

Patterns of IT-enabled innovation adoption in developed and developing countries: A comparative case study of Australian and Indian banking industries

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THE UNIVERSITY OF
NEW SOUTH WALES

**Patterns of IT-enabled innovation adoption in
developed and developing countries:
A comparative case study of Australian and
Indian banking industries**

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Doctor of Philosophy

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ABSTRACT

The literature on Information Technology (IT) enabled innovation, like innovation literature more generally, has focused predominantly on work conducted in ‘developed’ countries. Historically this has been due to a lack of empirical evidence collected in ‘developing’ countries and access to comparable examples of innovation. This situation results in the application of developed world ideas to innovation in the developing world. Whether and how the adoption of IT-enabled innovation in developing countries differs from developed countries therefore remains an unexplored question (World Bank 2008).

This thesis therefore addresses two research questions: *What are the patterns of IT-enabled innovation adoption in developed and developing countries?* and *How do they differ and why?* To explore these questions, the thesis focuses on the IT-enabled innovation of services in the banking sector, specifically internet and mobile banking (IMB). The adoption of IMB occurred during the late 1990s and early 2000s and is well documented for both contexts. The aforementioned questions are explored through a comparative interpretive study of IMB adoption in Australian and Indian banking industries as examples of developed and developing contexts.

The key findings of this study demonstrate that the dynamics of IMB adoption in both the Australian and the Indian banks follow the pattern of habituation, objectification and sedimentation phases (Tolbert & Zucker 1996). However, the motivations for adoption at each phase differ. Furthermore, the adoption of IMB in Australian banks is indicative of a sustaining innovation, while the same innovation in Indian banks suggests a disruptive innovation. The adoption of IMB in India satisfied an unmet customer need that had not previously existed in the form of banking (Christensen & Raynor 2003) and in the process disrupted traditional and informal finance methods. On the other hand, the adoption of IMB in Australia improved and sustained existing banking methods, providing greater efficiency. IT-enabled innovation appears to follow an opposite path in developed nations to that in developing nations driven by differences in consumer needs. These findings bring into question the direct application in developing countries of innovation models and frameworks created through the study of innovations in developed countries.

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INITIALS AND ACRONYMS

ATM	Automatic teller machine
CEO	Chief Executive Officer
CIO	Chief Information Officer
DIT	Disruptive innovation theory
EFTPOS	Electronic funds transfer at point of sale
GDP	Gross domestic product
ICT	Information and communication technology
IB	Internet banking
IMB	Internet and mobile phone banking
IT	Information technology
IS	Information systems
NRI	Non-resident Indian
NTP	New telecommunications policy
RBA	Reserve Bank of Australia
TAM	Technology adoption model
TPB	Theory of planned behaviour
UTAUT	Unified theory of acceptance and use of technology
WAP	Wireless access protocol
OECD	Organisation for Economic Co-operation and Development

1 INTRODUCTION

1.1 Overview of the Research

The adoption of information technology (IT) enabled innovation has been researched in Western countries, yet the same understanding has often been overlooked in developing countries. This research aims to offer new insights into the adoption of IT by exploring and comparing the characteristics of internet and mobile banking in Australia and India, which led to improved IT enablement of banks in these two countries. This chapter presents the background to the research – the research problem, the research question and the research objectives – and the methodology and thesis structure.

1.2 Research Problem

The adoption of IT has enabled innovation, and the internet especially has provided considerable economic growth in developed countries. Among other factors, this has contributed to increasing the economic gap between developed and developing countries. More recent developments in developing countries, however, indicate that this will not necessarily continue to be the case. The adoption of IT-enabled innovations appear to promise faster economic growth in developing countries, yet this has only recently emerged as an area of interest amongst researchers (Pick & Azzari 2008). During the late 1990s IT-enabled service innovation gained greater prominence as the service industry created economic benefits for many countries (Miles 2008; Dörner et al. 2011).

The literature on the adoption of IT-enabled innovation has focused predominantly on developed countries. The question arises whether the adoption of IT-enabled innovation in developing countries, which inevitably lags behind, will follow the patterns in developed countries. Whether and how the adoption of IT-enabled innovation in developing countries differs from developed countries is an important question, especially for the developing world (World Bank 2008), as IT has the potential to lift poorer communities out of poverty. Improved awareness of adoption patterns in developing and developed countries may assist developing countries deploy strategies to facilitate and foster the adoption of IT-enabled innovation and thereby boost economic development for their communities.

Of particular interest in this thesis is IT-enabled innovation of services in the banking sector. Specifically the focuses on internet and mobile banking (IMB) and presents exemplary cases of IT-enabled service innovations. The literature demonstrates that in developed countries the adoption of internet banking (IB) and mobile banking (MB) has contributed to significant improvements in banking services such as cost reduction and increased efficiency for customers. The adoption of IMB in developing countries though has not been as widespread as that in developed nations. It is therefore of particular interest to examine whether the IMB adoption patterns and the implications of this adoption in developing countries differ from those in developed countries.

The ability of nations to adopt and benefit from technology has been a major concern for the global community which has been magnified by the advent of the internet. This research investigates if and how the adoption of IT-enabled innovations has different impacts in developed and developing nations as a result of factors such as a country's ability to invest in and diffuse infrastructure, user acceptance of new technology, and whether socio-economic conditions impact on the ability of nations to adopt new technology for economic benefits. Much of the research on IT adoption has focused on developed countries, with little research on the process in developing countries (Abukhzam & Lee 2010), and this lack provides heightened motivation for this study.

1.2.1 Dynamics of Technology Adoption

The dynamics in the adoption of most communication and information technologies in developed and developing nations was a neglected field until the internet came into existence. The uptake of new technologies contributed to the widening economic gap between developed and developing nations and this gap became particularly apparent in applications such as internet banking, which radically affected traditional branch-based banking (Wong 2002). Internet banking allows customers to conduct transactions 24 hours a day, seven days a week, and impacts on customer convenience and overall satisfaction (Aggarwal & Kaur 2012). Despite this benefit, the gap in the adoption of these technology advances was a major inhibitor for developing nations and has hindered their economic and social progress. This gap in technology adoption has been the source of much debate (Rogers 1983, 1995; Barras 1986; Lyytinen & Rose 2003; Kim & Galliers 2004; Gallouj & Savona 2008; Herold 2010). The subject of the differences in technological uptake between different nations presents a major opportunity to explore adoption characteristics (Fleming 2003; Chinn & Fairlie 2004;

Freeman 2005; AL-Hajri & Tainall 2011), which seem to be mainly influenced by the quality of telecommunications infrastructure.

In 1998 a report of the Organisation for Economic Co-operation and Development (OECD) provided information on the number of telecommunication lines in developed countries (total 851 million lines or 64.5%). In 2000, 90% of internet users were located in the wealthier nations of Western Europe, North America and Australia (Ono & Zavodny 2007). By 2001, countries with low Gross National Income (GNI) owned fewer than 100 lines per capita compared to the OECD average of 72 lines per capita (OECD 2001). By 2002, only 10% of the world's population had access to the internet and 88% of those with access were in Western countries (Forum 2002). By 2003, 36% of the world's population had access to the internet but only 0.037% of people in India had access to the internet (Sharma & Gupta 2003). It was acknowledged by Chen and Wellman (2003) that the difference in access was slowly shrinking; however, it was still a major concern, particularly since the differences impacted on income levels in different countries.

The average incomes in the world's richest countries was nearly twenty times higher than those in the world's poorest countries, resulting in the inability of developing countries to afford new technology (Press 2000; Pohjola 2007). Organisations such as the World Bank and the United Nations (UN) had some effect in promoting the use of technology in developing nations, albeit very slowly.

The use and diffusion of technology can occur for a single product, such as the personal computer, or for many innovations which spread across an industry, often changing the course of that industry. Yet early seminal theories such as the institutional theories offered by DiMaggio and Powell (1983) and Tolbert and Zucker (1996) did not provide empirical frameworks to test the hypothesis that innovations follow a certain characteristics (Currie & Swanson 2009). There appear to be no published studies of the application of these theories (Weerakkody et al. 2009), with only one study on the institutional theory applied to internet banking (Shi et al. 2007). However, this was an empirical study of bank customers' motives rather than the industry's motives for adoption. Further, Weerakkody et al. (2009) stated: 'given the significance of institutional theory, it is surprising that there have been no reviews of meta-analytic articles published that profile its use' (p. 355).

A second seminal work by Christensen and Raynor (2003) focused on innovation as both sustainable and disruptive based on characteristics of innovation across an industry (Darian

2011). This research has limited and debatable notions on internet banking because it, like much of the other published research, appears to have focused on developed nations. Christensen and Raynor (2003) focused their work on the *disruptive nature* in the computer and steel industries and did not explore the service industry, although their work may provide insights to this research.

Finally, internet banking can be considered as service innovation rather than product innovation. Hence, literature such as the study by Barras (1996) on the diffusion of service-based solutions has been employed to assist in exploring the characteristics of adoption (Ozdemir & Trott 2009). The study of IT enablement of service-based industries, while in its infancy, offers an emerging view of innovation in the service industry, and remains an emerging field of research as organisations come to better understand the characteristics of IT enablement in this context, particularly in developing nations.

Organisations have been motivated to develop innovative products to either improve the performance of existing products or to develop a new capability, disrupting existing products or services (Christensen & Raynor 2003). Depending on their strategic objectives, organisations will differ in their approach to innovations (Raynor 2011). Some prefer to become the first to market; others prefer a watch-and-wait approach (Stamoulis 2000). While technology adoption research has often focused on individual innovations (Rogers 1995), there is little in the existing literature on institutional or industry innovations such as internet banking. From the literature review, it appears that this adoption has been so profound that the internet has had a transformational effect on banking (Li 2001), reducing the cost of operation, reducing barriers to access and allowing people to bank who were without any banking relationship prior to the internet (Liao & Cheung 2002; Banerjee 2009). Yet a common understanding of this global transformation has not emerged, and hence this thesis explores the nature and manner of global IMB adoption, from both a customer and an industry perspective.

1.2.2 Understanding Global Internet and Mobile Banking

To understand the adoption of IMB, the literature review covers 27 countries and comprises the development, challenges and opportunities the internet has brought to users and providers. The literature has been sourced from 1995, the beginning of IMB, to 2012 as more countries introduced IMB. Much of the literature emerged during the period 1997–2004 as this was the period in which IMB had the greatest impact and was a subject of debate for many academics.

The IMB literature demonstrates that the driving forces behind the rapid transformation of banks were factors such as economic development (Komal & Rani 2012), maturing financial markets, deregulation and new product development (Lustsik 2003). During the initial period of IMB, banks were quick to adopt rapidly evolving electronic and telecommunication technology to deliver self-service banking to customers (Radhika & Mukund 2003; Chen & Chen 2009; Khare et al. 2012). The movement by consumers from traditional branch-based banking was a shift to electronic delivery channels such as IMB (Karjaluoto & Pento 2002; Vinh et al. 2010).

Banks had, in many instances, leveraged the internet to offer low-cost, high-value-added financial services (Jeevan 2000; Stamoulis 2000; Malhotra & Singh 2010), despite the security and trust concerns which persisted (Zhao et al. 2008; Zhou 2011). Other banks introduced internet banking due to competitive pressures. While no literature offers an explanation for industry adoption, the lack of understanding increases when considering global adoption. In addition, considered to be a by-product of internet banking, mobile phone banking had an unsuccessful history in developed nations, while developing nations experienced quite strong adoption of mobile phone banking services (Porteous 2006; Columbus 2012). The increased prevalence of mobile phones amongst consumers has indeed provided greater propensity for mobile banking service since its inception (Goyal, et al. (2012), such that greater banking services are now being offered to the unbanked poor than ever before (Ghosh, 2012), providing greater economic benefits to poor communities.

So far the literature has been unable to clearly identify or compare the differences between developed and developing nations' adoption of IMB. The objectives of this research may enable a clearer view.

1.3 Research Objectives

The objectives of the research were to understand how and why IMB was adopted in both developed and developing countries and to compare the two patterns. Internet banking literature has existed since 1995 and has tended to focus on developed countries (Talukdar et al. 2002) despite there being major differences in product adoption in developed and developing countries (Chandrasekaran & Tellis 2008). There is therefore a gap in knowledge about motivations for the introduction of service-based IT innovations such as IMB from a global perspective. The research questions therefore aimed to address the identified gap.

Research Questions: What are the patterns of information-technology-enabled innovation adoption in developed and developing countries? How do they differ and why?

To address these questions, an interpretive research approach based on an industry case study methodology has been chosen (Orlikowski & Baroudi 1991). The interpretative approach allows for the historical observation of a phenomenon while the industry case study methodology allows multiple organisations to be observed in the same industry context (Yin 1994).

The data collected was at three levels: global, national and organisational. Global data based on UN categories of developed and developing countries (United Nations 1999a) provided information such as internet penetration and the Gross National Income of sample countries. Country-specific data, such as the impacts of country regulation and infrastructure, was also collected. At the individual institution level, data was collected from selected banks in the sample countries of Australia and India.

At a personal level, interviews with banking executives were conducted with a view to identify the drivers and use of information technology in delivering innovative banking solutions and to assess the impact of the diffusion of innovation in the sample countries. Hence the structure of the thesis reflects the manner in which the research was conducted.

1.4 Structure of Thesis

The remainder of this thesis is organised into a further six chapters which are described briefly below.

Chapter 2: Literature Review

This chapter reviews approximately 570 journal articles, conference proceedings, unpublished works, analyst views, corporate reviews, annual reports and business articles on IT innovation and the service industry as well as IMB. The objective of this chapter is to establish the diversity of the literature when comparing IT innovation dynamics in developed and developing countries and to identify how this study could contribute to the literature with new insights.

The relevant literature relates to 27 countries from advanced nations such as Finland and Australia to the developing nations of Asia and Africa. An aim of the review is to identify

whether a central theme emerges on the global diffusion of IT service innovation with particular focus on IMB.

Chapter 3: Research Methodology

Chapter 3 explores the research approach selected for this thesis. An appropriate method was chosen for the industry case study of selected banks in Australia and India and for the selection of the banks. This chapter also describes the data collection approach, the interviewees and how the interviewees were selected. The chapter concludes with a synopsis of the theoretical perspectives to address the research question and the method employed to interpret the results.

Chapter 4: Results: Internet and Mobile Phone Banking Adoption

Chapter 4 provides information about Australia and India, and includes historical information on the banking industry and the IB in each country. This historical approach has been undertaken to provide a context for the diverse facets of the research settings as well as to provide a synopsis of the diffusion of IMB in Australia and India. The chapter provides a comparison of the two countries in terms of their economic and technological background; demonstrates the differences in socio-economic characteristics; and outlines the chronological development of IMB in both countries, enabling a comprehensive analysis of IMB adoption.

Chapter 5: Analysis

The analysis of the findings aims to demonstrate the unfolding of IMB in Australia and India. The three theories which seemed most appropriate for analysis in this research are Institutional Theory, Disruptive Innovation Theory (DIT) and Service Innovation. These three theories provide a lens through which the findings can be examined, leading to the discussion.

Chapter 6: Discussion

The discussion chapter presents an interpretation of the findings and offers an explanation of why IMB may be diffused differently in different socio-economic environments. This chapter suggests that the adoption of innovations is premised on users' needs and that consumers' propensity to adopt is task-based, providing both usefulness and economic value. Further factors in adoption appear to be affordability and the emerging needs of citizens, which allow organisations to deploy technological innovations.

A number of key contributions are discussed in this chapter which may provide insights to Institutional Theory, DIT, and the Reverse Product Cycle. The theoretical perspectives offered by these three theories appear to demonstrate the need to address innovation adoption differently in developing countries from the conventional Western-based view.

Chapter 8: Conclusion

The overall findings, contributions of the theory and practice as well as limitations are outlined in this final chapter. Suggestions are made for additional future research which may advance the theoretical understanding of innovation adoption in developed and developing countries beyond this study.

2 LITERATURE REVIEW

2.1 Introduction

This literature review begins with an overview of the body of knowledge on IT innovation. The review also discusses the interrelation of the different strands of innovation, namely, service innovation and internet banking, and the blurring between product and service innovation. Both these factors have characterised the service innovation literature over the last 20 years. Blurring has increased further as IT has allowed the service industry to adopt technological innovations which may have originally emerged from different fields, such as is the case with the internet (Ayanso et al. 2010; Brynjolfsson & Saunders 2010; Gambardella & McGahan 2010). To add to this blurring, IT and its applications in developing nations appear to have had a great impact in countries such as India and China which industrialised at a rapid pace during the latter part of the 20th century. However, despite this growing industrialisation of some developing countries, the existing literature has focused on the developed nations of Western Europe and North America, with minimal studies evaluating the impact of IT on the adoption of innovations by emerging countries (Sonmez 2005).

To provide further insights into this growing body of knowledge, the literature on the global adoption of internet and mobile banking (IMB) provides an overview of the important interrelationship of IT-enabled innovations, particularly in the services industry. The services sector has emerged as a separate body of knowledge from the mainstream innovations literature (Castro et al. 2010) and appears to demonstrate differences in innovation practices between developed and developing countries (Hobday 2005; Hang et al. 2010). The assumption behind the existing literature on innovations is that it is universally applicable across the world. This assumption appears to be a major weakness, and it is this weakness which has motivated this study of the adoption of IT innovation between different nations. Internet and mobile banking has been chosen as the empirical base to study Australia as a developed country, and India as a developing country (UN 1999). The objective of researching the IMB literature is to explore whether contemporary innovation theory can be applied universally to all nations, or whether there are differences in the innovations theories. The chapter concludes with the research question emerging from the review of the literature.

2.1.1 Definitions of Innovation

Contemporary innovation literature has emerged from the original work of Gabriel Tarde (1903), which suggested that the adoption of innovations was based on the S-shaped curve,

which identified initial adoption, mass adoption and then the eventual demise of an innovation. Since then, innovation has received much attention, and business organisations and researchers have attempted to define it. Below is a sample of these attempts.

‘Innovation’ is defined by the Australian Bureau of Statistics (ABS 2005) as:

The process of developing, introducing and implementing a new or significantly improved good or service or a new or significantly improved process (p. 46).

This definition is somewhat broad and appears to cover both product and service innovation, while the OECD’s Centre for Educational Research’s definition (1997) is more specific and describes innovation based on the type of newness of the initiative:

There are essentially four types of innovation identified in the Oslo Manual for measuring innovation: product innovation; process innovation; marketing innovation and organisational innovation (OECD/Eurostat 2005).

While the two definitions above describe innovation from a product viewpoint, Rogers (1983) one of the most cited authorities in the field, describes innovation from the viewpoint of the user, where innovation is a perception of the new idea being implemented to serve a specific purpose:

An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation (p. 11).

Rogers identifies anything that is new as innovation, while Steele (1988) describes innovation as the spread of the capacity to produce and/or use an innovation which comprises elements of product, process and information technologies. Although different in perspective, a product, service or process which appears to be new is considered by researchers as an innovation. A common theme in the innovation literature history appears to highlight only a single product-based innovation. While much has been written and tested, much still remains to be explored, such as the evolution of an innovation throughout an industry. The literature on industry-wide adoption of innovations appears to be still in its nascent stage when dealing with the emergence of service innovation and industry-based innovation, at both a theoretical level and an empirical level, and hence warrants further investigation to explore whether

contemporary views on innovation can offer insights into service innovation in different nations.

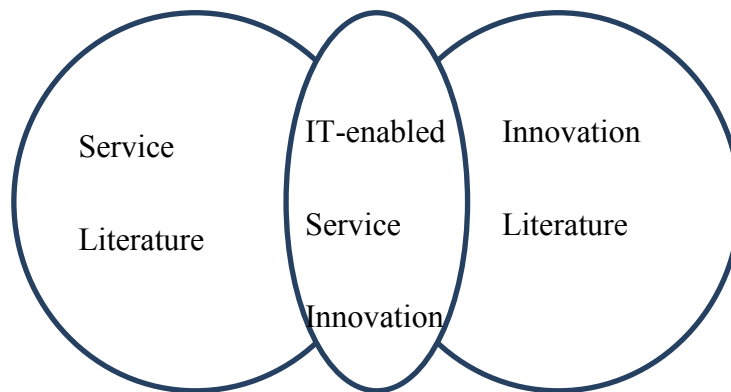
2.2 Growing Importance of IT in Service Innovation

It was during the late 1990s that IT-enabled service innovation gained greater prominence (Miles 2008), mainly due to the services industry increasing its contribution to GDP and economic growth (Ark et al.2003; Ahlstrom 2010; Brynjolfsson & Saunders 2010). By the late 1990s the services industry accounted for approximately 70% of Gross Domestic Output in Europe (Rubalcaba 2004), while the role of manufacturing was conversely declining (Tether & Metcalfe 2002). Impetus had been provided to policy makers and academics who had regarded services as having something of an auxiliary role in the economy at large (Howells 2000; Brynjolfsson & Saunders 2010). The service industries began to show prominence among practitioners and academics as competitive advantage was observed (Stratopoulos & Lim 2010), and hence greater attention was devoted to this growing body of knowledge from the year 2000 onwards.

Despite the growing importance of service innovation, the literature on IT-enabled innovation has focused much more on developed nations than other countries (Abukhzam & Lee 2010; Hang et al. 2010). This focus was due to the increased development of the services industry in these economies (Lopes & Dodinho 2005). This potential gap in knowledge presented the necessity for a study on whether the same issues apply to both developed and developing nations. So far the literature has been unable to offer insights into the adoption of technology across industry within a service industry; hence an opportunity arises to explore this space in the literature on the differences between IT-enabled service innovation in developing and developed nations.

The intersection of the literature on IT-enabled service innovation and the literature on service and innovation provides a basis for addressing the research problem in this study. Figure 2.1 illustrates how the literature on service and innovation and the resulting literature on IT-enabled service innovation is viewed in this study. While interrelated, these streams of literature bring together a new view on how innovation has emerged with the use of IT enablement, particularly in a service industry such as banking.

Fig 2.1: Emergence of IT-enabled service innovation from previous literature



As illustrated in Figure 2.1, there is an assumption in the literature that innovation and service literature have become interrelated to the extent that a strong combination of technology innovation and business ideas have started to transform and impact on the service industry (Ark et al.2003). The result of this IT enablement of businesses has been improved customer service delivery (Rubalcaba 2004; Slykeet al.2010; Ahlstrom 2010; Khara et al.2012). As this technology has become a key driver of growth in service firms (Alic 1994; Stratopoulos & Lim 2010), the topic has emerged as an important subject for policy makers(Howells 2000; Jonget al.2003). The increased knowledge of the service industry appears to have relied heavily on the development of IT innovations; in return, the service innovation literature appears to have received greater coverage by researchers. The next section begins with a definition and outline of the innovation body of knowledge and its potential application to this study.

2.3 Literature on Innovations

Innovations literature is a vast body of knowledge and hence a summary is provided below to demonstrate the extent of this field and its suitability for this study. Table 2.2 below categorises the subjects of innovation literature as product, process, service (combination of product and process) and business model to highlight the appropriateness of innovations literature to this study.

Table 2.1: Overview of Innovations Literature

Stream of Innovation	Innovations Literature and Main Theories/Key Contributors	Comments
Product Adoption	Economic Development: product innovation, process, market, input innovation, organisational innovation (Schumpeter 1934)	Innovation stems from entrepreneurial actions and has focused on the economic impact, which may not always appear as tangible methods and hence may be difficult to measure using Schumpeter's method.
	Sustaining and Disruptive Innovation (Christensen and Raynor 2003)	Sustaining (incremental) and disruptive (radical) innovations are the two extreme ends of innovation according to Christensen and Raynor (2003). Christensen and Raynor have provided an analysis of internet banking as a sustaining or incremental innovation, rather than a disruptive, or radical innovation, albeit in the context of Western nations. Whether the same theory applies to other environments appears to be untested.
	Architectural (Hendersen & Clark 1990)	Architectural innovation can be defined as innovations that change the architecture of a product without changing its major components and can be considered as being in between radical and incremental innovation.
	Dual Core: technical and administrative innovation (Daft 1978)	Dual-core innovations refer to small procedural changes to bring about innovation within the business only, and may be inappropriate for studying cross border industry cases.
	Tri-Core: technical, administrative and functional innovation (Swanson 1994)	Tri-core innovation refers to small procedural organisational changes to bring about innovation. When introducing IMB, banks saw major changes in the organisation and customers' attitudes as well as technology. For this reason the Tri-core theory has applicability to this study.
	Radical-Incremental (Tushman & Anderson 1986)	Incremental innovation builds on existing products, while radical innovation develops a completely new set of skills and solutions.
Diffusion/ Process	Institutional: process of institutionalisation (DiMaggio & Powell 1983; Tolbert & Zucker 1996)	The process of institutionalisation describes the diffusion of innovation across an industry and may be suitable for this study as the internet has now 'diffused' across the entire banking industry.

Stream of Innovation	Innovations Literature and Main Theories/Key Contributors	Comments
Diffusion/ Process	Diffusion (S-curve): stages of innovation diffusion (Tarde 1903; Rogers 1983, 1995)	The S-curve theory has its traditions in product innovation specifically rather than service innovation.
Service Innovations	Barras (1986; De Long et al. 2003; Sundbo 1997)	Service innovation describes innovation within the services industry and may be relevant to this study. Barras's work has stemmed from the banking industry although its premise is still grounded in Western thinking and may be open to challenge for its applicability to developing nations.
Business Model Innovations	User-driven: exploring user needs to develop products. (Eric Von Hippel 1988, 1995, 2002)	User-driven theory has focused on customer-led or a customer co-innovation, where there is already an innovation to involve customer feedback. However, it has limited applicability where new and undefined innovations have emerged.
	Open Innovation: collaborative innovation (Chesbrough 2003)	Open Innovation describes the application and development of an innovation by the use of partners and relies on strong collaboration between suppliers and partners.

Based on the original work of Tarde (1903), Schumpeter (1934) identifies innovation as product, process, market, input or organisational innovation as summarised in Table 2.1. Schumpeter's work emanated from a need for the economic development of initiatives which addressed various elements of innovation such as product, process, market, input innovation, and organisational innovation, and stemmed from the entrepreneurial actions and desires that led to economic and financial gain for organisations (Schumpeter 1934). Later, Ryan and Gross (1943) developed an adoption model while studying agricultural progress, and outlined the stages of the adoption of new agricultural processes by farmers in the US. These stages have been adopted by later researchers such as Everett Rogers (1983, 1995) and have emerged as a centrepiece in innovation literature. Rogers (1995) designed his social system around five stages, namely: awareness of the innovation, creating interest in the innovation, a process of evaluation, trialling the innovation and eventual adoption. Often, however, the early work on innovations was restricted to a single product and its evolution from emergence to death, and did not consider industry-wide diffusion.

Other scholars such as Newell (2000) and then Hubbard (2003) attempted to apply or slightly redefine Roger's diffusion model with their own views where they suggested that the diffusion model is merely a routinisation of the process of innovation rather than offering any new insights on innovation diffusion. The questions that then arise are: Is there a model different from the stages of diffusion? And is there anything that occurs during the processes of diffusion which has not been accounted for? In an attempt to address this difference in the innovation literature, an additional dimension is presented by Rivkin (2000), who refers to Schumpeter's work and assumes that imitation may spur past innovators on to fresh innovations, creating yet another cycle of innovative products (Utterback 1994). This new process may just be the initiation and implementation of imitated ideas, rather than new ones (Mustonen-Ollila 2003). What appears to be held as a universal view is that organisations which innovate will be more successful than those which do not (Van de Ven 2005). An alternative view to Van de Ven (2005) is offered by Wolfe (1994), whose views depict innovation from three broad approaches. Firstly, the diffusion of innovation occurs over time and space; secondly, the level of organisational innovativeness addresses the determinants of innovativeness; and thirdly, innovation process theory addresses the process conducted within the organisation to develop innovation practices. However, the above views appear to address the diffusion of a product rather than to address innovations across service industries.

2.3.1 The Diffusion of Innovations

How innovative products, processes and technologies are adopted by industry and consumers is often referred to as diffusion. Technology diffusion and innovation have often been linked and researchers have identified the concept of diffusion as related to processes which emanate from an action and not outcomes (Elkins & Simmons 2005). Similarly, Rogers (2003) discusses how a product diffuses across a staged approach from early inception to mass acceptance. These theories of diffusion, however, have been criticised for being product-centric and based on consumer diffusion rather than organisational diffusion (Cho et al. 2009). More recent research has explored how internet diffusion has occurred across the US, Sweden and India to identify any differences in uptake. Venkatesh and Shih (2005) found in their study that several theories such as evolutionary, leapfrogging, structural and agentic theories applied to the diffusion of the internet across the US, Sweden and India, which suggests different characteristics of adoption based on internet penetration. These different theories exhibit the following characteristics.

1. ***Evolutionary Theory*** assumes that the technology and the consumer evolve simultaneously (Gerard & Crawford 1981) and that the adoption of technology takes place from a simple solution to a complex solution, from one form to another, increasing in complexity, over the maturity cycle of the innovation. An example of this theory can be seen in Internet banking, where basic functionality was followed by Internet broking shortly after consumers had been accustomed to the innovation. It may appear, while an evolution of technologies has been adopted, that intermediary technologies may have been supplanted or leapfrogged by new innovations such as the traditional land based telecommunications being leapfrogged to mobile telecommunications in many developing countries.
2. ***Leapfrogging Theory*** explains how certain social, economic and technological conditions within communities or countries can jump several technological steps to reach a higher level of consumption to attain parity with countries at the top end of the relative scale in that domain (Breziz & Tsiddon 1998, Socolow, 2001; Steinmuelller 2001). For example, adoption of the telephone in Indian villages can be considered as leapfrogging because Indian villages with little to no existing technology adopted the telephone powered by satellite technology rather than landlines and gained access to a range of services not available earlier (Pitroda 1993). The leapfrogging process is a result of the alternatives on offer to developing countries rather than those alternatives available to today's developed nations during their industrialisation phase. The range of alternatives available today may represent a method which developing countries can use to emerge out of poverty in the coming years. This may be driven by economies, as well as the consumer's propensity to consume goods and services more than before.
3. ***Structural Theory*** argues that diffusion takes place as consumers are embedded in improving life patterns, and social networks (Gatignon et al. 1989). Diffusion occurs where existing technological conditions are supportive and complementary to the new innovation and have an incremental effect on the patterns and lives of the consumer. The existence of technology is assumed in this theory, but structural theory does not embrace a view on communities that do not have prior technology. Structural theory hence relies on the user's prior experience of the technology as a major contributor of adoption.

4. **Agentic Theory** presupposes that diffusion is a function of the user (Von Hippel 1995). The main burden of diffusion is shifted from the creator to the adopter of new technology, who then guides the development of the technology. The adoption is reliant on the requirements of the user's needs. However, Agentic Theory assumes that consideration needs to be given to firstly, user awareness of the product in developing countries and secondly the user's ability/inability to influence the outcome of the innovation

The above theories suggest weakness in their applicability to this study as they have been primarily based on product innovations rather than a service industry setting across an industry. As a result of this shortcoming, another theory Disruptive Innovation Theory (DIT), developed by Christensen and Raynor (2003), may offer useful insights for this study and is discussed below.

2.3.2 Disruptive Innovation

Christensen and Raynor (2003) suggest that an organisation may embark on two extremes of innovation, one extreme being sustaining and the other disruptive, as illustrated below in Figure 2.2.

Figure 2.2: The Disruptive Innovation Theory (DIT) (Christensen & Raynor 2003)

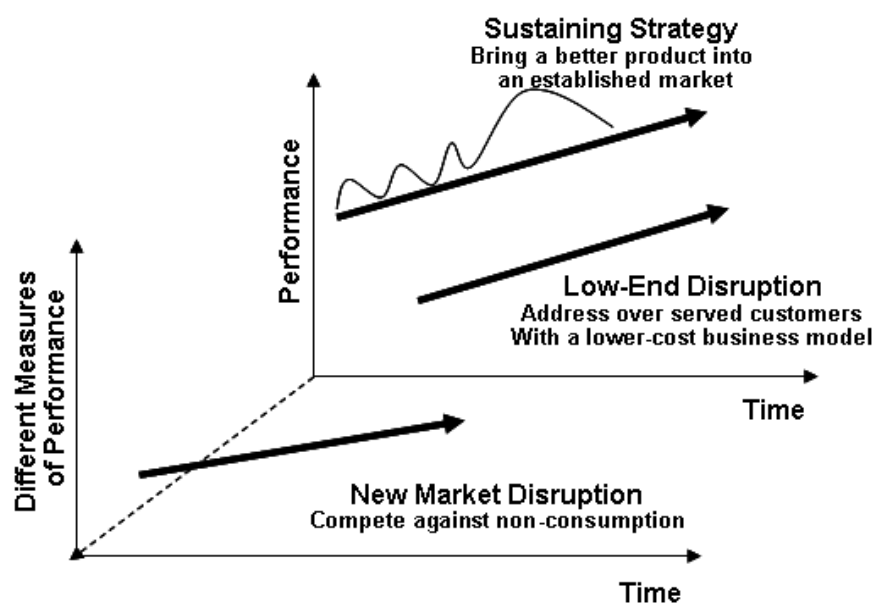


Figure 2.2 above illustrates sustaining and disruptive innovations. Sustaining innovation may be simply an addition or extension to an existing product or service as depicted by the top-most line in Figure 2.2, while disruptive innovation may be providing a new product previously not offered as depicted by the lower two lines in Figure 2.2. Disruptive innovation may occur in two different contexts: a low-end market or a new market (Lu et al. 2012). Low-end disruption may provide customers with simply a low-cost option in an over-served market. An example of an over-served market is the entry into the North American market of Korean automakers, which allowed the least attractive end of the product base to incumbent manufacturers (Christensen & Raynor 2003; Sridhar 2011) as depicted by the bottom line in Figure 2.2. An example of a new market disruption could be the personal computer where the initial customers were new consumers of the innovation (Christensen & Raynor 2003 p. 45). Sustaining innovations may have a faster impact in the performance of existing product offerings than disruptive innovations have, due to the adoption by consumers as shown by the 'performance' axis in relation to the sustaining innovation in Figure 2.2. Practical examples of sustaining and disruptive innovation are discussed below and provide a view on DIT's suitability for this study.

An example of sustaining innovation is the introduction of the Pentium 4 and the Pentium 5 microprocessors by Intel (Schmidt & Druehl 2008). The Pentium 4 was an addition to an existing product, i.e., the Pentium 3 microprocessor. The Pentium 5 was an incremental addition, giving faster speed and additional functionality. Additional functionality may be in the form of an alternative method of using the same product such as internet banking offering consumers an alternative channel to the branch network.

However, disruption can be a threat as organisations may not often see the potential for growth for the innovation but rather may see the innovation as a threat which would displace existing offerings to customers (Katsamakos & Georgantzias 2010; Darian 2011). Examples of these threats can be given from the computer and steel industries (Thomond et al. 2004):

- Cannon's introduction of simple desk-top photocopiers designed for small and medium sized enterprises led to the disruption of Xerox's domination of high-speed photocopying.
- Seagate's 5.25 inch disk drive in the personal computer disrupted the more complex and more expensive 8 inch drive.

Disruption occurs either at the low end or in the new product market. 'Low-end disruption' occurs when a product's performance overshoots the needs of certain customer segments. At this stage, a new product may enter the market with a lower performance and may establish a competitive position in the market (Schmidt & Druehl 2008). The organisation with a disruptive innovation initially targets the least profitable customer within the segment who would be content with a product that meets basic needs (Kohlbacher & Hang 2011). This type of customer is not willing to pay for enhancements of the product beyond basic functions, and hence is unnoticed by incumbent firms. Walmart and K-mart are examples of companies which are at the low end of the consumer market as they offered less sophisticated products than the higher end stores, yet were adopted by the clientele for product simplicity (Christensen & Raynor 2003).

An example of disruption in a previously un-served market is the installation of internet kiosks in a remote village in India where villagers had not previously experienced the internet and hence a new experience was provided (Rangaswamy 2003). However, not all disruptive strategies operate successfully, as found by South West Airlines in the United States (Raynor 2011), which used new procedures rather than technology to serve airlines customers more efficiently. Research by Rangaswamy (2003), however, suggests that customers who may already have had internet banking experience might not be the best starting places for new products. That is, the same innovation may not be successful if it is adopted by people who have already had banking experience. Hence the result of IB as an innovation was considered a disruption to the under-served market when it allowed villagers to communicate as well as to use of the internet for economic benefits for their livelihoods. The above review is summarised in Table 2.2 below on sustaining and disruptive innovation.

Table 2.2 Definition of DIT (Christensen & Raynor 2003)

Theoretical Component	Definition	Comments
Sustaining	Innovations target demanding, high-end customers with better performance than what was previously available. Some sustaining innovations are incremental year-by-year.	Sustaining innovations appear to present a new solution to an existing service. For example, the transition from buying an airline ticket from a travel agent to the option of buying the same ticket on the internet.
Disruptive	In contrast, disruptive innovations do not attempt to bring products to established customers in existing markets. Disruptive innovations can emerge as either a low-end disruption, or a new market consumption, where customers are un-served by incumbent firms.	Disruptive innovations attempt to address customers who currently do not have a particular product but that product may satisfy basic wants such as listening to music while mobile, e.g., the transistor radio.

Despite Christensen and Raynor's (2003) work focusing on the IT hardware industry, they have extended, albeit minimally, their DIT theory to discuss whether internet banking as a service innovation was a sustaining or disruptive innovation (Enders et al. 2006). In the section titled 'The Potential for Internet Banking', they state that:

there is not a large population of people who have been unable to open a bank account because they lacked the skills or the money, existing bank penetration of this market is high, hence this rules out new-market disruption for internet banking (p. 54).

In the next paragraph Christensen and Raynor (2003) refer to:

current bank customers at the low end who would be happy to accept a bank account with fewer privileges and features in order to get the service at a lower price (p. 55).

The above extracts from Christensen and Raynor (2003) suggest that the idea of IB may not satisfy the conditions for either a new market or a low-end disruption and hence IB is likely to be implemented as sustaining innovation by established banks. An interesting study to test and counter the sustaining-disruptive suggestion is provided by ING Direct (Gary 2004). ING Direct, which is an internet-only banking provider, operates without any branches. Customers set up savings accounts only on the internet, with deductions and additions being processed via the Automated Clearing House Network and without the need for the customer to have

any further interaction with the bank. Gary (2004) discusses disruptive innovation in banking by examining the ING Bank's introduction of their online-only high interest rate accounts, and suggests that the IB may not be described within the bounds of disruption as clients already had banking accounts and relationships with banks. Yet the ING example has the potential to be classified as disruptive as the customers may have had banking services but were presented with another potential disruptive method of banking other than the branch network.

An alternative view in support of Christensen and Raynor (2003) suggests that IB can only be deployed as a sustaining technology relative to creating a business model for retail banks (Enders et al. 2006). In their research Enders et al. (2006) argue that categorising IB may be difficult, as innovations evolve through sustaining innovation and potentially grow through disruptive efforts, each having different characteristics based on short-term survival and long-term growth (Thomond et al. 2004; Sridhar 2011). Conversely, Rangaswamy (2003) suggests that disruptive technologies are usually more appropriate for new as opposed to existing customers, making it hard for incumbent firms to develop them. However, the interrelated issues of disruptive innovations have not been investigated in depth (Lettice 2002). The differing views continue to raise the question of whether IB is sustaining or disruptive, and what the impacts are globally remains largely an unanswered question.

While the examples above provide some insights into sustaining and disruptive innovations, these studies have often been restricted to a single product (Lyytinen & Rose 2003; Unger 2011), rather than diffusion across an industry. Thus it can be assumed that the topic of 'disruption' may not have been researched or understood adequately (Ahuja & Lampert 2001), and there is a need for further ongoing research on disruption. Much is still unknown, for instance how a product or service is adopted industry-wide by organisations and the factors that contribute to the adoption of innovation. As this study is interested in the diffusion of innovation across a whole industry, other theories such as Institutional Theory may offer a new perspective.

2.3.3 Industry-based Innovation Diffusion

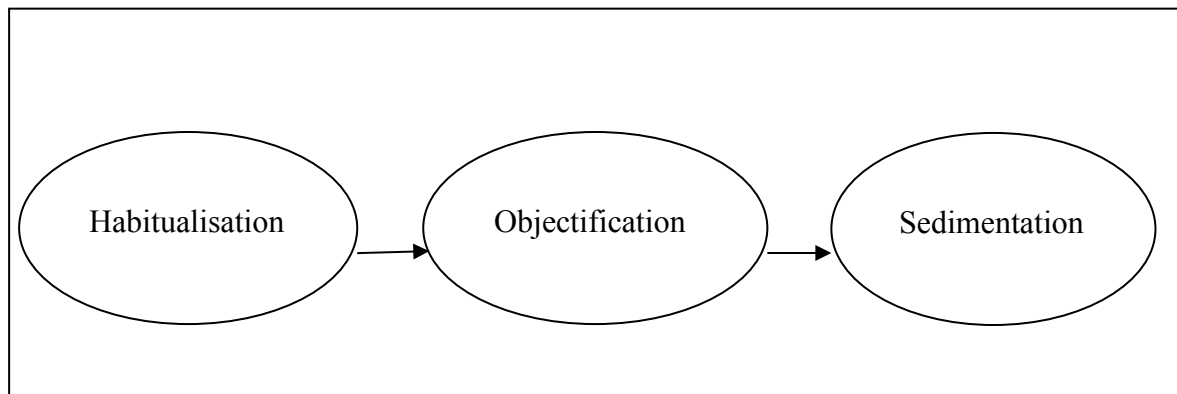
Central to this thesis is the investigation of how an innovation diffuses across an industry. Institutional theory offers insights into how an innovation diffuses across an industry and how organisations display characteristics relative to their stage of the adoption process (DiMaggio & Powell 1983). One of the few cited studies which apply Tolbert and Zuckers' process of

institutionalisation is by Cantero (2006), which explores adoption characteristics within an industry at a theoretical level, with minimal empirical testing, and hence overall the process of institutionalisation remains untested within an industry setting. Even as recently as November 2009, researchers found that institutional theory may have suffered from a lack of recently published empirical studies (Currie & Swanson 2009; Weerakkody et al. 2009). Still, the theory presents an ideal method for exploring the adoption of innovation across an industry setting.

Institutionalisation can be articulated by way of a process called isomorphism which describes the manner in which organisations follow certain courses of action in response to their peers or mimic competitors' actions (Deephouse 1996; Haunschild 1997; Srikanti 1997; Fox-Wolgrammetal 1998). Isomorphism results in institutional change or industry legitimisation (DiMaggio & Powell 1983; Deephouse 1996; Fligstein 1996; Furubotn 2001). Often these acts are in conditions of uncertainty without much knowledge of the actions of others (Haveman1993). The result of actions in conditions of uncertainty and based on the actions of others is the process of industry norms being adopted over time by all industry participants.

Firms adopt practices and norms that many other firms have adopted, and as more firms adopt a practice, the more legitimate that practice becomes (DiMaggio & Powell 1983; Tolbert & Zucker 1983). Organisations that mimic the behaviour of large firms or become part of the industry institution by adopting the industry norms, are likely to have good survival chances, as they would be part of a legitimate population of similar firms (DiMaggio & Powell 1983). Legitimacy or imitation can occur due to the desire to adopt industry practices and processes (Meyer & Rowan 1977) as organisations may be influenced by conditions of competition, market-driven ambiguity, uncertainty of industry direction, and environmental variability which leads to industry acceptance of the innovation (Haveman 1993; Lynn 1996). This industry acceptance of an innovation is explained by Tolbert and Zucker (2006) in their work *The process of institutionalization* and is characterised by three different stages of industry adoption, as outlined in Figure 2.3 below.

Fig 2.3: Model of the process of institutionalisation, adapted from Tolbert and Zucker (1996)



This model of institutionalisation identifies stages of diffusion and the adoption of a new form or practice among organisations within an industry. It is important to briefly analyse these different stages of institutionalisation as the adoption occurs over time, because it may identify the method of adoption of IMB by Australian and Indian banks. These stages are summarised below.

- **Habitualisation** describes the forces such as technology, legislation or market demands which generate a new structural arrangement. Environmental challenges may force an organisation to rethink the direction in which it pursues courses of action. A few organisations within the industry will initially adopt the innovation, which will then typically alert other organisations which are yet to adopt the practice. Habitualisation leads to the process of objectification (Zucker 1977).
- **Objectification** is the movement towards a more widespread and accepted industry position by an organisation. The objectification process starts to develop a consensus among organisations, creating a standardised and accepted form. Objectification of a new structure is often a consequence of organisational monitoring of competitors and efforts to enhance competitiveness. At the objectification stage, more organisations will adopt the innovation or practice than in the habitualisation stage, yet the remainder of the industry will only adopt in the final stage of sedimentation.
- **Sedimentation** occurs when the structures and processes of an organisation have been institutionalised across the whole industry. At the sedimentation stage, there is

relatively low resistance from organisations towards the innovation. The evolving and institutionally accepted structure is considered legitimate by all industry participants. Participant mimicking or imitation occurs, often without justification, where organisations copy the actions of others (Haveman 1993).

The three stages identified above in the process of institutionalisation appear to demonstrate the adoption of innovation by organisations within an industry and hence provide valuable insights into the study of IMB among banks in Australia and India despite the lack of identified industry-wide testing. The following section explores the literature on service innovation to understand whether any insights are offered to explain the adoption differences of IB.

2.3.4 Emergence of Service Innovation

The services industry has emerged as a major economic contributor to the world's developed economies as well as to developing economies (Bitner & Brown 2007). The term 'service' was first coined by Fuchs (1965), when it was found that after World War II many Americans had been employed in non-tangible employment or the service industry (Fuchs 1965). Another view of services is that manufacturing industries produce goods while service industries produce non-material products (Sundbo 1997). Services can also be described as intangible, perishable and heterogeneous (De Long & Vermeulen 2003). Similarly, Tether and Metcalf (2002) describe services as being engaged in transforming people and activities rather than being engaged in the production of tangible products. Service innovation though is still in its nascent stages of development despite its growing importance and its application to many fields of industry such as banking, insurance and air travel (Slyke et al. 2010).

The growing importance of service innovation has led researchers to identify both its similarities to and differences from product innovation, although it is more complex than product innovation (Dörner et al. 2011). For example, Froehle and Roth (2007) explored the interlinking of organisational resources and new service development while Ettlie and Kubarek (2008) explored similarities of service innovation to product innovation and found the novelty of manufacturing innovation to have a higher impact on innovations in products. Another view on service innovation presented by Kristensson et al. (2008) suggests customers are more central to the development of service innovations than product innovations, yet the strategies they offer appear to be no different from the ones offered by product innovations theories such as Rogers (1983). Despite these attempts to understand the emerging field of

service innovation, the underlying theoretical perspectives have limitations. These limitations have so far been unable to encapsulate the whole of the services industry and an understanding of how innovations are adopted. Limited research on how services innovations have occurred across industry and the pattern in which innovations evolves leave these questions unanswered in contemporary thinking on service-based innovation.

In order to compensate for this lack of research and the limited understanding of service innovation, a strand of literature has emerged (Drejer 2004; Howells 2006). The service innovation literature has identified the growing importance of the service economy and the theoretical approach to its innovations, yet it appears that while there is growing understanding, the theoretical underpinning of the service industry is weak (Barras 1986, 1989; Tufano 1990; Pennings & Harianto 1992; Buzzachi 1995; Gallouj 1997; Roberts & Amit 2003; Dörner et al. 2011).

So weak is the theoretical knowledge of service innovation that even as recently as 2009, Schiling and Werr (2009) found little research to adequately understand and categorise service industry (Oke 2007). What little service innovation literature exists appears to be not as widely used as the equivalent product innovations theories such as Roger's diffusion theory (1983). One of the most popular approaches to strengthen this weakness in understanding service innovations has been the theory proposed by Barras (1986) that services innovations occur in the reverse order to those of product innovations. Barras (1986) introduced the Reverse Cycle Model to add to the discussion on service innovation, and Barras' views appear to be a suitable approach on how IMB may have been adopted across an industry.

The reverse cycle model of Barras (1986) emerged from the banking industry and has often been regarded as the first innovation theory for services (Toivonen & Tuominen 2006). The reverse cycle model suggests that the process of service innovation occurs in reverse order to that of product innovation. For example, service firms may adopt innovations developed by technology companies and incorporate them within a service offering to create efficiency, new offerings and improved quality over time. The reverse cycle model is illustrated in Table 2.5 below.

Table 2.3: Reverse product cycle (Barras 1986)

Cycle Stage	Activity	Comments
Improved efficiency	Computerised insurance records	The initial service is improved by the use of technology. An alternative channel is provided for customers.
Improved quality	Internet-based quotations	The overall customer experience is streamlined using technology.
New services	Complete internet-based insurance quotation and purchase	A new service or product is offered which was not previously offered.

As suggested in Table 2.3 above, Barras (1986) explains innovation in financial service through the use of IT to offer financial products which had not been offered before. IT can be used to provide a competitive advantage in the delivery of banking services. Barras's theory originated within developed country settings; it remains to be tested whether the model is valid in developing countries.

Other views on service innovation have attempted to categorise the supplier-influenced approach taken by organisations to deliver innovations (Pavitt 1984; Soete & Miozzo 1989) or client-led innovations (Den Hertog 2000; Miles 2008). While research has highlighted various models in the service industry, understanding innovations in the service sector is difficult from two standpoints (Gallouj 1997). Innovation theories have been developed firstly on the basis of the analysis of technological innovation in manufacturing activities, and secondly on the measurement of productivity, leaving little opportunity to measure service-based innovations (Gallouj 1997). While researchers such as Barras (1986) and Miles (2008) have contributed to the understanding of service innovations, further empirical research is required to better understand this new and emerging field. Examples of service innovations outlined below will demonstrate the relevance to this study.

2.3.5 IT-enabled Service Innovation

Information technology has enabled innovation in service delivery and has resulted in the shift from traditional manufacturing to a service industry (Chesbrough & Spohrer 2006). An example of service innovation is the use of IT systems for online tracking of parcel delivery by the international delivery company Federal Express to provide an improved level of

service. Other industries such as internet-based shopping (Slyke et al. 2010), the health industry (Buntin et al. 2011), the publishing industry (Dittmar 2011) and the environmental industry (Melville 2010) are also examples of the impact of IT on business efficiency. Their service-based innovations have allowed organisations to offer ever improved levels of quality and service through the application of IT within their organisations and industries (Gabardella & McGahan 2010; Slyke 2010; Buntin et al. 2011).

Another IT-enabled service innovation has been the development of the self-service channel in the banking industry which has brought many benefits to banks by way of cost savings, and benefits to customers by way of convenience (Oliveria & Von Hippel 2009; Castro et al. 2010). Similarly, Ayanso et al. (2010) identified the use of the internet as a means to manage online sales performance of different channels for serving customers such as the branch and the internet (AL-Hajri & Tainall 2011). From the above examples, the benefits of IT in services appear to have increased in importance in business (Stratopoulos & Lim 2010), and to have created greater economic and financial benefits for customers and organisations (Brynjolfsson & Saunders 2010; Dittmar 2011).

Service innovations in the financial services are largely based on trust (Dimitriadis & Kyrezi 2010), such as required when making payments for goods via the internet (Jong et al. 2003). The introduction of the internet to financial services has allowed customers to trade stocks online, as a result of which service innovation has become a more international phenomenon, where organisations are able to operate across international borders. This is accompanied by both improved cost efficiencies and quality of service to consumers as more IT enablement occurs (Haukness 1999; Castro et al. 2010; AL-Hajri & Tainall 2011).

As this study attempts to understand the adoption of IT-enabled service-based innovations in developed and developing nations, it is appropriate to review the literature on the adoption of IMB to identify the pattern of adoption, implementation and success in the use of IT-enabled innovations.

2.4 Literature on Internet and Mobile Phone Banking Development

This section explores the adoption in Australia and India of IMB. The literature review suggests the global adoption of IMB is driven either by the industry (Yaun et al. 2010) or by consumer motivations (Onar et al. 2010). To date there seems to be little if any global consensus on the motivations for adopting IMB and although much research has been conducted since the start of internet banking in 1995, the topic remains an area of interest

more than a decade later and has had a significant influence on the banking industry (Changsu 2004).

2.4.1 Background to Internet Banking (IB)

There is ample evidence that the internet has become a great enabler of social change with developments occurring often (Hasan et al. (2009). The internet in banking is seen as ‘the use of the internet as a remote delivery channel of banking system services using the WWW’ (Rizal et al. 2007 p. 2). Internet banking, however, is not the first IT-enabled delivery of banking services, and was preceded by other IT-enabled banking services which deserve a brief review (Vinh et al. 2010).

Information-technology-enabled banking products include bank teller systems for account transfers, telephone-based banking, automated teller machines (ATM) and electronic funds transfer at point of sale (EFTPOS) (Yulia et al. 2009) and the latest, internet-based banking (Thornton & White 2001; Khalfan & Alshawaf 2004; Gikandi & Bloor 2010). Consumers had been significantly affected by all these technologies (Lassar et al. 2005; Proenca & Rodrigues 2011), although the internet had the advantage of following earlier established technologies (Hitt & Frei 2002; Khalfan & Alshawaf 2004). The impact of IT-based banking brought greater freedom through self-service (Calisir & Gumussoy 2008; Ozdemir & Trott 2008; AL-Hajri & Tainall 2011), and laid the platform for internet-based banking, bringing with it benefits to both banks and consumers (Khara et al. 2012).

Through the internet, consumers benefited by being able to conduct transactions online and alter the mode of delivering banking services (Vij 2002; ICFAI 2006; Malhotra & Singh 2010; Sudhaha & Karthkeyan 2010). The first bank to offer online transactions was the Security First Network Bank of America in 1995, which attracted a great deal of attention (Grandy 1995; Orr 1995; Lioa et al.1999; Bughin 2002; Shih & Fang 2006). This introduction of IB was followed by Wells Fargo Bank in 1996, which complemented the bank branch network with an internet presence and soon other banks in the US and Europe followed with their own IB offerings. The internet brought with it enormous opportunities for both banks and customers (Wang et al. 2003; Durkin 2004) such as cost savings (Wang et al. 2003; Gerrard & Cunningham 2003; Lassar et al. 2005; Hernandaz & Mazzon 2006; Cheng et al. 2006) and alternative banking channels (Sathye 1999; Yakhlef 2001; Durkin 2004; Chang 2005). The internet also had a dramatic impact on the banking sector by altering the method of delivery and the pricing of services while also introducing greater options for banks in

interacting with their customers (Herold 2010). During the 1990s and early 2000s, much work focused on the adoption and characteristics of IB by banks and consumers. This heightened focus brought to the forefront existing adoption theories such as the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB). Researchers explored these theories to investigate whether they offered insights into the adoption of IB, as outlined below.

2.4.2 Internet Banking Adoption Theory

With the advent of the internet, a number of theoretical views emerged on the diffusion of IB. Research has been limited to consumers' propensity to adopt IB using the Technology Acceptance Model (TAM) (Struabet et al. 1997; Wang et al. 2003; Yousafzai et al. 2010). While Davis (1989) used TAM to understand attitudinal and perceived behavioural factors in a consumer's use of technology (Tan & Teo 2000; Lassaret et al. 2005; Cheng et al. 2006; Shiet et al. 2007; AL-Hajri & Tainall 2011), empirical studies on TAM (Detmar et al. 1997) suggest the theory has limitations in its ability to measure the ease of use and the cultural factors associated with the adoption of the technology in developed and developing countries (Zhou 2011). TAM does not focus on external determinants such as the restricted availability of technology or the lack of basic infrastructure, which can be major limiters to adoption (Venkatesh & Shih 2005). However, studies by Lioa et al. (1999) have used the Theory of Planned Behaviour (TPB), originally developed by Ajzen (1985), which explains behaviour in terms of the intention of the consumer (Ajzen 1985). This theory predicts a consumer's behaviour but is limited in explaining the motives of organisations for introducing new products.

Both TAM and TPB focus on the consumer's perceptions and not the motivation of the banks and have been applied in a single socio-economic country and for a specific time period rather than in a longitudinal study. Hence both TAM and TPB appear to be limited for a comparative analysis of the data set and do not take into account technological adoption across a time period or in a specific industry. This limitation is a handicap to researchers as they have been unable to apply TAM and TPB across divergent countries with different socio-economic environments.

More recent research on IMB in different socio-economic environments (Akinici et al. 2004) demonstrates that banks in developing countries are inclined to use the internet as a new approach to serve customers and streamline service channels, while banks in developed

countries use the internet as an information tool and to improve relationships with existing customers (ICFAI 2006; AL-Hajri & Tainall 2011). To date research has predominately focused on the customers' propensity to adopt IB rather than on the banks' desire to invest in IB, so these differences in the adoption characteristics of banks in developing and developed countries create an opportunity to explore further the global adoption of IB.

2.4.3 Global Adoption of IB

To establish an understanding of the global adoption of IB and the similarities and differences between developed and developing nations, the UN classification of different countries has been used to classify the two chosen countries of Australia and India. Talukdar et al. (2002) suggest that countries with lower Gross Domestic Income (GNI) per capita be classified as developing, and countries with higher GNI per capita be classified as developed. Research by Laforet and Li (2005) investigating 27 studies across 17 developed and developing countries on the adoption of internet banking found only two studies which focused on the bank's motivation while the rest focused on the consumer's needs. Other research (Chou & Chou 2000; Diniz 1998; Feeny 2001; Furst et al. 2002; Clemons & Hitt 2000; Li 2002; Malhotra & Singh 2010) focused on factors such as operating costs and demand from customers (Brown et al. 2003; Hernandaz & Mazzon 2006). Factors which influence organisations to introduce IB in developed countries include cost savings and consumers' convenience, while developing countries experienced large increases in the number of consumers banking as a result of the adoption of IB (AL-Hajri & Tainall 2011). Adoption motivations therefore appear to be dissimilar in developed and developing countries. Literature on the global adoption of IB is somewhat fragmented due to the vastness and diversity of the innovation, and hence a review of the global adoption motivations by banks would enhance knowledge about IB.

2.4.3.1 Bank Motivations for Internet Banking Adoption

This review of global adoption contrasts the differences and similarities among developed and developing countries and identifies a range of motives behind the introduction of IB. These motivations include factors such as: the development of alternative channels for banking services other than the traditional branch network; cost reductions; greater profitability (Xue et al. 2011); and differentiation leading to a defensive strategy development.

For example, high-speed internet adoption led Finnish banking customers to be provided with IB services (Karjaluo 2002; Wright 2002; Cracknell 2004; ICFAI 2006). This high-speed

internet allowed for an alternative channel for banking in Finland which led to the most prolific use of IB (Karjaluoto et al. 2001; Karjaluoto & Pento 2002; Khalfan & Alshawaf 2004). The enthusiastic uptake of this innovation by customers was seized on by banks to better communicate with their customers and to deliver services via a technology other than the traditional branch network.

Banks used the internet as a new channel to augment their existing branch network in developing countries such as Estonia (Kent et al. 2005; Lustsik 2003), Malaysia (Seitz & Stickel 1998; Soteriou & Zenious 2003) and Nepal (Banstola 2007). The new channel offered banks an opportunity to generate new income streams or differentiate from their competitors (Suganthi 2001). However, globally, consumer demand varied widely across countries due to factors such as access to physical bank infrastructure and consumer perception about banking services (Hasan et al. 2010). Positive customer perception of banking was an important factor in the adoption of IB in developed countries during the 1990s as it allowed banks to be open 24/7, 365 days of the year through this alternative channel which also led to cost savings for banks.

Banks in Western Europe used the internet to pursue a cost-reduction strategy by reducing the number of branches in the bank network (Cracknell 2004; Scruggs & Nam 2002). Branch reduction was initially perceived as radical (Daniel 1999; Mols 2000); it provided the potential for greater profitability for banks (Campbell & Frei 2010). Cost reduction was also seen as an important bank strategy with the coming of the internet in Italy (Masciandaro 2000; Ferri & Masciandaro 2002), India (Unnithan & Swatman 2001; Sudhar & Karthikeyan 2010), Bangladesh (Mia et al. 2007) and Nepal (Banstola 2007). It was believed by bankers that these cost reductions would paradoxically result in improved customer convenience (Sciglimpaglia & Ely 2002; Bradley & Stewart 2003) because the reduction in processing time would allow them to serve more customers (Centeno 2003; Blount et al. 2005; Chang 2005; Bakar et al. 2011). By reducing operating costs, the internet allowed banks to create efficiencies in the process of delivery by eliminating wastage such as manual handling of customer requests (Clemons & Hitt 2000; Bughin 2003; Ahmed et al. 2010). This streamlined IT-enabled process was seen as a differentiator by banks as it reduced costs, improved customer service and enabled greater adoption of IB by consumers.

Product differentiation (Yavas & Shemwell 1996; Jham & Kaleem 2008) had been the focus of Australian banks (Sathya 1999), British banks (Li 2002) and Swedish banks (Yakhlef 2001), by providing greater product choice to customers (Stamoulis 2001; Hasan 2002). The

provision of greater product choice led to new revenue and profitability (Seitz & Stickel 1998; AC Nielsen Report 2002; Furst et al. 2002). Despite this, research has shown that differentiation of products in the banking industry had traditionally been difficult as banks were often limited by regulatory constraints and new products could be easily imitated (Nemzow 1999). This created a defensive mind-set among banks that were later adopters of IB that resulted in them deploying defensive strategies.

A further motivation for banks to deploy IB in the US was based on their industry peers as a defensive strategy against the competition (Diniz 1998; Scruggs & Nam 2002; Yu 2008). A report conducted by the Corporate Strategy Board (2003) highlighted a comment by Steve Ellis, the Executive Vice President of US bank Wells Fargo: ‘In the past we used technology to mimic the way we did business, now our focus is on finding new ways to do business’ (p. 23). Although banks used the internet to attract new customers, it was also considered a disincentive for customers to defect to competitors when their own bank had similar offerings (Sheshunoff 2000). The internet allowed the traditional barriers to entry to be reduced. Other banks and non-physical banks such as ING Direct could now enter the banking industry, which brought customer benefits such as product variety and delivery choice. This led to a greater movement of customers between banks and saw shifting loyalties of customers towards banks who offered IB. This defensive strategy drove banks to further embrace the adoption of IB and develop enhanced motivations to attract customers. Overall, banks which adopted IB at different times with respect to their peers appear to have demonstrated vastly different motivations and strategies which the existing literature has overlooked.

2.4.3.2 Customer Motivations for IB Adoption

While the previous section demonstrates that the introduction of IB by banks was initiated by profit- and cost-based motivations, this section suggests that consumer benefits were also a major contributor to the adoption of IB in developed and developing countries. Customer motivations appeared to differ from country to country, and while many motivations were common, others were different, as discussed below.

High household income and a positive attitude to technology adoption were seen as motivators for consumer adoption in Finland (Karjaluoto et al. 2001, 2002; Karjaluoto 2002; Karjaluoto & Pento 2002), Sweden (Witter 1999) and Germany (Tanba 2000). This positive attitude of consumers (Mattila et al. 2003) was driven by prior advanced knowledge of technology (Lassar et al. 2005), and prior use of the internet (Jham & Khan 2008; Yu 2008).

Similarly, a combination of these same factors contributed to adoption in Hong Kong (Wan et al. 2005), Singapore (Gerrard & Cunningham 2003; Campbell & Frei 2010) and Estonia (Karem 2003; Palmer 2003). Conversely, in Saudi Arabia much of the wealth was concentrated among the older population who were less technology literate and were consequently less willing to adopt new technology (Jasimuddin 2000; Al-Hajri & Tainall 2011; Hasan et al. 2010). Worldwide, it was assumed that there would be a greater propensity to adopt IB among younger people with high levels of income and greater technology literacy and for whom convenience was seen as a method of saving time (Banstola 2007; Nataraan et al. 2010).

Internet banking brought customer convenience through self-service and removed the need for face-to-face banking services (Ding et al. 2007); provided a 24/7 channel (Bitner et al. 2000; Blount et al. 2005; Karjaluoto et al. 2002) in Australia (Durkin 2004; Lichtenstein & Williamson 2006), Britain (Jayawardhena & Foley 2000; Li 2002; Cracknell 2004), the US (Orr 1995; Furst et al. 2002; Scruggs & Nam 2002) and the Middle East (Aladwani 2001). Self-service from IB encompassed improved accessibility to services, convenience (Campbell & Frei 2010) and ease of usability (Hway-Boon & Ming Yu 2003). Despite the convenience, older customers in Middle Eastern countries still preferred face-to-face interaction (Howcroft et al. 2003). Along with the benefits, IB gave rise to concerns and challenges such as customer privacy issues, security fears about banking transactions and cultural taboos about access to the new age of information which citizens had not seen before. Banks had to overcome these challenges as they were major inhibitors in some countries, which limited progress to IB adoption in those countries.

2.4.3.3 Challenges to IB Adoption

The challenges for innovations include the immaturity of the technology, consumer unwillingness to adopt, lack of infrastructure readiness and security fears. These factors have all influenced the uptake of IB to varying degrees in both developed and developing nations.

Strong religious and cultural concerns such as internet access to pornographic material led to a lack of infrastructure and regulatory development in both some developed as well as some developing countries (Buzzachi 1995; Pecenic 1996; Achour & Bensedrine 2000; Masciandaro 2000; Doern & Fey 2001; Scruggs & Nam 2002; Banstola 2007; Rahman 2008, 2009). The impact of poor regulation was a greater hindrance to the adoption of the internet in developing Islamic countries since they had strict laws on access to pornography via the

internet (Orr 2003; Khalfan & Alshawaf 2004; Serkan et al. 2004; Mia et al. 2007). This hindrance meant developing nations particularly in the Middle East were late adopters of IB in comparison to the developed nations of Europe and North America. The hindrance may also have been attributable to cultural aspects in the Middle East in not being able to see the value and benefit of IB and this resulted in poor customer adoption.

In Japan, a lack of management foresight by Japanese banks hindered the introduction of IB (Takezaki 1998). According to *The Economist* (2000a), Japanese banks had never been at the forefront of banking innovation and hence were not able to see the value of IB. Similarly, in Spain customers preferred traditional personal branch-based banking, which inhibited Spain's adoption of IB (Lorenza 2001; Strategies 2004). Customer preferences were a disincentive to investment in the required infrastructure and the development of adequate regulatory frameworks for IB adoption, thus discouraging adoption, particularly in Asia and the Middle East. Because the cultural attitudes of consumers were influential on the adoption of IB, this led to a lack of investment in adequate telecommunications infrastructure in both some developed and some developing countries (Abukhzam & Lee 2010).

Inadequate telecommunications infrastructure and limited access to personal computers were major factors in delaying the adoption of IB in Australia (Sathye 1997; Unnithan & Swatman 2001) and Germany (Tanba 2000). While in Finland, extensive research by Karjaluoto (2002) and Karjaluoto et al. (2001, 2002) found that geographic and demographic factors positively influenced the advancement of telecommunications infrastructure and resulted in Finland's global leadership in IB (Khalfan & Alshawaf 2004). These factors allowed the Nordea Bank, for example, to become a global leader in IB (*The Economist* 2000b; Enders et al. 2006). Conversely, in developing countries such as Egypt (El-Nawany & Ismail 1999), India (World_IT 2003), Romania (Gurau 2001) and Poland (Polasik & Wisniewski 2008), poor infrastructure became a limitation to the adoption of IB (Bughin 2003; Banstola 2007). Interestingly, the deployment of ATMs remained a higher priority than the internet, even though both strategies relied on the same telecommunications infrastructure (Hashem & Ismail 1998). The perceived lack of benefits from IB by consumers delayed infrastructure development and resulted in no effective regulation being developed to promote further adoption in many countries. The lack of development and education in IB (Gorbachea et al. 2011) appears to have been a limitation which influenced consumers' views on trust, the privacy of personal data and the general security fears posed by IB usage in some developed as well as developing countries.

Consumers' lack of trust, security concerns and privacy issues caused delays in IB uptake. For instance, in Korea some customers had lost financial transactions when using IB, which heightened security fears among customers (Ahn & Yang 2004; Aldás-Manzano et al. 2009). It was not until 1999 when the Federal Bank of Korea provided licences with strict regulatory control on the usage of the internet that IB-related security issues were resolved in Korea (Chang 2005). Similarly distrust of the internet led to low reliability for bank customers in Thailand (Larpsiri et al. 2002; Rotchanakitumnuai & Speece 2003; Esichaikul & Janecek 2009) and the Czech Republic (Centeno 2003). These studies show that developing countries experienced challenges to the adoption of IB based on limited trust in the banks and concerns about the privacy of personal information and the security of transactions. These issues were far more prominent in developing countries than in developed countries.

Low socio-economic factors have been identified as inhibitors to the adoption of IB, particularly in developing nations (Centeno 2003; Yiu & Grant 2007; Crabbe et al. 2009). These findings are supported by Centeno (2003), who identified socio-economic factors such as low household income, high inflation rates and the existence of a grey economy which contributed to poor investment in IT services (Khalfan & Alshawaf 2004). Low levels of social conditions led to poor education as an inhibitor to IB in China (Liao & Cheung 2002; Zixiang & Ouyang 2004; Gorbachea et al. 2011), and in countries such as Oman, Saudi Arabia, Kuwait (Jasimuddin 2001) and Jordan (Orr 2003; Sukkar & Hasan 2005; Khalfan & Alshawaf 2004). Hence, banks continued to provide traditional face-to-face banking services in Oman (Al-Sabbagh & Molla 2003) as the lack of personal service in IB was seen as a major barrier to adoption by consumers (Mattila et al. 2003). However, a shift to IB then occurred in the Middle East from older established customers who did not initially favor IB (Guru et al. 2003).

Low income and literacy levels exacerbated the slowness of adoption in poorer countries in comparison to the developed countries. The correlation between older and younger customers appears not to have been an issue among bank customers in developed countries who already had bank accounts as part of their daily needs. Socio-economic factors appear to demonstrate a major difference in the adoption of IB between developed and developing countries. However, while socio-economic conditions were an inhibitor for developing countries, mobile-based banking became a far more acceptable proposition to many of the same people for whom IB adoption was a challenge.

Considered an extension of IB, mobile banking (MB) gradually emerged in both developed and developing countries. Research demonstrates that the adoption of MB appears to have had an opposite pattern of adoption in developing countries, where affordability and the benefits of economic up-liftment allowed greater impetus to MB adoption (Pousttchi & Schurig 2004). The following section explores the adoption characteristics of MB as an adjunct to IB to assess if different motivations appeared between the two related IT-enabled service innovations.

2.4.4 The Emergence of Mobile Phone Banking (MB)

An extension to IB has been the use of mobile phones to deliver banking services. This service started to emerge in both developed (Ratten 2011) and developing countries during the early 2000s (Pousttchi & Schurig 2004; Laukkanen & Pasanen 2008; Beshouri & Gravrak 2010; Deng et al. 2010). This was the newest form of IT-enabled delivery of banking services to customers (Mattila & Suranta 2003). However, adoption patterns have differed between developed and developing countries. Whereas other forms of technology were adopted by developed countries in relatively short timeframes, MB struggled to provide consumers with compelling reasons to adopt this service. In contrast, consumers in developing countries saw MB as a way of connecting to the outside world as well as providing much needed economic gains (Hinson 2010).

Consequently the adoption of MB globally has been faster in developing markets than the uptake of any other modern technology such as television, fixed-line phones and personal computers (Datta et al. 2001). In these developing markets, the number of fixed and wireless telephone connections has doubled every year since 2001. For example, in 2006, Indians signed up for mobile phone services at the extraordinary rate of five million new wireless connections a month (Lakshman 2006), such that in that year India became the fifth country to have exceeded 100 million mobile phone subscribers and became the fastest growing mobile market in the world (IAMAI 2006a). This growth has been partly driven by telecommunication tariffs, as countries such as India enjoy the lowest call rates in the world at 2 cents per minute, compared to 33 cents in Japan, 11 cents in Brazil and 24 cents in Australia. These vast reductions in cost led to greater adoption of mobile technology as a medium for commerce. The following statement by the Internet and Mobile Association of India sums up the positive impacts of the mobile phone (IAMAI 2006a p. 4):

Mobiles phones today have moved beyond their fundamental role of communication and have graduated to become an extension of the persona of the user. We are witnessing an era when users buy mobile phones not just to be in touch, but to express themselves, their attitude, feelings, and interests. Customers used their cellular phones to play games, read news, surf the internet, keep a tab on astrology, listen to music, and check their bank balance.

Mobile banking had the potential to enhance the lives of the poor by providing a tool for economic benefits which would enable them to connect to the global economy (Dholakia et al. 2004; Shrivastava 2011). While banking through mobile phones emerged from developed countries (Isern 2008), the greatest potential of mobile banking was for the poor in developing countries (Ivatury & Pickens 2006). While the promise of greater mobility from mobile banking had proved to be a disappointment in the developed markets of Europe, the potential for emerging nations was very different and was fuelled by the availability and affordability of mobile phones in developing markets (GSM Association 2006).

Mobile banking offered the promise of a complete paradigm shift with features such as using mobile phones to make payments (Porteous 2006; Unhelkar 2008; Shrivastava 2011). However, the reality was that most nations with advanced infrastructure did not embrace MB as expected due to the information quality (Luarn & Lin 2004; Zhou, 2011), despite the benefits of convenience (Vaghjiani & Teoh 2005). While there was much hype in the late 1990s around mobile banking in developed countries, the hype did not live up to expectations, although in developing nations mobile banking had the potential to transform lives as it would enable banking for the people who had been unbanked (Porteous 2006). Datta et al. (2001) viewed mobile banking similarly to Porteous: 'People who have never had a bank account could enjoy basic banking facilities for the first time thanks to mobile financial services – a good reason for service providers to turn their sights to the emerging market' (p. 2). While the coming of MB brought enormous potential and promise across the globe (Frolick & Chen 2004; Mallat et al. 2004), developing countries were considered to be the most fertile ground for such technology-based services (Datta et al. 2001; Sudhakara & Murthy 2011). Mobile banking had a greater impact in countries with a limited spread of land-wired networks, and consumers seem to have warmed to the possibilities of mobile devices in emerging and poorer markets. This greater adoption of MB brought a new hope for poorer nations who were consequently able to take greater advantage of new technology than in previous generations.

Similarly, a study conducted in South Africa found that low-income people with bank accounts used their mobile phones to conduct an average 6.6 bank transactions per month

(Ivatury & Pickens 2006), with the highest usage being buying airtime, withdrawing money and paying bills, and serving customers. Supporting the growth of mobile banking services, Li (2002) suggests that as data transmission speeds improved alongside mobile device capabilities, mobile-phone-based banking also increased in range and flexibility, which in turn brought customer convenience. However, MB has been dogged by factors such as network incompatibility, security weakness and device limitations. These factors have led to limited availability and slow uptake of banking applications, resulting in the slow growth of MB services in developed nations.

2.5 Summary

Information-technology-enabled innovations have contributed much to the advancement and development of the service industry in developed nations. However, developing nations are fast adopting technological innovations and are witnessing the benefits of innovations as they emerge from poverty through the use of technology.

Developed nations appear to have adopted IB as an alternative channel for distribution, and the process has aided the reduction of costs through branch closures as IB has reduced the need to travel to a branch for many basic banking services, while developing nations have utilised IB to extend banking services to customers where none had existed before. The affordability of PCs relative to income levels was previously a major inhibitor to the diffusion of technology in developing nations, coupled with a general lack of infrastructure in developing countries compared to developed nations. The question of whether the same challenges have occurred in the entire industry of a given country remains unanswered, as well as the question of how the challenges were overcome, by consumers and banks alike.

Furthermore, the adoption of MB has gathered momentum, although differences in adoption have been identified between developed and developing countries. There is still no universal consensus, however, on the factors that affect the adoption of IMB. A report conducted by global business research firm Datamonitor in 2000 claimed that the adoption of mobile services in Europe was low due the lack of available services (Datamonitor 2000). The hype generated by the technology surrounding MB during the early 2000s petered into insignificance shortly after starting due to a lack of mobile device compatibility, consumer uptake, and banking services (Pousttchi & Schurig 2004). Nevertheless, attempts have been made to understand the propensity of uptake and impact on users of MB (Luarn & Lin 2004; Wu & Wang 2005). These studies are inconclusive in their assessment of what motivates a

bank or service provider or a whole industry. They have focused on the adoption by users but how these innovations are adopted remains unclear.

While much of the original literature on innovations focused on product innovation in developed nations, the emergence of service innovations offers insight into the adoption factors within the banking context for developed as well as for developing nations as they emerge into being service-based economies. From the literature review, a core question emerges on the comparison of technology adoption between developing and developed nations within the banking context. Exploration of this question would provide insights on the usage of technology that would assist organisations such as the World Bank, the United Nations, and national governments and organisations to better develop strategies, and to design products and services to meet the needs of consumers. Hence a question then emerges regarding the patterns and dynamics of IT innovation in developing and developed nations. Based on the literature, an opportunity exists to further understand the dynamics of adoption of IMB in different socio-economic nations, and as a result, the key research questions to be explored are:

Research Questions: What are the patterns of information-technology-enabled innovation adoption in developed and developing countries? How do they differ and why?

This study provides insights into the economic and social value of technology, particularly in developing nations where the impact of technology appears to have had the most influence on society. The study explores the theories commonly applied to developed countries such as the Institutional Theory (DiMaggio & Powell 1983; Tolbert & Zucker 1996), DIT (Christensen & Raynor 2003), and the Reverse Cycle Model (Barras 1996) to ascertain the relevance of these theories to the adoption of innovation in developing countries. The study attempts to highlight different characteristics shared by developed and developing nations and in particular it draws attention to aspects of the theories which are relevant to the developing world. This study focuses on Australia as a developed country and India as a developing country and their comparative participation in the adoption of IMB.

In summary, while the literature on IT-enabled innovations in services is recent, interest is increasing and there is clearly an opportunity for further exploration of the impact of innovations in the services industry in areas such as banking. It is envisaged that this study will add to the existing body of knowledge on innovations in services and provide valuable contributions to the existing findings which claim that bank innovations are easy to imitate

and that innovation in banks differs from that in manufacturing firms (Reidenbach & Moak 1986). As the study of internet banking lies within the body of service innovation literature, this study adds to the literature and highlights a new view within services innovation literature. It is envisaged that this study will contribute to the existing body of knowledge on the adoption of technology within the banking sector, with a particular contribution to the emerging field of technology adoption in developing countries.

3 RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter outlined the foundation for the research questions and the motivations for this study. This chapter begins with an overview of the research setting, i.e., the industry, and the empirical base, followed by the background of the research methodology, an outline of the case studies, and an explanation of the sampling strategy, the data collection and the methods used for analysis of the data.

3.2 Context of the Research into Internet and Mobile Phone Banking

The chosen research context was the Australian and Indian banking industries. The main reasons for this selection were:

1. An opportunity to explore the adoption of the same innovation in both a developed and a developing country. While the adoption of technology has been studied in similar countries, exploring diverse economic settings offers an opportunity to identify key organisational drivers for the adoption of innovations.
2. The researcher worked in the Australian banking industry during the global adoption of IMB in Australia and despite this involvement was unable to identify reasons why different countries exhibited different adoption characteristics motives when introducing IMB.
3. As a resident of Australia, the researcher was confident of obtaining access to much of the needed data; therefore Australia was a logical choice. India was chosen as the researcher had access to banking executives through informal connections in India. Furthermore, the researcher was born in India and brought up in the UK and Australia, which contributes an added cultural dimension to the research.
4. While relations and trade between Australia and India have improved in recent years, there is still a vast gap in both knowledge and research collaboration between the two nations. There have been recent initiatives such as the Australia-India Research Grant for joint research by the academic communities of both countries, yet there is little common business-based research. This research

contributes to the pool of business-based research for both researchers and business executives in Australia and India.

5. Most of the theoretical perspectives on innovation have been derived from and relate to developed countries while developing countries have been largely excluded. This oversight might be due to either the lack of industry maturity or the inability to extract meaningful data from developing countries. However, in the new century developing countries have started to make a significant impact on the global economy, which warrants debate on their emergence particularly pertaining to the adoption of technology.
6. Finally, a study of both a highly developed economy and a fast developing nation has the potential to inform practitioners of innovation adoption in different settings and to create opportunities for further research.

3.3 Research Approach

Information systems (IS) research requires contextual-based methods for understanding business challenges and developments (Walsham 1995). As such, the research questions provide the motivation and indicate an appropriate method for understanding the world (Minichiello et al. 1990). The amount of uncertainty related to the phenomenon under investigation is also an important factor in the selection of an appropriate research method (Trauth 2001).

The approach chosen for this research is interpretivist, as this method is based on the knowledge of a situation as a social event constructed by human actors (Walshman 1995). Supporting this approach, Orlikowski and Baroudi (1991) suggest that people create their own meanings and researchers try to understand the meanings from participants.

In further support for the use of an interpretivist approach, Trauth (2001) suggests the interpretive research method and cites Chau (1986) to support this thinking.

Interpretive studies assume that people create and associate their own subjective and inter-subjective meanings. The intent is to understand the deeper structure of a phenomenon (Chau 1986 p. 5).

Interpretive researchers begin with the assumption that reality can be observed through language and meanings (Myers 1997), as both may provide answers to the actions of

participants (Chau 1986). As a result, the researcher does not start with variables but rather observes the situation as it emerges during investigation through language interpretations and meanings from observations (Kaplan & Maxwell 1994). For the observation method, an interpretative industry case study approach is considered the most appropriate methodology, provided that there is adequate sampling and a data set for analysis is identified (Lin 1998).

3.4 Case Study Methodology

Case studies are one of the preferred methods for conducting qualitative studies as this approach is deemed to be the most appropriate for obtaining qualitative data for research when a study is about interpretations and historical evidence (Stake 1992; Seuring 2008).

Data collection for this case-based research comprised qualitative data derived from the experiences of the target organisations as the diffusion of IMB had numerous intentions which required interpretation. The qualitative approach allowed the researcher to discover and capture the views, actions and motives of the participants (Seawright & Gerring 2008). Heaton (1998, cited in Truath 2001) suggests interpretation using tools such as observation, interview and document analysis as a means of examining IS-based evaluation in two different cultures. The exploratory method was chosen for the study of IMB in Australia and India for the following reasons.

1. The study attempted to explore and understand the adoption of IMB by collecting information through a basic understanding of various events and actions (Akhtar & Dong 2004).
2. The study relied mainly on the use of interviews as a data collection instrument (Perry & Coote 1994).

The case study approach allows for a rich understanding and interpretation of the interviews. It allows for an identification of the emotions behind the decision making rather than just the facts, thus enabling an interactive data collection approach ‘where respondents provide facts about a matter as well as their opinions about events’ (Yin 2000 p. 90).

Yin (1994) also suggests that case studies are most appropriate when the researcher has no control over the events or when the focus is on contemporary events in a real life context. For example, ‘the structure of a given country or the industry or the economy of a city or a region may be investigated by using the case study method’ (Yin 1994 p.1). In this case, the

researcher had no control over the events as the research context was the banking industry in two countries and the events were historical.

Although the researcher had no control over the events, he was able to monitor, note and later analyse findings.

The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events such as individual life cycles, organisational and managerial processes, neighborhood change, international relations, and the maturation of the industries (Yin 2003 p. 2).

The case study research method comprises detailed investigation into and exploration of particular situations (Eisenhardt 1989a). This involves working closely with the expressed viewpoints of the participants, and can include both qualitative and quantitative data collection techniques (Eisenhardt 1989a; Yin 1994). Case studies can be either single- or multiple-case designs within these categories (Yin 1994) and can be either holistic (a single unit of analysis) or embedded (containing multiple units of analysis). A single case study design offers the researcher the opportunity to understand and explore specific instances of a phenomenon (Daymon & Holloway 2002). Multiple cases are desirable when the intent of the research is description, theory building or theory testing (Benbasat et al. 2001), hence a multiple case study approach was appropriate in this instance as more than one organisation was being studied. The next step was to identify the most appropriate artifacts to conduct data collection to offer rich insights into the adoption of IMB.

3.5 Sampling Strategy

The sampling strategy is an important contribution to the quality of the data (Barratta et al. 2010) and was based on targeted rather than random selection of the countries and organisations (Stake 1992). As some countries have limited data on their IMB development, one criterion for selection was the availability of data. Base on this limitation, the most appropriate countries, organisations and executives had to be carefully selected.

The two countries selected, Australia and India, represent one developed and one developing country respectively. The World Bank's classification (1996), as used in a study by Talukdar et al. (2002) which categorised new product adoption across developing and developed nations, was used in this study. The United Nations Social Order (1999b) takes a similar approach to the World Bank in describing developed and developing countries. Countries are

categorised as low, middle and high income countries (Bazar & Boalch 1997) with Australia as a developed country and India as a developing country according to this categorisation. Next, the most appropriate organisations in these two countries had to be identified.

In total, eleven Australian bank executives were approached and nine responded favourably, while ten Indian bank executives were approached and ultimately eight agreed to the interviews. The unfavorable responses were due to internal policy or to the person approached having left the bank. The banks were selected on the basis of their headquarters being in their own countries and not being branches of foreign banks. No particular preference was given to whether banks were private, public or nationalised. No particular distinction of size of bank in terms of assets or other financial criteria was considered, but it was required that each bank had an IMB product of some magnitude. Executives were selected at each bank based on their involvement in IMB and had all been central to the IMB deployment within their own banks.

3.6 Data Collection

Once the executives from both Australian and Indian banks had been contacted and agreed to be part of the research, interviews were organised as these are considered to be the most appropriate data collection instruments in case studies (Gibbert et al. 2008). The objective of the data collection exercise was to ascertain the motivations and emotions of the executives involved in the development of IMB in Australia and India. In addition, relevant individual bank information such as annual reports and analysts' reports were assessed to explore insights before the interviews. Both quantitative and qualitative data were initially collected.

3.6.1 Quantitative Data

Data relating to the target banks were collected from annual reports, Reserve Bank websites and Banskope in order to build a profile of the banks' positions in the banking industry. The research considered factors such as asset size, age of bank, profitability, return on assets, return on equity, staff numbers, cost-to-income ratio and branch deployments, all of which are important data to explore in an industry study (Masciandaro 2000) (See Appendix H & I). Data were collected from 1995, which marked the start of IMB to 2005 (Orr 1995; Yakhlef 2001), by which time all the banks in the sample had introduced IMB. Data such as internet usage, penetration rates and number of personal computers were obtained from the International Telecommunications Unit of the UN. This data informed the characteristics of IT diffusion in Australia and India. Industry analyst data and industry reports and internet-based sources on the global diffusion of IMB were used to identify themes and understand

industry trends. It was then appropriate to collect first-hand data from executives to understand the motivations for internet banking introductions.

3.6.2 Interviews

In-depth, face-to-face interviews are a fundamental method for collecting data in qualitative research (Sekaran 2000). They provide the researcher with an understanding of the interviewee's view of the issue being explored (Perry & Coote 1994). The primary method of data collection was in-depth, semi-structured interviews (Van et al. 2008) of executives who were involved in the development of IB in their organisations. The executives interviewed had been instrumental in the development of IB and were either employed at the time of the interview or had left the bank and were employed elsewhere.

Interviewees were identified through the researcher's own network or were referrals from other interviewees. In Australia, the Australian Bankers' Association assisted in identifying relevant interviewees who had the most knowledge of IMB (Eisenhardt 1989b). They were Chief Executive Officers, IT Division executives, Chief Information Officers, General Managers, Product Managers and Senior Vice Presidents.

Having contacted these executives, it was established whether they were able and willing to participate in the study, and confirmed whether they were the most appropriate interviewees. A total of 17 interviews were conducted in Australia and India as outlined in Table 3.6.1. Ten interviews were conducted on a face-to-face basis and seven interviews were conducted by phone. Another four interviews were conducted in Australia by phone as these executives were no longer employed by the targeted banks. All the Indian interviews but one was conducted face-to-face. While there is no consensus on the number of interviews required in a qualitative study (Lincoln & Guba 1985), the aim was to ensure adequate data had been gleaned from the sample set, hence it was important to build rapport with the interviewees to ensure the adequacy of the answers (Kumar 2005).

All of the interviews were recorded on a ZEN digital recorder and were subsequently transcribed into MS Word documents, including the time, date, interviewees present and the full transcription. (Refer to Appendices B and E for details of the interview participants, their positions and backgrounds).

Table 3.1: Overview of Interviews

Country	Total No. of Banks	Period of Interviews
Australia	9	September 2006 – January 2007
India	8	September 2006 – October 2006

The questions and the ethics approval documentation were sent to the interviewees before the meetings so that they could familiarise themselves with the questions and could be reassured of the thoroughness of the process and the legitimacy of the study. The questionnaire which was the core data collection tool was systematically used as a guide in all the interviews to cover major aspects of IMB development. There were 10 questions in total and each interview lasted between 30 minutes and one hour.

3.6.3 Coding and Thematic Analysis

Once collected, the interview data needed to be collated and analysed in a manner which allowed the researcher to draw emerging views on the overall motives of the adoption of IMB by banks in Australia and India.

The transcripts of the interviews were entered into the software program NVivo version 7, which allowed for the isolation of emerging patterns from the data into meaningful themes. Interviews were referenced and supplemented by making extensive notes against each emerging theme. The notes highlighted important passages and significant quotes, as well as detailing emerging theoretical issues and themes, which enabled the material to be categorised (Fereday & Muir-Cochrane 2006). Each interview response was structured into a specific category and then into a subcategory. The analysis of data from interviews and relevant documentation was interpreted (Wollin 1996) from the multiple personal histories given by bank executives (Denzin 2001). Later, quotations were used to illustrate conclusions about the differences which emerged from cross-case analysis, and the data analysis technique was used to establish a chain of evidence (Yin 2003), allowing for the coding of the data.

A narrative approach was then carried out to demonstrate the findings as a chronological representation of the case (Stake 1992). According to Neuman (2006), narrative analysis is ‘a type of historical writing that tells a story and a type of qualitative data analysis that presents a chronologically linked chain of events’ (p. 474). The next stage was to understand the

themes generated from the coding and thematic analysis to demonstrate how these were interwoven within the analysis. A comparative analysis (Neuman 2006) was conducted to understand the data from the perspective of Australian and Indian banks. This was done using the chosen theoretical frame work of Institutional Theory, DIT and service innovations. Both the Australian and the Indian IMB adoptions were outlined in chronological order from the start of the first bank launching their IMB service to the launch by the last bank.

3.7 Theoretical Underpinnings and Interpretation

In order to aid the analysis, the process of institutionalisation (Tolbert & Zucker 1996) was selected as the first theoretical filter and as a way of comparing the events in Australia and India. The process of institutionalisation was found to be an appropriate lens for analysing innovations across industry. Using Tolbert and Zucker's model, the observations and comments were mapped on a timeline based on the similarity of the comments and in chronological order of banks introducing the IMB. Both similarities and differences in the data were mapped. Aspects of the initial data were able to be explained by Tolbert and Zucker's theory; however, differences later emerged which could not be explained by Tolbert and Zucker's model, for example, the motivations for the adoption of MB.

In order to understand these unexplained motivations, Disruptive Innovation Theory (Christensen & Raynor 2003) was used as a second perspective. The objective of the second phase was to refine the findings and attempt to explain the differences between Australian and Indian banks' views on IMB adoption. DIT originally demonstrated internet banking as a sustaining innovation, rather than a disruptive innovation. However, instances in the Indian data suggested there may have been anomalies in this thinking. Further analysis of the data was required to understand how adoption was manifested in different environments. To do this, service innovation or the Reverse Cycle Model (Barras 1996) was used to establish the differences. This new approach appeared to explain a relationship with DIT and Barras' Reverse Cycle Model, in that the Indian banks experienced a reverse of what had been articulated by Barras. The Indian banks also demonstrated disruptive innovation behaviour in contrast to the Australian experience. As a result of these processes, a number of contributions are suggested in the discussion section to enrich existing theory and provide a deeper understanding of innovation adoption in different contexts.

3.8 Ethical Considerations

Ethics are an integral part of the data collection process, which begins and ends with the researcher (Neuman 2006). Having obtained the Ethics Approval from the University Ethics Board (see Appendix F), it was important to ensure that the role of the researcher was known and understood by the interviewees. A guide to ethics in research requires that each participant be informed of their involvement in the research, that no harm will be done to them, and that total privacy and confidentiality will be maintained both during and after the research process (Miles & Huberman 1984; Patton 1990, cited in AL Qur'an 2005).

Each participant completed an Ethics Approval form, thus consenting to the interview. Each participant was informed of their rights and assured that there would be no personal risk to them in any way as a result of the study. Participants agreed to the terms of the Ethics Approval Committee and signed the written consent form. While they had the right to refuse involvement in the study, none of the participants exercised this right. Care was taken to ensure that the researcher was both transparent and professional during the interviews and subsequent research.

3.9 Summary

The appropriate research, context and methodology were developed taking into account the nature of the industry research. The industry case study was supported by an interpretive approach, with semi-structured interview data collection as the most appropriate research instrument to ensure facts, opinions and emotions were all captured. The nature of the study required a cross-country comparative industry analysis, comprising multiple cases.

Appropriate theoretical frameworks established in the literature review were used to understand the findings in order to answer the research questions and to assist in the identification of this study's contributions to research knowledge.

4 RESULTS: EXPLORING IMB IN AUSTRALIA AND INDIA

4.1 Introduction

This chapter is presented in two sections. The first gives a background of the two countries, Australia and India. This contextualisation forms part of the case study to demonstrate the contrast between them. The second section provides a chronological in-depth account of the development of IMB in Australia and India. This account includes the similar and different characteristics of each country and the potential impacts of innovation adoption.

4.2 Comparing Australia and India

This section compares Australia and India: the demographics, the economies and the banking industry. The objective is to highlight the differences between a developed and a developing country in terms of economic and technological characteristics, which may lead to motivational differences in technology adoption.

4.2.1 Country Profiles: Australia and India

Australia is geographically one of the largest countries in the world, yet one of the least populated, with 21 million inhabitants in 2008 and an annual economic growth rate of 1.2% (Congress 2005), which had increased to 22 million by 2012 according to the Australian Bureau of Statistics. Australia has been a major recipient of immigrants from all over the world and, according to the Australian Immigration Department in 2008; immigration has had a significant effect on Australia's population. At the end of World War II, Australia's population was just over 7 million, with around 90% born in Australia. At the time of the 2006 Census, Australia's population was 19.9 million, with 'nearly one in four people living in Australia born overseas' (IMMI 2008).

Though blessed with so many immigrants, it has been a challenge for Australia to integrate into the world economy because of its distance from the major population regions of Asia, the US and Europe, and the time differences from major markets. Despite these factors, Australia has been a major contributor to some of the world's most notable innovations. According to the National Science and Technology Museum (2009), innovations such as the solar water heater, the aircraft flight black box recorder, the bionic ear and penicillin were all Australian inventions which have been widely adopted across the globe. The banking industry has also been a leader in product and technology innovation with developments such as the credit card,

ATMs and Electronic Point of Sales terminals. These innovations have occurred as a result of fast consumer adoption of new technology and forward thinking in banking regulations.

India in contrast is the world's largest democracy and second most populous country and according to the Indian Government had a population of 1.2 billion in 2012 (<http://censusindia.gov.in/>). Unlike Australia, India has been an emigrant country. Indian people have left India since the 18th century, originally to assist the British in Fiji, South Africa, the Caribbean and other British colonies. This was seen as a 'brain drain', where the best and brightest left India to settle overseas. In recent decades, however, these emigrants have assisted in connecting India to the rest of the world, which has helped India to emerge as a major economic power after several decades during which the economy was virtually closed (BBC 2007b). In 1991, driven by financial crises, India embarked on an economic revolution. As Das (2002 p. 213) states, 'apart from macro-economic reforms, it brought confidence and excitement'. Das quotes *The Economist* (2007) which claimed India was an 'un-caged tiger' waiting to be unleashed to its full economic potential (Khanna 2007; Hiscock 2008).

During the period of this study, the Indian economy posted an average economic growth rate of more than 7% (*The Economist* 2007), as it capitalised on becoming a major exporter of software services (CIA 2007b). In 1991 the economy received economic stimulus and due to conditions favourable for economic expansion (ITU 2004), India later emerged as the success story of the early 21st century. This economic expansion provided India with a Gross National Product (GNP) on purchasing power parity of approximately US\$2.4 trillion during the period of this study. Thus India became the fourth largest economy after the US, China and Japan (Sinha 2002). A booming economy and increased disposable income created greater acceptance of new technology and a willingness to spend on it (IAMAI 2006a). Despite this, India remained well behind its peers and behind developed countries in the overall rate of ICT adoption.

4.2.2 Economic and Technological Comparisons

Table 4.1 summarises the similarities and differences between Australia and India, with a focus on economic and technological factors.

Table 4.1: Economic comparison: income and overall prosperity

Year 2008	Australia	India
Population	21m	1.2bn
Middle Class	18m	250m–400m
Banks	12	52
GDP (Gross Domestic Product) Growth 1995–2007	2–3%	7–8%

Source UN and World Bank, Australian (www.austrade.gov.au) and Indian Government data (2009)

India is different from Australia mainly in the size of the population, an emerging middle class and a GDP growth rate which was one of the highest from the late 20th century into the early 21st century. Australia's GDP growth has been based largely on the resources sector which makes it a major contributor to the world's resource needs. India's population is second only to China's, with a fast emerging middle class of consumers. This middle class has become affluent and demands products and services previously affordable by only the few wealthy. Due to the population density and the geographic spread of the 24 states in India, each state has a state-based bank, with national banks also serving each state. India's growth has been based on both manufacturing and the IS sector and is predominantly export-based rather than fuelled by domestic demand. The export-based information sector has also contributed domestically by improving the telecommunications infrastructure in the country. This is illustrated in Table 4.2.

Table 4.2: Information and communication technology differences

Time Period	Australia	India
Internet % growth (1996–2008)	(300%) 20–90% per capita	(000s%) 0.001–8% per capita
Mobile phone % growth (1996–2008)	50–110%	25000%
Number of mobile phones (2008)	21m	250m (5th member of 100M Club)
Personal computers per capita (2008)	78%	3%

Technology- based characteristics demonstrate a wide yet closing gap between developed and developing countries as illustrated by the number of internet users in Australia and India.

The technological comparison between Australia and India demonstrates Australia's superiority over India as a fast adopter of the internet and mobile phones. However, while India started at a lower base, it has seen one of the fastest rates of growth in percentage terms over the same period. The ownership of personal computers per capita in India remains one of the lowest in the world due mainly to the cost of personal computers. In contrast to the low take-up of personal computers in India, mobile phone growth rate has been much faster due to the low cost of mobile phones and the reduced tariff structure, giving India the cheapest per minute cost in the world. Mobile phone ownership has moved from citizens in the cities to people in remote villages in India and has become a tool for the poorest villagers (Aggarwal & Kaur 2012). It has become a business tool as well as a communication tool, allowing villagers to generate income (Columbus 2012). For example, rickshaw drivers can now make appointments to meet clients, while the local peasant grocer can order supplies from the farmer. The uptake and growth in the use of mobile phones was evident after the removal of incoming charges in 2002 in India. According to data from a study on mobile handsets, the growth in handsets is likely to continue at an exponential rate (Kidron et al.2007).

According to Johnson (2006) in *The Financial Times*, India became the fifth member of the 100 Million Mobiles Club in 2006, along with Russia, Japan, the USA and China. When the telecommunications market was deregulated in the early 2000s it allowed multiple local and foreign operators to offer new products at competitive rates, again accelerating the pace of the adoption of mobile phones in India. The mobile phone has been transformed from a luxury to a commodity item, originally used for communication but now also for business such as for ordering goods and services. According to the mobile phone manufacturer Nokia, manufacturers have been able to take advantage of local manufacturing (Joshi 2007). Global phone manufacturers have been able to develop solutions to meet Indian-specific needs, taking into consideration factors such as literacy levels and rugged usage in rural villages.

Australia's mobile phone market suggests ownership of more than one phone per capita, making it one of the highest per capita users of mobile technology. As an early adopter of the technology, Australian consumers have adopted the mobile phone since its emergence in the early 1980s. Many consumers now own two mobile phones, one for personal use and one for business use. The 1997 deregulation of the telecommunications market, together with the country being a leader in new technology adoption, assisted Australian consumers to enjoy

greater product choice and competitive pricing. During 2009, the growth in the number of mobile phones was limited, apparently saturated at a level of approximately 95% of the Australian population, while in India, the 250 million mobile phone users in 2008 represented only 20% of the total Indian population.

A more appropriate measure may be the percentage adoption of mobile phones for each country: from 1995 to 2002 mobile adoption in Australia was approximately 55% while the Indian rate of adoption during the same period was less than 5%. During 2008–2009, the percentage growth in Australia was 100%, while in India the percentage growth was approximately 25000%. This was largely due to the increased Indian population with growing disposable incomes, for whom the mobile phone had become affordable and a status symbol.

4.2.3 Background to Australian Banking

The Australian banking industry is governed and monitored by the Reserve Bank of Australia (RBA), which is independent from the Australian Government. The RBA's main responsibility is monetary policy, with the primary objective of achieving low and stable inflation over the medium term. Other functions of the RBA include maintaining financial system stability, promoting the safety and efficiency of the payments systems, participating actively in global financial markets, managing Australia's foreign reserves and issuing Australian currency notes (RBA 2009). The banking industry contributed 8% to Australia's GDP during the period of this study, and continues to be a major contributor to and supporter of Australia's economy through robust regulatory and advanced technology products.

A major financial service inquiry in Australia, the Wallis Inquiry, was conducted by the Australian Government in the late 1990s to provide future guidelines for the Australian financial system. In the introduction to the inquiry report, Wallis claimed, 'The stability, integrity and efficiency of the financial system are critical to the performance of the entire economy' (p.1). Wallis (cited in Neale 1997) notes that rapid technological innovation; an evolving business environment and longer-term changes in customer needs are reshaping the financial system. He also mentions the internet as marking a major turning point in banking, which was transformed by technology, particularly the internet (Blount et al. 2005; Unnithan & Swatman 2001).

Before 1980, Australian retail banking had strict regulatory controls, resulting in banks having very similar products and services (Roberts & Amit 2003; Taylor & Hirst 1983). However, enhanced authentication technology and secure transmission of information were accelerating

technology use (Hanratty 1997). Brown and Skull (2006) noted that ‘comparative cost efficiency of banks may vary widely between developed and less developed economies in the Asia-Pacific region’ (p. 2). Brown and Skull (2006) also noted that the cost-efficiency advantage ‘may lie in the ability of large banks in developed economies to utilise advanced information technology’ (p. 2). Improvements in communications infrastructure and technology removed physical constraints and cost barriers to the transmission, storage and use of information.

Not only was Australia a leader in technology innovations but its banking consumers were also fast adopters of technological solutions. A study of the G10 countries and Australia conducted in 1999 by the Bank of International Settlements found that Australia was one of the heaviest users of cheques, credit cards and EFTPOS. During the 1990s, Australia experienced one of the fastest growths of EFTPOS along with Belgium and the United Kingdom. This further demonstrates Australia’s leadership in adopting new banking technologies.

4.2.4 Background to IMB in Australia

Electronic channels for payments and financial service delivery were increasingly taking advantage of networks during the 1990s. The expansion of ATMs, EFTPOS access points and telephone banking generated a large shift towards electronic transactions away from reliance on bank branches (Castro et al. 2010). Once security had improved, financial transactions through the internet started to expand rapidly and the operating costs per transaction were lowered through these new electronic media (Hanratty 1997; Bakar et al. 2011). Alongside banks in Sweden, Finland and the US, Australian banks were among the first to develop IB services, as rapid internet penetration was available to most of the homes in Australia.

To take advantage of this internet adoption, in 1995 the Advanced Bank was the first Australian bank to launch IB. The bank was subsequently acquired by St George Bank in 1996. This initial introduction of IB was followed by the Commonwealth Bank of Australia and Bank SA in 1996, Westpac and ANZ Bank in 1997, and the rest of the banks in the period 1999 to 2001. By 2001 all major national and regional banks had deployed basic IB, allowing account balance views and limited account transfers. From 2001 the banks advanced their offerings by providing functionalities such as bill payments, share broking and international payments, which later became mainstream offerings for all banks in Australia.

Researchers and analysts have observed that in 1997 Australia's biggest and most profitable bank, the National Australia Bank, had yet to introduce IB (Sathye 1997). This contradicts Bughin's theory (2003) which claims that large banks exercise their investment to ensure first-mover advantage over smaller organisations which do not have the ability to take risky decisions.

Internet banking was expected to open up competition among organisations and the substantial upgrading of infrastructure facilitated this roll-out (Sathye 1997). A similar finding was also made by the Wallis Report, which noted that after 1997 the introduction of new and upgraded telecommunications technology such as hybrid optic fibre and coaxial cable networks would provide additional communications capacity, resulting in more efficient provision of services. This opinion is similar to the viewpoint of Satya, mentioned above, yet not all banks recognised this opportunity for the rapid development of IB.

After the initial investment in IB, mobile phone banking using Wireless Access Protocol (WAP) was launched by five banks in early 2000, only to be closed down during the same year due to poor infrastructure, expensive handsets, limited functionality and high cost for the end user. There was a similar trend in countries such as Sweden and Finland which had been leaders in new technology adoption, particularly MB.

4.2.5 Background to Indian Banking

Banking first came to India in 1870 when the Bank of Hindustan was set up during British colonisation (Agrawal & Nagar 2005). The bank was later known as the Imperial Bank of India as the result of various mergers. When India obtained independence in 1947 as a democratic republic, the Reserve Bank of India was set up to manage and regulate banking (Agrawal & Nagar 2005). State-owned banks managed approximately 75% of the total assets with a large network of ATMs and branches. The State Bank of India, the largest in the country, owned close to 9000 branches, while ICICI, one of the newly licensed banks, managed approximately 600 branches (Sengupta & Thomas 2005). Some major strengths of the Indian banking industry have been the regulatory system, economic growth, risk and credit quality, and the ability of the industry to absorb IT advancement (FICCI 2006) .

The advancement of IT and the ability to deploy banking solutions gave Indian banks a key differentiator and a major factor in gaining competitive advantage. For example, ATM usage increased six-fold between 1999 and 2004 (FICCI 2006). In 2005, 39% of bank customers used ATMs, with younger customers the most likely users of these services (Sengupta &

Thomas 2005). As a result of greater technology usage, India's retail banking market expanded at a rapid rate, with total banking revenues close to US\$17 billion by 2010, up from US\$6 billion in 2004. This represents nearly triple growth within a six year period. Consumers became aware of the range of technology-enhanced products being offered by banks, providing greater choice and flexibility through new organisations (Sengupta & Thomas 2005; Sudhaha & Karthiyeen 2010).

This greater consumer awareness and subsequent range of choice increased during the 1990s when private financial institutions were granted licences to operate retail banks and soon had limited penetration of the urban areas of India (Pani & Agrahari 2004). These new banks did not have the legacy processes of the established banks and were able to develop solutions with the customers in mind. These newly licensed organisations were able to take advantage of one of the most profound initiatives in Indian banking history, the Financial Inclusion Policy, which stipulated that every Indian citizen was to be connected to the economy by way of a bank account. Although not an official act of parliament, the policy was adopted as a mechanism to extend banking to the masses and provided banks with the impetus to develop new solutions to capture the unbanked. IT was considered integral for capturing these customers and to reach the masses in the remote villages. As a result, the greatest impact on rural India may have started with the coming of the internet to the villages.

4.2.6 Background to IMB in India

The economic growth of the early 1990s led to a number of new telecommunications policies as the demand for services grew. These policies supported the growth of IMB in India. The New Telecommunications Policy (NTP) of 1999 was one of the most important pieces of legislation for the Indian industry (Sinha 2002). The NTP ensured India's emergence as a major manufacturer of telecommunications equipment through the core objective of providing affordable and competitive communications. It marked a major shift in telecommunications development for the country, opening the market to greater competition and providing telecommunication services to customers in the villages for the first time.

The NTP of 1999 had a dramatic impact on the telecommunications sector. Internet service provision was provided by the state carrier VSNL, which launched internet services in 1995 as the sole provider. In November 1998 the Government ended VSNL's monopoly by allowing private operators to provide internet services (Sinha 2002). The profound impact of

the opening up of the market in telecommunications is summarised in a report on the growth of the Indian internet by the Internet and Mobile Association of India (IMRB 2006):

It is making deep inroads into everyday life, be it creating a new means of service delivery, knowledge sharing and at the most basic level just how individuals communicate with each other. This revolution is benignly changing the lifestyle of Indians the length and breadth of the country (p. 4).

The report also states, 'PCs and internet connections have become more affordable making it easier for many to own a PC and use the internet' (p. 11). This cost factor facilitated the mass adoption of telecommunications technology. This phase in Indian telecommunications development marked a major turning point, particularly for poorer rural citizens. While most developing countries remained largely information and knowledge poor, countries such as India were undergoing rapid growth in services and information-based industries (Howells 2000; Malhotra & Singh 2010).

As a result of these initiatives, direct dial-up connections, personal computers, tele-banking and ATMs became common in India during the 1990s. While IB evolved in the mid-1990s (Radhika & Mukund 2003), it was not until 2001 that the Reserve Bank of India issued guidelines on IB development to provide a framework for technology, security, and legal and regulatory requirements for banks (ICMR 2004). A Reserve Bank of India survey in 2001 revealed that nearly 23 banks out of a total of 46 offered IB at various levels of services (Radhika & Mukund 2003). A report by the Internet and Mobile Banking Association of India (IAMAI 2006b) supported this by claiming that the years spent by banks on building trust with customers had resulted in a growing number of internet users with an increase in financial activities online. IM adoption was aided in part by the Indian telecommunications sector, which had been moving from a government monopoly to a free competitive market (Sinha 2002). So much so, that mobile users had surpassed personal computer users, with even more mobile phones than TVs in India (IAMAI 2006a).

Shortly after many banks in India introduced IB, Radhika and Mukund (2003) found that while there was high interest in it, the Indian banking industry was plagued by challenges such as a low personal computer and internet user base, and the lack of telecommunications infrastructure. A major contributor to growth, however, was the reduced cost of mobile handsets as a result of the NTP in 1999 and in the following years. The cost was reduced from US\$500 to US\$40 between 1998 and 2004, with tariffs decreasing 1000% during the same

period due to increased competition (ITU 2004). As a result, the mobile subscriber base grew from 1 million in 1998 to 33.7 million in 2004 (ITU 2004). This growth would become a boon in consumer uptake for the banking and telecommunications industries in later years.

4.3 Australian Internet and Mobile Banking Development

A chronological review of the evolution of internet and mobile phone banking in Australia is illustrated in Table 4.3. These statistics demonstrate the evolution of IMB from 1995 when the first bank introduced internet banking through to 2001 when the last bank introduced IMB.

Table 4.3: Timeline of banks introducing internet and mobile banking in Australia

Year of Launch	1995	1996	1997	1998	1999	2000–2001
Internet banking	Aus1	Aus2, Aus3	Aus4, Aus5	NIL	Aus6, Aus7, Aus8	Aus9
Cumulative	1	3	5	NIL	8	9
Cumulative % of banks in the study	11%	33%	55%	55%	88%	100%
Mobile phone banking						Aus8, Aus2, Aus4, Aus5, Aus6

Table 4.3 demonstrates that the first bank to launch IB did so alone in 1995. When the technology and product offering became more viable and stable in the eyes of the consumers, other banks followed Aus1, and in the case of Aus9 did so five years later, demonstrating a very different strategy from that of Aus1. The cumulative percentages demonstrate the rate of overall industry adoption within the studied targets over the time line of the study. In addition the table demonstrates that mobile phone banking was introduced in 2000 and 2001, to be later disbanded due to poor consumer uptake. These factors will be discussed in the following section.

4.3.1 The Introduction of IB in 1995–1996

The following section describes the key themes that have emerged from Australian banks (Aus1, Aus2 and Aus3) which were early adopters of IB. This group of banks demonstrated

similar characteristics and strategies in their deployment of IB. The influence of executives who had had prior experience of IB in a bank overseas, the need to upgrade ageing technology and the desire to provide improved customer service and to enable self-service were all key drivers.

4.3.1.1 Executive Influence

Australian IB started in 1995 (Sathya 1999) with Aus1 the first bank. Aus2 and Aus3 launched over a two-year period in 1995–1996. Senior executives were seen as important instigators for IB within their organisations (Brown & Russell 2007; Elenkov et al. 2005; Lin 2007). Within this context, the overseas experience of executives was believed to have had an influence on Australian banks. As the executive from Aus1 states:

As a matter of fact we visited some online banks overseas. They are basically have a call centre and the rest [of the banking channel] is online and you know that was their view of the world going forward (Senior Manager IB, Aus1).

These executives envisioned offering similar internet-based services in the Australian market and were seen as leading these initiatives. These executives were early visionaries of new products and services, and were central to driving innovative initiatives. They saw great potential for the internet in serving banking customers and, according to Tolbert and Zucker (1996) ‘champions are most likely to emerge when there is a large potential market for the innovation’ (p. 183). The quote below demonstrates a universal view among Australian banks, particularly among the early adopters:

Internal decision making was a very short process for [internet banking]. It [the proposal] solved itself almost immediately you looked at it. Our CIO, [Chief Information Officer] brought straight into it a couple of hundred grand to develop the IB channel and didn’t even bother going up to the next level [and decided it was] something we needed to deliver. [His view was] just deliver it (Senior Manager IB, Aus1).

Internet banking was championed by people who understood the technology and the business potential, even though there were technical challenges such as security and speed of service. The seeding of innovations, particularly unproven technology, had scant official procedure and minimal executive support. This led to ‘skunk works’ – trials of new technology with limited exposure for fear of failure. Australian banks developed the trial facilities to explore

the technology before revealing to management the value of the technology to the business. A lack of understanding at the higher executive level often forced technology initiatives underground until the need to protect existing customers emerged, such as what was observed by Aus2:

[Product Name (internet broking)] was certainly a skunk work.

Banks which were late in adopting IB faced the prospect of losing customers and so provided those services initially as a means for retaining customers, though they were not always sure about how to overcome the technical challenges initially.

4.3.1.2 Technology Challenges and Opportunities

During the late 1990s when the internet came into commercial use, much of the technology in existing bank offerings was seen as ageing, creating limitations as well as inhibiting business growth (Yang & Ahmed 2009). Existing technology was not only slow but also difficult to migrate to new platforms (Wang 2007), as observed by Bank Aus3 of the early technological challenges:

The infrastructure [and] line speed started to improve. [But] lack of PCs overall and the penetration of the consumer market was a significant impediment to the technology (CEO, Aus3).

Early adopter banks had different motives for introducing IB. For example, one bank saw growth strategy and staying ahead of the competition as major motives.

It was really quite literally a part of looking at what was on the horizon, what technologies were going to be suitable, how they could complement, particularly our customer-facing focus. So we were looking at a whole range of new technologies, new customer-facing technologies. In fact, we replaced the whole branch network to support that strategy (CEO, Aus3).

Customer considerations were at the forefront for banks which were the first to adopt new technologies (Wang 2007). Customer adoption of IB demonstrated either maintaining or creating market leadership in the industry for banks.

4.3.1.3 First Mover Advantage

First movers were keen on being able to differentiate their service offerings from the competition (Menguc et al. 2007) by introducing new products early (Varadarajan et al. 2010). In order to succeed, banks needed to continually differentiate from their competitors (Zott & Amit 2008) by providing value through their banking offerings (ICFAI 2006). As observed by Porter (2007) and Blount et al. (2005), organisations could gain two types of benefits from the deployment of the internet, one being operational efficiency and the other being strategic position or distinctiveness (product differentiation). Porter's (2007) view became particularly relevant as banking products became commodities soon after launching, thus the need to develop products that differentiated from the competition became necessary for remaining an industry leader (Orr 1998), as Aus2 demonstrated:

The motivation [for IB] was more about providing a differentiator and you know the internet was beginning to move with technology, and the retail banks thought it should continue to remain at the forefront of online banking (CIO, Aus2).

The early adopting banks were seen to differentiate themselves from the competition by introducing IB. They invested in understanding emerging customer needs because they were on a growth plan and considered customer feedback necessary for introducing new banking solutions.

The customer base really influenced the decision but it was really also around understanding our customers more, about understanding what their transaction volumes were [and] what their loads [usage of banking services] were (CEO, Aus3).

Customers' need for convenience was a major factor for banks in introducing IB, as this was seen as a major differentiator. Technology could enable convenience and provide banking self-service for customers in an innovative way.

4.3.1.4 Self-service

Banks which introduced IB earlier than the rest of the industry seized an opportunity to provide customers with the ability to self-serve for their banking needs (Ding et al. 2007). As Hernandez and Mazzon (2006) state:

The 1980s witnessed a marked shift in the distribution channels of banking services towards self-service alternatives. Pressured by rising costs, ever more demanding customers and the need to preserve profitability while standing out from the

competition, banks found themselves forced to invest in new customer service channels such as internet banking (p. 1).

Other researchers such as Durkin (2004) agree with Hernandez and Mazzon that consumers could access banking services when and where they wanted without face-to-face interaction (Campbell & Frei 2010; Bitner et al. 2000; Howcroft et al. 2002; Natarajan et. al. 2010). Self-service was considered to be of value to Australian customers:

There was a lot of thought that people would be self-directed online, trading [banking products] extensively themselves and managing themselves (CIO, Aus2).

A significant benefit for banks from self-service was that the internet reduced the need for the physical distribution of the branch network (Li 2002; Kent et al. 2005). As the internet was cheaper than the branch network, it became an alternative to the branch without the physical infrastructure.

4.3.1.5 Alternative Channels to Market

Technology offered customers banking choices to access their bank such as ATMs and credit cards (ICFAI 2006; Banstola 2007). The internet was yet another channel for interacting with the bank and also enabled banks to reduce costs. The CIO at Aus3 commented:

I think there was an eye to, you know, the things that we alluded to before, cost-to-serve and a new channel to market and a new way of doing business through alternative channels.

Introducing the internet as an alternative channel was evident among all respondents but more prevalent among the leader banks (Chang 2005). After the initial group of banks launched their IB service, two banks (Aus4 and Aus5) launched their own IB services. However, their motives were slightly different from those of the leader banks. There was no mention of a desire to be leaders in the industry or differentiation of their services from the competition. Aus4 and Aus5 saw the introduction of IB for different reasons than did Aus1, Aus2, and Aus3. This discussion is the basis of the next section.

4.3.2 The Followers: 1997–1998

Despite technological improvements from 1995 onwards, there were still technical limitations; banks faced challenges as a result of the newness and the ongoing uncertainty of the IB technology. Organisations were apprehensive about introducing technology with

limited market testing, even though the earlier adopter banks, Aus1 and Aus2, had already introduced IB. Aus4 and Aus5 saw the coming of the internet as a way to upgrade ageing technology which was restricting customers' ability to conduct transactions. Enhanced technology allowed banks to offer new services; however, this brought another challenge – product cannibalisation. Revenue from existing products would be threatened and this risked the prospect of departmental tensions. In addition, bank customers were monitoring the introduction of IB by Aus1 and Aus2 and had requested Aus4 and Aus5 to offer similar services as a result of the upgraded technology that was available.

4.3.2.1 Updating Ageing Technology

Banks such as Aus3 and Aus4 had been offering home-based banking via the personal computer and a telephone line to their customers since the early 1990s, allowing them to conduct banking after hours. The banking needs of customers had outstripped the capabilities of what banks were able to offer. The coming of the internet provided a means to serve these customers outside banking hours with improved services than those provided by home-based banking (Banstola 2007). Home-based banking (Yiu & Grant 2007) was followed by several decades of innovation based on banks using technology (Ozedemir & Trott 2008) to deliver services such as ATMs, telephone banking, voice response units and technology-enabled call centres (Hitt & Frei 2002). Internet banking was seen as a further development to improve home banking:

[Our bank] looked at home banking as being the prototype or the predecessor of internet banking [to replace old technology] (CIO, Aus5).

We had an idea of turning the PC banking gateway into an internet service [for banking products] (Head of IB, Aus4).

While trying to upgrade technology and new service offerings, banks were faced with product cannibalisation of existing products and revenues. This became both an opportunity and a challenge for banks that were prepared to take the bold move of introducing IB.

4.3.2.2 Product Cannibalisation

For banks Aus4 and Aus5, the risk of cannibalisation of existing products was seen as a major factor when they introduced internet banking (Nielsen 2008). Banks were fearful that their own innovative practices would disrupt their existing revenue streams. However, they were equally fearful that if new products were not offered, consumers would defect to

competitors (Singer et al. 2007). As a result they embraced new technology with a view to cannibalising existing products. This decision was made by reviewing the benefits of IB and recognising the consequences of not introducing this new IT-enabled banking service:

I think the real decision was probably an emotional one but the business case decision was around paper to electronic savings, displacement of transactions probably not so much in the branch environment, the displacement of telephone banking transactions into internet and the cost differential between those (Head of IB, Aus4).

Existing services such as telephone banking and branch-based services could be threatened; however, the needs of customers became of paramount importance to Aus4 and Aus5. Customers' needs eventually overcame the perceived risks of cannibalisation.

4.3.2.3 Customer-driven Service

Australian banks received a mixed reception from their customers when they introduced internet banking. Banks which introduced the internet service early relative to the rest of the industry were not responding to customer demand. Rather, they were introducing internet banking as a differentiator strategy (Jham & Kaleem 2008). Banks which were later adopters had customers who demanded the service be offered by their banks, in other words, internet banking was 'customer driven' in these cases (Banstola 2007).

So if you look at early adoption curves, we [had] rocketed ahead, absolutely rocketed ahead not only in take up but in transactional volume as well. Transaction usage and I think the take-up issue became a game with so many other banks because they saw what was happening to us. We had natural take-up because people wanted to take it up [IB]. They started playing the game of let's just register people so we get the same numbers (Head of IB, Aus4).

Those banks that did not immediately follow the response from customers were 'industry laggards', and hence introduced IB as the last group of banks.

4.3.3 The Laggards: 1999–2000

The last group of banks to deploy IB waited for the technology to mature before introducing it. Early adopters clearly introduced IB for growth and to differentiate them from the competition or to reduce customer service costs, while later adopters of IB used the new

technology as a 'retention' strategy. The late adopters were forced into defensive measures to avoid losing existing customers.

4.3.3.1 Defensive and Retention Strategies

The drivers and motivators for banks which deployed IB later than the early adaptors were mainly those of 'retention and survival' (Schlie et al. 2008), as suggested by Aus9:

So actually yes we had to get up with the competition just purely from a customer retention point of view, not from attraction but for retention (Head of IB, Aus9).

While many banks knew about IB, they perceived deployment as a defensive strategy (Bielski 2000; Yu 2008) and a long-term survival strategy (Scruggs & Nam 2002). The online channel was considered a powerful disincentive for customers to defect to other banks (Sheshunoff 2000). Banks which were later adopters of IB introduced the new service to avoid losing customers to other banks (Chellappa & Kumar 2005).

It was definitely a defensive strategy [to implement internet banking] (Head of IB, Aus7).

For banks which implemented IB, the major driver may have been to retain existing customers by ensuring similar offerings to the competition. It appears that retention of customers was marginally higher for banks which had implemented an IB service (Hitt & Frei 2002) and it was particularly evident among banks which were late adopters. The inertia of these late adopter banks resulted from a lack of foresight in overcoming technology difficulties and a lack of willingness. These were major hindrances to their progress in deploying IB, and the inertia also resulted in their customers' negative perception of these banks. These banks introduced IB without adequate strategic planning as they considered that IB had not technologically matured enough to warrant the investment required and still had major limitations.

4.3.3.2 Technology Limitations

Unproven technology was considered a major challenge (Polasik & Wisiewski 2008) for banks that had launched their IB service during 1999 and 2000, even though the internet had been in commercial use for at least the last four to five years.

There was a very strong perception that people would not change from telephone banking until broadband came in [due to] the time it took to go into your study to turn

on PC, dial in, log in, check your balance, move your money, etc. Lack of PCs, lack of broadband, being stuck on dial-up, [was] counterbalanced by the fact that many high net worth customers were overcoming the lack of PCs, and prepared to overlook the inconvenience of dial up-at that stage (Head of Electronic Channels, Aus6).

While overcoming these limitations, customers became more aware of what they could do with the internet and banks began to receive demands from customers to provide internet banking.

4.3.3.3 Customer Pressure

The major Australian banks Aus6, Aus7, Aus8 and Aus9 felt that as a result of their late entry into IB compared to other banks, existing customers felt disadvantaged (Jenkins 2007), which ultimately forced later adopter banks to introduce IB (Campbell & Frei 2010). The following comments typify this sentiment among banks that were forced to introduce IB:

By mid-1999 AUS6 was good at market research, and had very good customer information capability. It was pretty clear that when a statistical analysis was done on the customer base there was a very high correlation between income level and use of the internet, so it was seen that the use of the internet would provide a big opportunity for retaining particularly high value customers. Also failure to have a good IB presence would be a pretty good reason for some of these high value customers to defect, so it did make quite a strong influence, [and] we were in danger of losing our high value customers (Head of Electronic Channels, Aus6).

For banks such as Aus6, the initial focus was on providing IB to only high net worth customers, only later to find that the offering would be more universal.

4.3.3.4 High-end Customers

Customer segmentation in terms of deciding who would benefit from IB was of paramount importance to banks. The aim was to ensure that optimal solutions via the internet were provided to customers who needed them most, in some cases to high net worth individuals (Cracknell 2004; DeYoung et al. 2007). Internet banking was seen by banks as a capability for a limited consumer base, a base whose ability to access the internet and use the offering demanded a different level of service:

I think people came to the conclusion that there was a possible market for the self-directed high net worth customer (Head of Electronic Channels, Aus6).

Serving the high net worth customer was a view held only by Aus6. Other banks saw their whole customer base as having access to IB. Although the initial focus of Aus6 was on providing IB to only high net worth customers, the bank later decided that the offering should be more universal.

4.3.4 Australian Mobile Phone Banking: from Start to Stop

Mobile-based banking, that is, banking using the mobile phone, started to become prominent during 2000 for many banks in this research. Aus6, one of the largest banks in Australia, was the first to introduce MB, followed by Aus2, Aus4, Aus5 and Aus1 within a period of one year. The other banks, Aus3, Aus7, Aus8 and Aus9, considered themselves either too small or felt that they lacked the resources to substantiate the large investment required for mobile-based banking.

Wireless Access Protocol (WAP), the technology prevalent at the time, was used for transmitting data to and from mobile phones but was considered to be immature and short on capability. This inadequate capability became a major disincentive for customers to adopt mobile banking such that services offered were too limited to warrant customers making the required investment and too costly for banks to recover their investment.

There was high expectation for MB to perform well when it started (Laukkanen & Pasanen 2008). However, implementation was reduced to small trials with limited customer engagement. Much investment had been made and banks viewed MB as an opportunity to further reduce costs and provide a truly 24/7 banking service. It was envisaged that banking on the mobile would allow funds transfer, bill payment and share broking. These applications were considered a major leap forward for the banking industry; however, the hype did not meet expectations:

We were dubious of WAP, and so there was not the excitement around WAP that there was around IB. We basically put up a prototype/pilot. Little or no [customer] usage [was seen] and as far as I recollect we killed it (Head of IB, Aus4).

We organised about 1000 early edition WAP telephones, to be provided to private bank customers, and we were planning to do it on the IB infrastructure, they could not accommodate it, so we ended up piggy backed onto the telephone banking infrastructure. The reality of it was, the WAP was pretty slow, not that reliable, people found it quicker and easier to get onto telephone banking, all the functionally was the

same, so that was the first thing. But the other thing was it fizzled out. Basically there was not much interest, it was launched as a pilot to a limited number of customers, and it never went beyond [the] pilot (Head of Electronic Channels, Aus6).

Technology limitations and customer demand were major limitations to investment in mobile banking technology. Mobile phone technology was considered to be in its infancy both with user devices and the backend infrastructure provided by telecommunications carriers. The limited capability restricted the use of the service beyond basic banking. In addition, the initial cost of the service prohibited mass affordability. Aus6, having been a late adopter of IB, was the first of the major Australian banks to venture into mobile banking. However, low adoption by customers saw the service close. Other banks considered the merits but could not build a viable business case to launch a profitable business:

It was one of those things that were talked about a lot but they never really, you know, took off I think (CEO, Aus3).

Other banks simply did not even consider the mobile banking option:

There was not the excitement around WAP that there was around IB (CIO, Aus5).

Australian banks had conducted mobile banking trials during 2000 and 2001. However, Aus2, Aus4 and Aus6 had terminated these trials due to a range of reasons. Unreliable technology, poor user uptake and cost of service to the customer were cited as major reasons for the terminations. Within 12 months, banks went from offering mobile-based banking services to removing the service, citing unreliability, cost and lack of customer uptake as core reasons. High costs to customers led to a lack of customer adoption of mobile banking services (Isern 2008):

But the other thing was it fizzled out basically. There was not much interest, it was launched as pilot to a limited number of customers, and it never went beyond the pilot [and was limited to] those 1000 customers (Head of Electronic Channels, Aus6).

Issues of technology limitations, customer perceptions, the choice of products and developing a cost-efficient alternative self-service strategy were the major considerations for Australian banks during their introduction of IMB. The scenario has seen a similar position with the early introduction of MB in other developed countries (Karjaluoto et al. 2002).

4.4 Indian Internet and Mobile Banking Development

A chronological review of the evolution of internet and mobile banking for the Indian banks is presented in this section, which includes comments from the interviews conducted with Indian banking executives during September 2006 in India.

Table 4.4: Timeline of banks introducing internet and mobile banking in India

Year of Launch	1997	1998	1999	2000	2001
Internet banking	Ind1		Ind2	Ind3, Ind4	Ind5, Ind6, Ind7, Ind8
Cumulative number of banks over the study period	1	0	2	4	8
% banks of study each year	12%	0%	12%	25%	50%
Mobile phone banking introductions				Ind1, Ind2, Ind3, Ind4	Ind5, Ind6, Ind7

Table 4.4 demonstrates Ind1 as a leader among the Indian banks to introduce IB. The next Indian bank (Ind2) deployed internet banking two years later, followed by the other banks during 2000 and onwards. Similar to the Australian banks, half of the Indian banks in this study launched IB in the last time period of the study of 1995–2003.

However, unlike the Australian banks, there appeared to be no structured approach, strategy or motive common to the group, except for the last group of banks which were forced to upgrade their technology to a distributed and nationally connected banking network.

The focus for Indian banks was reaching unbanked Indian consumers and addressing the needs of the new customers emerging as a result of economic prosperity. In addition, there was competitive pressure from new market entrants.

4.4.1 Early Innovators: 1997–1998

The leader Ind1, which had received a new banking licence in 1994, had a clear set of objectives for investment in internet technology and not only wanted to be the leader in India in IB but actually had specific strategies for becoming the leader. These included capturing unbanked customers, extending the reach of banking to the villages in India and capturing

other potential customers who did not have access to the traditional branch network across India's villages.

4.4.1.1 Branchless Banking

The first bank to launch an IB service was Ind1 in 1997. Ind1's strategy was to extend banking to people who did not have a conveniently accessible bank branch (Schlie et al.2008; Natarajan et al. 2010). This was made possible when new banking licences were offered to financial institutions in 1994 by the Reserve Bank of India (Berger et al. 2008). The new banks were exploring innovative ways in which to extend and expand banking to a customer base beyond the traditional base of customers in the large cities, while at the same time ensuring cost-effective service delivery. The inability to build a branch network due to cost constraints raised challenges for banks and inspired them to develop new solutions using technology-enabled strategies.

Many bank customers had come to expect convenience and technical innovation in the services provided by their banks, often as self-service and hence via branchless interaction (Scruggs & Nam 2002; Sudhahar & Karthikeyan 2010). The coming of IB provided Indian banks with the potential for accessible and convenient financial services with a limited branch network infrastructure (Li 2001; Cracknell 2004), particularly in rural regions:

I think the main purpose clearly was that as a relatively new player we were challenged in the market place by our inability to build a large branch network. So really the purpose of the internet was an early bet of being able to use technology to defeat both time and distance [to capture customers] (CIO, Ind1).

Distance and the restricted opening times of branch networks added to the inconvenience of banking and excluded the rural poor from the banking sector. In 2002, of the 428 million deposit bank accounts in India, only 30% were in the rural areas. With a rural population of 741.6 million, the rural penetration of banks was disproportionately low to the overall population in India (Singhal & Duggal 2004). Banks that lacked either the infrastructure or the national reach to attract new customers were able to take advantage of new technology to deploy IB (Schlie et al. 2008). This was particularly evident as a major advantage for the new banks in India as opposed to the older, larger national banks. The newer banks did not have legacy technology to hinder progress. They simply 'leapfrogged' onto the new internet technology to deliver banking services, and in the process acquired a new set of customers

who had never previously held a bank account. Through the internet, banks for the first time had the ability to provide banking to the poor and other unbanked customers across India.

Banks which received new banking licences saw technology as a means of extending banking services to this new group of customers without the cost of building a branch network. Having the technology to extend banking to the villages of India allowed Ind1 to capture a new set of customers for whom banking had not been possible prior to IB, and hence started an unofficial revolution enabled by technology.

4.4.1.2 Unbanked New Customers

Internet banking brought the promise of low-cost banking to the masses that had been previously ‘unbanked’. The low-cost option of banking using IB brought both competition and enhanced banking services (Cracknell 2004), as it allowed banks to serve customers relatively cheaply compared to using traditional branch networks (Mols 1999). It also gave the opportunity to acquire a new set of customers who had previously been unreachable (Li 2001, 2002; Ahmed et al. 2010):

Clearly IB did create a new set of customers which was of course a part of the strategy that I have already enunciated and the only thing is in retrospect we were perhaps surprised by the number of new customers that we could create (CIO, Ind1).

The adoption of new technology enabled leapfrogging for Indian banks – from having no banking to technology-based banking. Traditional banking practices via the branch network could be completely by-passed by using the internet, gaining a competitive advantage in the process:

So you are seeing a serious leap-frogging. In the year 2002–03 as the whole market in the region started maturing, clearly it was the customer thinking this was the differential of value and possibly the new generation of customers coming into banking [describing India’s new generation of younger and educated customer base] (CIO, Ind1).

Indian banks took advantage of the internet by extending banking services to those who had never been connected to the banking network, particularly the younger generation and rural India. Rural India, which had previously been disconnected from the economy (Mishra 2002), was now being offered banking services, enabling communities to connect to the economy

and avail themselves of loans, bank accounts and financial advice to enhance their contribution to the economy as well as to improve their livelihoods.

4.4.2 The Followers: 1998–1999

The period between 1998 and 1999 saw the second group of Indian banks launching their IB services. Executives in this group of banks spoke of how Indian consumers were changing and maturing in their adaptability to both technology and banking services. They spoke of how the impact of globalisation was impacting on the economy and Indian customers, which in turn influenced how banks interacted with these customers. This was a major factor in the banks' strategies for deploying new technology-based banking services.

The key topics explored in this section are: new wealth creators as banking customers; how banks needed to be profitable in order to invest in IB; the growing needs of the Indian diaspora to transact from anywhere in the world; early technological challenges; and the bank branch as a social meeting place in Indian culture.

4.4.2.1 New Wealth Creators: the Emerging Generation

India's emerging class, or the new generation, is unmatched by any other country in the world except China (Khanna 2007). The country was experiencing an enormous rise in the wealth of the middle class, never seen before (Hiscock 2008). This was driven partly by the information technology revolution (Popkin & Iyengar 2007) and partly by the Indian government's financial reforms of 1991 (Walters et al. 2007), which relaxed import duties and encouraged foreign investment in India.

During the late 2000s, the middle class was estimated to be between 250 million and 300 million people and growing (Bijapurkar 2007). This enabled banks not only to think about new services but also to develop new channels for serving customers. Although the middle class, according to Bijapurkar, is a myth that has been oversold, the reality is that it has created an enormous opportunity for organisations to take commercial advantage of. While new estimates of the middle class range from 200 to 400 million, and growing fast, the middle class has emerged with an ability to purchase goods and services previously impossible. The middle class has thus had a major influence on organisations' strategies to develop new products and services for this consumer segment:

It [the middle class] has the greatest influence because India is an emerging market and particularly [the] majority of these [people are the] new generation. In some way

or other everybody was connected to the IT sector and hence the internet is one of the popular mediums (Senior VP of IT, Ind4).

The masses created an unprecedented opportunity when the number of consumers became far greater than the existing market (Prahalad 2005). The internet enabled new business opportunities, and bank executives expressed that this change had impacted on their desire to meet the new needs of customers with respect to banking (Barclay & Domension 2001). Three key recurring themes emerged from the Indian data: new economy, new wealth creators and new generation:

As the generation was changing, people were more tech savvy; there is a culture change within the country (GM IT, Ind7).

It was clearer that you know the economy in India is actually getting more open towards the global markets. [We had to get to the] other stage when the banking transactions also had to be more freely available (GM IT, Ind5).

So, internet banking was one way in which you can actually take that big leap, when we could actually free the customer from the confines of a particular office, and when he could transact with his bank from different centers (VP IT, Ind4).

Executives at these banks expressed that the new wealth creators were more likely to adapt to technological change and hence use IB. Customers who had recently acquired wealth as a result of the booming Indian economy were considered highly educated and technologically savvy: 'Internet banking and mobile banking will be used only by educated people, higher class of society' (Ind6). These customers had a greater propensity to accept technology in their lives.

The new emerging population (Sen 2005; Bijapurkar 2007) was becoming a boon for India and the banks. This group of emerging consumers was seen by banks as an avenue to offer new services for their emerging needs (new wealth). Rather than focusing on just the internet to offer lower cost banking, banks categorised their services to focus on particular population sectors to provide distinctive segmented banking (Li 2001). Banks focused on meeting the demands of the growing young generation as the most significant population sector. Research found that younger people with higher levels of income had a greater propensity to adopt IB faster (Lassar et al. 2005).

The younger and more affluent Indian consumers were the fastest growing customer segment and the most profitable for banks (Sengupta & Thomas 2005; Ahmed et al. 2010). Understanding this customer segment became a major focus for banks and drove organisations to expand their businesses:

One more driver, one more reason I would say is a customer segment [which is] the younger age generation. That means the percentage of the customers under this segment between the age group of say maybe 25–40–45 that age is improving and there is a demand from the customer side to have more and more features in the internet banking. Particularly if you see that 35% of the population is the younger generation in India that is a very fortunate thing unlike other developed countries (CIO, Ind3).

The growth in new customers allowed banks to increase their customer base and to grow their business, leading to new paths of profitability. Banks saw the internet as a method for raising new revenue by attracting new fees and charges and extending their customer base.

4.4.2.2 Profitable Customers

Banks look for profits whenever they introduce new banking solutions. They give consideration to functionality, volume building, fees and charges, efficiency and effective channel distribution (Cracknell 2004). With these considerations, banks have invested huge amounts of time and money in their online offerings but they remained unprofitable for many banks (ICFAI 2006). However, Hitt and Frei (2002) found customers to be more profitable for banks as a result of IB, based on demographic changes, customer behaviour and use of banking services (Ahmed et al. 2010). Retention was also a consideration for measuring profitability, as customers used more products and maintained higher balances, leading to more profitable customers, which was a consideration for real adopters such as Ind2:

They said that you have to have sticky customers [and] profitable customers, state of the art services, world is moving (CIO, Ind2).

Profitability was gained by providing new services and also by serving existing customers for whom convenient and flexible banking products were highly valuable. The flexibility from technology was valued by customers who could access their banking remotely, such as the vast Indian diasporas who were living abroad. For the first time, customers living overseas

could easily conduct their banking transactions and were happy to pay for the service, making IB profitable for banks.

4.4.2.3 The Indian Diaspora

The Non-Resident Indian (NRI) or the Indian diaspora has had a major impact on the Indian banks. Remittances transferred to India form a substantial part of the Indian foreign direct investment with record inflows of dollars. India is among the top three countries worldwide to receive remittances, followed by China and Mexico. According to the World Bank Global Economic Prospects Report (2006), China received US\$21.3 billion and Mexico US\$18.1 billion while India received US\$25 billion in 2006. With over 20 million people of Indian heritage living overseas, this group is not only affluent (Prasad 2007), but also willing to give to the India they have left. This driver was mentioned by four banks:

Initially yes because we were dealing with high net worth individual NRIs. At the bank the demands of NRIs and high net worth individuals was high, very very high. Obviously that will influence [our decision to introduce new products] in terms of taking the products. We do have our representative officers in Dubai and the UK (VP, Retail Banking, Ind3).

The NRIs were offered a variety of IB services such as bill payments, account statements and transactions, and they engaged in a revolution influenced by technology (Karem 2003). This technology impacted on the manner in which organisations and consumers became more connected to the global community. As noted below, the Indian market opened up to the elements of globalisation, which had an immediate impact on the adoption of technology:

Liberalising the economy and as part of that a lot of new private sector banks started coming in the country around [the] mid 90s. [The] Internet also became very popular, so with this liberalisation and globalisation and the power of [the] internet (GM, IT, Ind6).

The NRIs forced banks to diversify their traditional delivery channels (Akinci et al. 2004) and in the process started replacing ageing technology which had become a major inhibitor to the adoption of IB in Indian banks. The new technology allowed customers greater access to banking services. The internet forced older, more established banks to upgrade to new technology to replace their older technology, and in the process take advantage of the latest IT-enabled banking services.

4.4.2.4 Technology Upgrades

The deployment by banks and the acceptance by customers of ATMs was mentioned by seven Indian banks who claimed that ATMs provided efficiencies for the banks by automating transactions. Positive past experience (Schlie et al. 2008) with banking technology such as ATMs and the benefits for the consumer had a positive effect on the adoption of IB by consumers (Laforet & Li 2005; Proenca 2011). In India, ATMs were the first form of technology which allowed customers to access bank services anywhere at any time, bringing efficiencies and improved customer satisfaction (ICFAI 2006). Countries which have a high level of internet penetration and dense ATM coverage have been able to convert traditional customers to IB much more easily than others without those features (Bughin 2002). In the evolution of banking technology towards self-service, ATMs and telephone banking drove the adoption of IB (Chang 2005; Hasan et al. 2010). Indian bank executives suggested that ATMs had provided an endorsement and enabled the uptake of IB with a new centralised and nationally interconnected bank network:

Our bank currently has a decentralised mode of computerisation with each branch holding the database of its customers in its server. However, many of its branches are interconnected through leased lines with a view to offer network based convenience banking to its customers in the form of interconnected ATMs, any branch banking, internet banking etc (GM IT, Ind5).

The primary purpose we could say is 24x7 operations. Till then we were depending mainly on our branch offices. And the second thing is the ATM was popular at that time. ATM was in good usage (VP Retail Banking, Ind3).

Reduced costs of running a branch network enabled IB to gain momentum as the predominate channel, as banking transactions could be performed more cheaply than through a physical branch network (Li 2001; Natarajan et al. 2010):

Obviously internet banking cannot give cash, but if you take out the cash part of that internet banking [it] gives [banking] from anywhere. If I say my ATM cost is at 10% of my branch cost, internet banking is 1% of my branch cost, so there is a facility, there is an option for customers even at such remote areas to bank (CEO, Ind3).

In addition and partly related to infrastructure, the lack of adequate and timely foresight regarding the potential of the internet was seen as a limiting factor. The following extracts give insights into the positive moves for the advancement of IB offered to Indian customers:

It was the availability of the internet. It was availability of the information technology which made us think that now all this is possible (GM IT, Ind6).

The way technology was advancing, internet banking penetration was increasing, and it was very low at that time, high now. That was a decision, we were looking at 3/4/5 years, were looking that far ahead for IB where we knew there will be a need, and not now. We were preparing ourselves for this (Head of Technology, Ind8).

Expansion of networking infrastructure in the country and growing PC penetration all over the country will go a long way towards successful introduction of internet banking (GM IT, Ind5).

Instead of seeing lack of computer penetration at home as a limitation, banks continued to develop internet-based products in line with the development of internet cafes across the country (Hawk 2004). The increasing use of the internet and the resulting demand from customers forced banks to adopt new technology. This resulted in a major upgrade of banking infrastructure. However, the new banks seized the internet in more innovative ways by providing banking via the internet to capture market share as a means to overcome their short history in the banking industry. The inability to invest in branch networks was overcome by the use of internet technology.

New technology allowed banks to introduce new IB technology to capture and serve customers at a lower cost. However, this created other challenges such as changing the traditional way customers conducted their banking through branches, particularly in the villages, as it removed the personal experience customers were used to.

4.4.2.5 Branch Personal Services

Indian banking consumers had traditionally had a special relationship with banks and bank managers so the lack of personal service in IB was seen as a major barrier to adoption by consumers (Mattila et al. 2003). Internet banking was considered efficient and readily available but without a personal edge when it came to serving customers and this discouraged many traditional customers from using the service:

[The] Second point is the personal banker. [He] is the key utility where our customer will not feel that he is talking to the machine and through cards and passwords. He will feel that there is an emotional attachment and an interactive approach, where he will have more comfort while he is doing internet banking transactions (CEO, Ind3).

The lack of a personal approach may have slightly hindered the uptake of IB. However, positive government initiatives aided fast uptake and ensured that the benefits of internet and mobile banking IMB were appreciated in rural regions.

4.4.2.6 Positive Regulation

The development of regulation appears to have had a positive influence on banks in the introduction of IB in India, while in some countries regulation or the lack of it hindered IB deployment (Gurau 2002; Sukkar & Hasan 2005). The Indian regulatory authorities constantly supported the development of IB, to the extent that the Reserve Bank of India investigated the perceived value to society of the new technology and its possible benefit to the economy. The growth of the internet and faster technology adoption required government legislation to ensure that both consumers and service providers would be able to take full advantage of the technology. Hence the Reserve Bank of India promoted the adoption and growth of the internet, particularly in banking services:

Yes, yes the Reserve Bank of India and Government of India both are actually now trying for the Financial Inclusion to the maximum. Today the regulation actually facilitates internet banking (GM IT, Ind6).

Both competition and regulatory pressure have driven the banks to go for internet banking (GM IT, Ind5).

The Information Technology Act 2000 was a popular IT Act. We were the 12th country in the world to bring [in an] IT Act 2000. This Act gave a very solid legal framework against any machinations; any wrong doings as far as electronic banking is concerned. So this gave us an impetus and we were the first bank to implement the provisions of IT services in the country (Founder, Ind2).

Once this IT Act had been passed, older, traditional banks began to embark on their IB journey. These banks had a long history of service in the Indian community but were often encumbered with outdated technology, processes and products, and had to play catch-up in

order to stay competitive. This catch-up process was helped by the regulation and policies to promote banking to the masses.

One of the major influences on banking technology was positive regulatory initiatives, not the nature of the technology. Regulations such as Financial Inclusion specified the delivery of banking services at an affordable cost to the vast sectors of disadvantaged and low income groups (Conroy 2008). Unrestrained access to public goods and services is considered a necessity for an open and efficient society and it is essential that banking and payment services are available to the entire population without discrimination. This was the prime objective of this public policy aimed at improving banking for the masses.

As noted above, after the nationalisation of major banks in India in 1969, there was a significant expansion of branch networks to the unbanked areas and an increase in lending to agriculture, small industry and business. More recently, the focus had been on establishing the basic right of every person to have access to affordable basic banking services. According to the Reserve Bank of India, of the 203 million households in India, 147 million were in rural areas with 51.4% of farm households having no access to banking services. At an address at BANCON (Banking Conference) 2005, the Deputy Governor of the Reserve Bank of India, Dr Rakesh Mohan, stated that commercial banks had 338 million savings and current accounts compared to 290 million in 2000. Rural bank accounts had risen from 172 million to 200 million –an increase of 28 million – while urban accounts increased by 20 million from 118 million to 138 million. The annual rate of growth was around 3%, just a little over the population growth. The Reserve Bank of India placed considerable emphasis on the importance of Financial Inclusion, noting the existing problem of limited access to affordable financial services such as savings, loans, and remittance and insurance services by the vast majority of the population in the rural areas. This was believed to be a constraint to the growth impetus within the economy, which is contrary to views held by some bankers:

Today the regulation actually facilitates internet banking (GM IT, Ind6).

While technology was not the only element in these progressive improvements, it did play a major part in the inclusion of under-privileged citizens within the banking community by allowing banks to focus part of their strategy on serving the unbanked. At this stage, some of the laggard banks started to adopt internet technology, often for reasons other than the early adopters.

4.4.3 Year 2000 and Beyond

The last group of Indian banks in this study to adopt IB did so after 2000. These banks suffered from legacy technology, paper-based transactions and internal processes which often militated against the introduction of new technology. They were often governed by outdated human resource laws and constrained by a strong union movement. Yet these traditional banks realised the power of the internet and revitalised their technology strategies to encompass the internet. During this period the older and established banks began a major overhaul of their banking technology and core banking gained prominence in India.

4.4.3.1 Core Banking

Core banking is the depositing and lending of money and is conducted by a banking institution with its retail and small business customers by the use of a central computer network. Many banks treat retail customers as their core banking customers and have a separate line of business for managing small businesses. Larger businesses are managed by their corporate banking divisions.

Core banking functions include deposit accounts, loans, mortgages and payments. Banks make these services available across multiple channels such as ATMs, IB and branches (Hitt & Frei 2002). At the time of the data collection, Indian banks had only recently implemented this facility for customers as consumer mobility increased:

Core banking was not yet launched [2001]. It took two years later to come on, so we had to buy a transaction engine to put through a transaction real time almost one, one-and-a half years after launch [of IB] (GM IT, Ind7).

The recent development of technology has been a major aspect enabling new banking services. In India, centralisation of banking functions has had a major impact on efficiency and customer service. Centralisation provides the ability to connect the branch network, ATMs and bank accounts via a central computer network. This capability provides online real-time customer account information. Fund transfers and payments are implemented with immediate effect, rather than the traditional overnight transaction reconciliation.

Centralisation was raised by the larger state-owned banks rather than the new private banks, as for older banks in particular the centralisation capability had been a major boon, reinvigorating the Indian banking scene across the country:

So sometime around the year 2001, when although we did not have a centralised core system at that time, we started giving internet banking and made it part of our core banking. When we came to our core banking solution, we were on a distributed database. When we came to core banking in 2002 that was the time when we decided that we should get IB (Head of Technology, Ind8).

Banks had been decentralised across the nation, then IB forced the banks to centralise their whole IS infrastructure. This provided the later adopters of IB with a fresh approach to their banking. They could see the power of the internet not only in improving their own internal efficiencies but also in new ways to serve their customers. During this period, the mobile phone emerged as a tool not only for basic communications but also as a business tool. The mobile phone became more widespread in the hands of the masses as affordability became less of an issue. Enjoying one of the fastest uptakes of mobile phones has been a boon not only for telecommunications providers but also for banks. Because the use of mobile phones was so widespread, banks were able to offer banking services without having to force customers to adopt mobile technology. This has created a phenomenal industry for technology as well as for service providers such as banks.

4.4.4 The Era of Mobile Banking Services

With the emergence of WAP technology, banks could offer customers mobile-based banking applications, enabling customers to perform banking services without having to be tied to a personal computer (ICFAI 2006). Mobile banking saw an enormous uptake, creating benefits for customers, bringing mobility and flexibility (Vaghjiani & Johnston 2006; Wessels 2010). Banks recognised the opportunity for providing services with technology (mobile phones) that was already in the hands of many millions of customers. Banks provided detailed accounts of this in the interviews, which are represented below:

Mobiles are on the growth path. We are trying to re-launch it in a major and different way because more people have the handset. Today you get the mobile you can do a lot of things, bill payment, etc. In India people still walk in the branch, we want him to be doing [banking] from anywhere, any time (Founder, Ind2).

We will push alerts [banking product] as selected by the customer, any transaction which happens immediately an alert will go into his mobile. Really it's amazing, each SMS costs money, but people do not mind, that readiness of the customer is very interesting (CEO, Ind3).

Other banks described the use of mobile phones as a way of encouraging small item transactions through mobile banking as a way of providing convenience to customers:

You can go to a coffee shop and then pay a very small amount say a Rs. 50 or Rs.100/-. If you can pay through your mobile, that will be much easier for the person [merchant] to accept. So, small ticket transactions which are more in number and which are frequently used by a number of people who own the mobile, particularly the youngsters, college students, they go and have coffee for say Rs.20/- or Rs.30/-, Rs.35. It is a low ticket transaction, low volume (Senior VP IT, Ind4).

Comments from the sample respondents demonstrate a risk-taking attitude by banks, as well as a growing understanding of the needs of the Indian customer. For Indian banks, mobile solutions were not only trialed but created continuing learning and development that brought new business opportunities for those who had made the investment in MB. Mobile banking brought flexibility in providing services without an expensive bank network or expensive technology-based infrastructure. This capability gave Indian banks an advantage for capturing customers who had previously been ‘unbanked’ – those who had never had access to banking facilities nor the opportunity to connect with the general economy.

4.5 Common Themes for Australia and India

This section demonstrates that despite differences between Australia and India, there were also many observations which were similar in relation to IMB adoption. They are outlined in the following two sections.

4.5.1 IMB Motivations

Banks in both Australia and India demonstrated many similar motivations for introducing IMB. Examples of similar motivations are: cost reduction (Australia 77% and India 62%), branch rationalisation (Australia 77% and India 50%); alternative channels (Australia 77% and India 75%), and self-service (Australia 33% and India 50%).

4.5.1.1 Cost and Branch Rationalisation

Factors in both Australia and India such as branch rationalisation, developing an alternative channel and providing self-service to customers all demonstrate cost savings in infrastructure and resources. According to the much published World Bank Millennium Development Goals, technology reduces the cost of transactions and enables banks to provide services to rural communities (World Bank 2003). Recognition of the need to reduce the overall cost of

services and reduce reliance on branch traffic was the same in both countries as banks could attain a competitive advantage and superior delivery of services through streamlined processes. This also resulted in the overall improved satisfaction of customers (Bradley & Stewart 2003; Sciglimpaglia & Ely 2002):

But in particular we were focused at that particular time in the bank looking at alternate channels to market from a customer cost-to-serve basis and also looking at how to use technology for competitive advantage (CEO, Aus3).

The cost of transactions in the normal banking channel and the cost of transaction of the internet banking there is a lot of difference. So that is another important driver. If I say my ATM cost is at 10% of my branch cost, internet banking is 1% of my branch cost (Founder, Ind3).

Concurrent with cost reduction was the need to develop an alternative channel to the branch for bank customers. The branch was seen as the most expensive method of serving customers while the internet channel significantly reduced the cost of delivering banking. Developing an alternative channel as suggested above by Aus3 served as both a cost reduction and a strategic delivery initiative.

4.5.1.2 Alternative Channels

Related to the cost of services was the development of alternative channels as a way of delivering banking services other than through the branch network. Internet technology removed the need for banks to service customers using the traditional face-to-face channel (Blount et al. 2005). Banks in both countries needed to provide alternate channels to the traditional branch-based channel because improved distribution of banking services was a critical element for long-term banking competitiveness (Li 2002) and gave banks flexibility in delivery. The comment below on alternative channels is typical of those of many of the respondents:

We had to actually find better, more cost effective ways and actually trying to deal with [customers], so that was already the dawning of thinking about how we move customers to different [engagement models] (CEO, Aus3).

This view was more prevalent in Australia during a period of branch closures in the mid-1990s as a strategy to improve productivity. Indian banks, while considering the need to reduce costs, were not seeing branch closures as a mainstream strategy mainly to reduce the

cost of banking operations. Indian banks saw the internet as a way to become strategic in the face of competitive pressures by offering customers more ways to communicate with the bank and offering self-service for basic banking needs. For Indian banks, creating new channels enabled customers not previously served to be provided with banking products, particularly in the villages. In the case of Australian banks, a self-service facility would move customers from the branch to the internet as well as providing alternative channels for customers to conduct banking transactions.

4.5.1.3 Self-service Banking

The coming of the internet enabled banks to offer services in ways unthinkable before, in a more efficient and timely manner, because effectively a bank could now be open 24/7, 365 days of the year (Seitz & Stickel 1998; Soteriou & Zenious 2003; Proenca 2010). Banks were keen to ensure that their investment in innovations served consumers in regard to convenience and time saving as well as being a strategic tool in the acquisition and retention of consumers. The internet provided consumers with greater flexibility and ease of interaction with banks (Blount et al. 2005) and this was evident in both countries. The internet ensured customers were not bound by time or geography when requiring banking services (Karjaluoto & Pento 2002):

They could download their statements and that type of facility was there. So there is a facility, there is an option for customers even at such remote areas to bank with us (Founder, Ind3).

By providing customers with adequate services through technological innovations, banks ensured not only that customer needs for banking were met but that those customers could be restrained from defecting to other banks. Banks which were late relative to the other banks in introducing internet banking demonstrated these motivations more strongly than early adopters and hence customer needs became a major driver for IMB adoption.

4.5.2 The Customer Perspective

Banks placed a great deal of importance on customers' banking needs, both in meeting their needs for better banking services and in ensuring existing customers were not lost due to IB being offered by competitors. There was more emphasis on meeting customer needs in India, while retaining customers was more important to Australian banks. The following quotes illustrate the banks' views on meeting customer demands and the impact the internet had on their strategies for customers:

The customer base really influenced the decision [to adopt internet banking] but it was really also around understanding our customers more, about understanding what their transaction volumes were, what their loads were (CEO, Aus3).

You see that the main thing is availability, time factor in terms of flexibility of the customer to use the facility accordingly to their convenience and place and during that time in India there were a lot of cyber cafés opened even without owning a PC or an internet connectivity customers were able to go to the cyber café (CEO, Ind3).

Offering internet-based services allowed existing customers to be retained, and ensuring customer loyalty became one of a bank's customer retention strategies (Chellappa & Kumar 2005).

4.5.2.1 Customer Retention

A major reason for adopting IB, particularly for banks which were later adopters, was the retention of customers. In both Australia and India, banks which were late adopters were forced to act in order to prevent the loss of customers to other banks:

I guess the main driver was that we were the last bank and still had to launch IB, with impact from the point of view of customer defection [customers defecting to other banks] (Head of IB, Aus9).

We provided for existing customers. The idea is to retaining the customers. Actually some customers did move from the public sector banks to the new private sector banks. That did happen (GM IT, Ind6).

In India, later adopters were further challenged by the 'new banks', the group of nine newly formed banks issued with licences by the Indian Government in 1994. They did not have the legacy technology which restricted established banks from a more speedy adoption of IMB. It was these new banks that had emerged during the mid-1990s that first recognised the opportunity to meet the growing and diverse needs of customers.

4.5.2.2 Maintaining a Competitive Edge

Organisations are influenced by the conditions of competition, market-driven ambiguity, uncertainty of industry direction and environmental variability (Haveman 1993). These influences lead to greater competition in the marketplace for customers. In this context competition was a common determinant in banks' decision making and late adopter banks

were influenced by the early mover banks who wanted to sustain a leadership position by introducing IB. Further, the banks saw mimicking as a norm, adopting practices of a competitor to ensure the legitimacy of their own investment (Deephouse 1996). They strove to stay ahead of, or at least abreast of, the competition:

Banks in Australia are funny things. I think they do keep up with the Joneses. So if a competitor does something then that is usually a catalyst. Bill's doing that across the way, why the hell aren't we doing it? Then if two or three are starting to do it [internet banking] then it basically makes it so. All of them, in particular I think the big four banks, they tend to actually want to know what the key competitors are doing so that actually drives their behaviour a lot. So as soon as one starts then the second starts to do it and then all tend to follow. So I think that is basically part of the motivation [for IB]. I do not know that there was any clear kind of rationale because it was so small in the early days. It is very much peer pressure if you actually ask them what was the business case for it (CEO, Aus3).

Competitive advantage appeared to be a major motivation for banks to adopt technology, to be seen by the market and customers as organisations at the forefront of technology.

4.6 Summary

In this chapter, a review of Australian and Indian banking history, the growth of banking and technology innovation reveal both differences and similarities between banks in the two nations. A review of the chronological development of IMB in Australia and India highlights the motivations for launching new services through internet and mobile phone technologies.

Depending on when they introduced IB in relation to their peer banks, the banks had different motives in regard to their strategies and their ability to develop new solutions. This tendency was similar in both Australia and India. The story of IMB adoption in Australia and India highlights key similarities as well as major differences. For instance, the adoption factors which led to Australia developing IB much faster than India appear to be based on its advanced infrastructure. In contrast, India had limited infrastructure.

The lack of available infrastructure limited the growth of IB in India, which encouraged banks and their customers to seek alternative banking channels. Indian consumers demanded banking services via the mobile phone, which created a new industry driven partly by technology and partly by an emerging class of consumers, the previously unbanked

population in rural India. In Australia, banks appear to have diverted customers away from the traditional branch network and into IB mainly as a cost-cutting strategy, as evident from reduced branch numbers (Annual Reports from 1995 to 2001). Due to Australia's high banking penetration, new customers were customers from other banks rather than unbanked customers.

Mobile phone banking appears to have been a major failure in Australia, with many unsuccessful attempts to launch these services in 2000–2001. Consumers in Australia had access to telephone banking and IB and could not see the benefits of an inferior product that was expensive and required a special mobile handset. Mobile banking applications appeared to be poorly developed. Hence, the expense, lack of viable technology and general lack of customer need for the service all worked against the adoption of MB in Australia. In India, emerging affluent consumers with their new-found wealth adopted mobile banking and related services much faster and in addition, the need for access to banking services in the absence of IB for many millions of consumers allowed banks to develop MB services to reach consumers who had previously had no access to banking services.

5 ANALYSIS

5.1 Introduction

This chapter commences with a comparative analysis of the findings presented in the previous chapter. The aim is to understand the similarities and differences in innovation between Australia and India with respect to IMB adoption. Despite there being little empirical evidence or previous experience of institutional theory and its application (Currie & Swanson 2009; Weerakkody et al. 2009), the process of institutionalisation is a valuable theoretical lens to establish comparisons across time. Different factors between Australia and India, which the process of institutionalisation could not explain, are then assessed using Disruptive Innovation Theory (DIT) (Christensen & Raynor 2003) and further refined using the Service Innovation Theory (Barras 1996) to gain an in-depth understanding of the findings.

The results of the analysis demonstrate that while some adoption dynamics are similar in Australia and India, many are different as a result of socio-economic factors and technology maturity.

The themes relating to Australian and Indian banks have been grouped according to their responses and include aspects such as organisational culture, adoption of technology, customers' perspectives, drivers and motivators, competition and mobile phone banking. The analysis considers the individual stages of institutionalisation in Tolbert and Zucker's (1996) process of institutionalisation to determine the common and different themes as well as using DiMaggio and Powell's (1983) institutional theory.

5.2 Institutional Theory

DiMaggio and Powell (1983) articulate institutional change by way of a process called isomorphism, which describes how industries change by following a certain path. Industry participants act on information from peers, following each other on a path defined often in conditions of uncertainty which have been determined by peers based on what they see and do (Haveman 1993). In order to understand whether institutional theory can explain IMB diffusion, each phase of institutional theory as articulated by Tolbert and Zucker (1996) is interrogated and analysed in the context of the collected data.

In the initial phase of analysis, the Tolbert and Zucker model was used to interpret and then map the point at which action was initiated by a bank in each country and mapped across the

three phases of the model based on a timeline from habituation to objectification and then to sedimentation to assess if the data was generally consistent with what would be expected by the theory.

The aim was to explore if the theory could inform our understanding of IB adoption in Australia and India with consideration being given to different socio-economic conditions as major factors for diversity in organisational actions (Weerakkody et al. 2009).

5.2.1 Habitualisation Phase in Australian and Indian Banks

During habituation, Tolbert and Zucker state that ‘There are likely to be few in number [of organisations] limited to a circumscribed set of similar, possibly interconnected organisations facing similar circumstances’ (Tolbert & Zucker 1996 p. 182). This indicates that only a limited number of organisations have ventured into establishing a new practice, and that this phase further ‘involves the generation of a new structural arrangement in response to a specific organisational problem or set of problems’(p. 181).

Using Tolbert and Zucker’s definition of this stage of institutionalisation, it can be seen that Ind1 desired to create a new customer base of ‘unbanked’ customers and used technology to capture village customers. A major motivation was ‘the generation of new structural arrangements in response to a specific organisational problem or set of problems’ (Tolbert & Zucker 1996 p. 181), which provided impetus for adoption. The challenge for banks was the inability to establish branches in rural India for customers who had never experienced the benefits of banking. This inability to build a branch network gave rise to the opportunity to ‘leapfrog’ into new technology to offer services to a new client base that had been previously unbanked. During this leapfrog phase, the internet enabled Indian banks to explore innovative technologies for capturing new customers. Aus1, however, wanted to capture customers from the other banks and was willing to ‘skunk works’ IB to prove its business viability. ‘Skunk works’ was used as a technical term for developing a prototype of the product before launching it commercially. Aus1’s strategy was to capture and increase the customer base, using technology to differentiate from the competition.

In this initial phase, organisations did not see competitors as a threat as there was no competition (Kostova et al. 2008). However, there was little consensus at this stage. Organisations in the initial stage of IB deployment have offered diverse approaches to solving the same problem (DiMaggio & Powell 1983). At this stage organisations were intent on leading the industry, either to create a new business model or to set themselves apart as

leaders. Banks desired to be ‘frontier’ banks to pave the way for the industry and wanted to be seen as innovative (Elenkov et al. 2005). The desire to increase the customer base also motivated these organisations. At this stage of adoption, Tolbert and Zucker (1996) claim that there may be ‘multiple adopters of a given structure, but these are likely to be comparatively few in number, facing similar characteristics’ (p. 182).

Common themes that have emerged in this phase of habituation are size of bank (assets), differentiation, geographic reach, relative age and leadership desire. The data is critical for assessing whether Tolbert and Zucker’s habituation phase does inform similarities and differences between the Australian and Indian banks. Table 5.1 shows the first banks in both countries to adopt IMB and also shows the overall percentage of banks against the sample set in the study.

Table 5.1: Banks in the habituation phase

Country	Banks and Years of Internet Launch	Total % of Banks in This Stage
Australia	Aus1 1995, Aus2 1996, Aus3 1996,	33%
India	Ind1 1997	12%
	Years of Mobile Banking Launch and (where relevant) Decommission	
Australia	Aus1 2000–2001, Aus3 2000–2001	22%
India	Ind1 2000–ongoing	12%

Table 5.2 demonstrates that a small number of banks adopted IMB in both Australia and India during the initial stages of industry adoption. In addition to this, Table 5.2 presents a synopsis of the theoretical understanding of IMB in Australia and India provided by Tolbert and Zucker’s habituation. This approach has been used to interpret the results to obtain insights into diffusion by assessing the common themes and the different themes for each country as they have emerged.

Table 5.2: Common and different themes in habituation

Common Themes	Australian Differences	Indian Differences
Overseas influence	Cost reduction	New tech savvy customers

Alternative channel	‘Skunk works’	Inability to build branch network
Innovation champions	Mobile banking stop-starts	Mobile banking adoption
Industry leadership		

5.2.1.1 Common Themes in Habitualisation

Both Australian and Indian banks demonstrated attributes such as the desire to be an industry leader by offering an alternative channel or a differentiated banking product. These initiatives emerged from executives who had experienced IMB in the US or Europe or from executives who believed that IMB would offer real business solutions to their customers and who became champions of IMB during the initial stages of development. The size of banks, industry leadership through differentiation, geographic reach and bank age were also observed to be critical factors in the habitualisation phase and are analysed below.

5.2.1.2 Does Size Matter for Pace Setting?

Neither institutional theory (DiMaggio & Powell 1983) nor the process of institutionalisation (Tolbert & Zucker 1996) offer insights into the size of early adopters despite recent studies indicating size to be a major factor (Brown & Russell 2007; Pla-Barber & Alegre 2007; Morone & Testa 2008; Malhotra & Singh 2010). Ramdani et al. (2009) found that larger organisations were more likely to adopt innovations yet in this study, smaller organisations (Aus1 and Ind1) were leaders in both countries in this category due to their ability to mobilise resources faster than their large industry peers.

It appears that smaller organisations can mobilise resources faster to explore new ways to generate new business. This contradicts the research by Bantel and Jackson (1989) and Schoenecker and Cooper (1998) who determined that larger organisations with greater resources would often lead an industry in innovations due to the large investments required, which prohibited smaller firms from taking risks (Bradley & Stewart 2002; Malhotra & Singh 2007). However, Aus1 and Ind1 had strategic and competitive motives for leading with minimal investment budgets. They saw the internet as a way of gaining market share from competitors and acquiring new customers. Comments by executives indicate a desire to be seen to set the pace for innovations (Deephouse 1999).

In Australia three banks, 33% of the total banks in this study, launched an IB service early as opposed to only 12% in India. This indicates that Australia was clearly one of the pioneering

countries in IB, alongside the US and the Scandinavian countries of Sweden and Finland, while infrastructure poor countries such as India, Thailand and China were later adopters of IB, according to industry analysts.

The initiating banks in Australia and India, Aus1 and Ind1, had different motives for introducing internet banking. Although both Aus1 and Ind1 took risks on the investment because they wanted to be leaders in their industry and to differentiate their banks' position in the market, Aus1's focus was on offering streamlined and cost-effective services, while Ind1's focus was on creating a distribution network without traditional branch banking and extending banking to the unbanked.

5.2.1.3 Leadership by Differentiation

The creation and differentiation of new products is most frequently a spinoff from existing products (Lin 2007). Institutional theory does not provide guidance as to whether differentiation from the competition (Menguc et al. 2007) may be a motivator for early adopters (Varadarajan et al. 2010), yet the theory suggests that early adopters may be driven by the desire to improve performance (DiMaggio & Powell 1983). Haveman (1993) proposes that in conditions of competition, ambiguity, costly search and environmental variability, organisations that mimic the behaviour of larger firms have a good chance of survival. DiMaggio and Powell argue that institutional rules such as 'imitate large organisations' guide changes in organisational strategies, although in this study the process seems to have been 'imitate the leaders', regardless of size. The first banks to develop IB wanted to differentiate from the competition (Haunschild & Miner 1997; Ferri & Masciandaro 2002; Furst et al. 2002; Shi et al. 2008). At least one bank had a spontaneous approach to investing in IB:

Our CIO just bought straight into it, here's \$200K (Senior Manager IB, Aus 1).

Banks which invested early in new technology were driven by a desire to remain ahead of the competition. The senior management of Aus1 wanted to take the risk on IB and the lack of a benchmark did not deter them (Fox-Wolfgramm et al. 1998):

And so in terms of embracing it [internet banking] you know, the bank wanted to get ahead of the curve. But in terms of you know, what the other guys are doing, I don't think anybody seriously stopped to think (CIO, Aus2).

Being the leader meant there would be little or no competition (Haveman 1993). First mover advantage ensured that the leader in innovative solutions would remain the market leader

(Lieberman & Montgomery 1988), and competition was not a factor for consideration as there was none at this stage (Rivkin 2000):

Yeah, considerations to competitive actions were probably very little. I think the only consideration was that the bank consciously wanted to be seen to be the online leader in the market and it aggressively set out to grow its present points of presence and its ATM points of presence (CIO, Aus2).

Similarly, the leading Indian bank was seen to be setting the pace for the industry and was prepared to try innovations (Frame & White 2004). The managers decided that to compete with the established banks they had to differentiate by offering customers something different from the existing services (Zott & Amit 2008):

Largely I think the banks like us and perhaps [Ind2] bank was serving as frontier demonstrators [for internet banking]. Other banks started seeing the traction we were beginning to get because of some of these service offerings. [This] is what I believe caused a lot of banks to offer internet banking (CIO, Ind1).

In this context Ind1 had the benefit of ‘the generation of new structural arrangements in response to a specific organisational problem or set of problems’ (Tolbert & Zucker 1996 p. 181). Ind1 was a new generation bank, which had a new structure of management and limited legacy technology to hinder progress. Ind1’s desire to set the pace for the industry was driven by top management who were mostly younger than the average executive in the industry (Bantel & Jackson 1989). Both Aus1 and Ind1 had an innovative approach and were not deterred from investing in potential risky initiatives despite their relatively small asset base.

5.2.1.4 Bank Assets: a Determinant of Innovation?

Research indicates that the amount of bank assets has an impact on the propensity to innovate (Masciandaro 2000; Morone & Testa 2008; Ramdani et al. 2009). Innovative banks which introduced IB differentiated from later banks and demonstrated financial performance which was relatively superior to others in the industry (Roberts & Amit 2003).

Aus1 and Ind1 were fast emerging banks with growing national bases, while Aus3 was a fast emerging regional bank considering expansion into the national market. Aus2, the only national bank with limited international presence, had the second largest asset base of all Australian banks. Aus1 and Aus3 were relatively small due to their geographic coverage. In contrast, Ind7 and Ind8 had the largest assets bases during the period under study and were

the last to introduce IB, as was Aus6 in Australia, indicating a tendency for smaller organisations to innovate before larger ones (Laforet 2008). Ind1 was a new bank, formed in 1994 as part of the Indian Government's policy of extending banking licences; hence there were no legacy processes and technology entrenched in Ind1. Ind1 was therefore able to leverage innovations with a view to achieving a superior financial performance (Roberts & Amit 2003) and increasing its asset base. This strategy was partly related to the lack of geographic presence across the market, which drove the internet option to capture new customers.

Institutional theory does not offer insights or any guidance on the pre-determinants of innovation adoption. Hence, contrary to theory, the empirical data in this study suggests that the smaller the bank, the greater the propensity to be an innovator. Both Aus1 and Ind2 were smaller than the national banks and had a smaller geographic presence than the other banks. It appears that size of organisation does affect the motivation to introduce new innovations.

5.2.1.5 Limited Geographic Presence Enables Innovation

A study in India (Malhotra & Singh 2007) indicated that banks with a smaller geographic presence would be more likely to introduce IB to gain competitive advantage (Javier et al. 2007). However, other research has indicated that a bank with a large branch network may introduce internet banking to reduce the cost of service delivery (Furst 2002; Malhotra & Singh 2010) and strengthen the bank brand (Isern 2008).

Previous studies have tended to focus on banks in the developed nations for which the internet provided an opportunity to reduce their branch networks. Statistical data from the annual reports of banks in the UK and Australia, for example, show that the largest leading banks had reduced the number of branches during the mid to late 1990s due to a strategy of branch closures (Aus2). From the annual reports of banks and the financial data, there is some indication that the less nationally dispersed banks were the more likely to introduce IB. For example banks such as Aus1 and Aus3, were least nationally dispersed of the sample Australian banks. They used IB to compensate for the lack of physical branch presence.

A similar dynamic was observed in India as well. The less dispersed banks in India, Ind1 and Ind2 were first to adopt IB for the same reasons as the Australian banks.

You get the ability to be able to tap a customer 10 miles away from your branch which you can't do unless you have any other traditional channel (CIO, Ind1).

Ind1 illustrates a common view held by Indian banks of being able to attract a new clientele without the traditional branch network. In part due to the fact that traditional and often informal methods of borrowing and lending money had been disrupted (Buencamino & Gorbunov 2002), the new banks without a large geographic network were able to take advantage of the opportunity to introduce new technology.

The larger the network of branches, the less likely it appears that the bank will be one of the first to offer innovations. Aus1 and Ind1 had relatively limited branch networks and relied on their ability to innovate to capture market share. While Aus1 wanted to capture customers from competitors, Ind1 had ambitions to develop a new customer group, those who did not already have a bank relationship. Hence, while both Aus1 and Ind1 were first to market in their countries, their innovations were driven by different needs and strategies.

Institutional theory refers to structural arrangements as part of the institutionalisation process, claiming that organisations are driven to implement certain practices based on resource dependence, market forces, legislation and technological change (Di Maggio & Powell 1983; Tolbert & Zucker 1996). Tolbert and Zucker refer to Coleman (1980), who identifies a number of factors required for the adoption of innovations such as hierarchical authority and potentially unlimited life-span, but there is no mention of geographic limitations as a motivation for technology adoption. Banks in Australia and India demonstrated that limited geographic presence motivated banks to introduce IB either to gain new customers in the case of the Indian banks or to attract customers from competitors in the case of the Australian banks.

5.2.1.6 Bank Age: Is Age Influential in Adopting Innovations?

The age of banks was noted in order to determine if it was an influence on being early to introduce IB. Established banks in India such as Ind7 and Ind8 and in Australia such as Aus6 appear to have introduced IB much later than their younger peers. Institutional theory offers limited insights as to whether organisation age is a factor for early adoption of innovations. DiMaggio and Powell (1983) focused more on isomorphic forces of legitimacy in research rather than motivations for early adoption of technology. Malhotra and Singh (2007) identified that age has an impact on a bank's propensity to innovate as it is positively related to adoption due to experience and the ability to afford the risk of new investments. However, other research has indicated that newer banks without legacy technology and with greater flexibility are more likely to adopt new technology (Sullivan & Wand 2005). Tolbert and

Zucker (1996) do not provide any insights on organisational maturity and its relation to innovation adoption.

The relative newness of IB in the industry provided Aus1 with the capability to compete against the larger, more established banks in Australia. While ambitious to compete against the large four banks, Aus1 was not able to compete on customer numbers and financial capabilities but was able to compete in terms of product offering. Internet banking was one such product; by being the first bank in Australia to introduce the service, it differentiated from the larger banks. Aus2, one of the largest and oldest banks, was nevertheless still a leader in product offering. Aus2 was the first bank in Australia to offer Point of Sale (EFTPOS) solutions to merchants and customers, to the extent that it captured much of the market before the other banks saw the opportunity. Aus3 was a small regional bank with great ambitions. It was a result of the amalgamation of a number of smaller banks in the same state, enabling it to take advantage of scale, but it was a young bank compared to the established banks, Aus4, Aus5 and Aus6.

In India, Ind1 was one of the nine banks given a private banking licence in 1994 and was set up as a result of a number of diverse groups coming together. Ind1 did not have legacy systems in 1997 when it launched its IB service as it was only three years old. In the early years of its life Ind1 offered niche products before becoming a full service bank and using technology to supplement the lack of branches and to grow into a national bank. The internet gave Ind1 a far greater reach than it would have obtained with a branch network. The respondent commented, 'In retrospect we were perhaps surprised by the number of new customers that we could create[with the internet]' (Ind1). Hence, younger banks were more versatile in introducing innovations and had greater drivers for using these innovations as a competitive approach to capture market share and customers.

5.2.1.7 Summary of Analysis Using Habitualisation

Among the themes that have emerged from Australian banks, the desire to save costs by using IB as a cost-effective channel to deliver services appear to be strong driver. During the mid to late 1990s, banks particularly in developed countries chose to adopt IB as a way of reducing the cost of customer service (Clemons & Hitt 2000; Cracknell 2004; Mai et al. 2007; Campbell & Frei 2010). This resulted in branch closures (Hway-Boon & Ming 2003). However, while IB had become a normal or accepted delivery channel, the need for branches

remained strong and many banks in developing countries are finding the need to maintain or increase branch numbers as a result of customer requests.

In India the innovation leader Ind1 appeared to be interested in using the internet to develop a growth strategy to capture new customers who had emerged with India's growing economic prosperity. Ind1 also had a strategy to capture customers who were technology savvy and aware of the use of technology in business.

5.2.2 Objectification Phase in Australian and Indian Banks

The second phase of Tolbert and Zucker's (1996) model is the objectification phase. It is used as a theoretical lens to interpret the results from Australian and Indian banks. Tolbert and Zucker (1996) claim 'imitation may follow' (p. 181) after the pace-setters have established a framework of adoption for a given innovation. The adoption of an innovation in an industry can be predictable for reasons such as economic benefit and technical supremacy over peers (Anderson & Tushman 1990), although Galaskiewicz and Wasserman (1989) argue that inter-organisational uncertainty occurs where there is imperfect knowledge between organisations. Follower organisations mimic an industry leader even though that organisation may be equally uninformed about the motivations for its actions (DiMaggio & Powell 1983). Institutional environments shape organisations through social pressure and result in institutional isomorphism (Orri & Biggart 1994; Beckert 2010) as organisations in a particular institutional environment begin to look like each other as they respond similarly to regulatory and normative pressures or act as peer structures of the successful organisations in conditions of uncertainty.

Organisations create a normalised form due to their perceived acceptance among peers within the sector as a result of management approaches and their responses to impending industry and customer challenges. Galaskiewicz and Wasserman (1989) claim that managers are especially likely to make decisions based on the behaviour of other organisations in response to competitive peer pressures (Blaskovich & Mintchik 2010). DiMaggio and Powell (1983) suggest that motivations for decisions and actions can be varied and include enhancing efficiency, entrepreneurial staff, competitive pressures and the need to conform to perceived legitimate industry norms. These aspects that emerged in this phase of IB adoption are analysed in the following section.

5.2.2.1 Competitive Pressures and Problem Solvers

Once the first groups of banks introduced IB, the second groups appeared in both Australia and India. These banks in the objectification phase had motives of providing alternative channels and cost rationalisation similar to the earlier banks but they also had some different motives for investing in IB. Themes that appeared were competitive pressures leading to imitation practices (Yu 2008), customer demands and technology challenges. In addition, another motive in India was the increasingly affluent population.

Table 5.3 shows the banks which introduced IB in the objectification phase and the percentage of these banks in both countries, and suggests as per Tolbert and Zucker (1996) that more organisations will adopt the new practice than in the previous phase.

Table 5.3: Objectification of Australian and Indian banks

Country	Banks and Launch of Internet Banking	Percentage of Banks in This Stage
Australia	Aus4 1998, Aus5 1998	22%
India	Ind2 1999, Ind3 1999, Ind4 1999	38%
	Year of Mobile Banking Launch and (if applicable) Decommission	
Australia	Aus4 2000 – 2001, Aus5 2000 – 2001	22%
India	Ind2, Ind3, Ind4 2001–2 – ongoing	12%

Indian banks wanted to be seen as market leaders and providers of innovative solutions to their customers and were influenced by the emerging affluent class, mobile phone take-up and the unbanked customers, while Australian banks used the advent of the internet to solve existing problems. The motivations of the banks in the objectification are summarised below in Table 5.4.

Table 5.4: Australian and Indian themes in Objectification Stage

Common Themes	Australian Differences	Indian Differences
Peer pressure and imitation	Product cannibalisation Customer retention	New tech savvy emerging customers Mobile banking adoption

Self service	Branch rationalisation	Positive policies
Alternative channel	Cross selling	Demanding customers
	Mobile banking start-stops	Shift in customer attitudes
	Not customer-driven	

Banks in this stage of diffusion were looking to the leaders in the habitualisation phase to either learn from them or to ensure they maintained competitive parity (DiMaggio & Powell 1983), at least for their IB. Competitive pressures and overcoming technological challenges were identified as key aspects in the adoption of IB (Kuo & Dick 2010). While Australian banks wanted to solve existing banking problems such as home banking (Liao et al. 1999; Wright 2002), which required proprietary software and hence was difficult to upgrade, Indian banks were identifying services they could offer the affluent class emerging from the prosperity created by the information technology revolution in India.

Customers were beginning to ask questions of their banks as to why comparable services were not being offered. Customer dissatisfaction motivated banks to offer their customers IB. This demand was seen as a strategic challenge related to ‘identifying the set of organisations that face a defined problem and providing a positive evaluation of a structure as an appropriate solution’ (Tolbert & Zucker 1996 p. 183). According to objectification theory, at this phase competitive pressures for imitation begin to dominate, rather than strategic thinking, when organisations are considering introducing innovations.

5.2.2.2 Imitation of the Leaders

In the objectification phase, Tolbert and Zucker claim that ‘imitation may follow, but there is little sense of the necessity of this among decision makers, since there is no consensus on the general utility of the innovation’ (p. 181), although perceived strategic gain may be sought (Csaszar & Siggelkow 2010; Shenkar 2010). Banks which demonstrated characteristics in this phase found following the leaders easier than being an industry leader: ‘So it’s a lot easier to follow them and not look foolish because, well they did it too’ (Aus4). Imitating the actions of others was less daunting and easier for management than developing new strategies which were unproven and carried risks. Banks introduced new technology to serve their customers (Scruggs & Nam 2002) while ensuring they kept up with the competition. The response from Aus5 demonstrates banks competing for customers:

So mainly initially it was to keep the customers we had. Later there was quite a push to get other customers from the other institutions [banks] (CIO, Aus5).

Aus4 and Aus5 were among the largest banks in Australia and had large national and limited international client bases. The results showed a motivation to satisfy customers' needs, rather than to create something new, 'Internet banking was driven by the perception in the marketplace that customers really did want internet banking' (CIO, Aus5).

The Indian banks in this phase were all part of the 1994 group of new banks with limited legacy technology and processes. The assets of these banks were considerably less than those of the larger and longer established banks which were yet to be seen on the IB landscape. While customer demand was a major driver for the introduction of IB (Jham & Khan 2008), this demand was often driven by 'a consistent pattern of dissatisfaction or organisational failing' (Tolbert & Zucker 1996 p. 183), and it was a complaint often heard from the customers that competitors were providing greater options and product flexibility (Banstola 2007).

Our customers were definitely criticising us [for not offering internet banking] at the time. [They were questioning why the other [banks] have that [internet Banking] and you don't (Head of IB, Aus4).

Banks claimed that customers often questioned the lack of innovation and asked the banks to offer IB. In India, Ind2, Ind3 and Ind4 were all new banks set up in 1994. Aus4, Aus5 were driven more by the threat of competition and from the fear of being left behind and eventually succumbed to the pressure to offer IB. Similarly, Ind3 and Ind 4 introduced IB two years after the introduction by Ind1.

5.2.2.3 Competitive Pressures

Competition forced banks to adopt strategies for introducing IB (Yu & Fang 2009), as suggested by the theory, 'competitive pressures may be felt as force, as persuasion, or as an invitation to join in collusion' (DiMaggio & Powell 1983 p. 150). Both Aus4 and Aus5 found that old technology was restricting delivery of customer services, and the internet was seen as providing the ability to serve their existing clients better, without any major desire to capture new clients. However, they also wanted to ensure they did not get left too far behind their competitors (Singer et al. 2007) and they developed strategies to ensure they were not seen as laggards (Rogers 1983) but perceived as keeping up with the technological pace set by Aus1

in particular. Objectification involves the development of some degree of social consensus among organisational decision makers concerning the value of the structure (Tolbert & Zucker 1996 p. 182), such that Aus4 and Aus5 seemed to fear competitive pressures. The Indian banks Ind2, Ind3 and Ind4 were also concerned about competition (DiMaggio & Powell 1983) but their strategies also included increasing and protecting the customer base while using technology to develop new offerings:

It's [driven by] competition basically, only when we introduce they'll [competition] also likely do similar (CIO, Ind2).

In line with the sentiments of Ind1, Tolbert and Zucker (1986) claim that 'the structure is partially a consequence of organisations' monitoring of competitors, and efforts to enhance relative competitions' (p. 182). Banks saw competition as a serious threat to their client base and in order to capture the mind of the customer, each bank had to identify its key competitive position. According to one Indian bank, being competitive in their offerings was a key aspect, 'As a banker to my customers, I have to be more competitive than my competitor' (Ind3). There was a possibility that competitive pressures could engender a defensive mechanism rather than being a spur to innovation (Sheshunoff 2000; Csazar & Siggelkow 2010). Diversification of products was one of the main ways in which organisations could change their competitive standing to ensure they had an advantage (Haveman 1993).

We knew that if we start we'll be having an edge over the competition (CIO, Ind2).

Peer banks were monitored for new solutions which could also be introduced by the monitoring bank, 'The benefits of diversified products will be influenced by observations of other organisations' behaviour' (Tolbert & Zucker 1996 p. 183).

The market need was that, it is a time when all the peer banks and everybody were stepping into that (VP IT, Ind4).

Peer pressure (Haveman 1993) became a major factor for adopting IB, as the benefits of adoption became apparent from the experiences of Aus1 and Ind1 in each country. The benefits in this phase were partly driven by the need to give customers greater freedom to conduct banking and also, in the case of Indian consumers, an appetite for banking products which had been driven by increased affluence.

5.2.2.4 Freedom for the Customer

Institutional theory focuses on the actions of organisations such as legitimacy, conformity, imitation and homogenisation (DiMaggio & Powell 1983; Haveman 1993; Haunschild & Miner 1997) at the expense of the actions of consumers, mainly because the focus of the theory to date has been on government and non-profit settings rather than on market and private sector organisations (Currie & Swanson 2009). For this reason, the theory offers little guidance on how customers or users impact on the institutional adoption process of commercial organisations.

Enabling banking through self-service became a major motivation for IB (Yayawardhena & Foley 2000; Karjaluoto et al. 2002; Cracknell 2004; Durkin 2004; Blount et al. 2005). Looking for self-service options, banks searched for alternative channels (Seitz & Stickel 1998; Soteriou & Zenious 2003). Developing an alternative channel gave rise to perceived usefulness (Banstalo 2007) and led to greater adoption of IB (Chau & Lai 2003) while also reducing the cost of delivering banking services (Wright 2002). The perceived usefulness gave the banks confidence that their investment would be well received by customers (Hernandez & Mazzon 2006) because they would be providing banking at the customers' convenience (Ding et al. 2007; Campbell & Frei 2010). For example, paying bills when the branches were closed could be done within minutes at a customer's home without using cheques (VanHoose 2009). This motivation was common to both countries and all the adopters.

In India, the use of the ATM was seen as a positive precedent to IB. Customers' positive experiences of ATMs allowed easier adoption of IB, demonstrating that previous technological experience enhances adoption of other technologies (Liao et al. 1999; Natarajan et al. 2010). Internet banking benefited from customers' use of ATMs and credit cards more in India than in Australia due to the relative newness of ATMs in India, the benefits of which Australians had enjoyed since the late 1970s.

5.2.2.5 Emerging Consumer Needs

The emerging consumer class in developing countries has been a recent phenomenon and is not mentioned by theorists such as DiMaggio and Powell (1983) or Tolbert and Zucker (1996). However, the emerging consumer class in developing countries has been identified by Prahalad's (2005) work on the rise of global citizens who have traditionally been neglected by organisations yet account for the largest percentage of consumers. Following from Prahalad's

findings, Bijapurkar (2007) demonstrated the growing appetite of consumers in India to acquire products and services which had been previously out of reach (Hiscock 2008). Banks identified the emerging affluent customer who was technology savvy (Wang et al. 2003) and whose existence was a major motivation for developing IB. A new class of consumers was creating a need for products and services throughout the economy. Banking was a major interest for the emerging consumer class who were experiencing wealth for the first time.

Early IB research by Katz and Aspden (1997) found that younger and technologically experienced customers would be the most likely customers to adopt IB due to their existing use of the internet, particularly in developing nations (Balinamoune-Lutz 2003). In India this group formed much of the 'unbanked' consumer sector (Caskey 2002; Lyons & Scherpf 2004) and Indian banks could now use the internet to reach this potential client group. Indian banks therefore had the power to drive new adoption on a major scale. Introducing banking for the unbanked in India engaged a large percentage of citizens who were previously not involved in formal economic systems, thus in turn driving greater economic prosperity.

A major World Bank study by Caskey et al. (2006) highlighted the existence of high percentages of 'unbanked' households in developing countries and the contrasting high percentages of 'banked' households in developed countries. However, the links between access to financial services and increasing economic growth have not been well documented.

5.2.3 Sedimentation Phase in Australian and Indian Banks

The stage when a larger number of banks implement an industry form is labeled the sedimentation stage by Tolbert and Zucker (1996). Early institutional theories held that as an innovation spreads, a tipping point is eventually reached which provides legitimacy to the actions of early adopters (Meyer & Rowan 1997). Organisations modelled themselves on similar organisations in their field (DiMaggio & Powell 1983), achieving industry-wide accepted practices (Tolbert & Zucker 1996). With this theoretical perspective, it was found that all the banks within the data set demonstrated characteristics that conformed to the observation by Tolbert and Zucker those organisations observe and mimic the actions of those who have already conducted an action.

Managers observe the behavior of other organizations in their organization field, and their observation of innovative competitive activity (Greve & Taylor 2000 p. 1).

Similarly, banks adopted a ‘me too’ approach, often without due regard to their own needs or strategies (Swanson 2004), and introduced similar products to their competitors (Cantero 2005). During this phase, banks exhibited an imitation strategy (Rivkin 2000) that ensured conformity to the rest of the industry and demonstrated little differentiation of products (Deephhouse 1999; Jham & Kaleem 2008; Yu 2008).

Haunschild and Miner (1997) claim that these processes can be seen as the purest form of social influence, as it is the sheer frequency of market entrants that influences events. It is precisely the large number of organisations implementing a practice that confers legitimacy or endows a practice with a taken-for-granted status. It is at this stage that Jepperson (1991) states that an institution represents a social order or pattern that has attained certain state or property; institutionalisation denotes the process of such attainment. This social order among industry participants not only ensures conformity but also acceptance as the norm for that service or product. In conforming to the norms adopted by their peers, their behaviour in relation to their peers is influenced by the force of symbolic attributes (Glynn & Abzug 2002).

At the sedimentation stage, the ‘outcome-based imitation’ model proposed by Haunschild and Miner (1997) can be applied as a way of understanding conformist actions. Organisations assess the outcomes of other organisations’ uses of a practice or structure to determine whether they should adopt the same practice. Thus, neither the number nor the characteristics of others practising ‘x’ are important. Instead, it is the apparent outcomes of the practice that determine whether ‘x’ will be imitated. Practices that produce positive outcomes for others will be imitated; those that produce negative outcomes for others will be avoided. Firms which adopt practices which had negative outcomes may not be conforming to industry norms.

Conformist or imitating organisations have been classified in Tables 5.5 and 5.6, which list the banks considered to be in Tolbert and Zucker’s sedimentation phase. The majority of banks in percentage terms in both Australia and India adopted IB in this final stage of Tolbert and Zucker’s (1986) process of institutionalisation which resulted in ‘virtually completed spread of structures across the group’ (p. 184).

Table 5.5: Adoption of internet and mobile banking by banks in sedimentation stage

Country	Internet Banking Launches	Total Number & Percentage
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Australia	Aus6 1999, Aus7 2000, Aus8 2000, Aus9 2000	4–44%
India	Ind5 2000, Ind6 2001, Ind7 2001, Ind8 2001	4–50%
	Mobile Phone Banking Launch and (where applicable) Decommission	
Australia	Aus6 2000–2001, Aus7 nil, Aus8 nil, Aus9 nil	1–25%
India	Ind5 2000–ongoing, Ind6 2001–ongoing, Ind7 nil, Ind8 nil	2–50%

The majority of the banks in the industry in percentage terms had adopted IB in the last phase of Tolbert and Zuckers’ (1996) model in both Australia and India. The motivation for the adoption of IB for the banks in the sedimentation phase is outlined in Table 5.6.

Table 5.6: Australian and Indian banks’ themes in the sedimentation stage

Common Themes	Australian Differences	Indian Differences
Defensive strategy	Retention strategy	Non Resident Indian
Alternative channel	Mobile banking start-stops	New tech savvy/emerging customers
	No mobile banking	Mobile adoption
	High net worth	Lack of core banking and technology hindrances
		Demanding customers
		Positive electronic experience
		Shift in customer attitudes

Table 5.6 shows the sedimentation characteristics of the banks at the sedimentation stage. Institutional theory informs us that ‘sedimentation is characterized both by the virtual spread of structures across the group of actors theorized as appropriate adopters, and by the perpetuation of structures over a length period of time’ (Tolbert & Zucker 1996 p. 184).

This analysis has indicated that a ‘customer retention strategy’ was demonstrated by regional banks in Australia and larger banks in India. Both sets of banks, however, leveraged the technology to ensure customers were not lost to the competition. This group of banks, which was the last to adopt IB and adopted it at the sedimentation stage, was the largest grouping within the banks studied. Peer pressure or customer pressure was the main motivation for adoption. Customer demand drove these banks to introduce new solutions, as most customers

had more than one banking relationship. Customer demand was such that IB became a retention tool, i.e., without this, banks stood to lose clients to other banks.

Inhibitors to developing the service were a lack of belief in IB and a lack of understanding of the importance of the technology. There were also some issues related to technical capability even though the technology had matured enough so that uncertainty about platforms was reduced. Much of the uncertainty had been de-risked by the adoption of IB by earlier banks.

On the whole, these banks merely responded to their peers, without a considered strategy. Banks made a decision to be late introducers, with the exception of Aus7, which did not believe in adoption. However, Aus7 was an early adopter of mobile phone banking, only for the technology to be abandoned shortly after launch. A localised customer base was partly to blame for late adoption, according to some banks. However, both Aus7 and Ind8 are large organisations with global customers. Ironically, the largest banks in both Australia and India were among the last to adopt internet banking.

5.2.3.1 Adoption for Retention of Customers

Internet banking became a common commodity; everyone was offering it. The last of the major banks realised the need to offer IB as part of normal banking.

I mean it is in my opinion that [internet banking] has almost become a common product, everyone offered that. We were offering that, it just became a part of the standard internet banking [service] (Head of IB, Aus7).

At this stage of late adoption, competition was the reason for introducing new banking services rather than any defined strategy (Elsbach 1994; Yu 2008). Institutional theory states that at this stage organisations which imitate other organisations (Haveman 1983) acquire no competitive advantage (DiMaggio & Powell 1983). The outcome is that the innovation has complete acceptance across the industry (Tolbert & Zucker 1983, 1996). A great deal of innovative activity was based on externally sourced ideas and the innovations eventually diffused across the competing banks (Roberts & Amit 2003). The later adopters learned from the early adopters and were able to ensure that risks were minimised as the technology had become more sophisticated and the customers more accepting of IB. A fear of being left behind by competitors and a concern about negative public relations also drove the later adopters.

From a competitive offering point of view we obviously looked at what our competitors [were] doing and where it makes sense to our target market we will try and replicate the same capability (Head of IB, Aus9).

I suppose anyone who didn't at that time get onboard [internet banking] were going to be left behind and if we were not offering internet banking to our customers we knew our competition so it was really a bit of a no brainer from that point of view (Head of IB, Aus7).

At this stage of industry diffusion of IB, the imperative became more a matter of retaining existing customers rather than acquiring new ones from the competition, as indicated in research (Scruggs & Nam 2002; Wright 2002). Banks knew that they would risk losing customers if they did not meet the needs of the customers and align themselves with what was being offered in the industry (DiMaggio & Powell 1983). Later adopter banks adopted IB to ensure against customer losses.

So actually yes we had to get up with the competition just purely from a customer retention point of view that is where our competition comes into it. We had to keep up with them, not such from attraction but from a retention [of customers point of view] (Head of IB, Aus9).

Indian banks also introduced IB in greater numbers than in previous years. 'Legitimacy grows with density, at a decreasing rate, while competition grows at an increasing rate' (Haveman 1993 p. 594). Haveman suggests that as technology acceptance grows among industry participants, the number of adopter's increases and competition drives retention strategies.

Okay, so [the] competitor's action was yes one of the reasons but also at the same time, in fact we wanted to stay with the times (GM IT, Ind6).

Organisations develop strategic behaviour which becomes accepted across the industry (DiMaggio & Powell 1983). Banks become less risk averse when what was previously unknown and risky has been de-risked by the early adopters, allowing a less risky strategy to be pursued by later adopters.

In the case of our bank we attached a lot of importance to [the] competitor's action and started with [only] information-based internet banking (GM IT, Ind5).

[There was] no major demand from local customers, but competition, some of our peer banks had introduced it [internet banking], but it was at a nascent stage (Head of Technology, Ind8).

Thus for the late adopters, competitive pressures, the need to legitimise their actions (Oliver 1991) and customer demands were the main drivers for adoption. It is possible that later adopters were forced into making the investment into IB to increase industry acceptance as opposed to the informed strategic decision making of the early adopters (DiMaggio & Powell 1983).

The difference between Australian and Indian banks appeared to be that the larger Indian banks completely overhauled their ageing platforms into core banking during the period of the study, which allowed real time distributed networks, something which the Australian banks had already had in place for many years before internet banking. Late adoption by banks also forced these banks to introduce IB merely to prevent existing consumers from defecting to competitors. Whether these later adopters were smaller or larger in assets size than their peers is the analysis in the next section.

5.2.3.2 Are Laggards Larger?

According to Ferri and Masciandaro (2002), the initial resistance and reluctance of the late-adopter banks to the introduction of IB could be a result of their age and based on assets. Assets-based analysis was conducted to explore whether the size of organisations was a determining factor in adopting IB during the sedimentation stage (Deephouse 1996). A study by Masciandaro (2000) of Italian banks concluded that banks with larger asset bases were likely to adopt IB earlier than smaller banks due to their ability to invest and take advantage of economies of scale of operation. To assist in this asset-based analysis, secondary data from the annual reports of the selected banks in Australia and India was collected for the period 1995–2004, which is discussed below.

Contrary to Masciandaro's (2000) assumption, Australia's largest bank by asset base (Aus6) was a later adopter – together with the remaining smaller regional banks which remained focused on their traditional regional markets. The regional banks' assets were considerably less than those of the larger banks. Aus7, Aus8 and Aus9 were regional banks with relatively small customer bases and did not offer a complete range of services as their customers did not provide adequate financial returns for the banks to make the investment in new internet services.

Three of the four Indian banks in this group of late adopters were established nationalised banks whose history predated World War II. They had large national bases as well as substantial overseas bases serving the large Indian diaspora. Ind5, Ind6 and Ind7 in this group had some of the largest asset bases in India, due to the age of these banks, their entrenched customer base and varied product offering. Ind8 was one of the newly created banks with a limited geographic presence, and focused mainly on the region of its formation. Haveman (1993) suggests that 'organisations that imitate others in their population are similar in terms of structure, strategy, resources, and constraints' (p. 597). The research found Haveman's comment relevant since all the banks at this stage (year 2000) had to introduce IB in some form in order to ensure customer respect and guard against unhappy customers. Of the group of Indian banks, all but Ind8 were large national organisations. Ind8 was a small, regional private-sector bank which had been formed from a merger of a number of smaller banks.

Ind5, Ind6 and Ind7 were banks with a history of over 100 years of banking experience and with networks of branches across the whole of India. Their product offering was extensive for both local and overseas clients, yet they were restricted by archaic banking technology which delayed their ability to leverage new technology until the later stage. These established banks had large and loyal customer bases with comparatively limited banking needs. As one of these banks put it, long relationships were seen as critical for retaining customers. The larger banks initially felt that their entrenched customer relationships were adequate to counter the threat from new entrants with advanced technology and that their old ways would suffice. This factor has been highlighted by Christensen and Raynor (1997, 2003) as the power of established organisations to resist innovation (Braganza et al. 2009; Sandstrom et al. 2009). An executive of Ind7 suggested that competition from the new banks was restricted as the older banks had longer and deeper relationships with their clients than the new banks and 'the new banks who had recently been established had not established themselves' (Ind7), implying that the new banks did not have the relationship with consumers that the established banks had and that they were therefore not a competitive threat. However, in a world of technology, competitive products appear to be more important than long relationships. Due to their longstanding relationship with customers, the older banks still saw the bank as a meeting place and the branch manager as a friend, particularly in the villages.

Branch and personal bankers were a major factor in the manner in which banks offered personalised service [as an important factor for older banks] (GM IT, Ind6).

This analysis demonstrates that institutional theory, while supported by the research, is inconclusive when determining the size of later adopters. While only one large bank in Australia was a later adopter, the majority of late adopting banks in India were large banks. No significant conclusion can be drawn about size of organisation except to say that other factors of large organisations may impact on their adoption strategy. The above analysis is similar to other analyses of larger organisations, indicating the reluctance of myopic managers to take risks and the inability of ageing technology to cope with innovations (Braganza et al. 2009). This presented older banks with the choice of upgrading their technology or risking customer dissatisfaction.

5.2.3.3 Forced Upgrade of Technology

In India the threat from the private banks formed in 1994 was real and there to stay. As Ind6 put it, the new banks had no ageing technology to contend with and hence their establishment created great pressure on the existing organisations (Yang & Ahmed 2009). A similar sentiment was voiced by the executive of another established bank.

In the case of our bank also we attached lot of importance to the competitor's action and started with information based internet banking. Both competition and regulatory pressure have driven the banks to go for internet banking (GM IT, Ind7).

Hence, the choice for the later adopter banks was to compete with technology in a way they had not had to before (Wang 2007) or simply lose the race against their younger competitors who had introduced IB one to three years earlier. This approach ensured that these later adopters were defending their clients rather than creating new ones as done by the earlier adopters.

The new private sector banks came without any legacy. They were able to come with the latest technology, so that was the competition, so competition was one of the main drivers (GM IT, Ind6).

Banks adopted a pattern of making decisions which had already evolved over a period of time, and been de-risked and had been an accepted practice (Meyer & Rowan 1977).

So sometime around the year 2001, when although we did not have a centralised core system at that time, even on a distributed environment, we started giving internet banking facility and made it part of our core banking (GM IT, Ind7).

Introducing IB forced banks to overhaul their existing technology (Wang 2007) and prepare themselves for opportunities such as the emerging possibility of mobile banking which was gripping the banking industry during the early years of the 21st century.

5.2.3.4 Regulation Assists Adoption

Regulation has been deemed an important aspect of institutional innovation diffusion (Deephouse 1996). Government mandates can facilitate greater adoption of new functions and can speed up adoption (DiMaggio & Powell 1983). Indian banks were assisted by the Financial Inclusion Policy which stipulated that every citizen should be engaged in the economy through a banking relationship, as e-banking and financial infrastructure had a significant impact on the economy of a developing country (Isern 2008). The Financial Inclusion program in India and similar programs in other developing countries have ensured that banks offer banking services to the poor to enable them to participate in borrowing and depositing funds, in an attempt to allow funds and scarce resources to be used among other parts of the economy. The scope of financial inclusion can be expanded in two ways:

1. Through state-driven intervention by way of statutory enactments
2. Through voluntary effort by the banking community for evolving various strategies to bring all strata of society within the ambit of banking services

Limited access to affordable financial services such as savings, loans, remittances and insurance services by the vast majority of the population in the rural areas is believed to be a constraint to the growth impetus in the economy. The approach to this problem in developing countries was somewhat different from that in developed countries. In the latter, the focus was on the relatively small sector of the population without access to banks or the formal payments system, whereas in India, the majority of the population has been excluded from access to bank accounts and credit markets, a factor of interest for the Reserve Bank of India.

After the nationalisation of the major banks in India in 1969, there was a significant expansion of branch networks to unbanked areas and an increase in lending to agriculture, small industry and rural business. The focus was on establishing the basic right of every person to have access to affordable basic banking services. In an address by Ms Usha Thorat, Deputy Governor, Reserve Bank of India, as circulated at the Annual Bankers' Conference 2006 at Hyderabad on 4 November 2006, she outlined the challenges being addressed by Financial Inclusion:

The extent of exclusion from credit markets is much more, as the number of loan accounts constituted only 14 per cent of adult population. In rural areas, the coverage is 9.5 per cent against 14 per cent in urban areas. Regional differences are significant with the credit coverage at 25 per cent for the Southern Region and as low as 7, 8 and 9 per cent respectively in North Eastern, Eastern and Central Regions.

The extent of exclusion from credit markets can be seen from a different viewpoint. Of the 203 million households in India, 147 million are in rural areas and 89 million are farming households. Of these rural households, 51.4% had no access to formal sources of credit. Information and communication technology was seen as a solution for meeting Financial Inclusion, whether by the use of the internet or the mobile phone, depending on the need of the customer.

Overall the benefits of IB brought economic gain through the use of IT-enabled innovations. Consumers could now perform a task such as banking which affected their livelihoods and which assisted in their overall access to services which previously had only been available to their urban counterparts. Solutions such as IB and mobile banking facilitated by Financial Inclusion allowed the unbanked to avail themselves of banking services.

5.3 Institutional Theory Applied to Mobile Phone Banking

A similar but separate comparison was conducted for mobile phone banking as part of the same data collection process, but only as an afterthought when respondents started revealing different adoption characteristics for Australian and Indian banks. Mobile phone banking was considered an integral part of electronic banking and the next alternative delivery channel among banks in Australia and India. Table 5.7 below demonstrates the banks in Australia and India which attempted to launch the service and, in the case of Australian banks, terminated the service after a short period.

Table 5.7: Mobile phone banking diffusion (restricted to the cases in this study)

Country	Banks Launching Mobile Banking (2000–2001)	Banks Terminating Mobile Banking (2001)	Banks Continuing Mobile Banking (2006)
Australia	5	5	0
India	7	0	7

Table 5.7 demonstrates different characteristics of mobile phone banking adoption among Australian and Indian banks. It was decided in this study to treat mobile banking separately because Australian banks had introduced this new service only to terminate it very shortly after introduction, while their Indian counterparts had experienced enormous opportunities and growth.

The adoption timeframe for mobile phone banking was between 2000 and 2003 among banks in Australia and India. The processes of commissioning and decommissioning of mobile phone banking services in Australia and the growth in adoption in India did not appear to be explained by institutional theory. There appeared to be no firm or strategic actions of organisations or consumers (Myer & Rowan 1977), no indication of competitive pressures (Tolbert & Zucker 1996) or competitive mimicking (Haunschild & Miner 1997; Fox-Wolfgramm et al. 1998; Haveman 1993) or a clear understanding of the needs of consumers to assist in the analysis of MB consumers (Mignerat & Rivard 2009; Rajao & Hayes 2009). Hence the analysis deserves a separate discussion as below.

5.3.1 Mobile Phone Banking in Australia

Australian bank Aus6, having been criticised for taking a cautious approach to IB, decided to be one of the first to launch mobile banking, after customers had expressed dissatisfaction with the bank's services. DiMaggio and Powell (1983) describe this action of laggards making good their earlier decisions of being late in the market by being the first in the industry with subsequent new products. Although Aus6 had been one of the first to adopt mobile banking, it appeared that their decision was based purely on reversing the market and consumer perception, as low take-up of mobile phone banking resulted in the service being abandoned shortly after launching. The other late adopters of IB in this group indicated that, while their internet banking platforms had the technical capability for mobile phone banking, they could not justify the investment due to anticipated low levels of customer uptake.

In their unified theory of acceptance and use of technology (UTAUT), Venkatesh et al. (2003) argue that the user of technology must obtain satisfaction from the experience if adoption is to be maintained. This finding is similar to that in a study in South Africa (Brown et al. 2003) which measured perceptions and the relative advantage of mobile banking to needs. Both the above studies demonstrated that mobile banking had a perceived need and relevance to the

consumer and they appear to support the results in this study that MB gave consumers economic benefits which led to greater adoption.

Banks Aus1 and Aus2 were among the first to promote and introduce mobile phone banking but Aus3, which was one of the early adopters of IB, did not believe it had the customer mass to justify the investment. Both Aus1 and Aus2 subsequently ceased the service due to the lack of customer take-up. Aus2 had deployed a broking product to allow customers to buy and sell shares using the mobile phone. However, high cost to customers (Mallat 2007), slow speed of transactions and limited product offering deterred customers from continuing with this offering (Agarwal et al. 2007). Both Aus4 and Aus5 introduced a form of mobile phone banking in 2000. However, technical problems, lack of customer demand and cost of the service to customers forced both banks to cease the service shortly after its introduction. Both bank reintroduced MB in 2010 with the coming of the Apple iPhone which improved banking products as well as speed of transactions, which had been a major inhibitor to the adoption of MB earlier.

5.3.2 Mobile Phone Banking in Developing Countries

An advantage of MB is that it does not require high levels of IS literacy (Baliamoune-Lutz 2003), which could explain the high rates of adoption in developing countries (Deng et al. 2010). At the same time as Australia introduced and then abandoned MB, India (Agarwal et al. 2009), South Africa (Brown et al. 2003), Taiwan (Luarn & Lin 2005) and Kenya (Morawczynski 2009; Gikandi & Bloor 2010) were all able to successfully introduce the same technology and attract users.

In India, Ind1 had a growing and affluent client base that was becoming not only technologically savvy but also increasingly mobile. The rate of mobile phone uptake was seen as an important opportunity for generating more revenue for banks. Ind1 was again a leader in introducing this service as a trial and then continued to build on the initial service. Ind1 initially offered account balances and later funds transfers. Ind2, Ind3 and Ind4 developed a mobile banking service in the minimalist form of account balances to demonstrate presence to the market. However, as the technology and the customer base matured, more banking services were added and Ind4 offered services beyond banking, such as rail ticketing and the purchase of movie tickets.

The larger banks, Ind5, Ind6, Ind7 and Ind8, again were a little cautious in their introduction of MB. This was partly due to the older and established client base in rural India (Ind6) and

partly due to the emerging affluent client base using the banks for services other than standard banking services. As market demand facilitated the vast diffusion of MB (Laukkanen & Kiviniemi 2010; Wessels 2010), a large market provided a good return on the innovations and growing markets provided the profit for further market growth, as observed by Frame and White (2004) in an earlier study.

Mobile banking became a far greater success in developing countries than in developed countries (Datta et al. 2001). This was facilitated by drastic telecoms tariff reductions, affordable mobile handsets (Lakshman 2006) and faster adoption than any other technology (IAMAI 2000a). It appears from the research that, more importantly, the mobile handset performed a range of tasks never before available. Not only did the mobile phone provide communication but also the prospect of commerce and prosperity (Ulwick 2002) and thus it was relevant to the needs of the customer (Kim 2008). This function, the prospect of prosperity, had existed in developing countries for many years, and the newness of the mobile phone and the value of its use may have been the major factors in its uptake (Donner & Andres 2008).

Consumer adoption theories have emerged during the growth of recent technologies and gathered greater exposure during the internet's growth; however, they appear to offer limited insights into the mobile banking phenomenon. Theories such as the Technology Acceptance Model (TAM) proposed by Davis (1989) explain only attitudinal and perceived uses of technology, while the Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975) relates only to the behaviour of individuals based on certain predictions of behavioural intentions. Similarly, a later study by Ajzen (1985), the Theory of Planned Behaviour (TPB) only explains behaviour in conducting an action based on the intention of consumers. TAM, TRA and TPB attempt to explain consumer intentions to adopt based on the perceived usefulness of a technology. However, these theories do not address the 'job-to-be-done' (Ulwick 2002) and the motivation of consumers to adopt based on a function the innovation performs, and they appear not to explain the basic nature of mobile phone banking adoption.

A fundamental issue not considered by banks in this study when introducing IB or MB was the functions to be performed by the customer (Ulwick 2002). Institutional theory was unable to explain these aspects of customer behaviour with respect to mobile phone adoption in India. The limitation of institutional theory may be its inability to provide adoption characteristics from a consumer or customer requirements perspective (Pousttchi & Schuirg 2004), which Ulwick (2005) describes as the need to meet customers' functional expectations

or the tasks to be performed. Christensen and Raynor (2003) refer to Ulwick (2002, 2005) with regard to innovations performing certain functions as likely to attract greater consumer acceptance.

Institutional theory was unable to adequately inform the major characteristics of IB and MB differences between Australia and India as discussed above. To enable the research to explore these unexplained characteristics, other theories investigated in the literature review were explored. The Disruptive Innovation Theory (DIT) of Christensen and Raynor (2004) offers insights on serving consumers who were previously not served, the un-served consumers, and appears to link with the consumer's need to perform a job. Ulwick (2002, 2005) appears to provide some explanation of the adoption of mobile banking in India. DIT in conjunction with Ulwick's 'job-to-be-done' view has been used as the second theoretical model, with the assumption that DIT refers to the adoption of innovations in markets which have not been served before. Ulwick (2002, 2005) and Christensen and Raynor (2003) are reviewed in the following sections to explore the differences between Australian and Indian adoption characteristics.

5.4 Disruptive Innovation Theory

The Australian and Indian experiences with MB reflect the findings of research on the importance of providing products to customers based on what they want (Ulwick 2002, 2008). Ulwick highlights the unmet needs to be satisfied by an innovation and the value it creates to the user. Christensen and Clayton (2003) refer to Ulwick's notion that product uptake would be successful if companies targeted their products to the circumstances in which customers find themselves, i.e., the problems that customers may face rather than the customers themselves. Ulwick (2002) refers to wasting time and resources if customers' outcome needs are not met. Targeting the actual functions which customers need to perform will yield profitable results for the innovation (Ulwick 2008).

This notion of focusing on the customer's actual needs touches on what Pincus (2004) refers to as the motivation of a customer's needs, meeting a customer's unmet need to perform a certain task. Pincus (2004) claims that 'only salient needs are motivating' (p. 381), indicating the importance customers place on the ability of a product or service to perform a task they would not be able to conduct without the product. Hence, instead of providing a solution to customers by way of MB, banks actually focused on offering a task which could be performed, a task that gave not only social status but also the facilities of communication and

commerce (Luarn & Lin 2004). In the words of Christensen (2003), the job the customer hopes to achieve and not the customer himself should be the key unit of analysis for product designers to reap profits.

Christensen and Raynor (2004) define disruptive innovation as ‘non-consumption’ (a product or service which previously did not exist) or ‘compete against non-consumption’. With this view, IB and MB in India may be considered to have been disruptive, as consumers who did not have a bank account were for the first time offered bank services through technology and possibly in the ‘non-consumption’ segment of DIT. Internet and mobile phone banking were successful where, according to Lettice (2002 p. 4), it met ‘the unfulfilled needs of an emerging or niche market. It is a set of performance attributes, highly rated by niche market customers and is not initially appreciated by mainstream markets’. So with this finding, what was disrupted in India by bringing IB and MB to the rural masses? In the light of this understanding of customers’ unmet needs, it is plausible to assume that MB in India attended to a ‘job-to-be-done’, that of providing access to commerce and information which was not available in another way. In Australia the same information was available via the internet, which was more cost effective than mobile phone charge rates.

Another factor which may have enabled the adoption of MB in India was the large number of unbanked customers, for whom banking via the mobile phone was the only convenient way they could perform banking other than through the traditional and informal *Hawla* system (Buencamino & Gorbunov 2002; Schramm & Taube 2003). By using MB, the previously unbanked could engage in the economy and had the prospect of greater prosperity (Pousttchi & Schurig 2004). In addition, the mobile phone had become a mainstream product within Indian society and was providing a level of relevance to the Indian consumer which meant that the adoption of new mobile applications was not a great challenge (Kim 2008) and the new Indian affluent class was emerging in mass numbers which aided the affordable cost.

India’s new wealth was creating a new class of educated and demanding consumers (Khanna 2007). This situation gave banks an opportunity to take advantage of a growing population who for the first time had become custodians of wealth. This new wealth led to the need to explore the traditional concept of banking for the first time. Internet and mobile banking in India saw tremendous growth from 2002 (Bijapurkar 2007), particularly with growth in mobile phone uptake as a result of the regulation changes. Mobile banking usage offered many opportunities to bank the unbanked (Ivatury & Pickens 2006) and banks took advantage of technology which was already in the hands of customers. Mobile banking gave consumers

a new way of connecting to their local economies and the greater national economy, which had eluded them previously. In the process, many existing and informal financial practices such as village money lending were disrupted.

5.4.1 So What Was Disrupted?

Disruptive innovation presupposes that existing methods will be disrupted in order for a new approach to be accepted and this will occur only if the new approach satisfies a user need. However, what was disrupted and what kind of disruption IM and MB caused in the market is unclear, as the term ‘disruptive’ can be misunderstood (Schmidt & Druehl 2008). It is likely though that existing informal practices of financial transactions were disrupted with the introduction of IMB in India.

This study suggests that while the job of meeting consumers’ needs was being developed by both IB and MB in India, the kind of disruption as defined in Christensen and Raynor’s (2003) work remains unclear, partly as their work focused on the steel and computer disc drive manufacturing industry in the US and not on the service industry. Further, while no mention is made of Christensen and Raynor’s (2003) view on DIT in developing countries, it is assumed the thinking is more pertinent to developed countries. However, it appears that IMB had demonstrated characteristics of disruption in India as suggested by Christensen and Raynor (2003); hence the DIT provides a useful lens for this analysis. Further, IB as observed in India demonstrates a different view from that of Christensen and Raynor (2003), who suggest that internet banking was not disrupted, yet characteristics of disruption in India’s adoption have been observed, as discussed below.

For customers in rural India, the lack of a formal financial services structure allowed for informal community banking among the villagers, a practice which they had been using for centuries due to the lack of any available alternative. An informal system of financial transactions between villagers called the *Hundi* or the *Hawla* system provided finance to communities in exchange for personal belongings (Buencamino & Gorbunov 2002; Schramm & Taube 2003). This system appears to have been disrupted by the coming of IMB. These informal systems had existed for centuries in rural areas of developing countries and came under pressure as banks started offering IMB to customers who had never had any formal banking relationships. In the light of DIT, the Indian data suggests disruptive behaviour. For example, the ‘inability to build expensive branch networks’ (Ind1) was overcome by the use of technology to extend banking capability to customers for whom banking had previously

not been possible. This resulted in customers opening bank accounts for the first time. The ‘unbanked’ (Caskey 2002) were, for the first time, being banked, enabling them to have access to many other products through this new banking relationship.

The population of Indians with a bank account in 1995 was 26%; by 2005 it had increased to 36% of the population (*The Times* 2008). The number of unbanked customers had reduced as a result of banks being successful in using the internet and mobile phones for capturing customers who historically had never held a bank account (Lafferty 2006). This increase occurred in all the Indian banks, where the internet and later mobile phones allowed banks to create a range of new services (Lettice 2002). It appears that the unbanked and the Financial Inclusion Policy were related (Chakrabarty 2006; Gwinner et al. 2006), in that regulations had been developed to ensure that all citizens could be included in the financial framework of the nation. As one interviewee commented:

Yes, yes, the Reserve Bank of India and Government of India both are actually now trying for the Financial Inclusion to the maximum. Today the regulation actually facilitates internet banking (GM IT, Ind6).

According to Ind6, Financial Inclusion had enabled or forced the bank to deliver services to the unbanked population of India who, according to Lyons and Scherpf (2002), had never had a financial relationship. The benefits of being financially included allowed customers not only to have savings facilities but also to have access to credit. This was particularly important for India’s growing new generation of consumers buoyed by the emerging economy.

5.4.2 Internet and Mobile Banking: Sustaining or Disruptive Innovation?

This analysis questions whether IMB was disruptive or sustaining according to Christensen and Raynor’s (2003) disruptive innovation theory. Unable to use institutional theory to answer the two key differences of the adoption of mobile phone banking and new customers between Australia and India, Christensen and Raynor’s (2003) DIT was used. Christensen and Raynor have suggested that IB can be deployed only as a sustaining technology relative to creating a business model for retail banks. Sustaining innovation improves the performance of existing products along the dimension of mainstream customer value and does not disrupt existing business. While disruptive innovation demonstrates characteristics that existing customers may not want initially, such innovations will be cheaper and simpler, even with inferior quality, if compared to existing products. The claims made by Christensen and

Raynor, which have not only been contentious but have also engendered much discussion among scholars with reference to IB, are:

- There is not ‘a large population of people who have been unable to open a bank account because they lacked the skills or the money, existing bank penetration of this market is high, hence this rules out new-market disruption for internet banking’ (p. 54).
- Are there current bank customers at the low end who would be happy to accept a bank account with fewer privileges and features in order to get the service at a lower price? (p. 55)

In Scandinavia Enders et al. (2006) conducted a study with Nordea Bank to test if DIT provides insights into whether IB is sustaining or disruptive. Enders et al. (2006) concluded that IB at Nordea was a sustaining innovation and not a disruptive innovation. They conducted a qualitative study to evaluate the motives of Nordea for introducing IB. They found two categories of motives:

- Overlapping value networks – initially serving low-end customers with an offering of value over time for more established customers
- Disruptive circumstances – either over-served or ‘non-served customers or customers who lack ability, wealth, or access to conveniently accomplish an important job for themselves’ (Enders et al. 2006 p. 70).

The Nordea case demonstrated that customers were existing and were not over- or under-served but were simply provided with an alternative banking method. The second aspect of a sustaining innovation was the desire of banks to use the internet as a strategy to retain customers who could be lost to competitors. Banks which were later adopters saw IMB as a retention tool rather than for generating new business. Banks such as Ind8 and Aus8 who were later adopters wanted to guard against losing existing customers after realising that existing relationships with customers were altered by the internet (Li 2001). In Australia, no new customers were acquired as a result of the innovations but in India new customers, particularly previously unbanked customers, were acquired, particularly by the new banks.

One of the major drivers for IMB in Australia and to a lesser extent India was to maintain service and introduce a better product into an established market using an alternative channel

to serve customers. An alternative implies that a service already exists. The improved service resulted in self-service banking for customers and reduced the cost for the banks (Lafferty 2006). Internet banking allowed banks to pass much of the transactional capability to customers (Fisher 2006) and there was a cost benefit to banks in reducing branch infrastructure. By providing self-service, banks were able to save costs and retain customers as well as serve customers who did not have to wait in bank queues.

In India, the new product or service being introduced to the masses was IMB and the option of improving services was not possible as there was no existing service to improve in many cases. In Australia, banking had been almost universal and the option for improving the service was delivery via an alternative channel with the added aim of cost saving. In the words of Christensen and Raynor (2003), the market was 'under-served' in India while in Australia the notion of 'unbanked' did not exist. According to Christensen and Raynor (2003), when sustaining an offering, no new customers are created; rather existing ones are better served by the use of technology or pricing. This theme was prevalent throughout the Australian banks where no bank indicated capturing new clients as a result of IB or MB except for clients from other banks. There were no instances of Australian banks being under-served (no banking) or over-served. In all instances, they provided IMB to facilitate self-service via an alternative channel, to reduce costs for the bank and to differentiate from competitors.

In the process of disruption, 'leapfrogging' appears to have occurred in India, both technological and social. Serageldin (2006) observed 'leapfrogging' in developing nations and has received attention from other scholars who have all defined it as 'deployment of advanced technologies in developing countries ahead of or at least at the same time as their deployment in industrialised countries' (Socolow 2001 p. 1). Supporting the leapfrogging finding, Fleming (2003) explains that countries that are advantaged with new technology can leapfrog to take up a new position on the technology adoption curve. Internet banking leapfrogged Indian banking consumers to technology-based banking without Indian consumers first engaging with the traditional branch network.

There are examples of IT-enabled leapfrogging similar to IMB (Samuel 2005; Willenberg 2007; Rodgers 2008). One example is the sharing of computers at community centres and post offices in poor villages of India for education and trade (Prakash 2004). In Bangladesh, banks provided clients access to tele-banking as a way of connecting the underprivileged to funds without the need for expensive bank branch networks (Alam et al. 2008). In Papua New

Guinea, the community has seen a leap to modern satellite-based telecommunications allowing access to global markets (Davison et al. 2008). It seems poorer nations have sometimes been able to leap ahead of more industrialised countries (Chouri 2006), although how prepared these nations are to take full advantage of the leap depends on their willingness to adapt to new technology (Steinmueller 2001).

5.5 Reversing the Product Cycle

The process of introducing new technology in a service industry such as banking follows a predefined path, according to Barras (1986). The path uses IT-enabled innovations to enhance the performance of an overall product or service offering (Gambardella & McGahan 2010; Ordanini & Rubera 2010). Barras (1986) indicates that the process called ‘the reverse product cycle’ firstly improves the overall efficiency of the offering and is followed by the second phase of improved quality of the product and finally a new product resulting from the application of the IT. During the process of introducing IMB in Australia and India, the evidence from the data appears to support the reverse product cycle process in Australia, while in India the adoption process appears to be reversed. The three phases of Barras’ theory (1986) are analysed below for both Australia and India using the data from executives.

5.5.1 Phase 1: Using Information Technology to Improve Efficiency or Create a New Service?

In Australia the initial stages of the introduction of IB was depicted by Aus1: ‘So the driver here was another channel and cheaper channel again and I would say had branch at the top end, call centre in the middle, online banking cheaper, easier’. Similarly, the strategy employed by Aus3 in the initial phases was to develop ‘a channel to market [which] actually help us in terms of our profitability’. Hence a new channel was developed to assist in the efficiency of the overall product offering in Australia, and in the process created cost savings and developed the potential for increased profitability.

In India though, the initial stages of IB introduction allowed banks to create a new set of products which had not been offered to customers previously. In the process a new set of customers were now touched by IB which allowed them to develop a banking relationship that had not previously existed. Ind1, for example, believed satisfying a new generation of consumers using IB was vital, ‘possibly the new generation of customers coming into bank with organisations’. These consumers had not previously had a banking relationship and the product was a ‘new service’ (Barras 1986). The internet now offered millions of potential

consumers the opportunity to purchase new products unavailable before. As part of the process of developing new offerings, Ind7 used the internet to provide ‘railway ticket booked over internet anywhere is good enough for a travel, so is the air ticket’, and a new product was born. The internet was used for the enablement of a new product offering which could not have existed before.

From the above review, the data appears to demonstrate that IB in Australia did indeed improve the efficiency of delivery to customers of banking services, yet in India the customers were largely new, and hence IB was an entirely new product as no previous banking relationship or product had existed accessible to those consumers. As technology infrastructure matured, the quality of the service offered by banks also improved and this was evident from the banks which adopted IB later than their peers in the industry.

5.5.2 Phase 2: Using Information Technology to Improve Quality of Service

According to Barras (1986), the application of IT to services in the ‘send phase’ yields improvements in the quality of the service as understanding of the nature of IT matures. Both Australia and India experienced improvements in the quality of the IB service as consumers’ acceptance and the IT supporting the banking service matured. Aus3 experienced a phase where their understanding of the innovation of IB assisted them: ‘So we learnt a lot I think about that [internet banking] and about how to do it and how not to do it so that’s how the customer base really influenced the decision but it was really also around understanding our customers more, about understanding what their transaction volumes were, what their loads were, those sort of things’. This increased understanding allowed banks to offer a superior service and ensure the IB platform was leveraged to a greater extent. In India, a similar strategic approach appeared as banking services and infrastructure became more aware of the needs of consumers. Similarly, Ind4 also found improved service to customers to be a major differentiator: ‘People have made it this is going to give you market feasibility, customer service and availability. So that is why the entire decision was taken that we should go for this thing but it should be as early as possible’. Improved quality appears to be a key driver for banks offering IB, in both Australia and India. Banks saw the internet channel as a way of ensuring outdated processes were improved and streamlined to offer better service to their customers.

5.5.3 Phase 3: Using Information Technology to Create a New Service or Improved Efficiency?

According to Barras (1986), in the final stage of the process, IT will often be used to develop a new product suite as the industry and consumer base become accustomed to and develop a greater level of understanding of the value of the IT-enabled service. For example, Aus8 saw the opportunity to develop a new service through selling other products with IB as a strategy to create more revenue, often referred to as cross-selling. 'It was not so much like a cost saving measure and as you already know it was very much about trying to get to lift up cross selling and the view was what is the value proposition as to why a customer would want all of their products with you.'

Australian banks used technology skills and their knowledge about customers' requirements to extend what was initially an improvement of existing services via the internet to the development of new services and products. Australian bank Aus3 had started the process of developing new approaches to offer a new product: 'So that was already the dawning of the thinking about how can we move customers to different channels and the advent of call centres were starting to take off. An executive from Aus9 said, 'We are certainly tracking the volume and the volumes are certainly encouraging enough for us to warrant some further investigation definitely and of SMS combined with the few queries we are getting around the access PDAs that certainly people are looking for that much and that more convenient access to be able to do when and where they want to', indicating a new offering on the platform originally created by IB. Indian banks, however, appeared to follow the reverse in this final stage, as suggested by Barras (1986), to offer streamlined banking products. Banks were forced to upgrade their banking technology and develop streamlined processes to handle the new customer base. For example, Ind6 'started a fully computerised branch' as a result of the massive uptake of new customers. Ind5 similarly embarked on a program of centralising their complete IT infrastructure and noted:

Our bank currently has decentralised mode of computerisation with each branch holding the database of its customers in its server. However, many of its branches are interconnected through leased lines with a view to offer network based convenience banking to its customers in the form of interconnected ATMs, any branch banking, internet banking etc. (GM IT, Ind5).

Through the program of interconnection initiated by the internet, banks in India became more efficient and in the process used IT to streamline their banking services. As part of the

streamlined processes, banks began to offer ATM services and other enhanced internet-based banking services.

5.6 Summary of Analysis

The analysis identified major differences between Australian and Indian banks' adoption of IMB. Factors such as technology maturity, consumer perceptions, adequacy of infrastructure, cost efficiency and general economic factors contributed towards the mode and process of adoption by banks in Australia and India.

In both Australia and India, smaller banks in terms of asset size and geographic reach were the first movers to adopt IMB. They had little regard for competitors' actions and were keen to set the industry pace. Customers' emerging needs drove their decisions, along with the banks' desire to increase revenue and their customer base. While Aus1 wanted to make inroads into the competition, Ind1 was setting about banking the 'unbanked', those Indian citizens who did not have a bank account.

According to Tolbert and Zucker (1986), some organisations considered from the perspective of habituation wanted to be seen as market leaders, driven by customer acquisition rather than customer retention, as opposed to later adopters of IMB. They had no regard for regulatory guidance and hence set the pace of the banking industry with innovations.

Banks which were considered to be in Tolbert and Zucker's objectification stage realised the potential and benefits of IMB after the early adopters had introduced it. During objectification, banks were driven by the actions of competitors and created strategies to solve existing business problems. These banks started their own programs of implementation but, as opposed to the early movers, with business objectives which explored the possibilities based on the potential of IMB. Aus4 and Aus5, as well as Ind2 and Ind3, while learning from the early movers, developed a compelling value proposition for their new service, wanting to know about the problem to be solved as well as the potential profitability of the new IMB investment. Banks in this category were primarily responding to a competitive threat and were attempting to differentiate themselves by leveraging the innovation for financial gain and competitive advantage.

Banks that were in the sedimentation phase were a mixture of smaller regional organisations (Aus7, Aus 8) and large national organisations (Aus6, Ind7 and Ind8). According to Tolbert and Zucker (1986), during sedimentation organisational norms are set, practices are adhered

to (Haveman 1993) and uncertainty is reduced for other industry participants to follow (Haunschild & Miner 1997). Organisations in this phase may not have the resources to implement new technology as leaders. They are also perhaps driven by a slower response from customers and/or scepticism about the value of the new technology. Banks in this group adopted a 'wait and see' attitude. They waited until the rest of the industry had fully adopted the innovations and had resolved all the risks and uncertainty before embarking on their own adoption, and they developed a defensive strategy to protect their existing customers. There was no indication of a plan to acquire new customers, only a fear of losing existing customers, whether they were small or large organisations. Banks in this category appeared not to be distinguished by particular assets size relative to the industry, which does not concur with the views of Ferri and Masciandaro (2002), who claim that size is related to the stage of the adoption of new technology, that is, that banks with greater assets are more likely to be early adopters of innovations.

A number of additional features of Tolbert and Zucker's (1986) process of institutionalisation were observed in this study. They are as follows:

Early adopters of IMB: Habitualisation Phase

- The size of an organisation in terms of asset and geographic distribution seems to be critical when introducing new technologies. Smaller organisations in both countries were the first to market. However, there is no clear evidence that banks with relatively large assets are the last to introduce new innovations (Masciandaro 2000).
- Early innovators may be aiming to create a new customer base, to bank the 'unbanked'. Banks which had a limited branch network were early in adopting IMB innovations (Frame & White 2004), although 'new customers' appears to be defined differently by Australian and Indian banks.

Late adopters of IMB: Sedimentation Phase

- Aus6 and Ind8 were among the last banks in the sample set to introduce IB. Both had a relatively large asset base and also one of the largest networks of branches and ATM installations across their respective countries. Again this situation is very different from previous studies which indicated that larger banks with branch networks would typically adopt IB faster to reduce costs.

- Aus 8 and Aus9 are regional banks while Aus6 is a national bank, yet all three were the last to adopt IB. Aus6 was, however, the first to adopt MB while Aus8 and Aus9 had not considered the mobile option as their customer base appeared to be more regional and less demanding.
- Of the last banks in India to introduce IB, both Ind6 and Ind7 are national organisations with an extensive network of branches across India while Ind8 is a regional bank with a small network in northern India, and hence, no standard was observed nor advised by institutional theory on banks in the sedimentation stage.

The differences between Australian and Indian banks outlined above could be informed only partially by Tolbert and Zucker (1986) and left unanswered three major aspects of the research:

1. Indian banks mentioned the emerging and unbanked consumer, whereas 97% of Australian banking customers already had a banking relationship and hence there were no new customers to acquire. The Australian banks' strategy was to provide alternative or improved modes of banking; while in India the opportunity to offer new banking relationships became a major strategy for most banks.
2. Adoption in Australia was based on cost reduction, while in India it was based more on acquiring new customers who had not previously been banked. In this process a new product/service was being offered into a new market, as opposed to the same service being offered via an alternative channel in Australia.
3. The mobile phone banking adoption did not follow any pattern attributable to institutional theory. Australian banks which launched this service terminated it within 12 months, while Indian banks which launched the service gained momentum, adding more banking services over time. While in Australia as in India banks started introducing the MB service around 2000, by 2001 all the Australian banks had ceased their MB service. Over the same period, Indian banks had either continued in a trial mode or launched new services. By 2006, seven of the eight Indian banks interviewed in this study had a mobile banking component in their range of services.

Unable to use institutional theory to answer all the questions about the adoption of IB and MB, this research utilised the work of Ulwick (2002, 2005), DIT (Christensen & Raynor 2003) and Barras (1986) to explore whether adoption patterns differ in different countries.

These views help to explain that meeting a customer's need to perform a job function generates high adoption rates which in some instances can disrupt existing practices.

Barras (1986) indicates that while service innovation may follow the process of product innovation in developed countries, it appears that this process may be reversed in developing countries, as observed in the adoption of IMB in India.

Hence, while there appear to be similar characteristics between Australian and Indian IMB adoption, there are also very distinct differences which have been analysed in this section. The next chapter highlights these differences and discusses the possible reasons for the differences in more detail.

6 DISCUSSION

6.1 Introduction

The key research objective of this thesis was to understand the dynamics of IT-enabled innovation adoption in developed and developing countries and to explore if and how they differ. It has been observed that Australia did not have any emerging class of citizens; there was no reference to such a class in the data. It was evident in the data that in India the emerging class arising from improved socio-economic conditions has a significant role in the adoption of innovation. For example, the emerging class was a motivator for Indian banks offering a new range of services.

Populations experiencing financial affluence are a major enabler of technology adoption (Ind4), and this affluence can have a major impact, particularly on the lives of younger and educated citizens in developing countries, to a greater extent than in developed nations (Bijapurkar 2007). This increasing affluence has altered the dynamics of the adoption of technology in these countries as these customers have been targeted by new organisations which understand customers' needs quite differently from traditional and established organisations. These factors contributed to the differences in adoption of IMB between Australian and Indian banks, and may hence result in the different theoretical viewpoints which have emerged among nations in North America and Europe. In the light of this apparent difference in the adoption of technology, the objectives of this study were explored through the research questions:

Research Questions: What are the patterns of information technology enabled innovation adoption in developed and developing countries? How do they differ and why?

6.1.1 Three Major Findings

Based on the comparative analysis of IMB adoption by banks in Australia and India, three major findings have emerged from this study:

- 1. IT-enabled innovation adoption in developed and developed countries appears to have many similar characteristics yet also have some different characteristics.**

Using the concepts and claims of institutional theory (Tolbert & Zucker 1996), it can be concluded from the findings of this study that adoption patterns may be similar in many ways

yet different in others in developed and developing countries, although it appears the theory has focused on developed countries. This research appears to demonstrate that some dynamics of IMB adoption in both developed and developing countries follow the pattern of the habituation, objectification and sedimentation phases of Tolbert and Zucker (1996). However, the motivations for adoption at each phase appear to differ between the two contexts in respect to the maturity of the banking market and the needs of users.

2. The adoption of IMB in Australia appears to be indicative of a sustaining innovation, while the same innovation in India suggests a disruptive innovation.

Internet and mobile banking in India have satisfied an unmet customer need that had not previously existed in the form of banking and in the process disrupted traditional and informal finance methods (Christensen & Raynor 2003), while in Australia existing banking methods were improved and sustained, providing greater efficiency.

3. IT-enabled innovation in banks appears to follow an opposite path in developed nations to that in developing nations, driven by difference consumer needs.

The adoption of IMB was found to be motivated by different factors in Australian and Indian banks, and accordingly reference the service innovation process suggested by Barras (1986), i.e., the reverse cycle model suggests the reverse process in the two countries for the adoption of IMB.

6.2 Institutional Innovation: Context-specific Motivation

Institutional theory (DiMaggio & Powell 1983; Tolbert & Zucker 1996) has been useful for interpreting the adoption of new technology across industries despite the limited evidence of previous empirical evaluation of the theory (Weerakkody et al. 2009). Institutional theory posits that there are broad structural similarities in innovation adoption patterns within industries and between developed and developing countries, while the motivations may appear to be different. The process of institutionalisation (Tolbert & Zucker 1996) informs the manner in which banks adopt IMB from the early innovators to the followers and subsequent laggards or late adopters. The findings in this study appear to correspond to this theory. Tolbert and Zucker (1996) state that innovations are motivated by technological change (e.g. internet), legislation (e.g. IT Act), or market forces (e.g. consumer choices). However, motivations influenced by factors such as emerging affluent consumers, size and geographic reach of an organisation appear to be unexplained by the theory. Table 6.1 summarises the

key observations of IMB adoption in Australia and India across Tolbert and Zucker's three processes of institutionalisation.

Table 6.1: Institutional theory: view of IMB innovation, comparing Australia and India

Institutional Theory DiMaggio & Powell 1983; Tolbert & Zucker 1996	Motivations for IMB Adoption	
	Australia	India
Differences during habituation phase Industry leaders: Aus1, Aus2, Aus3 and Ind1	Cost cutting, branch reductions and alternative channels to market	Use innovation to provide banking services to the 'unbanked' Emerging affluent consumer demands
Similar observations during habituation	Overseas influence of the executives in these banks Alternative channel for banking delivery Innovation champions to bring about innovation To become industry leaders	
Differences during objectification phase Industry followers: Aus4, Aus5, Ind2, Ind3 and Ind4	Update ageing technology to provide new improved banking services to gain improved efficiencies, streamlined services and improved product offerings	Motivated by positive regulation Extend banking services to new customers
Similar observations during objectification	Peer pressure and imitated adoption of IMB Increase in self-service Alternative channels for service delivery	
Differences during sedimentation phase Industry laggards: Aus6, Aus7, Aus8, Aus9, Ind5, Ind6, Ind7 and Ind8	Defensive strategy employed to retain existing customers by both large banks and small banks with limited geographic	Internet used to upgrade ageing technology and streamline processes as a result of new customers. Driven by emergent demand and growing affluence of consumers.
Similar observations during sedimentation	Alternative channels for service delivery	

The findings suggest some similar characteristics for adoption of IMB in both developing and developed environments. In Australia three banks and in India one bank initially offered IMB followed by other banks that had motives different from those of the early adopters (Astley & Fombrun 1983; Scott 1987; Oliver 1988). These adopters were then followed by a large number of other banks, often under competitive pressure rather than from any defined strategy (Deephouse 1996; Hannan & Freeman 1977). At this stage, banks were found to mimic other banks (Galaskiewicz & Wasserman 1989), often in the guise of a strategic process (Deephouse 1996; Haunschild 1997; Srikanti 1997; Fox-Wolgramm et al. 1998), leading to industry-wide conformity.

6.2.1 Similar Adoption Motives in Australia and India

While the early literature on institutional theory (DiMaggio 1983; Deephouse 1996; Fligstein 1996; Furubotn 2001) and more recent studies (Lyytinen et al. 2009; Rajao & Hayes 2009) demonstrate how practice can be adopted over time, there is limited empirical evidence of the motives for these institutional changes within an industry. Similar motives for the adoption of IMB in Australia and India such as the intention to be the market leader in adoption of IT innovations to gain market entry were related to the size of the organisation and its age in the banking industry. Smaller and younger banks with limited national distribution reach were the first to adopt IMB, while large banks with legacy technology and smaller regional banks appeared to be motivated by competitive pressures.

6.2.1.1 Organisational Age as a Determinant of Innovativeness

The banks which were first to adopt IMB were small in assets and distribution capability, and young in age relative to the rest of the banks in the industry. These banks were motivated by the need to lead and to increase their market share, despite limited resources. Technology was the enabler for them to lead the industry and increase their businesses.

Industry leaders in both Australia and India exhibited common motivations such as a strategic vision to be a market leader and these banks were often driven by entrepreneurial management who had international experience (Bantel & Jackson 1989). Early market entry motivations appeared in smaller banks that might have seen themselves as frontier organisations (Aus1 and Ind1) in the pursuit of a corporate identity as market leaders and first movers (Varadarajan et al. 2010).

While institutional theory indicates that larger organisations are likely to be imitated by smaller organisations that lack resources and are unable to invest in costly new ideas (DiMaggio & Powell 1983), this research has demonstrated the opposing view that early innovators are likely to be smaller organisations, with both large and small organisations as followers. Early innovators may also be small regional organisations which demonstrate a desire to lead the industry and grow their customer base.

Smaller organisations may be more likely to invest in alternative strategies for growth and to take risks which are strategically targeted to a particular consumer base as part of this growth strategy. These organisations may identify opportunities faster than their larger competitors. This was demonstrated by Aus1: ‘Just getting internet setup and you know our CIO brought straight into it, a couple hundred grand [\$200K], didn’t even bother going up to the next level, [it was] something we needed to deliver’. The Chief Information Officer (CIO) was motivated to become a leader in the industry with IB. Leadership is vital, irrespective of whether the technology diffusion is occurring in a developing or developed country. In both environments leaders were influenced by experiences of success with IB in another bank and were able to bring the benefits of this experience to their current organisation.

Leader organisations in the pursuit of innovation tend to disrupt existing methods of service, often with a view to improving existing options, although in Australia the motivation of these leaders was to reduce costs by offering a technology-based banking service and appearing competitive to the consumer. In India the motive was to offer banking to the unbanked population to open up a market which had not been possible before the advent of the internet. In both Australia and India, however, early adopters were limited in the size of their operations relative to the other banks.

6.2.1.2 Size of Organisation as a Determinant of Innovativeness

Organisational size (Ramdani et al. 2009) and geographic presence emerged as major motivations for the adoption of IMB by both Australian and Indian banks. This appears to be inversely related to financial capacity and the extent of the distribution network, as observed by Malhotra and Singh (2007, 2010) of banks in India which adopted IB. Organisations which are young entrants into an industry will typically innovate to increase their business (Laforet 2008) and take advantage of a new channel (Malhotra and Singh 2007), while older organisations may have greater inertia in relation to the adoption of innovations (Christensen & Raynor 2003).

The lack of a large distribution network (Javier et al. 2007), which inhibits conventional business growth, may motivate smaller banks to develop alternative channels (Mazzon 2006), which will not only provide cost-effective solutions (Li 2002) but also extend banking beyond the traditional customer base (Howcroft et al. 2002). These findings appear to contradict the suggestion by Tolbert and Zucker (1996) that older organisations are better placed to introduce innovations.

Supporting the findings in this research, Wang and Ahmed (2004) found that organisational newness and restricted geographic reach and size may be an indication of a firm's motivation to innovate (Brown & Russell 2007; Pla-Barber & Alegre 2007). Similar to the claims in this research, Malhotra and Singh (2007) found organisations that have a smaller geographic reach and consequently a limited distribution network are likely to introduce IMB ahead of larger organisations in the industry. In Malhotra and Singh's study (2007), it was found that innovations are likely to provide smaller firms with competitive advantage over their larger peers (see also Morone & Testa 2008) by allowing solutions to be tested and implemented much faster than established organisations could (Christensen & Raynor 2003).

Technology-enabled innovations may give smaller organisations faster access to markets and customers, particularly as resources may be a major limitation to conventional business growth, such as in the case of Ind1 which was challenged by 'our inability to build a large branch network'. The speed at which smaller organisations such as Ind1 can introduce innovations will likely be as a result of their ability to manoeuvre resources much faster than a larger organisation, which is contrary to the view put forward by Tolbert and Zucker (1996) and DiMaggio and Powell (1983). Once a technology has had initial success, competitors are more likely to decide to place their mark on the industry landscape by using the new technology as a means to differentiate and also to leverage technology to upgrade ageing technology and enhance business services.

6.2.1.3 Technology and Customers as Drivers of Innovation

Ageing technology may force later adopters to incorporate innovations or risk customer attrition (Yang & Ahmed 2009). Tolbert and Zucker (1996) do not indicate this particular characteristic; however, Haunschild and Miner (1997) and Rivkin (2000) observe that later adopters of innovations conform to the industry norms and follow industry leaders (Csaszar & Siggelkow 2010). This study suggests that later adopters of IMB may experience diminishing

returns and in some instances late adoption may force organisations to take decisions without sufficient strategic analysis (Blaskovich & Mintchik 2010).

Organisations want to meet the needs or demands of their existing customers and industry peer pressure (Wang 2007; Beckert 2010) or competitive actions (Haveman 1993). As Ind6 remarked, 'The new private sector banks which came without any legacy, they were able to come with the latest technology, so that was the competition, so competition was one of the main drivers'. Organisations were forced to adopt new technologies, created by the need to upgrade existing, ageing technology. It is assumed that large established banks appear to be in this segment but it is also possible that the segment includes small regional banks, which may not have adequate resources, and banks that share a lack of vision or are hampered by ageing technology. Being forced by customers and competition to upgrade their technology, banks may find a new way of serving their customers while cannabalisising their traditional methods of service delivery.

Lack of access to the new services being offered to customers of competitive banks (Singer et al. 2007) creates a feeling of inferiority among customers of laggard organisations. These customers may ask laggard organisations to offer the new services, and customer demand and competition may be the motives of laggard banks to deploy the new services. As General Manager, IT Services of Ind5, and the Head of Internet Banking, Aus7 explained, the pressure was felt by the laggard banks:

Of course, our educated and techno savvy customers had a major role in our decision to go for internet banking (General Manager IT, Ind5).

I suppose anyone who didn't at that time get onboard were going to be left behind and if we were not offering internet banking to our customers we knew our competition [would] so it was really a bit of a no brainer from that point of view (Head of IB, Aus7).

Customers being offered IB and MB by early adopting banks ultimately created pressure on the laggard banks to offer competing services to their customers. This is consistent with what we would expect to see within the sedimentation process of institutional theory (Tolbert & Zucker, 1996).

6.2.1.4 Innovation Motivated by Competitive Pressures

Competitive pressure appears to be a major motivator for innovation adoption (Haveman 1993; Shenkar 2010) and the actions of competitors are likely to impact on later adopters.

The decision to defer innovation may be affected by considerations such as few customer requirements. However, over time competitive pressure based on an accepted industry structure, according to Tolbert and Zucker (1996), may motivate organisations (Banstola 2007; Yu 2008). In the later stage of industry adoption, organisations may be forced to accept the innovation, albeit not an innovation by this stage. Larger organisations may suffer from inertia, which is a view contrary to previous research by Bantel and Jackson (1989), who indicate that larger organisations have an additional resource base for taking greater risks. Haveman (1993) suggests that fear of losing competitiveness forces organisations to offer the innovation despite not having any strategy (Yu 2008), as the extent of industry acceptance forces adoption (Elsbach 1994). In this instance, customers are likely to be older (Banstola 2007) and on the whole content with the services, often not demanding new services comparable to the services being offered by competitors (Wisdom & Goldstone 2011). These organisations continue to introduce innovations after the industry leaders and continue to accommodate older technology until they are forced into adoption – such as Ind7, Ind8 and Aus6.

Follower organisations often lack a vision for adopting new technology and are content with mimicking their industry peers (Haveman 1993; Wisdom & Goldstone 2011), and are more likely to face competitive threats from early adopter organisations (DiMaggio & Powell 1983; Tolbert & Zucker 1996). Lack of either desire or perceived need for a new approach ensures that follower organisations remain the last to adopt a new technology.

6.2.2 Different Adoption Motivations between Developed and Developing Countries

Different motivations that have emerged from the research indicate that regulation and an emerging affluent population's demand for technology may have an impact on adoption. These factors are where Tolbert and Tucker's (1983) theory is unable to inform this research. This research brings new light to the process of diffusion of technology in developing countries for which technology adoption and usage may be a recent event, with a willingness to adopt technology as a result of a burgeoning affluence that has been a consequence of the introduction of new financial regulations.

6.2.2.1 Impact of Regulation on Innovation

Positive regulation and favorable consumer pricing may aid consumer uptake of products, potentially leading to mass adoption (Rothenberg & Zyglidopoulos 2006). The perceived value of IMB to consumers and the emerging large number of new consumers in India drove a demand for services that would meet their needs, and demand ultimately can fuel more product development.

The development of the Financial Inclusion Policy and the IT Act (Sarma 2008; Sinclair et al. 2009) may be a key aspect in the development of IMB in India. According to DiMaggio and Powell (1983), regulation appears to be a major motivator for adoption of innovations (Montalvo 2008). Positive regulation may also be seen to be a major motivator in the adoption of IMB in other developing countries (Leeladhar 2006) where the need to engage greater numbers of citizens in the local as well as the international economy may be directly related to their social and economic wellbeing (World Bank 1999).

As Orru et al. (1991) claim, organisations in developing countries look for similar regulatory directives to help the introduction of innovations (Popp 2009). However, in developed countries there appear to be few regulatory pressures for introducing innovations despite the suggestion of institutional theory (Tolbert & Zucker 1996). Regulation enables business growth due to greater uptake of products and may be a major motivation for organisations to offer new products and services. However, according to institutional theorists, adoption seems to be a mandate to adopt an innovative practice.

Regulation in India mandated that organisations provide banking solutions for people who had not been part of the economy. In developing economies there are a relatively large number of people who are not part of the official economy, hence positive policies have an impact on many citizens for whom technology could either alleviate poverty or facilitate improved economic conditions (World Bank 1996) and this may be a key motive for innovation adoption. This positive policy in a developing country such as India may encourage the development of a new class of customers who had been ignored or for whom existing organisations considered it uneconomical to provide meaningful products or services.

6.2.2.2 Recent Technology Experience Enabling Innovation Adoption

The use of or recent acquaintance with new technology seems to positively motivate both providers and consumers to adopt innovations (Leeladhar 2006; Wessels 2010). Consumer awareness of new technology and its perceived benefits and the increasing affluence of

consumers, particularly in developing nations, may increase the likelihood of adoption (Beshouri & Gravik 2010).

Previous theoretical frameworks (Davis 1989) such as the Technology Adoption Model (TAM) (Struab et al. 1997; Wang et al. 2003) and the Theory of Planned Behaviour (TPB) (Ajzen 1985) attempted to understand attitudinal and behavioural factors of consumers. TAM has been limited in its ability to measure ease of use and the cultural or socio-economic factors of technology adoption in different countries; however, it does not focus on external determinants such as technology availability and the lack of basic infrastructure as major limiters to adoption. These theories predict intention and behaviour at a point in time and no mention is made of prior experience in the process of adoption. This has handicapped researchers from assessing the suitability of the theories in a global setting over a period of time.

In order to understand these differences in adoption characteristics, DIT was used. Although useful on its own, the service innovation model from Barras (1986) appeared to provide greater insight into the observations of this research. To this extent, the service innovation model from Barras appears to demonstrate a manner in which the adoption of technology in developed and developing countries can be better understood.

6.3 Reversing the Service Innovation Cycle

While the motivations of developed and developing countries appear to be similar in some instances and can be explained by institutional theory, the differences appear to be unclear from a theoretical viewpoint. The impact of adoption and the characteristics of motivation appear to be vastly different in developed and developing countries. These characteristics were further explored using DIT and service innovation. Toinenen and Tuominen (2006) claim the Reverse Product Cycle, originally developed by Barras (1986), as the first insight into the adoption of technology in services. Barras' (1986, 1990) research claims that when new technology from one field is introduced for the improvement of another industry (i.e., services), the process of product innovation is reversed. In the case of IMB, the internet which was conceived within the defense industry had transformed into applications in banking, and similarly the mobile phone originally developed for communications had been used as a banking technology. These technological transformations bring efficiencies, quality and then product innovation in three distinct stages of the process within the industry that has adopted

the technology. The reverse of this is often the case in service innovations, hence, the term ‘reverse product cycle’.

The reverse product cycle was discussed in Chapter 1. The first stage of the process is designed to increase the efficiency of delivery of the existing services from technology which was used in another field; the second stage is to improve the quality of services; and the third and final stage is to develop new services with enhanced features. Barras (1986, 1990) highlights the application of technology (the internet) in fields other than its original application. In this instance, banking was the recipient industry. This study appears to show that for developing countries the use of the internet in the service environment presents a radical innovation. As such, the reverse product cycle observed in developed countries may not apply universally to all countries, particularly in developing countries where the adoption of innovation appears to be different, often driven by different consumer needs.

In conjunction with these different consumer needs, Christensen and Raynor’s (2003) DIT appears to be related to the adoption of service innovation as observed in both Australia and India. Sustaining innovation appears to relate to IMB adoption in developed nations, while disruptive innovation appears to coincide with IMB adoption in developing nations as a result of the disruptive characteristics of new product introduction where there was no previous offering. Table 6.2 summarises the difference in emphasis between the introduction of IMB in developing and developed countries as seen from the perspective of the reverse product cycle (Barras 1986) and in Christensen and Raynor’s (2003) theory of sustaining and disrupting innovation.

Table 6.2: Reversing the reverse cycle across an industry while sustaining and disrupting

Developed Country Observations	Developing Country Observations
Sustaining innovation (Christensen & Raynor 2003) Barras’(1986) reverse product cycle	Disruptive innovation (Christensen & Raynor 2003; Abernathy & Townsend 1975) in developing countries, reversing the Barras (1986) product cycle
Barras’ Phase 1: Efficiency Sustaining banking services through the provision of alternative channels to market (Aus1) Enabled <i>branch reductions and cost cutting</i>	Barras’ Phase 3: New Product IMB – to <i>leapfrog</i> existing informal methods and serve an unbanked or under-served consumer base, e.g., mobile financial services in developing countries (Duncome & Boating

resulting in a lower cost-to-serve, e.g., computerised policy records (Barras 1986) (Aus2)	2009) (Ind1) Centuries old <i>hawla</i> systems of funds transfer were under threat as a result of IMB (refer to 6.2.3.1). <i>Users' unmet needs</i> for communication and banking appear to have been met through IMB (Ulwick 2002) (Ind2)
Barras' Phase 2: Quality IMB improved, enabling <i>better customer experience</i> and product enhancement, e.g., online policy records (Barras 1986) (Aus4, Aus5)	Barras' Phase 2: Quality Positive policies were developed to improve infrastructure for addressing new customers, such as greater access to telecommunications in remote villages to provide banking via post offices (Ind2)
Barras' Phase 3: New Product Additional product offerings such as BPay and broking which disrupted existing practices in the industry as a result of the internet, e.g., a fully automated service (Barras, 1986) (Aus1, Aus2)	Barras' Phase 3: Efficiency As more <i>affluent customers became accustomed to IMB</i> , a streamlined technology approach was developed to cater for the increase in customer numbers adopting IMB (Ind7, Ind8). In this stage, services were enhanced through the use of efficient technology such as core banking platforms

Table 6.2 suggests that the reverse product cycle, as described by Barras (1986), appears to operate in India. Hence, this research appears to demonstrate contradictory views of the reverse cycle for developing nations where the application of new technology may have different implications and serve a different class of customer than in developed countries.

6.3.1 Sustaining Existing Services in Developed Countries

The findings demonstrate that developing countries may not have had existing products to improve, while developed countries had existing technology and infrastructure to either replace or enhance (as indicted by Aus4 and Aus5), thereby providing operational efficiencies. Organisations often leverage emerging technologies to rationalise existing service delivery methods to improve customer perceptions (Ismail & Panni 2009) and to streamline dated and ageing technology, as Aus6 had been forced to do with the introduction of IB. In India, the application of new technologies which was enabled by the immaturity of the market was a radical departure from the nature of the informal systems that had operated before. Many customers went from no service or product to the latest product or service. Hence, services were sustained in one environment (developed) and disrupted in another (developing).

While replacing ageing technology and reducing cost, organisations may in the process develop new solutions for existing business problems (Seitz & Stickel 1998), as was the case for Aus4 which used IB to provide a more user-friendly business banking service. In this instance internet technology had the potential to alleviate challenges in existing business practices. This process is likely to occur in developed countries where customers already benefit from a technology solution in some form, and developing a new technology solution is likely to retain existing customers (Al-Hawari et al.2009). This is distinct from the examples in developing countries where the technology may not have been available previously.

Organisations that see an opportunity to increase their business using IT (Lichtenstein & Williamson 2006) reach out to consumers with the prospect of capturing customers from their competitors (Cracknell 2004). The technology allows for a major shift in the relationship between organisation and consumer by reducing the strength of the relationship existing in traditional business practices (Jayawardhena & Foley 2000; Li 2002). This appears to be evident in developed nations as large populations already had a banking relationship when the adoption of an enhanced service was offered, as observed by Aus4 and Aus5, which both used IB to offer streamlined business banking services.

Christensen and Raynor (2003) describe this approach as ‘sustaining innovations target demanding customers, high end customers with better performance than what was previously available’ (p. 34). In the case of IB, Christensen and Raynor (2003) claim that internet banking is a sustaining innovation and this study reinforces this view as ‘existing bank penetration of this market is high’ (p. 54), implying that the penetration of banking in a developed market is such that only sustaining rather than radically different options exist for customers. Further, in developed countries, the penetration of banking was high (Centeno 2003; Cracknell 2004), which supports the view of Christensen and Raynor about bank penetration. The motivation in developed countries was to provide a better banking experience to customers rather than to provide a completely new service. The motivation used the internet as an alternative channel (Khalfan & Alshawaf 2004) for convenience (Cracknell 2004; ICFAI 2006) and to differentiate (Suganthi 2001) from the competition (Gao & Owolabi 2008). Convenience through alternative channels of service delivery (Karjaluoto 2002) brought benefits to customers and organisations by diverting traffic from expensive branch networks (Smith 2009) to the internet (Scruggs & Nam 2002; Cracknell 2004). Reducing costs indirectly ensured that customer satisfaction improved as serving times were

reduced when customers did not have to wait in bank queues (Sciglimpaglia & Ely 2002; Bradley & Stewart 2003).

Reduced costs and improved efficiency may be seen as major benefits for organisations in developed countries and as key differentiators (Yakhlef 2001; Li 2002). Speed of service is coupled with a varied product range (Stamoulis 2001; Hasan 2002) and could become the core strategy for organisations in their pursuit to differentiate, despite differentiation in a service context being traditionally more difficult than in a product industry (Nemzow 1999). Those organisations which are unable to differentiate risk losing customers to aggressive organisations (Scruggs & Nam 2002), and may turn to defending their existing customer base rather than using technology to acquire new customers (Diniz 1998). Customers being offered insufficient product choice and defection to competitors would become major concerns (Sheshunoff 2000) for organisations not able to invest in modern technology-based solutions.

Later, as IMB became a mainstream banking offering, other services were offered on the internet platform such as broking (Spindler & Recknagel 2008) and bill payment (Laukkanen et al. 2008). These services were further enhancements of the products which banks made available through the internet and, in India, also through mobile banking.

6.3.2 Service Innovation in Developing Countries

The scenario is different in an environment where particular services do not exist and age-old informal methods have been the norm. When these methods are replaced by modern technology, new market entrants may seize the opportunity to disrupt the old practices.

The adoption of IMB in developing countries appears to have followed the reverse of that in developed countries, in that the deployment of new products was followed by improvements to quality and efficiency. Internet banking was a new service for consumers in many developing countries, and the ‘unbanked’ (Johnston & Morduch 2008) had for the first time the chance of obtaining services which would benefit their social and economic wellbeing. As these banking services gained momentum among consumers as their needs were being met (Ulwick 2002), improvements in the quality of the infrastructure and supporting policies enabled a more focused approach by service providers (Bitner et al. 2000; Durkin 2004). Consumers gained greater confidence in the service being offered (Hitt & Frei 2002) and demanded greater efficiency as additional offerings such as MB become available.

In developing countries, limited physical infrastructure led banks to use a new channel to generate services which had been previously unavailable (Li 2001; Cracknell 2004). Rapid uptake of new services then prompted service providers to search for more efficient means of providing the same services. The internet was rapidly being overtaken by mobile technology as a means for delivering services more efficiently and to a larger customer base using the latest technology (Mishra 2002). As the emerging consumer class started engaging in the economy (Hiscock 2008), technology and the efficient delivery of services brought about a service revolution in developing countries, bringing with it great consumer demands (Popkin & Iyengar 2007).

6.3.2.1 Banking the 'Unbanked'

Disruption to gain market entry appears to be an approach to dislodge existing organisations (Christensen & Raynor 2003) to gain new customers (Djankov & Sharma 2008), where customers have limited or no services (Comninou et al. 2009). According to an interpretation by Rangaswamy (2003), disruptive technology is understood as a new product or service that 'disrupts' an industry and eventually wins market share. Christensen and Raynor's theory states that innovations will often demonstrate characteristics that existing customers may not want initially. Although they may be cheaper and simpler, they may also be of inferior quality compared to existing products. While this would appear to be the case in the context of developed countries, this research suggests the same claims cannot be made for developing countries. Customers in India were offered IB via a personal computer at the local post office and later on the consumer's mobile phone. This approach relates to Christensen's premise about non-consumption and providing a solution which is offered in the absence of any previously available facility.

Rural and poorer regions in the world are likely to be ignored by service providers (Prahalad 2005); however, technology may enable these regions to disrupt traditional, age-old practices. In this study, the informal, village-based *hawla* method of banking (Buencamino & Gorbunov 2002; Schramm & Taube 2003) appears to have been disrupted. The services of village merchants who lent money, provided options for funds and facilitated the transfer of overseas remittances were threatened by IMB. The cost savings, increased security and immediacy of IMB replaced informal and often risky methods. A previously under-served customer's basic financial needs could be met securely and safely with the coming of IMB (Christensen & Raynor 2003). Meeting customers' unmet needs for a job or function can lead to the successful development of a product or solution (Ulwick 2002, 2008). Meeting the needs of

millions of consumers led to successful IMB adoption in India (Akinci et al. 2004). A major factor for the limited traction of mobile phone banking in developed nations was the lack of need when IB had good penetration, while countries such as India with lower internet penetration, particularly in rural regions, favoured the adoption of MB.

In developed countries, the 'job of banking' the poor was being adequately done by banking channels such as the branch and the internet, while in developing countries, there were no banking channels used by the poor. Hence there was a dramatic uptake when IMB was provided. Christensen and Raynor (2003) agree that successful organisational strategies are targeted at a product's functionality, rather than at the customer. In this manner the function to be performed was addressed, i.e., that of banking, which resulted in mass uptake of IMB in developing countries (Porteous 2006), in an affordable manner.

6.3.2.2 Increased Affordability Drives 'Leapfrogging'

High adoption among large populations drives the cost of the technology down to an affordable level where even the poorest in developing countries can afford it (Chen & Zhao 2008), creating a 'leapfrogging' effect where the technology had not existed before (James 2008). In India the roll-out of land-based telecommunications, a technology which had been widespread in developed nations for many decades, had still not reached rural regions. In India and other developing countries, the mobile phone leapfrogged the landline communications which had become available for communications in developed countries.

By making this leapfrogged technology available in poorer countries (Fong 2009), there was a great possibility that a large number of people would benefit from products or services driven by this technology (Safeena et al. 2011). This technology would meet some of the basic communication and financial service needs of the poor for whom ownership would previously have seemed an unlikely possibility (Fong 2009). This possibility, it would appear from this study, may result in greater acceptance of technology and its benefits by people in developing countries while at the same time meeting the consumers' needs which ultimately drive demand (Komal & Rani 2012).

Consumers' needs are driven by factors such as increased product functionality and the availability of a product suitable for mass consumers, and as a result it would be likely to generate the desire by consumers for a better way of life. These factors may lead to a more affordable product, one which is cost effective and mass produced, making it available to more people than ever before. For example, in India, mobile telephony is an example of a

product where mass adoption has enabled one of the cheapest call rates in the world (Duncombe & Boating 2009). The greater population density in developing nations is a crucial element in this reduction of cost which leads to faster mass adoption, which in turn forces the disruption of existing methods of delivery and traditional age-old practices, as new methods become economically viable for the masses as they emerge from poverty.

6.3.2.3 Growing Affluence Encourages Disruption

The emerging consumer class in developing countries is a relatively new occurrence (Bijapurkar 2007), created by the affluence of fast developing nations, and there appears to be little theoretical literature to turn to for guidance. There has been a dramatic rise in the number of citizens engaging in the economy as a result of increased prosperity in some developing countries. This has led to an increased need for services such as air travel, hospitality and banking.

Neither institutional nor disruptive theories offer any insight on emergent affluent influences in the adoption of innovations. Some understanding has been offered by Bijapurkar (2007), who attributes the new Indian consumers and their growing affluence to economic prosperity, as does Khanna (2007), who offers insights into the growing entrepreneurship in India leading to greater affluence. Hiscock's (2008) contribution to this stream is that the growing wealth in developing countries is driven largely as result of opening up historical economic constraints.

The emergence of new organisations in established industries is likely to result in their adoption of new technology earlier than by existing organisations, and to threaten existing practices (Christensen & Raynor 2003). New entrants tend to bring new approaches to an industry and increase competition. They may not have any legacy technology inhibiting the introduction of new technology, and they may not have the disadvantages of out-dated labour practices and the structural challenges often inherent in established organisations. Therefore, new organisations, for example, Ind1 and Ind2, are often in a position to embrace new technologies effectively. Moreover, new organisations tend to attract entrepreneurial and ambitious staff that is more likely to favour technological innovations than their established competitors and will set the pace for change in the industry. By leading and developing new solutions, young organisations create an adoption practice for the remainder of the industry participants to follow. These new solutions are targeted to the increasingly affluent in their market.

6.4 So Was Internet Banking Disruptive?

Whether IB and MB were disruptive requires the application of Christensen and Raynor's (2003 p.49) 'litmus test' that provides comprehensive test which defines three separate criteria's to establish if a technology is disruptive. These are listed below in Table 6.3.

Table 6.3 Christensen and Raynor's litmus test for disruption (2003)

Christensen and Raynor's (2003) Litmus Test for Disruption	Internet and Mobile Banking Observations in India	Internet and Mobile Banking Observations in Australia
Is there a large population of people who historically have not had the money, equipment or skill for this function?	In India, consumers did not have the relevant components to conduct their banking. ✓ criteria met for disruption	98% of the Australian population had a banking relationship; hence no disruption ✓ criteria met for sustaining
To use the product or service, do customers need to go to an inconvenient, centralised location?	Indian consumers did not in many cases have the option to conduct their banking in the villages, or the need. ✓ criteria met for disruption	78% of Australian households had internet access in 2001 and could access IB from their own homes; hence no disruption ✓ criteria met for sustaining
Are there customers at the low end of the market who would be happy to purchase a product with less performance if they could get it at a lower price?	In India there were two tiers of customers: the city and the village. The village customers required basic banking services, and would be prepared to accept a lower performance banking product. ✓ criteria met for disruption	The needs of the city and the rural community were similar, no mention by the interviewees of this being different; hence no disruption.
Can a profit be earned at the low end at discount prices?	Banks could generate income by being able to provide banking to poor communities through banking deposits via the internet, and on-sell other banking products through the access. ✓ criteria met for disruption	Internet banking was developed more for cost savings through branch reductions and never envisaged as a profit-making initiative; hence no disruption ✓ criteria met for sustaining
Is the innovation disruptive to all of the significant incumbent firms in the industry?	All banks described new consumers for both internet and mobile banking, and all banks had to provide new services or streamline existing process, and hence disruption had occurred at different levels, particularly to incumbent firms as a result of the newly formed banks. ✓ criteria met for disruption	All banks used the internet channel to sustain their existing businesses; hence no disruption ✓ criteria met for sustaining

Table 6.3 explores the factors to be considered from the litmus test provided by Christensen and Raynor (2003 p.49), the data appears to demonstrate that internet and mobile banking had indeed been disruptive in India and sustaining in Australia, and that Christensen and Raynor's (2003) DIT theory may be extended to include countries with different socio-economic condition as the study appears to demonstrate that conditions for disruption were met in India in that there was no other product or service before the introduction to IMB, and that in Australia the conditions to offer the innovation was to enhance or improve the existing service.

6.5 Summary of Discussion

This chapter has demonstrated that contemporary research and theories on innovation have major limitations in their applicability universally. Key findings suggest that while similar adoption dynamics may exist in developed and developing contexts as described in the theories, the motivations and the manner in which innovations manifest may actually appear to be different from those described in the theories. Consideration of social and emergent economic development in different countries may explain the divergence in adoption dynamics of innovation in different environments.

The provision of IT services in developing countries may be different from what has been the universal view in developed countries, and while many theories such as institutional theory (Tolbert & Zucker 1996), DIT (Christensen & Raynor 2003) and Barras (1986) may be valid in the context of developed nations, these same theoretical views appear to differ in explaining the adoption of technology in developing countries. Some reasons for the differences may be the lack of research in developing countries, the lack of data or the lack of need. Nevertheless, the importance of countries such as India and China will bring a new wave of debates on innovation which may differ vastly from the traditional Western thinking and provide theorists as well as practitioners with new insights into the characteristics of innovation adoption.

From this study it would appear that developing countries may bring new opportunities to corporations which have the desire to address the 'bottom of the pyramid' (Prahalad 2005). The needs of these economically emerging communities appear to be driven by an emergence of new wealth, and there appears to be no historical comparison to developed countries. This new emergent class of consumers has allowed organisations to offer services that had not previously existed in their own countries or even, in the case of MB, in developed countries.

It may be that developing countries have leapfrogged developed countries in the development of IT-enabled services in the banking sector, and maybe in other sectors as well.

The economically emerging consumer appears to have disrupted the normal practices of service offering, and this disruption has led to product innovation such as MB that is unprecedented even in developed countries. The resultant impact of these may present a reverse of the innovation process in developing countries, as appears to have been the case for IB and MB in Australia and India. The implications of these processes may present organisations with the opportunity to develop products and services previously unheard of. For researchers, the implications of innovations in developing countries may present a completely new stream of research as developing countries emerge out of poverty and into prosperity.

7 CONCLUSION

7.1 Introduction

The goal of this research was to understand patterns of IT-enabled adoption of innovations in countries with different socio-economic backgrounds, as it appeared that there was no common view on adoption patterns. To explore this, an interpretivist methodology was selected to carry out the research. The research used primary data comprising interviews with executives in target banks in Australia and India. The secondary data consisted of launch dates for IMB by participant banks, the assets of banks, the histories of the selected banks, and profitability information from the target organisations. The next level of analysis in this research consisted of identifying data from the responses from bank executives which highlighted the emergence of relevant themes and concepts of adoption, and then using existing theoretical views to understand the adoption of IT-enabled innovations in the banking industry within two countries.

The use of internet and mobile banking as the case study context was convenient in this study as IMB was introduced to both countries, Australia and India, over the same timeframe, i.e., 1995–2002. The subsequent analysis and interpretation of the data revealed many similar characteristics but also some different characteristics for the same innovation over the same timeframe. Common characteristics included using IMB as an alternative banking channel, achieving operational cost savings and differentiation from the competition. A major difference in the case of India appeared to be the adoption of IMB to bank the unbanked population, thus connecting these communities to the economy. The unbanked population was emerging from poverty into relative affluence and hence needed basic banking services which had previously not been available to them. IT and the internet was the approach used by banks to serve customers who had been previously excluded from banking services.

During the analysis, a range of theoretical views such as institutional theory (Tolbert & Zucker 1996), disruptive innovation theory (Christensen & Raynor 2003) and the reverse product cycle (Barras 1986) were used to provide theoretical analysis of the adoption of IMB across Australia and India. While some similarities and differences of adoption, such as using IMB as an alternative channel and differentiation strategies, could be explained by institutional theory, limitations in the theory were discovered in its application to understanding the emerging consumer class and its motives for adopting IMB. These limitations appeared partly because institutional theory had not been tested empirically before

and partly because it originated in North America and thus may not be relevant to both developed and developing country settings. Disruptive innovation theory (DIT) (Christensen & Raynor 2003) was used to provide further clarification of IMB alongside the service innovation literature (Barras 1986), as this theoretical lens had previously offered insights into the adoption of innovation in banking. The additional use of this theoretical lens offered a number of potential contributions from this research.

The above theories used in this research appear not to have been tested previously in the context of a developing country as they had all emerged within developed country settings, and hence this study provided a range of interesting findings as outlined below.

7.2 Contribution of This Research to Knowledge

The research has provided insights into the adoption of innovation theory to understand what motivates organisations to introduce IT-enabled service-based innovations. To assist in this process, three contemporary innovation theories were used: institutional theory (Tolbert & Zucker 1996), disruptive innovation theory (Christensen & Raynor 2003) and the reverse product cycle (Barras 1986). The contributions of this research to these theories are discussed below.

7.2.1 Contribution of This Research to Institutional Theory

This research appears to be the first empirical testing of Tolbert and Zucker's (1996) process of institutionalisation across two different empirical settings. Previous research such as that of Masciandaro (2000) used the theory but did not establish the key motivations of the organisations in an industry to adopt innovations; it discussed only one context rather than multiple industry-wide adoption. It was anticipated that institutional theory would assist in understanding the adoption process of IMB in Australia and India and further explain the manner in which organisations adopt innovations over time. Institutional theory proposes that there are motivations such as regulatory and technological motivations for adoption but it does not appear to elaborate on the impact of different motivations, nor does it identify whether the theory applies to specific industries or different socio-economic settings.

According to Tolbert and Zucker (1986) innovations are motivated by potentially three factors, technology, in the case of this study, the internet and mobile phones, legislation, i.e., Financial Inclusion policy and the IT Act, or market forces, e.g. consumer demand. From these motivations institutional theory identifies a staged process where different organisations introduce the innovation over a time period. Each of the stages suggested by Tolbert and

Zucker (1996), i.e., habitualisation, objectification and sedimentation, appears to support the motivations for adoption of innovation found in this research in some respects. This research confirms that industry-wide innovation does appear to occur in stages, as suggested by Tolbert and Zucker (1996), and each organisation in the industry belongs to one of the three stages. Hence, it was anticipated that Tolbert and Zucker (1996) would provide this research with a valuable method to identify innovation adoption characteristics among organisations and their motivational behaviours.

However, despite alignment in some aspects, institutional theory does not take different contexts into account, i.e., developing and developed countries. Further, a major limitation of institutional theory appears to be that it also does not identify the characteristics of each organisation in terms of size, geographic presence and financial capability within the three phases. The observations arising from this research indicate that institutional theory does not directly apply to the identification of motives for adoption of innovations with reference to organisational size, an organisation's strategic motives and a new emerging class of consumers specifically, though it is unclear if Tolbert and Zucker (1986) considered this aspect as part of the motivations for innovation within market forces.

This study found that organisations smaller in asset size and geographic reach may, in both developed and developing countries, be leaders in the introduction of innovative solutions to their customers. It was observed that smaller organisations were keen to adopt new technologies quickly and to differentiate themselves from competitors. Institutional theory does not differentiate organisations by size and hence has not informed the difference of adoption of innovation between larger and smaller organisations. Further, this study found that relatively smaller geographic organisations take advantage of IT-enabled innovations to expand businesses in new ways and may be industry leaders; these organisations either grow existing customers or developed a new set of customers who had not previously used a similar product or service. It appears that institutional theory therefore may not offer insights into the relative size or geographic reach of organisations and their propensity to introduce innovation.

This research found that organisations in developing countries may use technology which they did not previously own or use to grow their business, often as a result of consumer growth. Hence the availability of IT allows organisations to offer services to completely new customers. In addition, it was observed that institutional theory does not identify whether the adoption of innovations by these smaller organisations is for growth or cost reduction, neither

does the theory differentiate motivations in specific terms, although this research indicates that a strong growth-based strategy had been adopted by smaller organisations.

A key observation of this study is the importance of the growth strategy for organisations, particularly those which adopted IMB in the habituation stage of Tolbert and Zucker's (1986) theory. This study identified that institutional theory does not account for the new emerging consumer class who appear to be major motivators for the adoption of innovations, particularly in developing countries. The focus of institutional theory on a developed country appears not to consider the fast emerging consumer class found in developing nations. This omission may be partly because the emerging consumer class in developing countries has only appeared in recent years, due to relatively recent strong economic growth, and was not present at the time institutional theory was conceived. This emergence has created a new class of consumers who had not previously been part of the local or national economy, who for the first time had a need for banking services. This appears to be major difference in developed countries, and appears not to be differentiated by Tolbert and Zucker (1986) as this key difference of the emerging consumer class appeared to be a major motivator to innovation adoption in developing countries. It is hence proposed that the emerging consumer class be considered as a subset of Tolbert and Zuckers (1986) market forces when considering the needs of consumers in developing countries.

Hence the research found that institutional theory does not provide insights into the motivations of organisations in a developing country context, and is unable to account for the impact of an emerging class of consumers in these countries. Further, the theory does not inform the nature of organisations in the three stages with respect to size, geographic reach, age or asset base, and hence the overall strategy of each organisation for the adoption of IT-enabled innovation.

These limitations motivated the researcher to search for another theory for answers. Disruptive innovation theory appeared to explain some questions left unanswered by institutional theory, as the introduction of new products and services has often been explained by DIT.

7.2.2 Contribution of This Research to Disruptive Innovation Theory

Disruptive innovation theory (Christensen and Raynor 2003) discusses two dimensions of innovations: sustaining and disruptive. Sustaining innovation extends or improves existing products, while disruptive innovation relates to a new product that had not served users

previously and when released disrupted some other method or product. This disruption can take the form of either low-end disruption, which targets customers who do not need the full performance valued by customers at the high end, or high-end disruption, which targets customers who have needs that were previously unserved by existing products or services. Christensen and Raynor (2003) clearly identify IB as a sustaining innovation and argue against it being disruptive, in that IB merely extends the service of banking to a new channel, from the branch to the internet, and hence nothing is replaced, nor is a new customer or user created.

It was assumed that DIT would provide insights into the adoption of IB as a sustaining innovation and demonstrate characteristics that meet the litmus test provided by Christensen and Raynor (2003 p. 49). This litmus test provides guidelines on whether a technology can be considered disruptive or not by testing the nature of the consumer, the technology and the manner in which it was adopted. To this extent the research discovered that sustaining and disruptive technologies appear to be dependent on the context in which they are applied, and highlights that disruptive innovation may appear to vary in outcomes depending on the social context. When IMB is claimed by Christensen and Raynor (2003) as a sustaining and not a disruptive innovation, it could be due to the assumption that IB is introduced to support and automate existing banking processes in developed nations. Christensen and Raynor (2003) assume that customers already had a bank account. For example, in India, consumers who were originally targeted by banks to offer IMB were those who did not previously have a banking relationship, further they were happy to be offered a banking service which was very basic than what was offered to consumers elsewhere in the world, and disruptive to the incumbents in the industry who did not offer this service, and hence according to the litmus test were disrupted.

This research suggests that when IB was introduced in India where no other form of IT-enabled banking had existed previously it was a low-end disruption, although it appears to be a sustaining innovation in Australia. Internet banking was brought to the villages of India where formal banking had not existed, and hence there was nothing to improve or streamline as was the case in of banking in Australia and in other developed countries. This observation gives further insights when considering the adoption of MB, where the uptake was much slower and smaller in Australia than in India. Further, mobile banking in India appeared to indicate that when innovations are adopted where no other formal method exists, a low-end disruptive innovation will have the greatest opportunity to penetrate a market with an

unserved consumer base. When banking did not exist for a particular consumer class, technology appeared to satisfy a basic need for banking enabled by IT in India, and hence experienced successful adoption.

This research demonstrates that IMB appears to have been sustaining in a developed country like the one where this theory had its roots, yet in a developing country, the same innovation appears to demonstrate characteristics shown by Christensen and Raynor (2003) as disruptive. This finding may indicate that DIT may not be completely applicable to developing countries, and hence it contributes further to the debate on whether IB is sustaining or disruptive.

This research found that IMB may be sustaining in a developed country as outlined by Christensen and Raynor (2003), yet the same innovation may be disruptive in a developing country. In the process of identifying the disruptive nature of IMB in a developing country, the litmus test (Christensen and Raynor 2003 p.49), for disruption is whether a function, or service had previously existed, or served a consumer need. In the case of India, no such IT-enabled product had existed previous to IMB, and its introduction disrupted informal methods of financial transactions, at the same time developing a mass market at the low end of the market where consumers were happy to receive initially a very basic banking service. While the informal “hawla” system of financial transactions appears to have been disrupted in India in the process of introducing IMB, this indicates that Christensen and Raynors (2003) disruption theory can be applied yet the same innovation may be either sustaining or disruptive depending on the socio environment. Whether an innovation is disruptive or sustaining may have implications to the manner in which it is either adopted or introduced, and questions of what existed before introduction of the innovation may require consideration as it may be different depending on the socio environment.

7.2.3 Contribution of This Research to Service Innovation

In the process of identifying the applicability of DIT to this study, and to further explore the adoption of IT innovations in a service context, a review of the service innovation literature from Barras (1986) informed the process by which IMB was adopted in Australian and Indian banks. It is suggested that a new technology is developed within the normal product cycle such as the one suggested by Rogers (1983) is followed by a transmission process where it is taken from another industry and adopted by a user industry such as service or consumer goods (Barras 1986). In the instance of IMB, the transmission of the internet had been from the defense and the mobile phone from the telecommunications industry's respectively. Within

this transmission process Barras (1986) suggest that this new technology adopted from another industry experiences three distinct phases that appear to be the reverse from traditional product innovation. These three phases has been termed by Barras (1986) as the 'reverse product cycle' and consists of a sequential process the following: improve service delivery and efficiency, improve the quality of the service offering, and finally develop a new product using the transmitted technology. These claims appear to support the findings of the adoption of IMB in Australia, a developed country, yet appear to contradict the findings of this study in the case of India, as discussed in the next section.

This research used the reverse product cycle of Barras (1986) to identify if IT-enabled service innovations were adopted in a similar manner in Australia and India. The reverse product cycle provides insights into IT-enabled innovations adopted in the banking industry and identifies a three-staged approach of adoption. The reverse cycle is so called as Barras (1986) claims that innovations in the service industry using IT appear to demonstrate the reverse process of the product innovation process, i.e. where the internet and the mobile phone were initially used for communications. In this study, the internet and mobile phones, both adopted technologies were used in Australia to deliver an efficient banking service, while in India, it was primarily used to provide a new service to consumers who had not previously had a banking relationship, and thereby creating a new service, hence reversing the Barras (1986) cycle. It was anticipated that the findings in this research would demonstrate the characteristics described by Barras and support Barras's (1986) view on service innovation and his view that IT-enabled innovations in the service industry do appear to be the reverse of product-based innovations adoption.

As Barras's (1986) work was typically researched in the developed country context, there appears to be limited evidence that the theory would apply in the developing country context. Barras's assumption that an IT-enabled innovation existed previously was based on the use of technology in the service sector in developed countries, and supports existing products. However, where there are no previous products to improve using IT, the reverse cycle appears to demonstrate a reverse of this theory, such as in India where there were no previous IT-enabled services. That is, instead of a systematic staged process of IT-enabled adoption of innovation in service organisations starting with improved product quality, followed by a streamlined business processes and finally a new product, the reverse of this staged process was found to be the case in the Indian context.

This research found that the model provided by Barras (1986) on the adoption of service innovations appears to support the reverse cycle model in Australia, while the opposite appears to be the case in India. In India, banking had been limited to a relatively few people and hence IMB introduced a new set of banking products, as consumers adopted new products and new processes, and the quality was improved over time.

Hence, it appears from this research that the reverse of the reverse product cycle (Barras 1986) was observed in a developing country context. In India, a basic banking service was considered a major innovation which later improved in quality and was further developed by introducing new products and services. In India, the research found that later stages of the adoption of IMB actually improved the original service offering as opposed to what was proposed by Barras (1986), which was the development of new products in the later stages of adoption. The new IMB service became widespread as more people were able to afford access to technology.

This research found that the adoption of IT-enabled innovation appears to have a different pattern in developing countries than in developed countries due to socio-economic conditions. These differences appear to be driven by the availability of existing technology and the propensity of the users to both afford and have access to infrastructure.

7.3 Limitations of This Research and Future Research Opportunities

While this research has suggested new insights into the adoption of innovations in different socio-economic settings, there are also some omissions which could not be included due to the time and scope of the research. These shortcomings may provide opportunities for future research and expand on the findings.

Firstly, this research was restricted to two countries, Australia and India, due to the availability of data, particularly the realisation that data in other developing countries might not have been readily available. Data from additional countries may have added to the richness and variances of the findings.

For example, adding a country such as China to this research would identify if a communist country has any differences from a developed country and a developing country. It is unclear whether the adoption of innovation would differ in a highly regulated and controlled environment, and if consumers would be more or less willing to use new technology. Further,

in an environment where consumers are less in control of their lives, it is unclear if there would be the need to use technology in different ways and with different motivations.

The time period selected for this study was 1995–2002, and an extended period beyond 2002 would provide another dimension to the findings as maturity in technology infrastructure may have positively impacted on consumer adoption beyond the period of this study. Furthermore the comparative examination of the evolution of IMB in the last decade in developed and developing countries would be a highly interesting future research topic.

Further, additional interviews beyond locally headquartered banks may have provided an additional dimension to the study. International banks such as CitiBank, ING and Barclays implemented IMB earlier than some of the Australian and Indian banks. Whether these banks presented any influencing competitive threats or any social and structural changes among the Australian and Indian banks has remained unresolved in this study.

Finally, data from customers was not captured, although initially it was considered as an option. This would have become a bigger research project and may have been unmanageable within the timeframe and hence the research was restricted to banks. Customers' motivations for adopting IMB would be valuable as it would bring the two sides to the adoption process. This additional research could provide deeper insights into customer needs and motivations for adopting IMB.

It is envisaged that these additional research opportunities would add further to the findings of this research and extend the notion that innovations appear to be adopted in different ways in developed and developing countries.

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APPENDIX A: INTERVIEW QUESTIONS

In order to understand and answer the core research questions, a set of open-ended interview questions was developed. Each question was asked in a systematic order from question one to question ten, with answers being recorded on a digital recording device for future transcribing. The questions are outlined below.

Questions

1. Can you please share the story of the introduction of IB in your bank, decisions, timeline etc?
2. Can you please describe the main purpose and drivers which influenced your bank's introduction of transactional IB, and your motivation behind your decision?
3. What considerations were given to your competitor's actions during your decision to introduce IB, and how did this impact on your own strategy?
4. What, if any, influence did your customer base have on your decision to introduce IB?
5. Did the new service create a new set of customers; if so, was this part of the strategy?
6. What impact in internet and information technology in the country and your company influenced your bank's introduction of the IB service?
7. What do you believe influenced or motivated other banks to introduce IB, e.g., regulation?
8. Can you outline the internal decision making, i.e., were there any innovation champions for IB or was this an initiative from top management? Is there a defined process for introducing innovations?
9. Can you please describe your bank's mobile IB, when introduced, and how.
10. Finally, can you please describe the main purpose and drivers which influenced your bank's introduction of mobile IB.

APPENDIX B: AUSTRALIAN BANKS: BACKGROUND

Bank	Year of Launch	Bank Background
Aus1	1995	A small regional bank renowned for being first to market with innovative solutions to serve its customers. The bank resulted from a number of mergers with other smaller regional banks, which were equally nimble in decision making and in the forefront of technological innovation. This bank merged with the first bank to introduce the early version of internet banking.
Aus2	1996	One of the large Australian banks, this bank has a national reach as well as being a full financial services provider. Serving retail and personal customers, business and corporate as well as government customers, the bank has a wide range of products and services both in Australia and overseas. This bank has been an early adopter of many other technologies such as the Electronic Point of Sales technology allowing customers to make purchases from their debit or credit cards.
Aus3	1996	One of the larger regional or state-based banks in Australia, this bank again is as a result of mergers and acquisitions between the early and late 1990s. The motivator and driver for internet banking was a desire to grow beyond its traditional state-based customers and increase penetration in the other Australian states, where its penetration was negligible.
Aus4	1997	One of the large national banks in Australia providing a full range of services around the Australian and Pacific rim. Had previous experiences in the international scene; however, the focus has been on growing the presence within the Australian market base.
Aus5	1997	Another of the large national banks with a presence across much of Australia and limited presence in locations such as Japan, US, UK and Asia. Major focus has been on growing markets in the traditional locations of the Australia-Pacific rim markets. Considered a leader in introducing new solutions to the market.
Aus6	1999	One of Australia's largest banks, full service financial providers and the most experienced of banks internationally. Large retail, business and corporate client base, with ownership of financial institutions across the UK and the US.
Aus7	1999	A small regional bank focusing predominantly on one of Australia's geographically larger states, with limited penetration into the other Australian states. One of many regional banks which have been a target of larger overseas banks wishing to penetrate the Australian market.

Bank	Year of Launch	Bank Background
Aus8	1999	A small state-based regional bank servicing a small client base of predominantly retail customers. Customers of these types of banks would often obtain business services from one of the national banks and personal services from the regional banks. This bank has, due to its relative size, been a later adopter of new technology.
Aus9	2000	A small regional bank, although aggressive in both personal banking and localised business banking needs to many of the agricultural customers. By 2000, the bank was still focused on its traditional market and had not ventured into other states, nor was it considered to be innovative in new product introduction, resulting in customers often holding two accounts, the other with one of the major national banks.

APPENDIX C: AUSTRALIAN BANKS: INTERVIEWEE DETAILS

Bank	Year of Launch	Executive Position	Executive Experience
Aus1	1995	Senior Manager for Internet	Over 20 years' experience in information technology industry
Aus2	1996	Chief Information Officer	30 years' experience in information technology industry with varied industry disciplines
Aus3	1996	Chief Executive Officer	30 years of experience including four in the United States with small start-up companies
Aus4	1997	Head of Internet Banking	15 years' experience in variety of industries. Recruited in bank to introduce the Home Banking concept.
Aus5	1997	Chief Information Officer	American executive with over 30 years' experience running a large financial services business
Aus6	1999	Head of Electronic Channels	20 years' experience, extensive overseas exposure. Headed up the channels group to reduce cost and develop new channels
Aus7	1999	Head of Internet Banking	New recruit, but across much of the development in the financial services industry
Aus8	1999	Head of Marketing	20 years' experience, predominantly in banking, lead for the internet channel
Aus9	2000	Head of Internet Banking	Extensive banking experience in a number of institutions across Australia

APPENDIX D: INDIAN BANKS: BACKGROUND

Bank	Year of Launch	Bank Background
Ind1	1997	One of India's fastest growing banks and one of 10 which were given a bank licence in 1994. Originally a group of different companies which came together to offer full banking services. The bank is now one of the most watched institutions in India for its aggressive growth plans and views on the Indian economy and its place in the Indian economy. Renowned in the banking industry as an innovative solutions provider and at the forefront of new thinking.
Ind2	1999	Another of the new banks. Started life with five original founders from different banking experiences, and moved from offering home finance loans to a full services banking provider after taking on the new bank licence. This bank has a national presence across business and personal banking.
Ind3	2000	Another of the newly formed banks which started in the mid 1990s. The bank has grown to be one of India's premier banks offering products to its international customer base. Aggressive but measured in its approach to new strategies.
Ind4	2000	Ind4 is another of the newly formed banks from the mid 1990s which, like the others above, did not have legacy systems to deal with or large out-dated practices and was able to implement new technology. Ind4 has started developing a large and extensive distribution network via a branch network in tactical geographic locations.
Ind5	2001	Ind5 is one of the large established banks which are nationalised. Ind5 has a long history, having being established in the late 1930s. The bank has an extensive network of branches across India as well as in the US, UK and Middle East, providing personal, business and institutional services. The bank, like most of the larger nationalised banks, started a widespread program of introducing core banking connecting all branches to the central technology.
Ind6	2001	Ind6 is the second of the nationalised banks in the study. Again a long history having played a major part of the Indian banking industry from the early 20th century. The bank has over 2,000 branches across India and has been a particularly popular bank among India's large diasporas in the UK, US and the Middle East. From the year 2000 the bank started a major overhaul of existing technology to replace old systems with core banking in a major program to computerise the extensive network of branches across the nation.
Ind7	2001	Ind7 is one of the largest Indian banks with an extensive network of branches across India's vast country, with presence in the cities as well as the rural districts of India. Ind7 is also one of India's oldest banks, dating back to the British Raj. One of the largest branch networks has had a major overhaul with the introduction of new technology to the bank's network across the US, UK, Asia-Pacific and the Middle East.

Bank	Year of Launch	Bank Background
Ind8	2001	Ind8 is a regional bank, a new generation, private sector bank offering a wide spectrum of retail, SME and corporate banking products and services. It was among the earliest banks to offer a technology-enabled service. A much smaller bank than the others, due to its predominantly regional focus, but again has large India diasporas which tends to drive its business.

APPENDIX E: INDIAN BANKS: INTERVIEWEE DETAILS

Bank	Year of Launch	Executive Position	Executive Experience
Ind1	1997	Chief Information Officer	Over 25 years of information technology experience. One of the most respected professionals in the Indian banking industry and within Asia
Ind2	1999	1. Founder 2. Chief Information Officer 3. Head of Retail Bank	Interviewee 1: One of the founders of the bank with 30 years' experience in the banking industry including experience with international merchant banks. Interviewee 2: Twenty years' experience in the banking technology sector. Responsible for the internet banking deployment. Interviewee 3: Over 25 years' experience in banking, and currently Head of Electronic Channel in the retail bank.
Ind3	2000	1. Chief Executive Officer of IT 2. Vice President, Retail Banking	Interviewee 1: Over twenty five years in banking technology, extensive experience in emerging technologies. Interviewee 2: Twenty years of experience in banking
Ind4	2000	1. Senior Vice President 2. Vice President	Interviewee 1: Over thirty years' experience in banking and technology, extensive knowledge of Indian banking consumer. Interviewee 2: Emerging technology expert in the banking area, extensive experience in deployment of new technology
Ind5	2001	General Manager, Information Technology	Thirty years in banking in the nationalised banking industry, a veteran of the Indian banking system
Ind6	2001	General Manager, Information technology	Experience in the banking industry at the highest level. Responsible for the implementation of large systems including core banking
Ind7	2001	General Manager, Information technology	Responsible for large-scale development of core banking and deployment of internet banking systems
Ind8	2001	Head of Technology	One of the top executives at the bank. Responsible for deployment of technology in the bank

APPENDIX F: AUSTRALIAN AND INDIAN BANKS: SIMILARITIES AND DIFFERENCES

S = Similarities, D = Differences

S/D	Australia	Percentage of Respondents	India	Percentage of Respondents
S	Banking and Culture		Banking and Culture	
	Overseas influence	33%	Overseas influence	28%
	Informal innovation process	100%	Informal innovation process	100%
	Innovation champion	100%	Innovation champion	100%
	Driver and Motivations		Driver and Motivations	
	Cost reduction	77%	Cost reduction	62%
	Branch rationalisation	77%	Branch rationalisation	50%
	Alternative channels	77%	Alternative channels	75%
	Self-service	33%	Self-service	50%
	Competition		Competition	
	Maintaining competitive edge	100%	Maintaining competitive edge	100%
	Maintain leadership position	22%	Maintain leadership position	28%
	Competitive peer pressures	88%	Competitive peer pressures	87%
	Customer Perspectives		Customer Perspectives	
D	Meeting customers' demands	33%	Meeting customers' demands	75%
	Customer retention	44%	Customer retention	28%
	Technology Limitations		Technology Limitations	
	Home banking conversions	22%	Lack of core banking	28%
	Early technology challenges	66%	Infrastructure limitations	75%
	Strategic		Inability to build branch networks	12%
	Product cannibalisation	11%		
	Defensive strategy	44%		

S/D	Australia	Percentage of Respondents	India	Percentage of Respondents
D	Customer Perspectives		Customer Perspectives	
	Cross-selling of products	55%	New emerging class of consumers	50%
	Not customer driven	33%	Younger customers	
	High net worth individuals focus	33%	(‘unbanked’, without a bank account)	62%
	Innovation Management		Profitable customers	12%
	Skunk works to test and try	77%	Shift in consumer behaviour	50%
	Mobile Banking		Technology savvy users	75%
	Stop-starts for mobile banking	88%	Personalised branch-based banking	38%
			Electronic Revolution	
			Recent ATM deployments	87%
			Indian Diaspora	
			NRI client base	50%
			Positive Regulation	62%
			Mobile Phone Banking Uptake	87%

APPENDIX G: ETHICS APPROVAL

ETHICAL CONSIDERATIONS

The research approach for this study is one in which each individual of every organisation who will be part of the research will be provided a consent form requesting their approval and acceptance to participate in the research. In the event that they refuse to participate, no further involvement will be requested of that particular individual or organisation.

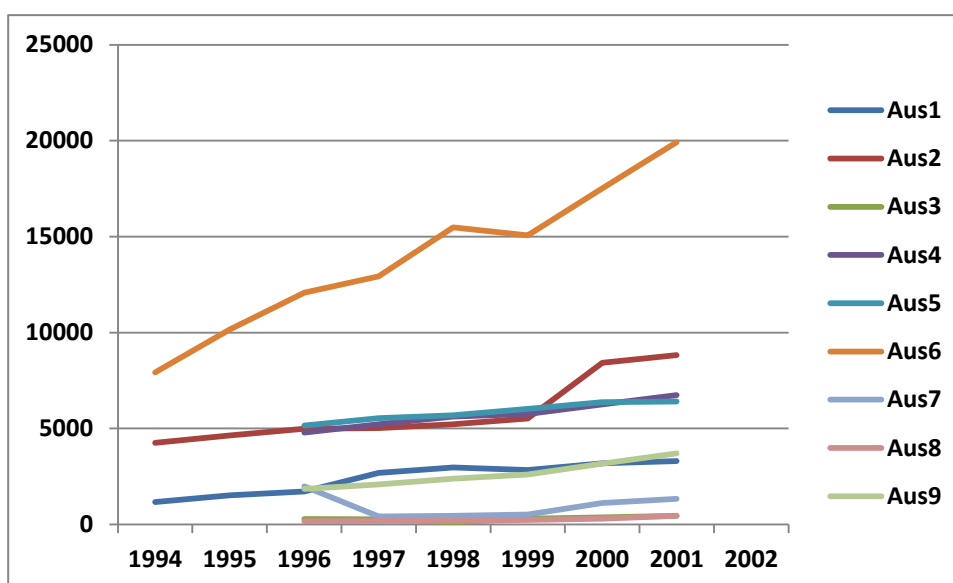
University of New South Wales, Sydney, Australia

Approval No: 06638

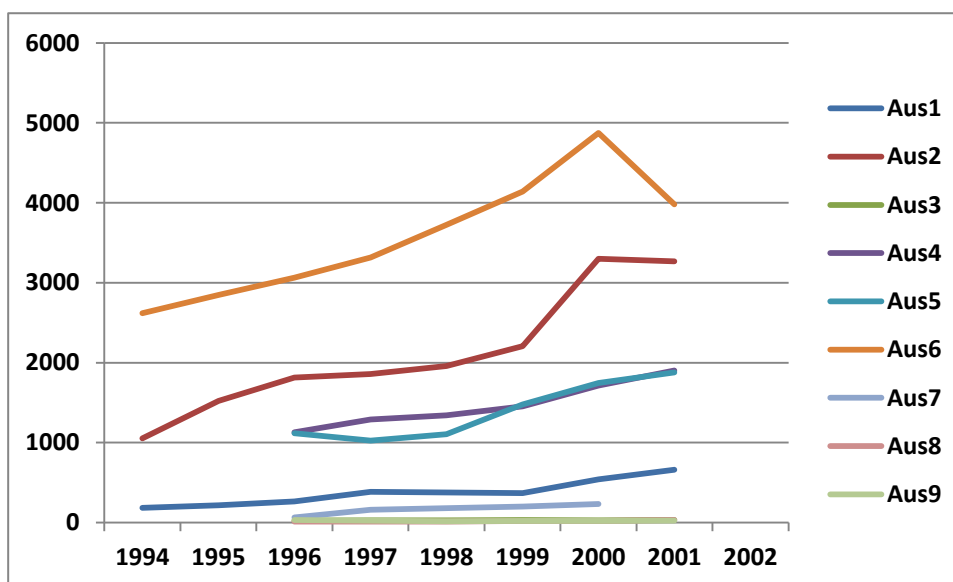
Approval Date: April 2006

APPENDIX H: AUSTRALIAN BANKS FINANCIAL PERFORMANCE DATA (1994-2001)

Australian Bank Revenue in \$M (Aud)



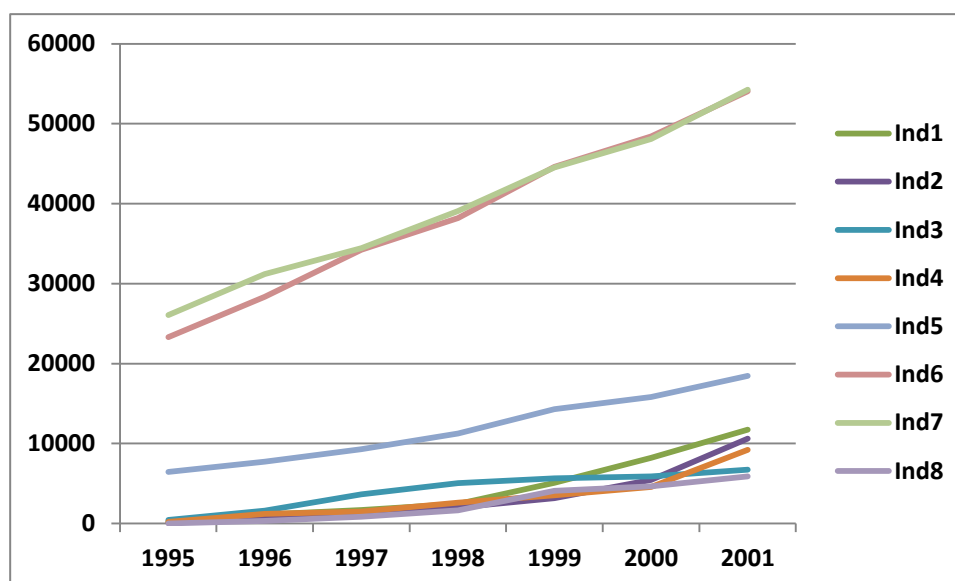
Australian Bank Profits \$M (Aud)



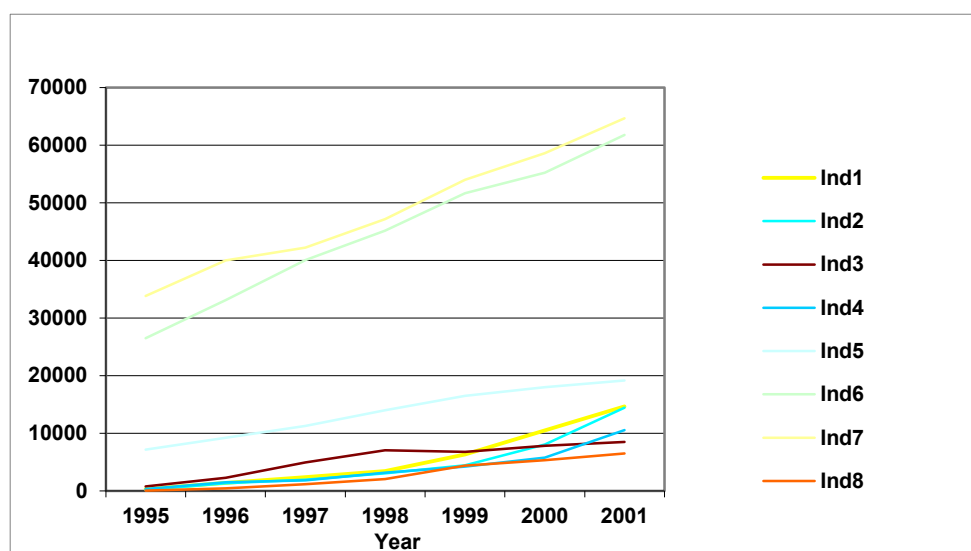
Source: Individual bank Annual Reports

APPENDIX I: INDIAN BANKS FINANCIAL PERFORMANCE DATA
(1994-2001)

Indian Bank Revenue in \$M Indian Rupees



Indian Bank Profits \$000 Indian Rupees



Source: Bankscope & Indian bank Annual Reports (Where available)