcher: _____
Date: _____

Consent to Audio Recording of Interview (if applicable)

I also voluntarily agree to be audio recorded during the interview being conducted by Mustafa Ally of the University of Southern Queensland. I understand that the digital recordings will be used to gather information about my organization's usage of online payment methods and e-Commerce and online shopping behaviour, and such information will be used to generate academic publications. The recordings will be kept for approximately one year and will be securely stored on the researcher's University computer. After the data is collected and transcriptions are made, the recordings will be destroyed.

Interviewee's Name: _____

Interviewee's Signature: _____

Date: _____

Signature of the Researcher: _____
Date: _____

Interview Protocol

Interviewee Title/First Name/Last Name

_____

Organization/Company Name: _____

Position in company _____

Role in company's website development and the payment aspect of the site:
_____
_____
_____
_____

Contact Details

Email: _____

Phone: _____

Fax: _____

Skype: _____

Business website:

www._____

Date: _____
Interviewer: _____

Definitions/Explanation of Terms and Concepts

***Online Payment Methods*:** Credit Cards, Debit Cards, PayPal, Direct Bank transfers etc.

***Internet/Online Payment Method*:** For the purposes of this study an Internet Payment Method is one where the payment is initiated and authorized in real-time over the Internet with little or no manual intervention during the process.

Offline Payment Method: Offline payment methods are payment methods available on the website that are not processed through a payment gateway. These payments must be processed manually after an order comes through. Such examples of offline payment methods are Cash, COD, Money Order, Cheques, etc. Payments made by credit and debit cards (where the card information is sent by an online form, email, fax, telephone or letter and processed offline) and bank transfers (Internet banking/BPAY) are also treated as offline payment methods. Confirmation of payment is typically done by SMS or email.

***Payment Culture*:** Within any given country, and sometimes within states or regions of a country, there are distinct approaches to payment, depending on the range of payment options available locally, the local payment habits and practices and the local or national regulations that govern payment.

***Internet income*:** Income resulting from goods and services ordered over the Internet where the commitment to purchase is via the Internet or web. Excluded from these measures are orders, payments or transactions for which the commitment has been made using other arrangements, such as face to face.

***Internet Transaction*:** The Organisation for Economic Co-operation and Development (OECD) defines an e-commerce or Internet transaction as: "the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the Internet. The goods and services are ordered over the Internet, but the payment and the ultimate delivery of the good or service may be connected on or off line" (OECD 2001). Internet income is, therefore, defined as income resulting from goods and services ordered over the Internet.

Payment Service Provider (PSP): A payment service provider (PSP) offers the service of handling payments to Internet merchants. It is a data centre that provides the infrastructure between the issuer and the acquirer and ensures exchange of information between the parties. Merchants redirect their consumers to the PSP's site. The PSP typically offers a range of payment methods. After payment is completed and the transaction cleared, the PSP informs the merchant accordingly.

1. *PART A: About Your Organization:*

1.1. Tell us about your company/organization: location, structure, history, vision

1.2. When did you go online?

1.3. How many people are currently employed?

1.4. What is you primary selling/service activity (revenue model)?

Retailer/Importer/Wholesaler/Manufacturer

Service provider – primarily services to consumers and/or businesses

Other: _____

1.5. What types of goods and/or services do you supply? (virtual/tangible)

1.6. What is the typical value of a payment currently received online?

1.7. How many online orders do you take per month (on average)?

1.8. What percentage of your sales originates from overseas based customers?

1.9. How do you rate your business terms of payment fraud and why? (low / medium / high risk)?

1.10. Do you have the following on your company website?

1.10.1. Business Description; Privacy Policy; Shipping Policy; Return policy; Contact information

1.11. Your website's features

Information about the business	
Inquiry or contact facility	
Online ordering	
Shopping cart facilities	
Online payment capabilities(c)	
Capability for secure access	
Client/customer account registration	
Facility to track orders	
Personalised page for repeat customers	
Automated link with back end systems	

2. *PART B: Questions related to the usage of payment methods for sales of goods or service*

2.1. What payment methods (offline and online) do you offer your customers and what were the reasons for offering them on your website?

2.2. What attributes do you look for in a payment method? (cost effective, flexible, easy to use, low maintenance, secure)

2.3. How important is offering online and alternative payment methods important to your company?

2.4. What is the most popular method of payment?

2.5. What are the reasons for not offering them other online payment options?

2.6. What are some of the key problems with online payments, specifically and generally? (Consider issues such as privacy, security, fraud, chargebacks, dispute resolution, refunds, type of goods sold)

2.7. In what way has the type of goods you sell influenced your decision in terms of the types and range of payment methods you offer?

2.8. What measure have you taken to reduce chargebacks? (order tracking; delivery times; clear product description; all costs disclosed; clear contact information, prompt response)

2.9. Are you PCI DSS compliant? (Secure network, cardholder data protection, vulnerability management software programme, access control measures; regular monitoring and testing of network; information security policy)

2.10. Can you provide an estimate percentage of your income from sales of goods and/or services that is paid for by your online payment methods? (OPTIONAL)

2.11. Can you provide an estimate percentage of fraudulent transactions associated with the different payment methods on offer? (OPTIONAL)

2.12. Do you plan to offer any other payment methods in the future? Which ones and when and why?

2.13. Who do you think that the development of your online business has been hindered by the lack of an adequate payment solution? How and in what ways?

2.14. What would you like to see in a payment solution for your type of business?

(lower transaction costs; more payment options to suit different transaction values; more secure and less risks to business and consumers)

3. Any other comments on the study not catered for in the questions asked:

APPENDIX C: **CONSUMER SURVEY QUESTIONNAIRE**

1. Introduction

Thank you for agreeing to complete this survey which is part of a research project on the use of online and offline payment methods by online consumers and shoppers who purchase and/or pay for goods and services using the Internet.

The purpose of the study is to identify the factors that influence your choice of payment methods, as well as your experiences and perceptions of, and preferences for, these methods

Examples of ways of making payments include online CREDIT CARDS (for example, Visa and MasterCard) transactions, DEBIT CARDS (for example Visa Debit, Debit MasterCard), PAYPAL, INTERNET BANK FUNDS TRANSFERS (EFT, Direct Debits, BPAY), PRE-PAID CARDS, MOBILE PHONE PAYMENTS, offline credit card transactions, COD, cheques etc.

This survey will take most people about 30 minutes to complete. All responses will be treated with complete confidence and security. Only group and aggregated data will be reported in all publications and reports. You have our assurance that no personal information that could identify you in any way will be published in any reports.

Mustafa Ally and Professor Mark Toleman, from the School of Information Systems at the University of Southern Queensland, are conducting this study. You can contact either of them at Mustafa.Ally@usq.edu.au (07 4631 1232 / 0402026786) or Mark.Toleman@usq.edu.au (07 4631 5593).

If you are below the age of 18 please ensure you have the necessary permission of your parents or guardian before continuing with this survey.

For the purposes of this study an online payment method is one where the payment is initiated and authorized in real-time over the Internet, typically using a shopping cart. These Internet payment methods can be used to pay for goods and services purchased from an online store or business as well for offline transactions such as rate, utility, wage and telephone bills etc.

An offline payment requires offline processing before finalization of the transaction, for example, the receipt of a cheque, cash or credit card details via fax, email or web form.

If you would like to go into the draw to win a $100 shopping voucher please enter your email address at the end of the survey.
THANK YOU!

---

2. PART A1: Demographics

* 1. In which age group do you belong?

- ◯ Under 16 years
- ◯ 16-24 years
- ◯ 25-34 years
- ◯ 35-44 years
- ◯ 45-54 years
- ◯ 55 year and over

* 2. In which income group do you belong?

- ◯ Less than $21 000 per year
- ◯ $21 000 and $30 000
- ◯ $31 000 and $59 000
- ◯ $60 000 and $80 000
- ◯ Over $80 000

* 3. What is your gender?

- ◯ Male
- ◯ Female

* 4. What is your highest educational qualification?

- ◯ High School
- ◯ University/Technical institution
- ◯ None

* 5. In a typical week, how many hours would you spend on the Internet?

- ◯ Less than 1 hour
- ◯ 2 to 4 hours
- ◯ 5 to 10 hours
- ◯ 11 to 20 hours
- ◯ More than 20 hours

* 6. To what extent do you agree with the following statements?

	Strongly Disagree	Disagree	Fairly Agree	Agree	Strongly Agree
In general, I am hestitant to try out new technologies.	◯	◯	◯	◯	◯
If I heard about a new technology, I would look for ways to experiment with it.	◯	◯	◯	◯	◯
I like to experiment with new technologies.	◯	◯	◯	◯	◯
Among my peers, I am usually the first to try out new technologies.	◯	◯	◯	◯	◯

* 7. To what extent do you agree with the following statements?

	Strongly Disagree	Disagree	Fairly Agree	Agree	Strongly Agree
In general, I am among the last in my circle of friends to use a new payment method when it become available	◯	◯	◯	◯	◯
If I heard that a new payment method was available on the Web, I would not be interested to use it to pay for online purchase	◯	◯	◯	◯	◯
Compared to my friends, I seek out relatively little information about new payment methods	◯	◯	◯	◯	◯
In general, I am the last in my circle of friends to know of any new paymen methods	◯	◯	◯	◯	◯
I will use a payment method even if I have not heard of it before	◯	◯	◯	◯	◯
I know about new payment methods before most other people in my circle do	◯	◯	◯	◯	◯

* 8. To what extent do you agree with the following statements?

	Strongly Disagree	Disagree	Fairly Agree	Agree	Strongly Agree
Most people in my social network use the Internet to make payments	◯	◯	◯	◯	◯
Most people in my social network think I also should use the Internet to make payments	◯	◯	◯	◯	◯

4. PART A2: Your Online Shopping Experience

* 9. Approximately how many years ago did you first start shopping online?

- ◯ Less than 1 year ago
- ◯ 1-2 years
- ◯ 3-4 years
- ◯ 5-6 years
- ◯ 7 years and more
- ◯ Don't know/Can't remember
- ◯ Not applicable

* 10. In a typical month, what is the average number of purchases would you make using the Internet?

- ◯ Less than one
- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ More than 4
- ◯ Not applicable

11. If you have abandoned a shopping cart in the past, what were the reasons for doing so? (tick all that apply)

- [ ] High shipping prices
- [ ] Comparison shopping or browsing
- [ ] Changed mind
- [ ] Saving items for later purchase
- [ ] Total cost of items was too high
- [ ] Checkout process was too long
- [ ] Checkout required too much personal information
- [ ] Site requires registration before purchase
- [ ] Site was unstable or unreliable
- [ ] Checkout process was confusing
- [ ] Concerned about paying online
- [ ] Site was not secure
- [ ] Payment options were not available

Other (please specify)

5.

12. If you have NEVER USED THE INTERNET TO PURCHASE and/or PAID for goods and services, what are the reasons for not doing so. If you have, please skip this question.

- [ ] I haven't had the need to buy anything that way
- [ ] I'm nervous/concerned about paying for things over the Internet
- [ ] I am concerned that the supplier won't deliver the goods after I pay them
- [ ] I don't trust the Internet
- [ ] I don't have a credit card to pay over the Internet
- [ ] Don't really know
- [ ] Other (please specify)

6.

13. If you have purchased over the Internet, what types of goods and/or services have you bought?

- [ ] Information delivered online (News, electronic publishing, etc.)
- [ ] Online communities / social networking (associations, clubs, dating, self-help, etc.)
- [ ] Online games
- [ ] Movies, Music or other digital entertainment downloaded / delivered online
- [ ] Adult entertainment products and services
- [ ] Communications, broadcasting and internet services (Mobile/VOIP billing, Prepaid cards/plans, WiFi & ISP providers, Domain Registrars, Hosting companies, Cable & Satellite TV/Radio, etc)
- [ ] Event Tickets
- [ ] Automobile / Auto Parts
- [ ] Designer / Luxury Apparel
- [ ] General Apparel
- [ ] Books, Magazines, or other publication subscriptions for physical delivery
- [ ] CDs, Audio/Video tapes, DVDs, etc. sold for physical delivery
- [ ] Consumer Electronics (including Computer hardware and Peripherals)
- [ ] Flowers / Cards / Gifts & Toys
- [ ] Food / Beverage
- [ ] General Merchandise / Department Stores
- [ ] Health / Beauty products (Medical supplies, Vitamins, Prescription and Non-prescription drugs, Cosmetics, etc.)
- [ ] Home products (Furniture, Appliances, Pet supplies, Linen/home décor, Office supplies, Tools / Hardware)
- [ ] Jewelry
- [ ] Outdoor / Recreation / Sporting goods
- [ ] Packaged PC software, PC games and video games sold for physical delivery
- [ ] Travel and travel services (Airline tickets, Car rental, Hotel rental, etc.)
- [ ] Consumer Financial Services (Banking, Insurance, Credit monitoring, etc.)
- [ ] Other Consumer Services (Auction services, etc.)
- [ ] Business Services (IT services, Legal / Accounting services, Consulting, Advertising / Marketing services, etc.)
- [ ] Educational Services
- [ ] Government Services
- [ ] Charity / Non-profit

☐ Other goods or services not listed above (please specify)

7. PART B: Making online payments over the Internet

* 14. Which of the following methods ARE YOU AWARE OF for paying over the Internet? (Tick all that apply)

- [ ] BPAY
- [ ] Credit Cards (online)
- [ ] Internet Bank Account Funds Transfer (EFT, Direct Debit)
- [ ] PayPal
- [ ] Mobile phone payments
- [ ] Google Checkout
- [ ] Electronic cheques (e-checks)
- [ ] Electronic cash methods (e-cash)
- [ ] Debit Cards (Visa, MasterCard)
- [ ] Micro-payments
- [ ] Pre-paid cards / Gift Certificates
- [ ] Credit Card payment via fax, phone, e-mail
- [ ] None
- [ ] Other (please specify)

* 15. Which of the following payment facilities do you have? (Tick all that apply)

- [ ] Credit Card
- [ ] Debit Card
- [ ] Internet Bank Account
- [ ] PayPal Account
- [ ] Google Checkout Account
- [ ] Prepaid Card
- [ ] Mobile phone payment pin account
- [ ] None
- [ ] Other Payment Facilities (please specify)

8.

* 16. When making payments over the Internet which of the following methods HAVE YOU USED?(tick all that apply)

- [ ] Credit Card (online)
- [ ] Internet Bank Account Funds Transfer (EFT, Direct Debit)
- [ ] PayPal
- [ ] Mobile phone payments
- [ ] Google Checkout
- [ ] Debit Cards (Visa, MasterCard)
- [ ] BPAY
- [ ] Pre-paid cards / Gift Certificates
- [ ] Money order via mail
- [ ] Credit Card payment via fax, phone, e-mail
- [ ] Cash on Delivery (COD)
- [ ] Personal/Bank cheque via mail
- [ ] None
- [ ] Other (please specify)

* 17. Which payment method do you use MOST OFTEN over the Internet?

- ◯ Credit Card (online)
- ◯ Internet Bank Account Funds Transfer (EFT, Direct Debit)
- ◯ PayPal
- ◯ Mobile phone payment
- ◯ Google Checkout
- ◯ Debit Cards (Visa, MasterCard)
- ◯ BPAY
- ◯ Pre-paid cards / Gift Certificates
- ◯ Money order via mail
- ◯ Credit Card payment via fax, phone, e-mail
- ◯ Cash on Delivery (COD)
- ◯ Personal/Bank cheque via mail
- ◯ None

Other (please specify)

9.

* 18. To what extent are you concerned about the following when it comes to paying over the Internet?

	Very concerned	Somewhat concerned	Neither concerned nor unconcerned	Somewhat unconcerned	Very unconcerned	N/A
Retention and storage of credit card and other financial details by the merchant or payment provider	◯	◯	◯	◯	◯	◯
Interception of payment and account details during transmission	◯	◯	◯	◯	◯	◯
Loss of privacy	◯	◯	◯	◯	◯	◯
Theft of credit card and account details from merchant or payment gateway	◯	◯	◯	◯	◯	◯
Identity theft	◯	◯	◯	◯	◯	◯
Lack of security mechanisms	◯	◯	◯	◯	◯	◯
Limited payment options at websites	◯	◯	◯	◯	◯	◯
Inability to pay for small valued items	◯	◯	◯	◯	◯	◯
Inadequate authentication methods	◯	◯	◯	◯	◯	◯
No offers of guarantee against fraudulent use of my account information	◯	◯	◯	◯	◯	◯
Untrustworthy Websites	◯	◯	◯	◯	◯	◯
Currency conversion and handling	◯	◯	◯	◯	◯	◯

Other concerns (please specify)

* 19. Which of the following experiences have you encountered by shopping and paying online? (tick all that apply)

- [ ] Fraudulent use of your credit card account
- [ ] Fraudulent use of your debit card account
- [ ] Fraudulent use of your PAYPAL account
- [ ] Fraudulent use of your Internet bank account
- [ ] Identity theft
- [ ] Unresolved disputes over refunds
- [ ] Poor service and response from the payment providers
- [ ] Security breaches on your computer
- [ ] No bad experiences

Other (please specify)

10.

* 20. Of the different payment methods that you are aware of, which method do you most PREFER to use to pay for goods and services?

- ◯ Credit Card (online)
- ◯ Internet Bank Account Funds Transfer (EFT, Direct Debit)
- ◯ PayPal
- ◯ Mobile phone payment
- ◯ Google Checkout
- ◯ Debit Cards (Visa, MasterCard)
- ◯ BPAY
- ◯ Pre-paid cards / Gift Certificates
- ◯ Money order via mail
- ◯ Credit Card payment via fax, phone, e-mail
- ◯ Cash on Delivery (COD)
- ◯ Personal/Bank cheque via mail
- ◯ No preferences
- ◯ None
- ◯ Other (please specify)

21. Why would you most prefer to use this method for your online payments? (tick all that apply)

- [ ] I feel it's more secure
- [ ] It's more convenient
- [ ] Speed
- [ ] It allows me to make small purchases
- [ ] I don't have a credit card
- [ ] It is cheaper than the other methods
- [ ] I get loyalty points
- [ ] It is easier to use
- [ ] I don't like using credit cards
- [ ] Many people I know use it
- [ ] It offers good protection against fraud
- [ ] It protects my privacy
- [ ] Lack of other choices
- [ ] Don't know of alternatives
- [ ] Other (please specify)

22. To what extent are you LIKELY TO USE the following online payment methods in the next twelve months?

	Extremely unlikely	Quite unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Quite likely	Extremely likely
Credit Card (online)	◯	◯	◯	◯	◯	◯	◯
Internet Bank Account Funds Transfer (EFT, Direct Debit)	◯	◯	◯	◯	◯	◯	◯
PayPal	◯	◯	◯	◯	◯	◯	◯
Mobile phone payment	◯	◯	◯	◯	◯	◯	◯
Google Checkout	◯	◯	◯	◯	◯	◯	◯
Debit Cards (Visa, MasterCard)	◯	◯	◯	◯	◯	◯	◯
BPAY	◯	◯	◯	◯	◯	◯	◯
Pre-paid cards / Gift Certificates	◯	◯	◯	◯	◯	◯	◯
Money order via mail	◯	◯	◯	◯	◯	◯	◯
Credit Card payment via fax, phone, e-mail	◯	◯	◯	◯	◯	◯	◯
Cash on Delivery (COD)	◯	◯	◯	◯	◯	◯	◯
Personal/Bank cheque via mail	◯	◯	◯	◯	◯	◯	◯

Other (please specify)

12. CONFIDENCE

Payment Method Attribute 1

23. The following statements relate to the level of CONFIDENCE you have in the payment method you use most often.

Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
The payment is always executed and completed successfully	◯	◯	◯	◯	◯
The system is always available when I want to use it	◯	◯	◯	◯	◯
The system is reliable	◯	◯	◯	◯	◯
I can trust the system	◯	◯	◯	◯	◯
Using this method of payment, a merchant can deny receiving the payment	◯	◯	◯	◯	◯
It is easy for someone to use my details to make payments fraudulently	◯	◯	◯	◯	◯
There are adequate rules, regulations and government policies to protect me when I use this payment method	◯	◯	◯	◯	◯
The way the payment system works on the whole instils confidence in me	◯	◯	◯	◯	◯
The payment takes too long to process	◯	◯	◯	◯	◯

13. CONFIDENTIALITY

Payment Method Attribute 2

24. The following statements relate to the extent to which you believe your CONFIDENTIALITY and privacy is protected using your main method of payment.

Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
The payment cannot be traced back to me	◯	◯	◯	◯	◯
My identity is kept from others	◯	◯	◯	◯	◯
The system is a secure way of making a payment	◯	◯	◯	◯	◯
The system uses an effective means for establishing my identity	◯	◯	◯	◯	◯
The system protects my details from being compromised during transmission	◯	◯	◯	◯	◯
The system is collecting more personal information from me than is necessary	◯	◯	◯	◯	◯
My personal information will be shared with other companies without my authorization	◯	◯	◯	◯	◯
I am concerned that my data will be retained by the merchant for future use	◯	◯	◯	◯	◯
I am concerned that unauthorized people (hackers) may have access to my personal information	◯	◯	◯	◯	◯
Offline payment methods protect privacy and confidentiality better than online methods	◯	◯	◯	◯	◯

14. CONVENIENCE

Payment Method Attribute 3

25. The following statements relate to how CONVENIENT you find your main method of payment.
Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
I find the payment method easy to use	◯	◯	◯	◯	◯
Using this payment method saves me time	◯	◯	◯	◯	◯
The system suits the way I prefer payments to be made	◯	◯	◯	◯	◯
It allows me to use it for both offline and online purchases	◯	◯	◯	◯	◯
The response time is quick enough for my needs	◯	◯	◯	◯	◯
The system is flexible. I can use it with other payment methods (e.g. Internet banking, mobile phone)	◯	◯	◯	◯	◯
I can use it to pay other individuals just as easily as merchants	◯	◯	◯	◯	◯
I can easily transfer funds between my accounts using this payment method	◯	◯	◯	◯	◯
The account setup and registration process is easy	◯	◯	◯	◯	◯
I can use it to make small payments of under $5	◯	◯	◯	◯	◯
The system has all the functionality and features that I require	◯	◯	◯	◯	◯
I can use it to make any size payments	◯	◯	◯	◯	◯

15. COST

Payment Method Attribute 4

26. The following statements relate to the COST associated with using your main method of payment.
Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
Using this payment method saves me money	◯	◯	◯	◯	◯
The cost of setting up and using this payment method is unacceptably high	◯	◯	◯	◯	◯
The payment system offers payment guarantees that encourage me to use it	◯	◯	◯	◯	◯
The transaction costs are high	◯	◯	◯	◯	◯

16. CONTROL

Payment Method Attribute 5

27. The following statements relate to the extent of the CONTROL you have over the payment process using your main method of payment. Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
I am aware of the exact steps involving the operation and execution when I make a payment	◯	◯	◯	◯	◯
I can control the way my information and transactions are processed when I make a payment	◯	◯	◯	◯	◯
Once the payment has been sent and the goods received there is little else I can do	◯	◯	◯	◯	◯
I can cancel a payment anytime during the payment process	◯	◯	◯	◯	◯
I can reverse a payment easily after I have made the payment	◯	◯	◯	◯	◯
I can control the risks and uncertainty associated with using this payment method	◯	◯	◯	◯	◯
I can abandon the payment steps at anytime before I click the pay button	◯	◯	◯	◯	◯
I find the payment steps predictable	◯	◯	◯	◯	◯

17. COVERAGE

Payment Method Attribute 6

28. The following statements relate to your knowledge of the COVERAGE and the extent of usage of your main method of payment.
Please state to what extent you agree or disagree with each of the statements listed below.

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
I can use this payment method to pay for overseas purchases	◯	◯	◯	◯	◯
I can use it to pay most merchants	◯	◯	◯	◯	◯
People are very familiar with this method of payment	◯	◯	◯	◯	◯
I use this payment method because most merchants offer it as an option	◯	◯	◯	◯	◯
I use this payment method because other people are also using it	◯	◯	◯	◯	◯
I would use this payment method more often if more merchants offered it as an option	◯	◯	◯	◯	◯

18. PART C: Factors that influence your choice payment methods

29. To what extent do you agree with the following statements?

	Strongly disagree	Disagree somewhat	Neither agree nor disagree	Agree somewhat	Strongly agree
I would not use a payment method if the payments page did not demonstrate it was secured using SSL and https	◯	◯	◯	◯	◯
I would choose a payment method that offered me rewards, discounts, loyalty points and other incentives	◯	◯	◯	◯	◯
I would choose a payment method that was more readily available in more online stores	◯	◯	◯	◯	◯
I would choose a payment method that my peers were using	◯	◯	◯	◯	◯
I would choose a payment method that offered me a money back guarantee if I returned any goods purchased	◯	◯	◯	◯	◯
I would choose a payment method that limited my liability in the event of fraud	◯	◯	◯	◯	◯
I would choose a payment method if there were effective steps in verifying my identity	◯	◯	◯	◯	◯
I would choose a payment method if the website displayed trust marks and other security seals	◯	◯	◯	◯	◯
I would use a payment method if I was satisfied with the website's security and privacy policy	◯	◯	◯	◯	◯
It is important to me that I should also be able to use the payment method on smartphones and other devices	◯	◯	◯	◯	◯
I should be able to use the payment method to make overseas purchases	◯	◯	◯	◯	◯

The payment method should be available whenever and wherever I want to make a payment	○	○	○	○	○

30. What would you like changed to encourage you to make purchases and payments over the Internet?

- [ ] Nothing, I are happy with everything as they are
- [ ] Want to lower payment handling costs
- [ ] Want to speed up the payment process
- [ ] Want to handle things entirely electronically
- [ ] Want a cost effective way of receiving small payments
- [ ] Want greater security
- [ ] Want an easier way to make payments
- [ ] Want guarantees against fraudulent use
- [ ] Want a quick and easy way to resolve disputes
- [ ] Want the payment method available everywhere I pay
- [ ] Don't know
- [ ] Other (please specify)

19.

* 31. How did you initially become aware of the method you used to pay with over the Internet?

- [ ] Request or recommendation from another customer
- [ ] Recommendation from a friend or relative
- [ ] I read about the method in an article
- [ ] TV and/or radio promotion
- [ ] Email campaign
- [ ] The web site hosting company or shopping basket I selected suggested using it as one of the methods to receive payment
- [ ] Search Engine
- [ ] Don't know
- [ ] Other (please specify)

* 32. Which of the following codes, symbols and practices have you come across and/or are aware of while paying for purchases online?

- [ ] Browser padlock or key symbol
- [ ] Website's digital certificate / SSL Security / https in web address
- [ ] Trustmarks (for example, Truste, VeriSign etc,)
- [ ] PCI DSS compliance
- [ ] Credit card CCV verification
- [ ] Verified by Visa and MasterCard SecureCode Authentication
- [ ] Email and password verification
- [ ] Assurance of limited liability in the event of fraud or identity theft
- [ ] Company privacy and security policies
- [ ] None of the above

Other (please specify)

* 33. Which of the following codes, symbols and practices do you LOOK OUT FOR or SEARCH FOR before making a payment?

- [ ] Browser padlock or key symbol
- [ ] Website's digital certificate / SSL Security / hppts in web address
- [ ] Trustmarks (for example, Truste, VeriSign etc,)
- [ ] PCI DSS compliance
- [ ] Credit card CCV verification
- [ ] Verified by Visa and MasterCard SecureCode Authentication
- [ ] Email and password verification
- [ ] Assurance of limited liability in the event of fraud or identity theft
- [ ] Company privacy and security policies
- [ ] No, don't look for any of these

Other (please specify)

20. Comments

34. Please add comments on any aspect of this study here:

35. If you are not an Australian resident and are completing this survey outside of Australia, please state the country from where you are accessing the Internet

21. Thank you

Thank you for taking part in this survey. If you need to contact us for any reason please email us at allym@usq.edu.au.

36. If you would like to go into the draw to win a $100 shopping voucher please enter your email address.

APPENDIX D: **SURVEY DATA TABLES and CHARTS**

Demographic and Shopping characteristics

Table D-1: Age groups of respondents

	Number	Percent
Under 25 years	52	20.0
25 - 34 years	67	25.8
35 - 44 years	71	27.3
45 – 54 years	38	14.6
55 years and over	32	12.3
Total	260	100.0

Table D-2: Income distribution of respondents

	Number	Percent
Less than $30 000	87	33.4
$31 000 and $59 000	63	24.2
$60 000 and $80 000	60	23.1
Over $80 000	50	19.2
Total	260	100.0

Table D-3: Gender of respondents

	Number	Percent
Male	129	49.6
Female	131	50.4
Total	260	100.0

Table D-4: Education status of respondents

	Number	Percent
High School	63	24.2
University/Technical Institution	184	70.8
None	13	5.0
Total	260	100

101Table D-5: Weekly Internet usage of respondents

	Number	Percent
Less than 4 hours	23	8.8
5 to 10 hours	73	28.1
11 to 20 hours	85	29.2
More than 20 hours	79	30.4
Total	260	100

Table D-6: Past online shopping experiences of respondents

	Number	Percent
Less than 1 year ago	20	7.7
1-2 years	42	16.2
3-4 years	86	33.1
5-6 years	61	23.5
7 years and more	51	19.6
Total	260	100

Table D-7: Average monthly purchase

	Number	Percent
Less than one	40	15.4
1	69	26.5
2	59	22.7
3	23	8.8
4	17	6.5
More than 4	52	20.0
Total	260	100

Table D-8: Highest single online payment

	Number	Percent
Below $5	1	.4
$5 to $10	3	1.2
$20 to $99	15	5.8
$100 to $199	27	10.4
$200 to $499	81	31.2
$500 to $1900	71	27.3
$2000 or more	62	23.8
Total	260	100

Table D-9: Lowest single online payment

	Number	Percent
Below $3	60	23.08
$3 to $5	37	14.23
$6 to $10	52	20.00
$11 to $19	31	11.92
$20 to $99	71	27.31
More than $99	9	3.46
Total	260	100

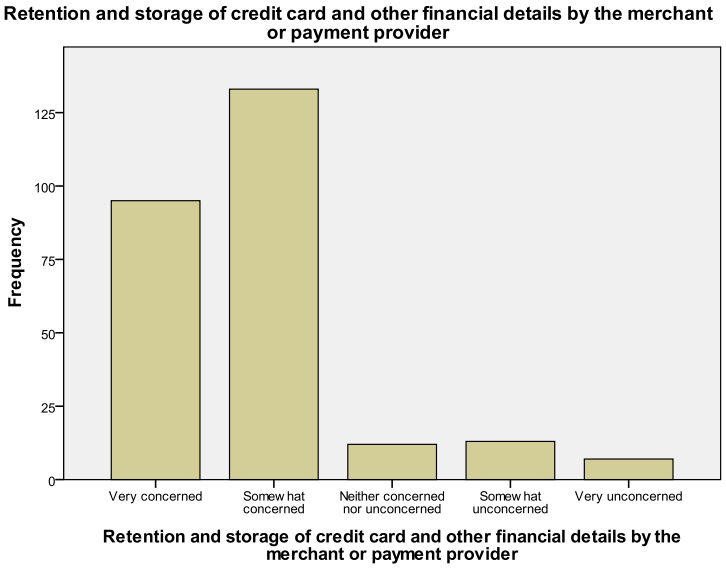
Concerns about the payment process

Retention of credit card details (C1)

Table D-10: Retention of credit card details

Retention and storage of credit card and other financial details by the merchant or payment provider					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	95	36.5	36.5	36.5
	Somewhat concerned	133	51.2	51.2	87.7
	Neither concerned nor unconcerned	12	4.6	4.6	92.3
	Somewhat unconcerned	13	5.0	5.0	97.3
	Very unconcerned	7	2.7	2.7	100.0
	Total	260	100.0	100.0	

Figure D-1: Retention of credit card details

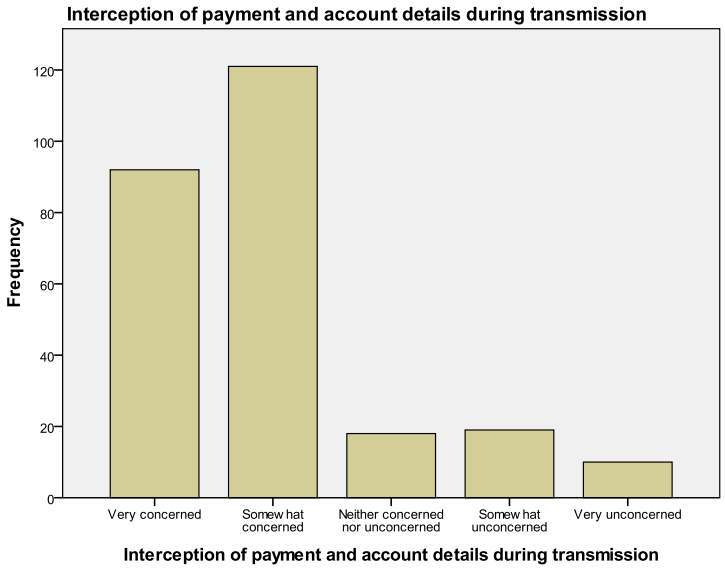


Interception of payment details during transmission (C2)

Table D-11: Interception of payment details during transmission

Interception of payment and account details during transmission					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	92	35.4	35.4	35.4
	Somewhat concerned	121	46.5	46.5	81.9
	Neither concerned nor unconcerned	18	6.9	6.9	88.8
	Somewhat unconcerned	19	7.3	7.3	96.2
	Very unconcerned	10	3.8	3.8	100.0
	Total	260	100.0	100.0	

Figure D-2: Interception of payment details during transmission

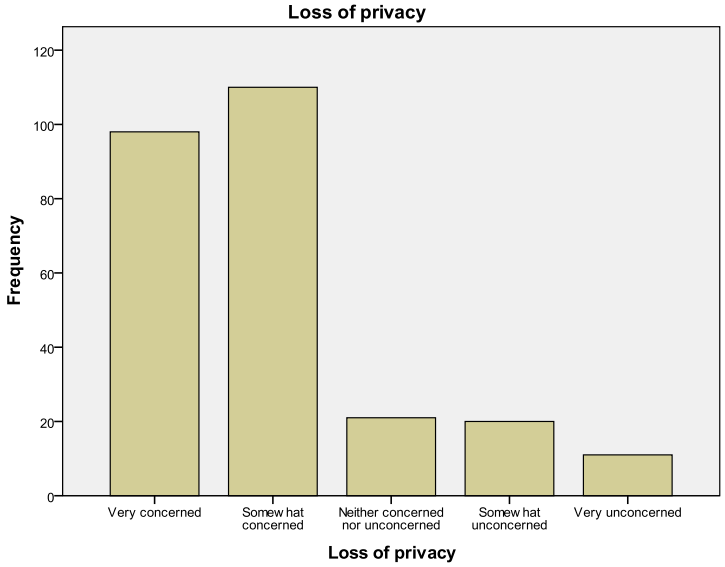


Loss of privacy (C3)

Table D-12: Loss of privacy

Loss of privacy					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	98	37.7	37.7	37.7
	Somewhat concerned	110	42.3	42.3	80.0
	Neither concerned nor unconcerned	21	8.1	8.1	88.1
	Somewhat unconcerned	20	7.7	7.7	95.8
	Very unconcerned	11	4.2	4.2	100.0
	Total	260	100.0	100.0	

Figure D-3: Loss of privacy

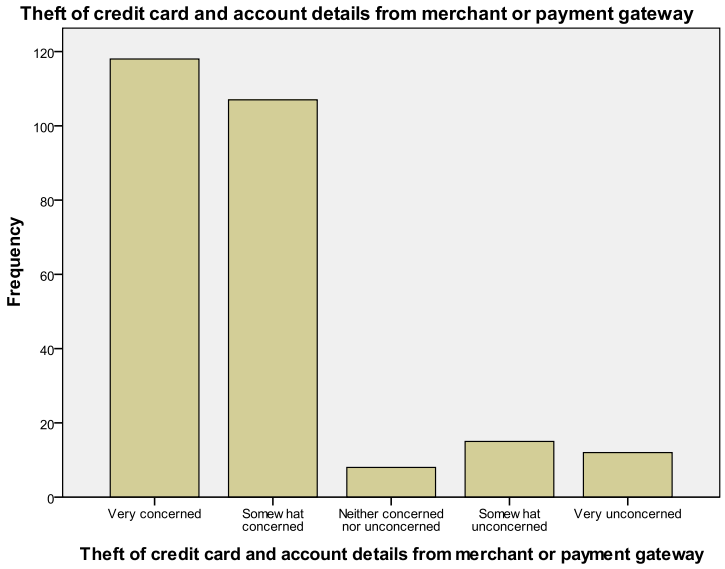


Theft of details from merchants (C4)

Table D-13: Theft of details from merchants

Theft of credit card and account details from merchant or payment gateway					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	118	45.4	45.4	45.4
	Somewhat concerned	107	41.2	41.2	86.5
	Neither concerned nor unconcerned	8	3.1	3.1	89.6
	Somewhat unconcerned	15	5.8	5.8	95.4
	Very unconcerned	12	4.6	4.6	100.0
	Total	260	100.0	100.0	

Figure D-4: Theft of details from merchants

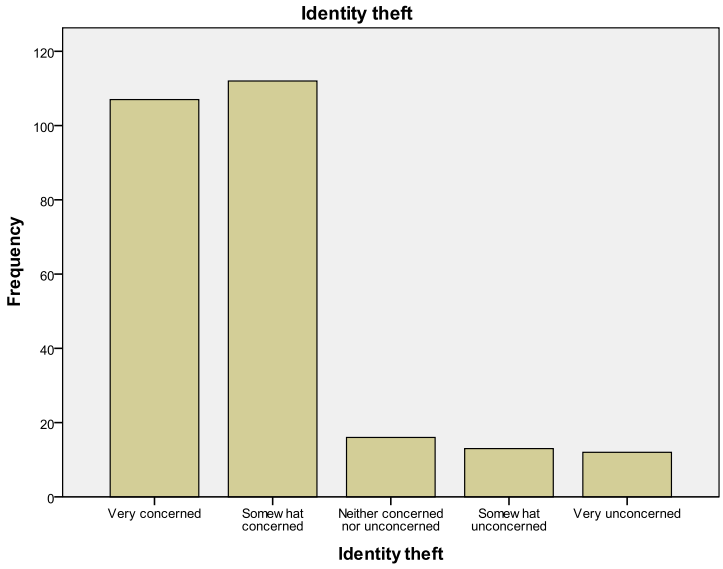


Identity theft (C5)

Table D-14: Identity theft

Identity theft					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	107	41.2	41.2	41.2
	Somewhat concerned	112	43.1	43.1	84.2
	Neither concerned nor unconcerned	16	6.2	6.2	90.4
	Somewhat unconcerned	13	5.0	5.0	95.4
	Very unconcerned	12	4.6	4.6	100.0
	Total	260	100.0	100.0	

Figure D-5: Identity theft

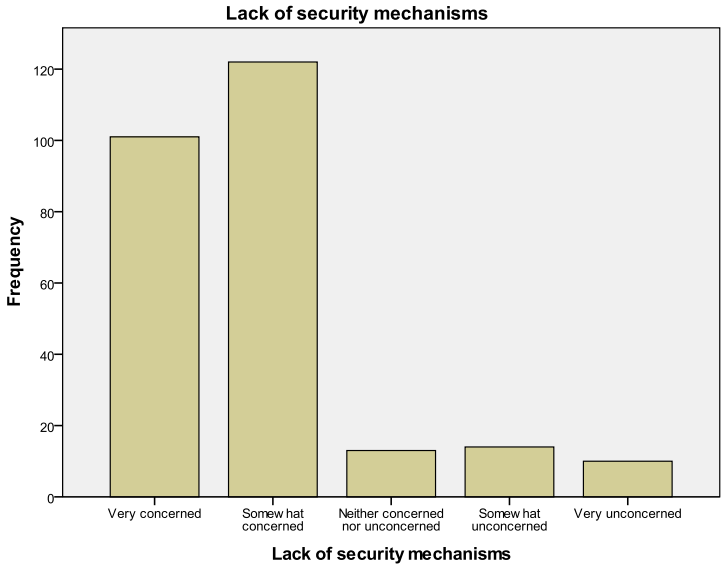


Lack of security mechanisms (C6)

Table D-15: Lack of security mechanisms

Lack of security mechanisms					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	101	38.8	38.8	38.8
	Somewhat concerned	122	46.9	46.9	85.8
	Neither concerned nor unconcerned	13	5.0	5.0	90.8
	Somewhat unconcerned	14	5.4	5.4	96.2
	Very unconcerned	10	3.8	3.8	100.0
	Total	260	100.0	100.0	

Figure D-6: Lack of security mechanisms



Limited payment options (C7)

Table D-16: Limited payment options

Limited payment options at websites					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	42	16.2	16.2	16.2
	Somewhat concerned	102	39.2	39.2	55.4
	Neither concerned nor unconcerned	76	29.2	29.2	84.6
	Somewhat unconcerned	26	10.0	10.0	94.6
	Very unconcerned	14	5.4	5.4	100.0
	Total	260	100.0	100.0	

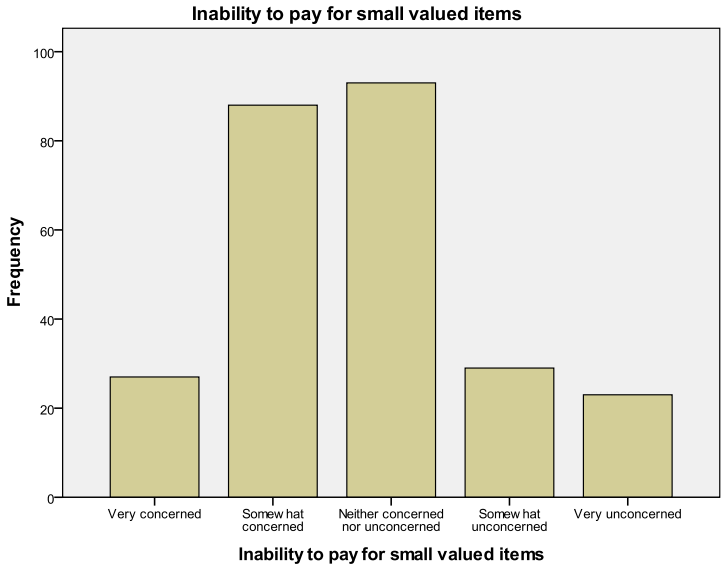
Figure D-7: Limited payment options

Payment of small valued items (C8)

Table D-17: Payment of small valued items

Inability to pay for small valued items					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	27	10.4	10.4	10.4
	Somewhat concerned	88	33.8	33.8	44.2
	Neither concerned nor unconcerned	93	35.8	35.8	80.0
	Somewhat unconcerned	29	11.2	11.2	91.2
	Very unconcerned	23	8.8	8.8	100.0
	Total	260	100.0	100.0	

Figure D-8: Payment of small valued items

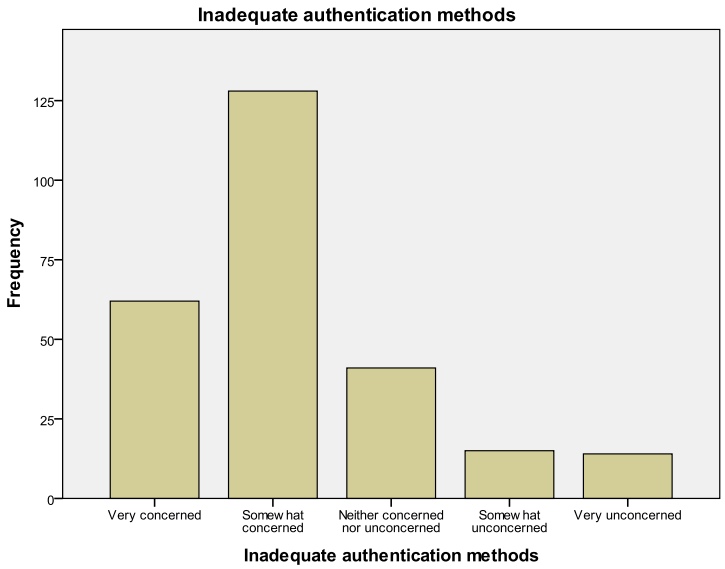


Inadequate authentication (C9)

Table D-18: Inadequate authentication

Inadequate authentication methods					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	62	23.8	23.8	23.8
	Somewhat concerned	128	49.2	49.2	73.1
	Neither concerned nor unconcerned	41	15.8	15.8	88.8
	Somewhat unconcerned	15	5.8	5.8	94.6
	Very unconcerned	14	5.4	5.4	100.0
	Total	260	100.0	100.0	

Figure D-9: Inadequate authentication

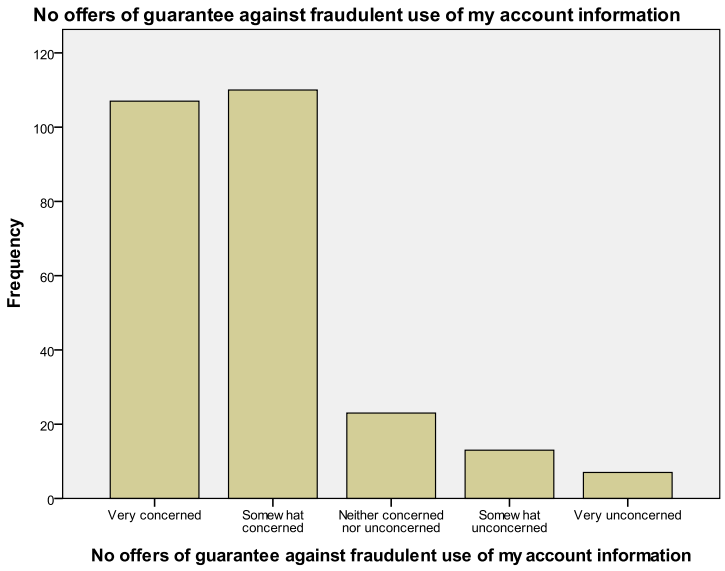


Guarantees against fraud (C10)

Table D-19: Guarantees against fraud

No offers of guarantee against fraudulent use of my account information					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	107	41.2	41.2	41.2
	Somewhat concerned	110	42.3	42.3	83.5
	Neither concerned nor unconcerned	23	8.8	8.8	92.3
	Somewhat unconcerned	13	5.0	5.0	97.3
	Very unconcerned	7	2.7	2.7	100.0
	Total	260	100.0	100.0	

Figure D-10: Guarantees against fraud

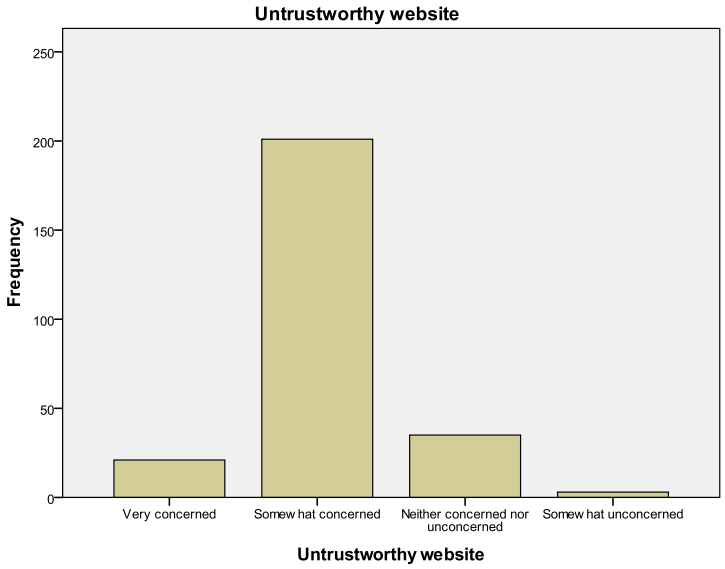


Untrustworthy websites (C11)

Table D-20: Untrustworthy websites

Untrustworthy website					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very concerned	21	8.1	8.1	8.1
	Somewhat concerned	201	77.3	77.3	85.4
	Neither concerned nor unconcerned	35	13.5	13.5	98.8
	Somewhat unconcerned	3	1.2	1.2	100.0
	Total	260	100.0	100.0	

Figure D-11: Untrustworthy websites

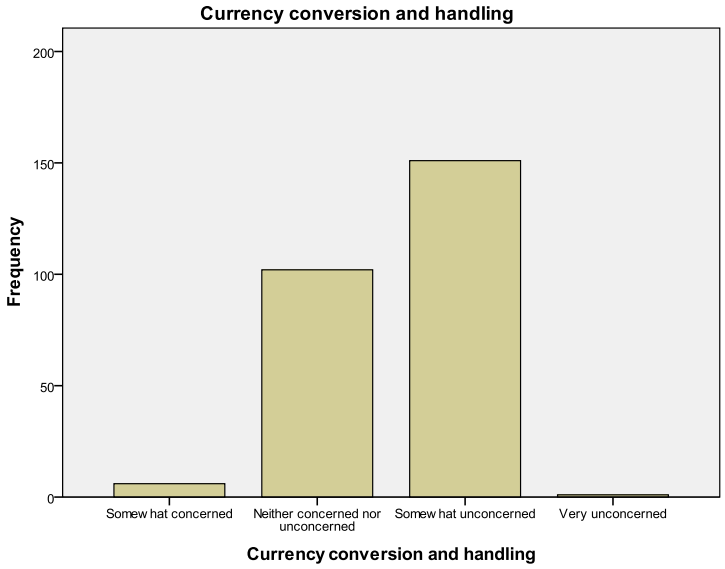


Lack of currency conversion (C12)

Table D-21: Lack of currency conversion

Currency conversion and handling					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat concerned	6	2.3	2.3	2.3
	Neither concerned nor unconcerned	102	39.2	39.2	41.5
	Somewhat unconcerned	151	58.1	58.1	99.6
	Very unconcerned	1	.4	.4	100.0
	Total	260	100.0	100.0	

Figure D-12: Lack of currency conversion



Demographics and preferred payment type

Figure D-13: Age and PTA

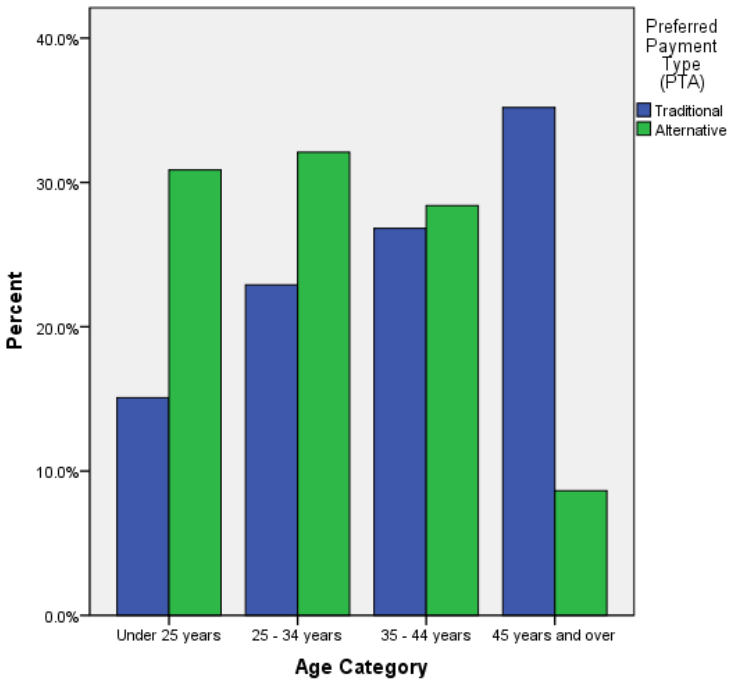


Figure D-14: Income and PTA

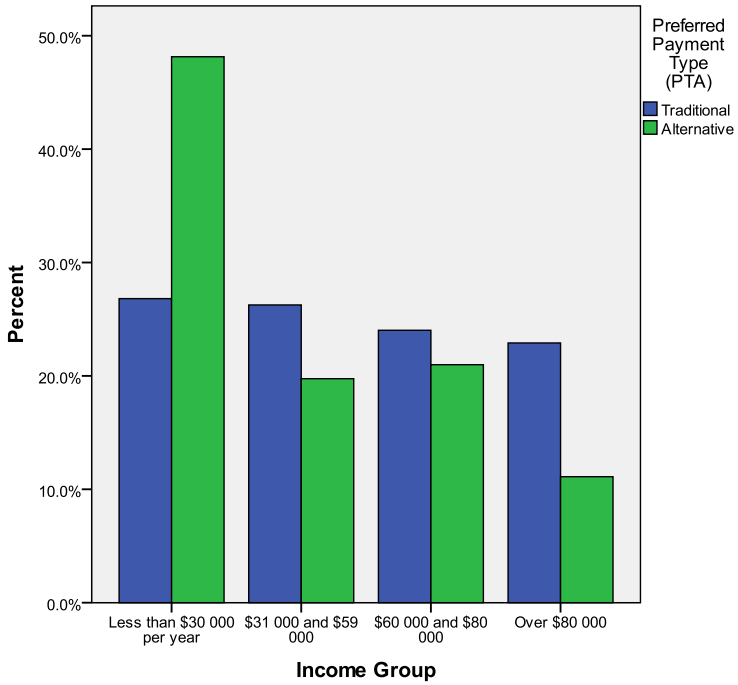


Figure D-15: Gender and PTA

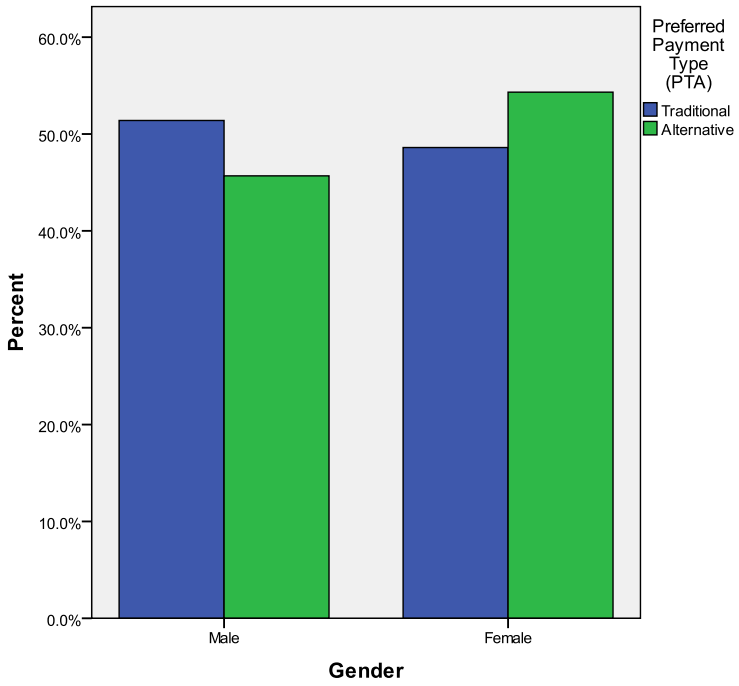
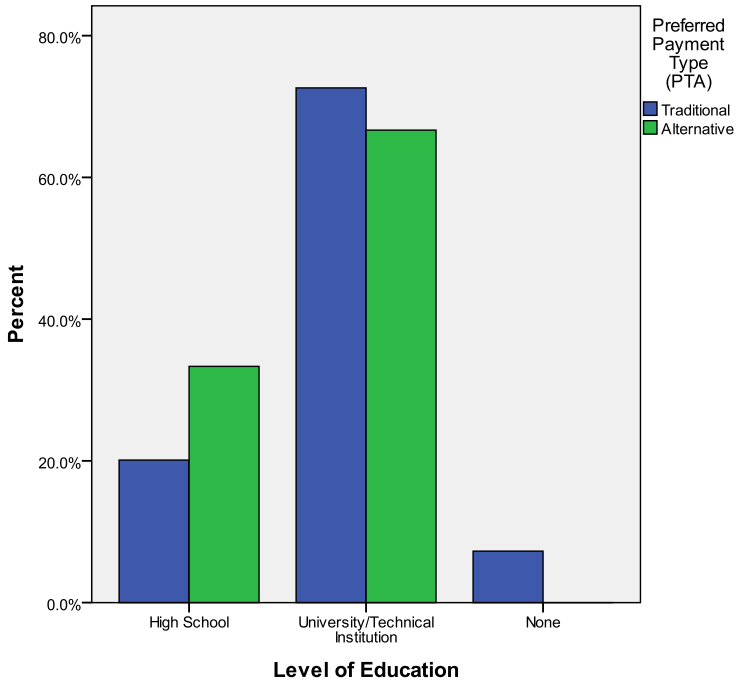


Figure D-16: Education Level and PTA



Online shopping experience and preferred payment type

Figure D-17: Weekly Internet Usage and PTA

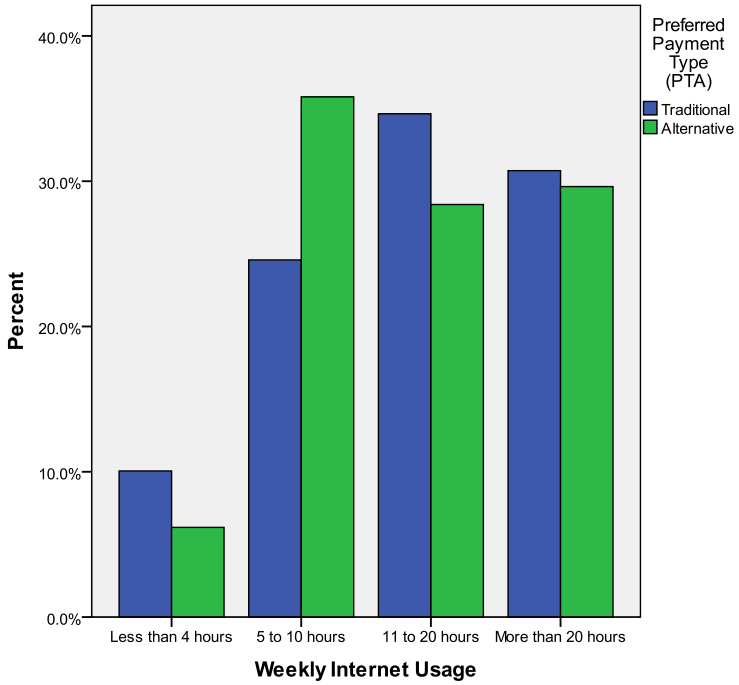


Figure D-18: Years of Online Shopping and PTA

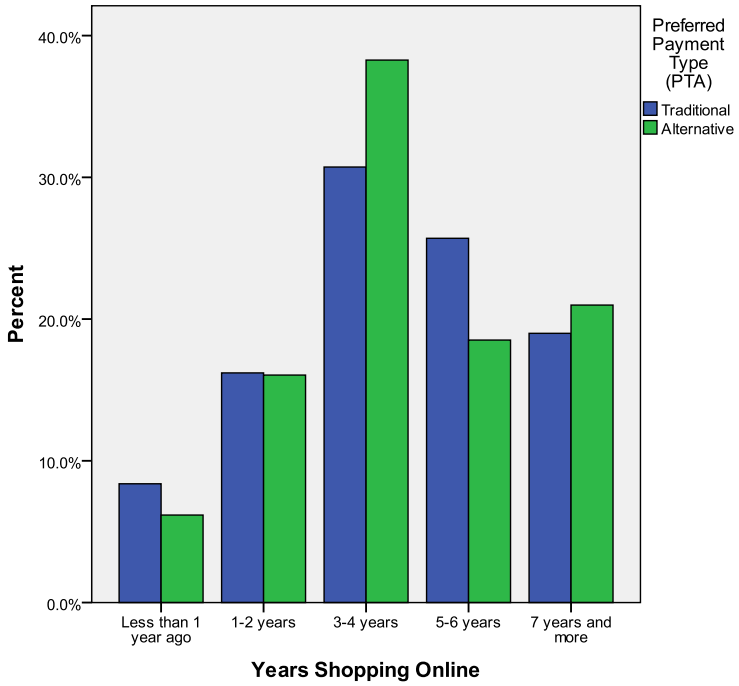


Figure D-19: Average Monthly Purchases and PTA