

**STRATHCLYDE BUSINESS SCHOOL**

**DEPARTMENT OF MARKETING**

**“CUSTOMER ADOPTION OF INTERNET BANKING: A  
CROSS-NATIONAL STUDY IN SCOTLAND AND  
NIGERIA OF A PROPOSED MODEL OF UNIVERSAL  
DETERMINANTS”**

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A thesis submitted in partial fulfilment of the requirements for the award  
of Doctor of Philosophy degree in Marketing

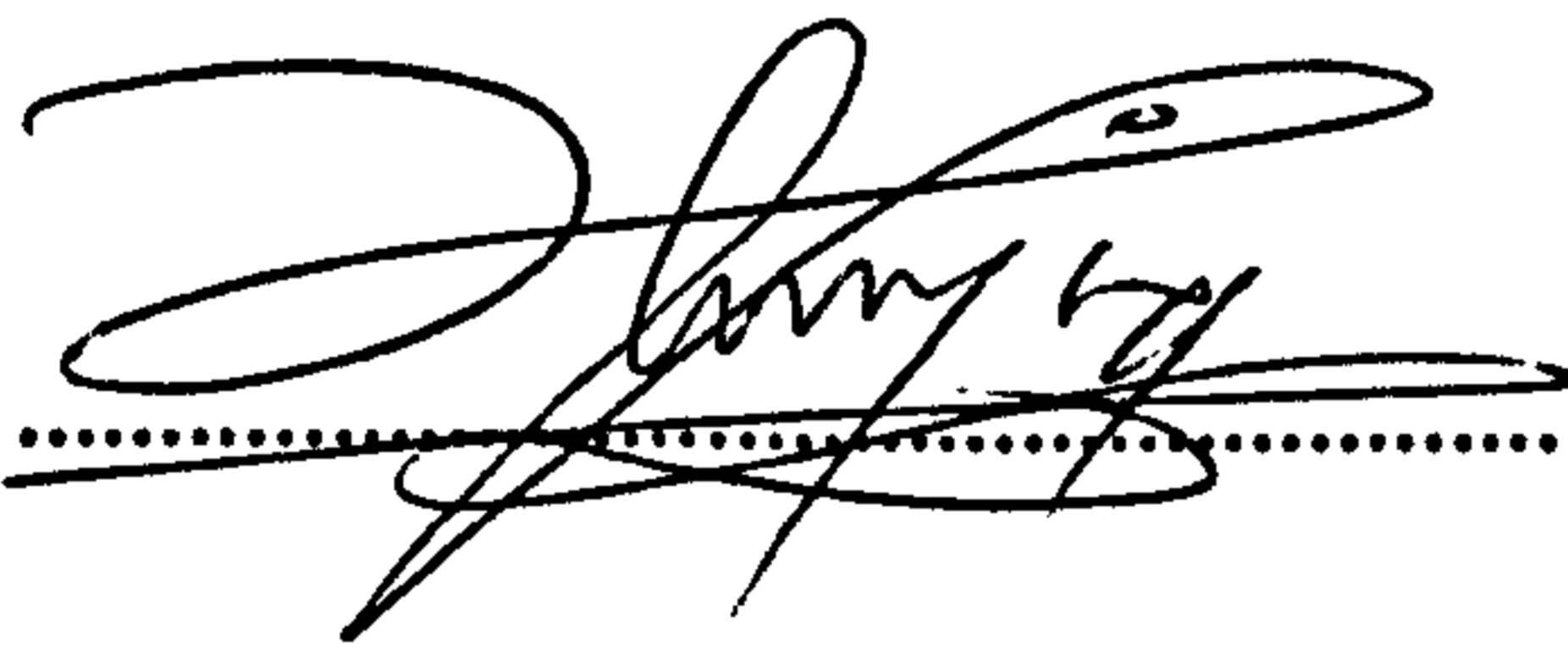
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## **CERTIFICATION**

This is to certify that the research project reported in this thesis was originally conducted by OKEY PETER ONYIA under our supervision and has been read and adjudged to contain original writings of the student; that all citations and references in the thesis have been duly acknowledged; and that the thesis meets the required standard for consideration as part of the requirements for the award of Doctor of Philosophy (PhD) degree in Marketing in the Department of Marketing, Strathclyde Business School, University of Strathclyde, Glasgow, United Kingdom.

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## **DEDICATION**

To my wife, Josephine Oyovwikhotu Anastasia Chinyelu Onyia, who has been my sister, partner, friend, soul mate and wife rolled into one since the past 18 years. And to our five bundles of joy gifted us by the Almighty... Gerald (Daddyuu), Vincent (Tuuu), Basil (Buga), Jude-Thaddeus (Daddinn) and David (Alumamama-daddy) Onyia-Onaka. It was; it is; and it will always be for you all that I went through this. God bless our family.

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## ABSTRACT:

The impact of the Internet technology on global commercial activities is best appreciated when one considers the tremendous rush by many businesses worldwide into online marketing activities since the year 2000. Among other scholars, Bradley and Stewart (2003) noted the highly indispensable ubiquity of the Internet in global retail banking and therefore predicted a near-universal adoption of Internet banking by 2011. Unfortunately, the global banking industry is currently still battling with persistent reluctance of retail customers to adopt the Internet banking channel due to certain factors, made even worse by the global financial crisis and economic recession precipitated by the collapse of Lehman Brothers of the US in September 2008.

Two factors, *customer readiness* and *channel readiness*, were hypothesised in the current study as *potential universal determinants* of retail customer adoption of Internet banking (IB). The study involved two identical surveys carried out simultaneously in Scotland and Nigeria to cross-nationally test a proposed model of eight *customer readiness* variables and eight *web-channel readiness* variables in order to determine their *universality* as factors that can motivate or hinder retail customers' IB channel adoption. The sixteen variables were investigated as the possible universal predictors of customers' *attitudes* and *intentions* towards IB adoption using a combined adaptation of Davis' (1989) Technology Acceptance Model (TAM) and Ajzen' (2005) Theory of Planned Behaviour (TPB).

A “mixed-mode method” (Wilson, 2006) was employed in primary data collection including web-based, email and intercept surveys. The comparative statistical analyses of the two national data sets involved the use of SPSS and AMOS for factor analyses as well as scale reliability and model invariance tests in both covariance structure and latent mean structure analyses. The results indicate significant scale reliability, convergent validity, discriminant validity, and model fit for the final, re-specified version of the model. Three *customer readiness* variables (*customer access*, *customer awareness*, and *customer prior involvement*) and three *channel readiness* variables (*channel ease of use*, *channel usefulness*, and *channel convenience*) were validated in the final SEM model, which was confirmed as an adequate depiction of the hypothesised causal relationships in the study.

Consequent upon the forgoing, this study contributes the validated model, named EQUAEVAL, to consumer behaviour and technology adoption theories in financial services marketing. The EQUAEVAL model represents a proposal for an *equal evaluation* of both *customer* and *channel* characteristics as *universal antecedents* of retail customer adoption of Internet banking. In terms of managerial implications, the study also contributes the validation of *customer access*, *customer awareness*, and *customer prior involvement* on one hand, and *channel ease of use*, *channel usefulness*, and *channel convenience* on the other hand, as issues that financial institutions anywhere in the world must deal with in order to redress the growing customer reluctance to Internet banking adoption.

# CHAPTER 1:

## INTRODUCTION

### 1.1 The study background:

The present study is situated within the body of research that examines the overall impact of the Internet technology on retail banking, with special focus on the factors that motivate or hinder retail customers' adoption of the Internet banking channel. The Internet is a global public communications network which seeks to provide connectivity between and among all computers in the world, giving every computer user the ability to communicate with one another on a public basis (Turban et al, 2002). The Internet was first conceived in 1969 (Tan and Teo, 2000), but it was not until the early 1980s that its global impact became apparent (Perumal and Shanmugam, 2004). As Fjeldly and Shur (2003) point out, the "ubiquity" of the Internet has facilitated its innovative application in so many fields of human endeavour.

Global commerce is one of such areas in which the "ubiquity" of the Internet has become most apparent, given the tremendous rush by many businesses worldwide into online marketing activities since 1999. Over the last decade, this continuing trend has given rise to an explosive global market expansion and brand internationalisation (Muthitachoen and Palvia, 2002:p201). Vinton Cerf, who is regarded as "the father" of the Internet, has predicted that half of the world's population would be using the Internet by 2010. Cerf has also forecasted that by 2020 there would be between 6 and 30 billion Internet-connected devices around the globe and that by 2030, most people would be able to talk to their computers and other electronic devices and these gadgets would be talking back to them (Harmon, 2001; Perumal and Shanmugam, 2004).

In the financial services sector, the impact of the Internet was first captured by Nehmzow (1997:p1) with his assertion that "the Internet will shake banking's medieval foundations". The author's statement and those of four other scholars were



crucial prognostications of the current expediency and pervasiveness of the Internet, which is gradually transforming banking and financial services into a universal online industry, unrestricted by any national or geographical boundaries. Firstly, in the same year 1997, Barwise (1997) had estimated that by the year 2007, 60% of global banking transactions would be carried out via the Internet. Secondly, Li (2001:p309) argued that the ultimate objective of banks in adopting the Internet technology would eventually be to “achieve global Internet banking”, in which transactions would be carried out seamlessly and simultaneously in several countries and with multiple currencies.

Thirdly, in 2003 an international Delphi study by Bradley and Stewart (2003:p257) found that technological changes, especially the advent of the Internet, were among the most dramatic and challenging areas of development in the global banking industry. The scholars validated the high-level importance of the Internet in global retail banking and, therefore, predicted that by 2011, adoption of Internet banking would be near *universal*, with 85% of banks around the world dealing with their customers via the Internet (ibid:p258). Lastly, a review by Illet (2005) of a survey sponsored by the Future Foundation on online banking usage in the UK relays a prediction that “more than a third of people in the UK (38%) would be banking online in five years' time” (i.e., 2010). The study also predicted that by the same year (2010), the number of global users of Internet banking would double.

However, it is worth noting that while all the above predictions might not really occur exactly by the times foretold, the general underlying precept deducible from the assertions is that at some point in the future, almost everyone around the world would be able to bank online with the help of the Internet, just as most people watch television in most parts of the world today, a phenomenon thought to be impossible about 50 years ago. Moreover, Bijmolt et al. (2004) have already observed signs that show the dreams coming true. According to the authors, most modern banks and other financial service providers are already beginning to operate in multiple markets due to the internationalisation of banking and financial services, facilitated by liberalization and information technology diffusion in many countries. Similar notions of the potential movement of the financial services industry towards borderless globalisation have also been argued by Perumal and Shanmugam (2004).

Corroborating the earlier prediction by Cerf, the authors intoned that about 3 billion people (half of the world's population) would be using the Internet by 2010 and that most would be using it for banking and financial transactions, among other purposes.

Banking is an information-intensive business and, therefore, information communication technology (ICT) will continue to play an increasingly significant role in banking and financial transactions, especially the Internet technology (Liao et al, 1999:p63). The world's first Internet banking service was introduced in the US in October 1995 by the Security First Network Bank (Chou and Chou, 2000; Akhtar and Dong, 2004; Wan et al., 2005), but the worldwide diffusion of the Internet channel among banks and other financial firms became rapid only from 1999 (Hill, 2000; Bradley and Stewart, 2002), having been stimulated by the advancements in satellite communications technology. These advancements in satellite communications were said to be responsible for the successful development of wireless telephony and broadband Internet capabilities that have virtually replaced dial-up Internet connections in many parts of the world and, as such, have helped to usher in newer and speedier "customer-centric" IT banking systems in the global banking industry (Liao et al., 1999).

Added to the current impacts of ICT development is the need for financial institutions to constantly strive to understand their customers' ever-changing values and expectations of greater service efficiencies in the face of pervasive technological advancements and deregulations that have created stiff competition in the banking industry of many countries around the world since the late 1980s (Holmsen et al., 1998; Shergill and Li, 2005; Ramayah et al., 2006). As a result of the surge by financial firms to keep up with changing technologies and customer values, the Internet has permeated and changed virtually all facets of the traditional banking service, including distribution, production, payment, trading and customer service (Llewellyn, 1997; Sathye, 1999). The term "Internet banking" is therefore used to encompass the various opportunities offered by banks to their customers, which enable them to carry out their banking transactions over the Internet (Furst et al., 2002: p1). Similarly, Hain et al. (2002:p1) define Internet Banking (IB) simply as "the ability of the customer to transact business with the bank through the use of the Internet".

Some of the basic retail banking services now available online include information requesting, account balance checking, inter-account transfers, bills payment and statement requesting (Sciglimpaglia and Ely, 2002; Mukherjee and Nath, 2003). Banking customers can now enjoy these services without having to personally go to their bank branches because, thanks to the Internet, banking services are no longer restricted by time and place dimensions. Customers in many places around the world can now access their bank accounts when and where they want, 24 hours a day, 7 days a per week, and without the complications of certain inter-personal exchanges (Durkin, 2004:p485; Karjaluoto et al, 2002:p261). Most banks in many countries are now using the Internet technology to foster their competitive advantage by offering customers personalised online services in a real-time interactive mode and in the comfort of their homes or offices. Many financial firms today are also offering Internet-based banking services as a distribution option parallel to their offline branch transactions, while quite a number of other online banking firms exist exclusively on the Internet (Jun and Cai, 2001:p276).

However, all the aforesaid notwithstanding, while banks in several parts of the world are embracing the Internet as a novel service delivery channel and are trying to keep up with the ever-changing technological developments in their industry, they are at the same time finding it difficult to convince their retail customers to adopt the services they provide through this new innovative channel (Aladwani, 2001; Black et al., 2002; Wang et al., 2003; Kuisma et al., 2007; Laukkanen et 2008). In spite of the huge global diffusion of Internet banking (IB) among the banking institutions, its adoption by the retail customers is still very slow and fragmented (Mattila et al., 2003; Kolodinsky et al., 2004) due to resistance to its adoption (Kuisma et al., 2007; Laukkanen et 2008). In addition, despite the increased academic and industrial interest in the area of electronic marketing in general since the turn of the century (Zeithaml et al, 2002; Lee and Lin, 2005; Bauer et al, 2005), there is still a great deal of knowledge gap in the area of electronic banking, especially regarding customers' perception and mode of evaluation of the alternative electronic banking services at their disposal (Ibrahim et al., 2006:p478).

According to Kuisma et al. (2007:p76), “consumer resistance to innovations has received relatively little attention in the marketing literature when compared to the attention paid to innovation adoption”. The consensus among these and other scholars is therefore that there is need for more research on the roles and benefits of the various electronic banking delivery channels, not only in terms of customers’ perception and evaluation of the services delivered through the channels, but also the factors that can enhance or hinder potential customers’ adoption, satisfaction, and retention of the channels (Li, 2001; Lee and Lin, 2005; Parasuraman et al., 2005).

The above suggestion becomes even more pertinent when one contrasts the rapid growth of the Internet channel among financial institutions with the low rate of adoption among retail customers as reported in many countries. For instance, Weeldreyer (2002) reports that Internet banking penetration has not measured up to expected levels because adoption rates among customers have been very low and customer interest in Internet banking has been diminishing rapidly. The author argues that the problem emanated because bank marketers jumped into the technology without listening to their customers to find out precisely what they wanted, what would satisfy them, and what online services they were willing to pay for. This is principally an indication that studying consumers’ desires and behaviours is as much relevant in the online marketing context as it is in the offline context. Moreover, as still a relatively new channel of financial services distribution, the Internet banking evolution is far from being over (Yang and Fang, 2004; Singh, 2004). A lot more studies are still needed, especially in the area of online consumer behaviour, to determine what might encourage or discourage customers’ adoption and retention of the Internet banking.

In the light of the above scenario, the present study seeks to contribute to the evolving research on the strategic role of the Internet in banking by investigating factors that can influence retail customers’ attitudes towards the adoption of Internet banking. Particularly, the study is focused on the concept of *readiness*, including factors that can affect both the *customer’s readiness* and the *web-channel’s readiness* for Internet banking adoption. In designing the study, an assumption was made that an investigation of these two broad dimensions of *readiness* would provide a clearer

understanding of the online banking customer's attitude towards Internet banking, give an insight into why retail customers have been reluctant to adopt Internet banking around the world, and also produce some indications of how the reluctance might be reversed in order to accelerate adoption towards the universal diffusion of Internet banking as earlier predicted.

## **1.2 Rationale for the study:**

The concept of Internet-based retail banking is still a relatively new technological innovation in the global banking industry (Karjaluoto et al, 2002:p261), and in spite of its huge diffusion as a banking service delivery channel among the institutional stakeholders in the industry (Bradley and Steward, 2002:p258), its adoption by the retail banking customers is still very slow and fragmented (Kolodinsky et al, 2004). This situation seems true for both individual and corporate customers. For instance, based on findings from a study of facilitators and inhibitors of Internet banking adoption among corporate customers in the USA, King and Gribbins (2002:p6) came to the conclusion that:

**“the adoption of Internet technologies by organisations is still in its infancy stage since the technology is continuing to emerge. Relevant research, such as examining adoption factors, is (therefore) imperative and needed.”**

The above view has been corroborated by Lichtenstein and Williamson (2006), who noted that in spite of the explosive growth of Internet banking in America and some parts of Europe since year 2000, it remains a new and emerging area of innovation diffusion among banking customers in most parts of the world. Research has also shown that while most banks in North America have spent millions of dollars to provide Internet banking services for their customers and some even exist exclusively on the Internet, customer adoption of Internet banking services has remained quite slow (Sarel and Marmorstein, 2003b). The scholars also observed that in spite of the huge investments by US banks in developing Internet banking capabilities in anticipation that retail customers would gravitate to the “new cheaper delivery system”, customer response over the years has been “mixed at best; market penetration is low and customer usage is sporadic, focusing mainly on simple tasks”.

It has even been reported that about 17% of customers who had adopted Internet banking channel in the US have abandoned it for reasons such as insecurity, complexity of the system, and lack of clarity of information from the banking websites (Orr, 2005). Relaying a report on online customers' experience in the US by the Customer Respect Group, Orr (2005) also noted that "one of every six users abandoned website banking either because they were uncomfortable about its privacy policy or the company's business practices were unclear". In effect, regardless of all the millions of dollars spent on building Internet banking systems in many countries, reports have shown that individual users are reluctant to use the online banking systems (Wang et al., 2003; Kuisma et al., 2007; Laukkanen et al., 2008).

In Europe, a report published by Nielsen/NetRatings (2002) in October 2002 noted that "usage of online banking is far from consistent across European markets, with Netherlands and Sweden leading the way in online banking penetration and some of Europe's larger markets lagging behind." A more recent report by Nielsen (2005) indicates that customer adoption of Internet banking in the UK is still less than 30% of UK population, while Italy has less than 10% penetration. Also, in a study of customers' perception of security in the UK Internet banking sector, White and Nteli (2004:p49) confirmed that while the rate of general Internet penetration has steadily increased, its usage for the purpose of banking has not increased at the same rate. Existing research has also shown that while Finland is among the world's leading countries in electronic banking penetration, adoption of Internet banking in most other European countries has remained comparatively low (Mattila et al., 2003).

In the Asian financial sector, Liao and Cheung (2002:p283) observe that there has been a "slowdown in Internet e-retail banking" in Singapore as a result of what the scholars call "demand-side changes." Apart from the fact that the Internet has not become as readily accessible in many parts of the developing world as in the developed countries, existing research also indicate that there is huge customer reluctance to adopt internet banking services in parts of Asia and Africa due to reasons of security, process complexity, and inadequacy of infrastructure. For

instance, the results of a pilot survey by Guru et al. (2000) in Malaysia showed that despite the general understanding that electronic banking reduces the need for customers to visit their bank branches and might eventually replace brick and mortar banking, about 90% of respondents in the survey still visited their bank branch at least once every month. In a study of adoption factors in Thailand, Rotchanakitumnuai and Speece (2004:p270) also observed that “customer adoption of Internet banking has not been as strong as most banks might have wished”.

In effect, indications from existing research from various parts of the world show that individual customers tend to still regard Internet banking (IB) not yet as desirable as the other electronic channels of banking service delivery such as ATMs, mobile banking, and Credit/debit cards. Hence, they still exhibit a general reluctance to IB adoption (Suganthi et al., 2001; Aladwani, 2001; Rotchanakitumnuai and Speece, 2004). Consequently, in spite of the initial euphoria at the inception of the new IB technology in banking circles, adoption rates have slowed down in various countries and banking institutions are currently grappling with customer reluctance to adopt Internet banking on account of many factors (Kohn, 2004:p213; Kuisma et al., 2007:p76).

Furthermore, Internet banking is still a relatively new subject area for academic investigation (Floh and Treiblmaier, 2006), especially as all of the empirical studies in the area so far have been conducted within the last 13 years (since 1996). Strong indications exist in the literature pointing to the fact that Internet banking is still evolving and therefore a lot more research is needed in the area (Li, 2001; Black et al., 2002). Limayem et al. (2004) corroborate this view by noting that online consumer behaviour in the banking sector is still emerging and an increasing number of research publications is needed yearly in the area. In addition, the authors argue that in spite of the progress so far made, there are still significant disagreements in research findings among scholars and the research results still appear fragmented. As a result, there is still a lack of good understanding of the important factors affecting consumer behaviour in the online banking context, with an obvious need for more research to throw more light on the issues (ibid).

From another perspective, Wang et al. (2003) call for a change in the focus of research in the area. The scholars argue that while initial research on Internet banking has focused on technological development, attention must now necessarily move towards “user-focused research”. The authors propose that subsequent research on online consumer perceptions and behaviour in the Internet banking context should focus on the understanding of factors affecting customer adoption and continuance of Internet banking. Similarly, O’Loughlin et al. (2004:p522) maintain that although the study of technology-based delivery of financial services has received increased attention over the past few years, it still continues to pose challenges for marketers and academics in the quest for a better understanding of the needs and expectations of Internet banking customers.

Based on the above assertions and arguments, it is clearly pertinent that more consumer-oriented studies in the area of Internet banking are necessary in order to explore clearer understanding of the real issues that could enable bank marketers to elevate customer enthusiasm in the new distribution channel. The rationale for the present study is therefore the need to identify and investigate intervening factors that might motivate or inhibit retail banking customers’ adoption of Internet banking anywhere in the world. The study is a cross-national investigation of the influence of factors identified from the existing literature as potential universal antecedents of customer adoption of Internet banking. It is expected that findings from the research would serve as a vital initiative for reducing the current global reluctance of individual customers towards the adoption of Internet banking and also a contribution towards the realisation of the desired global diffusion of Internet banking predicted by scholars such as Barwise (1997), Li (2001), Bradley and Stewart (2003), and Ilett (2005).

It is also worth noting that even though quite a few scholars have studied IB adoption in many countries and have identified various drivers and inhibitors of the new channel in their individual countries, there is yet no consensus among the scholars concerning the global influence of most of the factors investigated (Limayem et al., 2004). As a result, no set of factors has so far been isolated and validated as *universal determinants* of retail customer adoption of Internet banking. One therefore



wonders how the predicted universal diffusion of the Internet banking will be realised. Consequently, in consonance with the suggestions of Suganthi et al. (2001) and Gerrard and Cunningham (2003), further research is absolutely necessary in different national settings and contexts in order to determine a suitable array of variables that can model universal antecedents of retail customers' adoption of Internet banking. The current study has been designed in direct response to that clarion call.

Lastly, none of the studies published in the area so far involves a cross-national validation of the any of the factors variously identified as determinants of customer adoption of Internet banking between a developed and a developing economy. Moreover, evidence exists in the literature that e-commerce in general, and Internet banking in particular, has not been sufficiently researched in the developing countries of sub-Saharan Africa (Molla and Licker, 2005). This study therefore seeks to fill this gap as a cross-national comparative study between a developed and a developing country. A cross-national study of this nature is of necessity because it will not only help to identify and compare attitudinal vicissitudes of local banking customers from two different national economies, but will also attempt to validate the intervening variables across two countries with dissimilar cultures and levels of economic and technological development.

### **1.3 Aims and objectives of the study:**

A recurrent recommendation of many scholars who have researched Internet technology adoption and retention, especially in the banking sector, is the need for more research to test out existing consumer behaviour and innovation diffusion theories in the online context. This does not presuppose that new theoretical frontiers should not be explored. Rather, the scholars contend that the existing theories of consumer adoption and retention of Internet technology have not become sufficiently mature to form a solid foundational basis for exploring new frontiers, especially in the area of Internet-based banking and financial services (Lichtenstein and Williamson, 2006; Floh and Treiblmaier, 2006).

The above scholars advise that further, deeper and wider empirical investigations of the existing technology diffusion models should be carried out to ascertain their reliability, applicability and generalizability in the *online* context, especially in other parts of the world where levels of economic and technological development are fundamentally different from those in America and Western Europe. Having the aforesaid in mind, the current study has been designed to cross-nationally investigate factors that influence retail customers' *attitudes* and *intention* towards Internet banking adoption in Scotland and Nigeria, using a combined adaptation of Rogers' (1962; 1995) Theory of Innovation Diffusion (TID) and Davis' (1989) Technology Acceptance Model (TAM).

### **1.3.1 The comprehensive aim of the study:**

Consequent upon the foregoing rationale, the principal aim of the study is to identify all possible customer-related, channel-related and environmental factors that have influenced retail customers' perceptions, attitudes and decisions about Internet banking adoption in different parts of the world from the existing literature, and to further investigate them cross-nationally between a developed economy and a developing economy, with the intention of validating and proposing a set of *potential universal determinants* of retail customer adoption of Internet banking. However, in order to achieve this overriding aim, the study has been split up into six specific objectives as follows:

### **1.3.2 The specific objectives of the study:**

1. To identify from the existing literature all possible intervening factors that have influenced retail customer adoption of Internet banking in various parts of the world since its inception (1995 – 2008).
2. To isolate the consistently recurrent factors and model them for a cross-national comparative study between a developed and a developing economy with the aim of validating them as potential *universal determinants* of retail customer adoption of Internet banking (IB).

3. To test and analyse the research model with data collected from Scotland (as the developed economy) and Nigeria (as the developing economy).
4. To test and validate the causal relationships hypothesised between the *intervening factors* and customers' *attitudes* and *intentions* to IB adoption across both countries.
5. To analyse and compare IB-user and non-user respondents' perceptions of the importance of the intervening factors as antecedents of customer adoption of Internet banking across the two countries.
6. To propose the research model, if validated, for further cross-national research in other parts of the world as the potential model of *universal determinants* of retail customer adoption of Internet banking anywhere in the world, irrespective of cultural, economic, and technological disparities.

### **1.3.3 Expected benefits of the study:**

On the basis of the above aims and objectives, it is expected that the present study will be beneficial for both theoretical and managerial purposes. Theoretically, it will extend IB adoption research into the realm of cross-national comparative studies. It will also propose a model of potential *universal determinants* of retail customer adoption of Internet banking, thereby contributing a vital step towards reversing the persistent global resistance of retail customers to adopt Internet banking (Wang et al., 2003; Kuisma et al., 2007; Laukkanen et al., 2008), and also help to accelerate the universal adoption of Internet banking variously predicted in the earlier literature. Moreover, it will also contribute a current understanding of the attitudinal propensities of banking customers in Sub-Saharan Africa to the global research on Internet banking adoption.

From a practical managerial perspective, it is expected that findings from the study will also serve as a reference resource for bank marketers in preparing and steering both potential customers and their web-channels through the transition from brick and mortar banking to Internet-based retail banking. The importance of these contributions becomes more apparent when one recognizes that the location-bound

commercial activities of several high-street firms are rapidly being replaced or at least largely accompanied by web-based transactions, and therefore it has become imperative that marketers of financial services the world over must also offer top-quality, secure and convenient web-based services in order to attract and retain online-customer patronage (Lichtenstein and Williamson, 2006).

#### **1.4 The study locations:**

A study location, in this context, implies the physical place(s) where a specific research project has been carried out. A research location could ordinarily be a company, a group of companies in an industry, a laboratory, a group of households in a specific geographical area, a village, a town, a city, a country, or a group of countries. It could also be a website or a group of related websites. As a physical or cyber-place, the *study location* is different from the *study area*, which is the subject matter on which the research is focused.

In the present research, two countries, Scotland and Nigeria, were selected as the study locations. Please, refer to section 6.4 (page 149) for justifications of the choice of the two countries as national study locations. Since 1996, most of the existing studies in the area of Internet banking diffusion have been carried out at individual country levels rather than at firm levels. One reason for that is because banking and financial services in most countries are a national industry. Another reason is that since Internet banking technology is still a relatively new banking innovation and also a new subject area for academic investigation in many countries (Black et al, 2002; Floh and Treiblmaier, 2006), most of the studies are still being carried out at individual national levels. However, with the globalizing effects of modern information and communication technologies (ICT) on businesses worldwide, the financial industry is also fast becoming a regional (e.g., EU, AU, NAFTA, etc) and, to a large extent, a global industry. Cross-national studies are therefore expected to become more pertinent in future.

A conspicuous trend of the studies so far published in the area is that the study locations often reflect the countries of origin or residence of the authors of the studies. Although detailed reviews of existing studies in the area are variously presented in chapters 2, 3, 4 and 5 of this thesis, the first table in the appendix section titled *Appendix 1* also presents a list of some of the published studies to illustrate the fact that majority of the research conducted in the area so far reflects the specific contexts of individual national locations rather than individual financial firms or segments of the financial industry.

More importantly, it can also be observed from that table (*Appendix 1*), that very little research published in the area so far is cross-nationally comparative in design or focus. Only the studies by Daniel (1999), Bradley and Stewart (2003), Wirtz and Lihotzky (2003), Luneborg and Nielsen (2003), Wu et al. (2006), and Durkin (2004; 2007b) are international in flavour, but none is cross-nationally comparative by design or objective, and they are mostly research on IB service diffusion among banking institutions rather than customer-focused research. Also, very little of the existing studies published so far have come out of Africa; an indication which seems to confirm Boateng and Molla's (2006) assertion that not much is known about electronic banking in general in the developing countries of Sub-Saharan Africa.

In contrast, the present study involves a cross-national comparative analysis of data from two identical surveys conducted simultaneously on the Internet banking adoption behaviours of retail customers in Scotland and Nigeria. Scotland is one of "the constituent countries" that make up the United Kingdom (Health Statistics Quarterly, No 33, 2007:p20) and represents a developed economy and a distinct Western-European culture, while Nigeria is a typical developing economy in the West-African sub-continent and represents a distinct Sub-Saharan African culture. Besides, Scotland, as part of the UK, is a more technologically advanced nation-state than Nigeria. Floh and Treiblmaier (2006:p106) recommend that cross-validation research in the area of customer choices of online banking channels would be of interest in order "to see how parameters change in countries with different legal regulations and varying internet user behaviours."

In designing this research, it was therefore assumed that the distinctive economic, cultural and technological differences between the two nations justify them as good cross-national study locations for a comparative study in the area of Internet banking adoption behaviours of retail customers. Consequently, the historical, economic, cultural and technological dissimilarities between Scotland and Nigeria were the major reasons for selecting them as the research locations for the present study. Details of the differences between the two nations as well as further reasons for selecting them are contained in section 6.4 (page 149).

### **1.5 Overview of the research approach:**

The study takes on a deductive approach to research, starting from substantial reviews of relevant literature in related areas. These include consumer attitudes, intentions and behaviours both online and offline, various theories relating to innovation diffusion and Internet technology acceptance, retail banking service channels, customer adoption of Internet technology in retail banking services, as well as factors identified in previous studies as determinants of customers' adoption behaviours in various parts of the world. These reviews have helped in delineating the research problem, framework and hypotheses of the study. From the theories and concepts in the literature, a framework of conceptual propositions, hypotheses and measurement scales have been developed into a model of the research design.

For the main field work of the study, appropriate measurement scales were adopted from various published sources and developed into a quantitative survey instrument for data collection in order to confirm the existence and influence of the isolated factors on retail customers' attitudes and intentions towards Internet banking adoption. Using the data collected in Scotland and Nigeria, the proposed model of sixteen intervening factors was empirically and cross-nationally investigated, while the hypothesised relationships in the model were statistically tested and compared across the two countries.

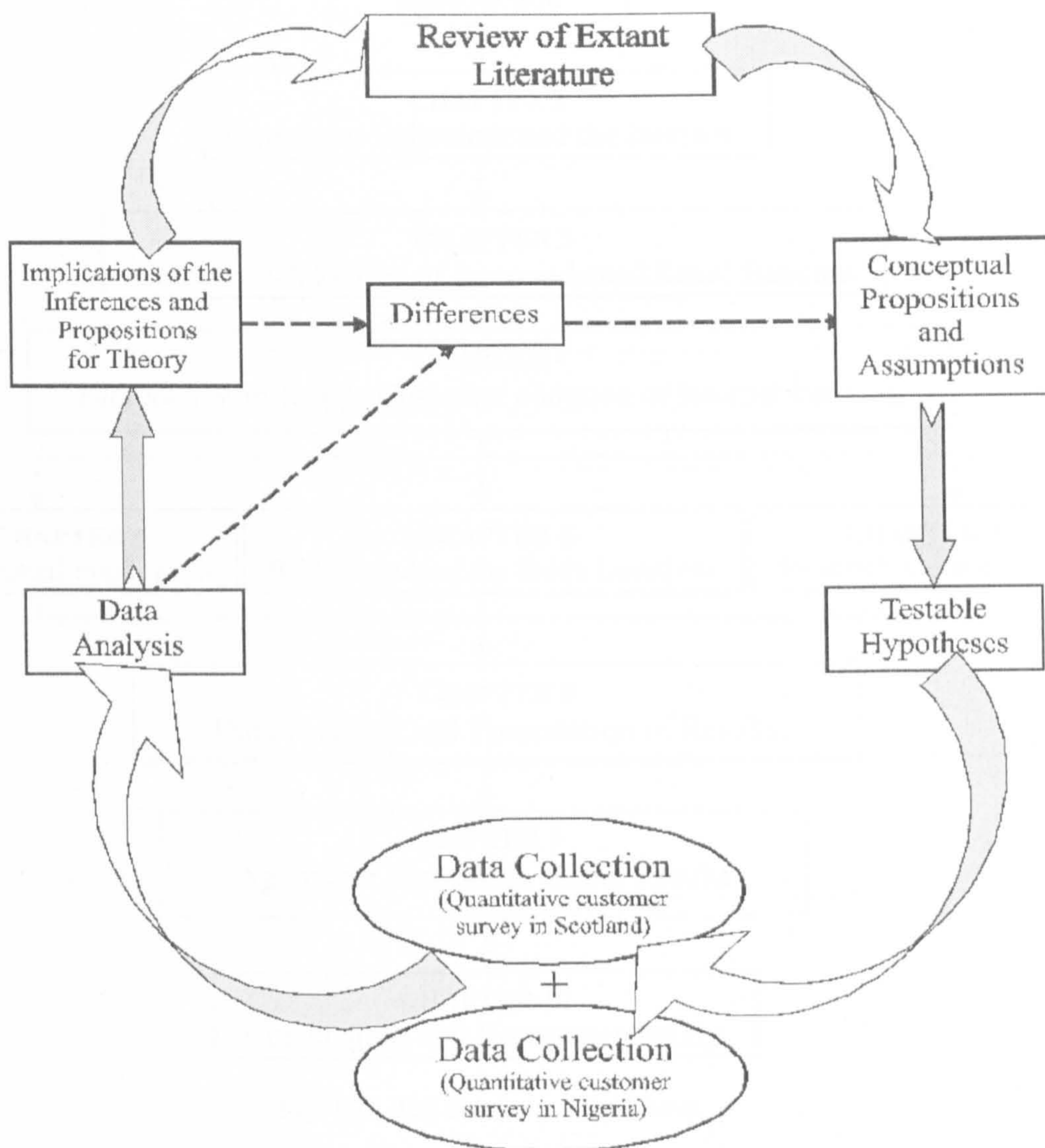


Fig. 1.1: The Research Process

## 1.6 Structure of the thesis:

There are ten chapters in the thesis (See figure 1.2 below). This first chapter delineates the study area, giving a conceptual background of the research focus. It also discusses the research problems, provides justification for the study and outlines its objectives and benefits. In addition, the chapter introduces the research locations and explains the research process, giving an overview of the approach (figure 1.1 above) and an outline of the structure of the thesis. (See figure 1.2 below).

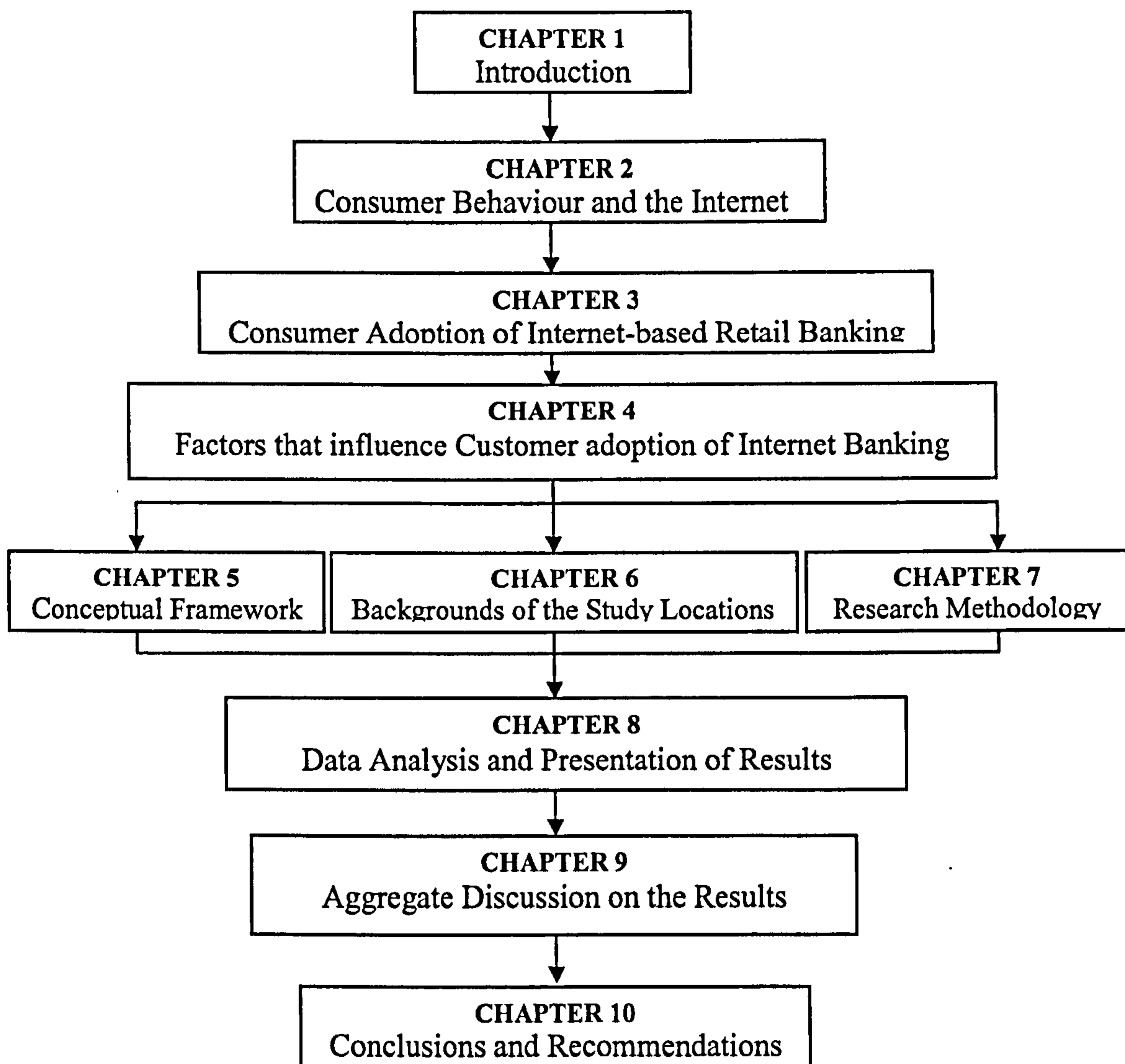


Fig. 1.2: The Structure of the Thesis.

Chapter two defines the concepts of consumer attitude, intention, and behaviour. It clarifies Internet technology adoption as consumption behaviour and reviews the existing theories of consumer behaviour. It then maps out the relevance of these theories to consumer Internet adoption behaviour. The Internet as a retail banking distribution channel was fully discussed in chapter three. Also reviewed in the chapter were the concepts of online customer behaviour and adoption of internet retail banking services. The importance of both *customer readiness* and *web-channel readiness* as vital prerequisites for retail customer adoption of Internet banking was also discussed.



The fourth chapter deals with factors identified from the existing literature published from previous research as influencers of customer adoption of internet banking. The factors were streamlined into two broad categories in the current study, including *customer related factors* and *web-channel related factors*. The effects of these factors in different countries were also discussed in the chapter. Chapter five details the inferences made from the reviews of the existing literature as well as the benefits of the research issues and objectives, all of which culminate into the development of the research model and hypotheses.

In chapter six, detailed profiles of the divergent economic, cultural and technological environments of both Scotland and Nigeria were provided. This chapter also contains a review of Internet penetration in the two countries, especially, with regard to the scope and types of retail banking services available in the two countries. The information gathered during these reviews also provided further justification for the choice of the two countries as the national locations for the present study.

Chapter seven clarifies the methodology of the study. It starts with a review of the two traditional philosophical paradigms of research, positivism and Interpretivism, as well as their implications for research. Then it provides the basis for the preferred positivistic stance, explaining its implications for a quantitative research such as this one. In addition, the chapter looks at alternative data collection techniques and gives a rationale for the choice of the survey technique for this study. It also explains the data collection procedure involved in the survey and then concludes with a discussion on the statistical methods applied in the analysis of the data collected.

In the eighth chapter, all the procedures involved in statistical analyses of the data have been documented, together with results of the analyses. These include various multivariate statistical analyses such as factor analysis, used for factor extraction/confirmation; and covariance structure analysis and latent mean structure analysis, both of which were used for scale validation, measurement invariance tests, model fit test, and parameter estimation of the final SEM model. Also documented in this chapter was the detailed analysis of the research hypotheses.

Chapter nine contains an overall discussion of the results of the analyses and their interpretation as findings from the study. The findings were used to appraise and validate the model of proposed universal factors hypothesised as determinants of retail customer adoption of internet banking. The discussion also linked the findings back to the existing body of theories in the literature, thereby bringing to the fore the filling of gaps identified in the theories.

Lastly, in chapter ten, the theoretical and practical contributions of the research were presented. The contribution to theory relates to the filling of the gap identified in the literature on customer attitude to technology adoption in general, and to Internet banking in particular. The practical contribution relates to the managerial benefits of the research findings for bank managers. The chapter also examined the limitations of the current research and finally proffers suggestions for improvement in future research that might seek to validate the model in other cross-national contexts in other regions around the world.

## **CHAPTER 2:**

### **CONSUMER BEHAVIOUR AND THE INTERNET**

#### **2.1 Introduction:**

In the previous chapter, an overview of the present research was introduced, including the research focus, rationale, aims and objectives. Also highlighted were the study locations, research approach and structure of the thesis. This chapter seeks to present key psychological concepts such as *behaviour*, *intention*, and *attitude* (Ajzen, 2005) in relation to the concepts of *online consumer behaviour* and *Internet technology diffusion* as the theoretical frameworks that underpin retail customers' adoption behaviours towards Internet banking. These theoretical constructs have been integrated in cross-disciplinary research emanating from fields such as Social Psychology, Business, Management Science, Information Technology and Marketing.

#### **2.2 Conceptual Interpretations:**

To enable a better background understanding of the main concepts and theories employed in this study, this section will first clarify the conceptual meanings of the component key constructs and variables of the study area, while the other sections of this chapter will plot out the relationships between the key concepts and theories with regard to consumer behaviours, both offline and online.

##### **2.2.1 The Behaviour Concept:**

Behaviour is a term in Psychology which denotes the totality of the activities, actions, reactions, interactions, sentiments and performances exhibited overtly by individuals. It refers to the way in which people do certain things, that is, the manner in which an act or action is carried out, especially if it is carried out repeatedly in the same way. In defining behavioural learning theories and behavioural measures, Schiffman and Kanuk (2007:G-2) conceptualise behaviours as 'observable responses to external stimuli.' Also, in the Macmillan Dictionary of Marketing and Advertising,

Baker (1996) defines behaviour as “Physical acts performed or undertaken by individuals as opposed to attitudes, beliefs and opinions which constitute a state of mind towards a concept or object and may lead to physical action”.

The above definitions are in line with Ajzen’s (1985) clarification that behaviour refers to observable acts that could be studied in their own rights. The author observes that people sometimes fail to distinguish between behaviours and occurrences that may be the outcomes of those behaviours’ (Ajzen and Fishbein, 1980:p29). For instance, a student’s failure in an examination is not behaviour but an outcome of series of behaviours, which may include skipping classes, watching television instead of studying, going shopping during lecture hours, and so on. Hence, behaviour is used when somebody overtly does something in a specific way repeatedly, rather than a one-off action. Behaviour is therefore not accidental or a mistake but a volitional tendency to act in a certain way. It involves a conscious choice by an individual to perform or not perform an action (Ajzen and Fishbein, 1980:p41). Although an action tendency, behaviour is conceptually different from intention and attitude, both of which have been shown by psychology scholars to be antecedents of behaviour, as discussed in the sub-sections below.

### **2.2.2 The Intention Concept:**

The Merriam-Webster Online (2007) defines *intention* variously as the determination, the resolve, or the intent to act in a certain way. The Encarta World English Dictionary (2007) also describes it as the state of having a clearly defined purpose for desiring to do something, with specific objectives for having the desire and the resolve to do it. In a study of Internet technology adoption by businesses, Nambisan and Wang (1999:p98) equate the desire of several businesses in the late 1990s to “join the web technology bandwagon” with *intention* to adopt the Internet technology, but argue that their mere desire or *intention* was not enough to achieve their objective and so did not equate with the actual adoption since there were many knowledge barriers that businesses had to overcome before they were able to introduce the Internet technology into their operations. *Intention* was therefore seen as different from *action*.

In the light of the argument above, someone's *intention* indicates their desire, willingness, volition and a conscious decision to do something, but does not amount to *behaviour*, and not until they actually perform the desired action does the *intention* transform into *behaviour* (Ajzen, 2005:p99). According to the author, though an individual may form the intention to engage in a certain behaviour, "this intention remains a behavioural disposition until, at the appropriate time and opportunity, an attempt is made to translate the intention into action". The action, when performed, is the behaviour, while the willingness and resolve to carry it out is the *intention*.

Intention is, therefore, an antecedent of behaviour and helps in determining the direction of a particular behaviour - doing it or refusing to do it. Behaviour is the transmission of intention into action (King and Gribbins, 2002), while Intention is the evidence that a person has or has not experienced conviction about the object or target of the action. This is because *intention* is formed in the individual's mind by external and internal factors, such as received information, stored facts and figures, messages and other people's experiences at the person's disposal. The interplay of all these factors induces him or her to be convinced, or not convinced, about performing the action. Hence, Ajzen and Fishbein (1980:p41) assert that when an appropriate measure of intension is obtained, it will provide the most accurate prediction of behaviour.

### **2.2.3 The Attitude Concept:**

*Attitude* is an overt emotional state that expresses one's "attraction or aversion (emotional valence)" to an object, subject or activity (Encyclopaedia Britannica Online, 2007). Oskamp (2004: p162) also describes *attitude* as "a predisposition to respond favorably or unfavorably toward a given object (person, idea, etc.)". According to the author, one cannot develop an *attitude* until he or she develops "some feeling about the object in question", usually on the basis of the bits of information received about it. *Attitude* therefore encompasses a person's beliefs, feelings, thoughts, opinions, and overall mindset about an issue, an activity or another

person. Upon evaluating a specific object or issue, a person's *attitude* toward it reflects his/her standpoint on it. This standpoint is based on both the person's *beliefs* (cognitive responses) about the matter and his/her *feelings* (affective responses) toward it (Ajzen, 1996:p5; 2005: p4). *Attitude* may be positive or negative towards the object or issue depending on the person's beliefs and feelings. Hence, the two scholars above agree that *attitude* is a person's inclination towards responding either favourably or unfavourably to an object, person, institution, or event.

An important characteristic of *attitude* is the fact that it is evaluative in nature (Eagly and Chaiken, 1993). This subjective judgemental nature of human *attitude* explains the positive and negative polarities of attitudinal propensities in different people. Consequently, different people might find the same thing or the same person good or bad, wise or foolish, appealing or repulsive, encouraging or discouraging, acceptable or unacceptable, believable or unbelievable, convincing or unconvincing, worthwhile or worthless, nice or awful, harmful or beneficial, et cetera (Ajzen and Fishbein, 1980:p21).

This polarisation of people's evaluative dispositions is also what helps researchers to measure *attitude* in terms of those positive and negative emotions exhibited by people toward specific objects, persons or events. Osgood et al. (1957) developed the theory of *Semantic Differentiation*, a multi-item scale for measuring meanings of concepts but which later became "the most important scale for measuring *attitudes*" (Ajzen and Fishbein's, 1980:p20). The *Semantic Differential* scale uses two polarities of emotive and affective phrases such as those mentioned above and is still the best *attitude* measurement scale today.

*Attitude* is often erroneously equated with *behaviour*, but research has shown that *attitude* in itself is rather an antecedent of *behaviour*. Adopting Fishbein's (1963) *Behavioural Intention Model* and Ajzen and Fishbein's (1980) *Theory of Reasoned Action*, researchers have shown that a person's *attitude* towards an object leads them to form an *intention* to behave in a certain way regarding the object, and this *intention* is subsequently followed by the actual behaviour toward that object. *Attitude* is therefore not the same thing as *behaviour* but leads to an *intention* to behave in a certain way, which in turn leads to the *behaviour* (Ajzen, 1996:p32). For this reason,

both *attitude* and *intention* are the major ingredients for measuring and predicting *behaviour*. Ajzen (2005:p30) confirms this behavioural sequence by noting that just as *attitudes* flow reasonably and spontaneously from *beliefs*, so do *intentions* and *actions* follow reasonably from *attitudes*. *Actions* here refer to the actual *behaviour*.

#### **2.2.4 Consumer Behaviour Concept:**

Consumer behaviour is the way or manner in which people buy and use products and services. Blackwell et al. (2006:p4) define consumer behaviour as “activities people undertake when obtaining, consuming and disposing of products and services”. These activities would include decisions as to why, how, when, where and under what circumstances people buy and use products and services. The scholars also affirm that consumer behaviour is equally a field of study about consumers’ consumption behaviours. This notion tallies with that of Stanton (1978:p96) who conceptualises consumer behaviour as ‘a study of the reasons for the consumer’s series of behaviours which he or she exhibits as he or she makes a choice of product, a choice of shop, and a choice of price at which to buy the product.’ The assumption implicit in the above perceptions is that consumer behaviour is principally about the “reasons” *why* consumers buy *what* they buy, use what they use, buy it *where* they buy it, buy it *when* they buy it, buy it *how* they buy it, and use it how they use it.

Understanding the buying and consumption activities of consumers as well as the reasons behind them is a key factor in understanding the consumers themselves. This knowledge is vital in helping marketers in their efforts to satisfy the needs of their customers. Consumers consume in order to satisfy various personal needs. Wright (2006:p227) supports this view by stating that “both intrinsic and extrinsic products and services play an enormous part in satisfying consumers’ needs and wants”. To facilitate the consumption of products and services which they consider appropriate for satisfying their needs, consumers have to make series of decisions about *what* to buy, *where* to buy it, *when* to buy it, *how* to buy it, at *what price* to buy it, *why* it is necessary to buy it (benefits expected from using it), and whether to continue buying

and using it or not. Hence, the totality of their decisions and how they make those decisions concerning spending their available resources (time, money and effort) in buying, using, evaluating and disposing of products and services in their daily lives amounts to their consumption behaviour (Schiffman and Kanuk, 2007:p3).

The theoretical analysis above implies that consumer behaviour involves a complex, but sometimes unconscious, interplay of both mental and physical activities. These include making considerations between alternative products or services, shops, prices, credit offers, payment methods, delivery systems, and after-sale benefits; taking purchase decisions to buy or not to buy, where to buy it and what quantity to buy at the agreeable price; going ahead to actually make the purchase; using the products or services; evaluating their quality and benefits before, during and after usage; and subsequently taking post-purchase decisions – for instance, to continue to consume the same product/service or not (Kotler et al., 2002:p191; Blackwell et al, 2006:p4; Schiffman and Kanuk, 2007:p3). Consumer Behaviour is therefore a problem solving behaviour (Jobber, 2004:p70), which requires a conscious or unconscious search for alternative pieces of information, a cognitive processing of the alternatives, and a decision taken at each of the various levels of the “what, why, when, where and how” issues mentioned above in connection with every product or service bought and used by the consumer.

Lastly, two schools of thought pervade the literature concerning consumer behaviour. One is the neoclassical economics view, which ascribes *perfect rationality* (Mishra and Olshavsky, 2005:p362) to consumers, insisting that they make conscious, rational decisions concerning what they consume by searching for, and considering, all possible alternatives at their disposal before making purchase decisions. The other view is that of *bounded rationality* (Simon, 1983), which is prevalent in Psychology and Marketing literature. Developed by H. A. Simon in 1955, *bounded rationality* holds that the fundamental cognitive capabilities of consumers (such as their short-term memory, slow rate of mental processing, and issues of availability and accessibility of information in the long-term memory) are rather inhibitive to their decision-making processes.



According to holders of this view, the consequence is that consumers make their consumption decisions in a trial and error manner, which involves less effort but is also less accurate (Payne et al., 1993; Mishra and Olshavsky, 2005). The proponents of *bounded rationality* also argue that by simply responding to the various marketing stimuli surrounding them in such a heuristic way, consumers basically substitute benefits for costs and accuracy of decision for less effort. They try to adapt to the benefit of whatever product or service they have chosen on the basis of expediency. By so doing, consumers in this framework make decisions that are “satisficing” rather than ideal (Simon, 1983).

### **2.2.5 The Innovation Concept:**

Consumers are motivated to behave variously in different purchase situations by a variety of socio-psychological factors around them, including their personal needs, economic capabilities, social trends, cultural (and at times religious) values, societal expectations and technological developments. Social and technological trends usually churn out product and service innovations in every modern society. Evans et al. (2006:p243) conceptualize *innovation* as anything (such as product, service, idea, or process) that is perceived as new in a given market. *Innovation* has also been classified as the process of introducing something new in order to improve a situation. This indicates that *Innovation* is something newly invented or produced, which was not previously known or in use. Various scholars have offered different angles to the understanding of *innovation*, giving rise to sub-concepts such as product innovation, systems innovation, technological innovation and business management innovation (Foxall, 1984).

In explaining the role of *innovation* in new product development, Baker (1992:p.125) lays more emphasis on the commercialization aspect rather than the inventive aspect of innovation. The scholar conceptualises innovation as ‘the commercialisation of an invention and its introduction to the market place.’ In contrast to the above view, Afuah (1998;p.4) observes that in product innovation, the new product itself is often regarded as the innovation. However, the author clarifies

that *innovation* is more of the process of making the new product or service than the final output itself. To him, innovation is the use of new technology and new market knowledge to offer a new product or service to customers.

Without doubt, all the subsets of innovation mentioned above seem to point to the same conceptual meaning of *innovation*. For instance, Betz (1998:p.3) defines technological innovation as “the invention of new technology and development and introduction into the marketplace of products, processes, or services based on the new technology”. Embedded in this definition is the fact that innovation actually encompasses the newly invented technological system or process, the new product or service made using that process, and the new business and managerial procedures brought about by the introduction of the new technology. The scholar’s assertion that “technological innovation combines the ideas of technological invention and business innovation” seems to confirm the interrelationship between all aspects of innovation.

However, Foxall (1984:p25) observes that in as much as scholarly conceptualisations of innovation are varied and sometimes confusing, they are still not sufficiently broad enough to embrace the innovative process in its entirety. One might, therefore, concede that innovation simply begins with a new idea and ends with the widespread use of the new product, service or process developed from that idea, as well as the widespread diffusion of the process itself (Schott, 1981). Four main factors have been identified as drivers of the need for innovation in modern society, including technological advances, changing customer needs and values, intensified competition and changing business environment (Goffin and Mitchell, 2005:p.3).

The overall effect of these factors is the need for change in the way things are done – the way businesses are run and the way products and services are produced and marketed to the customers, whose values and needs have been changing over the years. The change is aimed at improving production systems and management processes as well as producing new products and services that will meet the customers’ changing needs. Thankfully, the tremendous advancements in technology (especially communication and information technology) in the last thirty years have accelerated the evolution of innovations in many areas of commercial endeavour

worldwide. Chief among these technological innovations is the Internet technology, which has permeated and is changing every facet of the mode and manner of business and marketing globally (Rettie, 1998).

Consequent upon the pervasive innovations in global businesses and markets initiated by the development of the Internet technology since the late 1990s, Horn (1999:p.42) has predicted that “the (internet) technological revolution will change everything in the world we live in, with no institution, no person, and no government left unaffected”. In addition, Deighton (1997:p.347) asserts that “the ferment in the field of marketing in particular is unprecedented”. Innovations bring about changes – disruptive changes as well as improvement changes. Hence, in the bid to improve their operational and service efficiencies, sustain their competitive advantage, and propel their profitability, businesses worldwide are having to grapple with both the *disruptive innovation* and *sustaining innovation* (Christensen, 2003; Enders et al., 2006) occasioned by the advent of Internet technology. With regard to electronic banking innovation, Durkin (2007b:p.221) refers to it as “a discontinuous innovation” given that a change in behaviour by both groups of users (customers and bank service personnel) is required for effective adoption of the Internet-based service channel.

#### **2.2.6 The Adoption Concept:**

Being new, innovative products, services and ideas often have to face users’ acceptance or rejection in the market or organisation. Defined by Kotler et al. (2002:p222) as the decision by an individual to become a regular user of a new product or service, adoption has to do not only with a customer’s acceptance of a newly developed product, service or idea, but also with the continued usage of that product, service or idea (Sathye, 1999:p325). Kotler et al. (2002) characterise the adoption concept as a mental process which an individual goes through from the time of learning about an innovation to the time of final acceptance, purchase and usage of the new product, service or idea that typifies that innovation. The scholars identify five mental stages of this process, including awareness, interest, evaluation, trial and final adoption, and also advise that marketers should endeavour to help their customers move through these five stages in order to achieve adoption.

Two theoretical concepts have been associated with product and service innovations by Marketing scholars, including *innovation adoption* and *innovation diffusion* (Kotler and Armstrong, 2001:p200; Evans et al., 2006:p243). In further developing the theory of *diffusion of innovation*, Rogers (1995) classified users and buyers of an innovation according to their time of adoption and called the classification “adopter categories.” Based on his own observations, he conceptualised five adopter categories within his “adoption curve,” which was defined in terms of percentage groupings within the normal distribution of the curve. The five categories include *innovators* [2.5% of all adopters], *early adopters* [next 23.5%], *early majority* [next 34%], *late majority* [next 34%] and *laggards* [last 16% of all adopters] (Statt, 1997:p35; Evans et al., 2006:p248).

The groups are characterised by differences in social class, age, education, income, attitudes, and many other variables (Baker, 1992). Most innovation marketers and consumer behaviour researchers focus their attention on the earliest adopters, the 2.5% category, because apparently it is a lot easier and faster to convince them about the innovative product or service than the other groups. Being the earliest purchasers, therefore, they are more receptive to innovations and are usually in position to spread the “good news” to the other prospects.

To clarify the difference between adoption and diffusion, research has shown that adoption involves the process by which each individual member of the society accepts and uses an innovation, while diffusion reflects the mass acceptance and usage of the innovation by cross-sections of the society over time. This notion is confirmed by two scholarly delineations of the concepts. While Sathye (1999:p325) perceives *adoption* as the acceptance and continued use of a product, service or idea by an individual consumer, Evans et al. (2006:p243) conceptualise *diffusion* as the way in which innovation is communicated and distributed through society over time. Hence, while adoption is an individual’s evaluative behaviour toward innovation, diffusion is an aggregation of the adoption behaviours of numerous individuals and organisations in the society over time (ibid).

### **2.2.7 Internet Adoption as Consumer Behaviour:**

Existing literature has shown that innovative products and services evolve from changing social trends or advancements in technology. The Internet is an archetypal example of an innovation that has evolved and pervaded numerous aspects of human activities, as a developmental technology, a marketing distribution channel, a business process, and a channel of communication. Therefore, any situation in which individuals can buy and use products, services and information via the Internet in each of the above contexts amounts to consumer behaviour. To analyse this notion further, the Internet serves consumers in two major ways.

Firstly, it serves as a tool that aids consumers in searching and/or receiving alternative information about the goods and services that they are interested in, thereby enabling them to make better, informed purchase decisions. Secondly, the Internet also serves as a distribution channel – an online marketplace or cyber shop – through which consumers can search for information and also buy the goods and services they need. For either purpose, the computer-enabled consumer has to make a conscious decision to use the Internet as a means for acquiring the information, goods and services he or she needs. Therefore, the Internet usage decision becomes one of the series of conscious decisions which the consumer makes in interacting with marketers and brands in various product or service purchase situations.

Accordingly, since consumer behaviour is conceptualised as the series of decisions which consumers make as they purchase and consume products and services, and since the decision to adopt (i.e., to accept and continue to use) the Internet in connection with consumption is one of those series of decisions, it stands to reason that Internet adoption is a part and parcel of consumer behaviour. This notion has given rise to the concept of online consumer behaviour. To confirm the above analogy in the use of the Internet for online banking, Durkin (2004:p487) contends that an appreciation of customers' decision process in adopting technological innovations is key to understanding customer motivation in Internet banking adoption.

Studies on online consumer behaviour have shown that product information search on the Internet is the most important predictor of online buying behaviour (Bellman et al., 1999:p34). In a study of predictors of online buying behaviours in the US, the above scholars concluded that the online consumer lives a “wired lifestyle.” The study respondents, who had spent many years using the Internet in their offices, agreed that the Internet and other new forms of communication technology have improved their work productivity. In addition, they revealed that just as they use the Internet for most of their other daily activities such as reading news, exchanging emails, carrying out personal banking transactions with their banks, and chatting with distant friends and family, they equally “naturally turn to the Internet to search for product information and in many cases to buy products and services” (Ibid: p35).

In the context of online banking, the Internet principally serves as a banking services distribution channel through which customers can enjoy various personal banking services provided online by the banks without having to physically go to their banks. The most generic of these online services include: checking account balances, paying bills, transferring funds intra-bank from one account to another, requesting for credit card advances, and placing requests for new chequebooks (Chou and Chou, 2000).

Another innovative use of the Internet generally by consumers is for online word-of-mouth (WOM) activities through interactions with friends, school mates, work colleagues and family members or through the formation of Virtual Communities (Hagel, 1999:p55) and Blogs. The Internet has enabled groups of people with shared common interests (virtual communities) to ‘gather together’ online to form ‘a set of interwoven relationships’ (Mohammed et al., 2004:p392) which provides them a forum for relating with one another and sharing information, experiences and opinions regarding their purchase and usage of specific products and services (Toder-Alon et al. (2005:10).

Through online word of mouth (WOM), the Internet has similarly boosted the concept of *viral marketing* into a mass-scale phenomenon (Rayport and Jaworski, 2001:p175). Now popularly known as “word of mouse” (Pickton and Broderick, 2005: p.137), online WOM allows consumers to pass on emails and other reference materials of interest to their friends, colleagues and families. Hence, taking all the above innovative interventions of the Internet in the field of consumer behaviour into consideration, many scholars (e.g., Szmigin, 2003; McCarthy and Wright, 2004; and Clark and Wright, 2005) have come to agree that one of the greatest ongoing changes in consumer behaviour in the contemporary marketing arena has been the consumer’s mutation from a passive, reactive target to a “post-modern,” creative and innovative consumer. Thanks to the Internet, consumers now proactively interact and initiate ideas that help to shape their overall consumption experiences rather than having the ideas and experiences haughtily shoved at them by marketers.

### **2.3 Behavioural Theories Related to Online Consumer Behaviour:**

The rationale for marketers to study consumers’ attitudes and behaviour is in order to be better able to provide goods and services that will be most acceptable to the consumers and also to satisfy their needs and wants the most. Evidence exists in the literature that consumer satisfaction leads to development and reinforcement of positive attitudes in favour of products and services, enhances loyalty to the products and services, and also reduces consumer uncertainty (Sheth and Parvatiyar, 1995). Hence, marketers’ offer of good quality products or services and consumers’ satisfaction and positive attitudes to them are imperative for forging a better understanding between the two parties in the social exchange process (Thibaut and Kelley, 1986).

Various scholars have studied technology adoption processes and online consumption behaviours in various innovation diffusion contexts over the years and have developed useful theories to explain the human behavioural attributes at work in those processes and contexts. The behavioural theories most directly related to online

consumption contexts include the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980), the Theory of Innovation Diffusion (TID) by Rogers (1983), the Theory of Planned Behaviour (TPB) by Ajzen (1985), and the Technology Acceptance Model (TAM) by Davis (1989).

Over the years, several researchers have employed these theories in various studies of social consumption and innovation adoption in order to better understand the consumer. In the Internet banking context, a number of scholars have applied some of the theories in various forms to explain customers' attitudes and behaviours towards the adoption and retention of Internet-based retail banking services (see Tan and Teo, 2000:p6; Karjaluoto, 2002:p261; King and Gribbins, 2002:p2; Suh and Han, 2002:p247; Wang et al, 2003:p503; Lassar et al, 2004:p179; Lichtenstein and Williamson, 2006:p51). A detailed discussion of the conceptual development, postulations and uses of the aforementioned theories is presented in the following subsections, indicating various instances in which they have been used to enhance theoretical understanding of the relationship between social consumption and technology application.

### **2.3.1 The Theory of Reasoned Action (TRA):**

First introduced by Martin Fishbein (1967), the Theory of Reasoned Action (TRA) was developed by Ajzen and Fishbein (1975) and later extended in 1980 as the Behavioural Intentions Model (BIM). The theory is based on the authors' assumption that "human beings are usually quite rational and make systematic use of the information available to them" (Ajzen and Fishbein, 1980: p5). It proposes that an individual's action is predetermined by his personal *attitude* towards the issue involved, his belief about the consequences and social expectations of his actions, and his motivation to comply or not comply with such expectations (ibid). The scholars argue that people would usually consider the implications of their actions before deciding to engage or not engage in a given behaviour. This viewpoint has apparently informed the authors' decision to name the model "a theory of reasoned action."



Espousing the significance of the TRA model, Suh and Han (2002:p248) note that the social behaviour of an individual is based on his/her attitude towards that behaviour, which is a function of both his/her beliefs about the outcomes or consequences of performing that behaviour and his/her evaluation of those consequences. Regarded by Blackwell et al. (2006:p413) as the best model for predicting consumers' future behaviour, the TRA comprises two main components. One is the personal attitudinal component, which deals with the individual's judgement in favour or against the act, depending on his perception of the consequences that might result from performing the act, as well as his/her evaluation of those consequences (Suh and Han, 2002:p248). The other is the social, normative component, which deals with the subjective norm or the person's perception of the social pressure on him or her from referent groups to perform or not perform the act, including the motivation to comply or not comply with their expectations (Lee and Green, 1991:p290; King and Gribbins, 2002:p2).

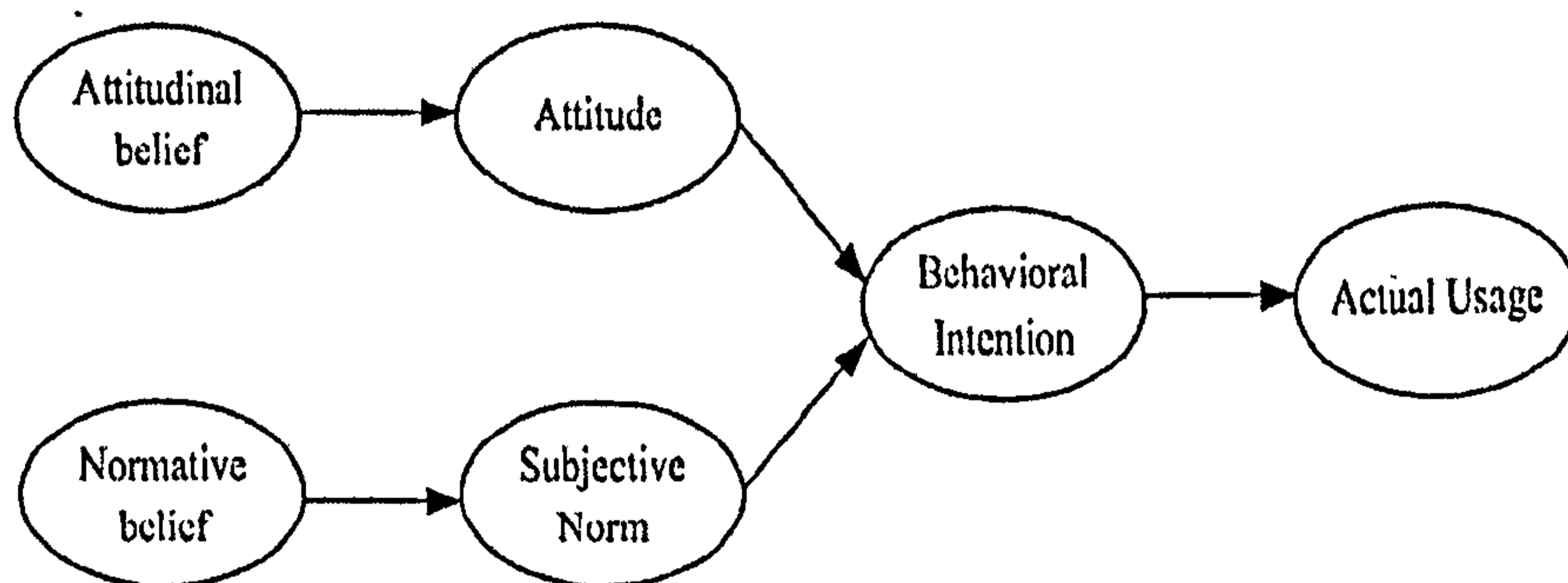


Fig. 2.1: Original model of the Theory of Reasoned Action (Fishbein and Ajzen, 1975)

According to Shih and Fang (2004:p215), the inclusion of the subjective norm in the TRA model (figure 2.1 above) represents the importance of social influence on personal behaviour. However, Ajzen and Fishbein (1975; 1980) reject any notion that human social behaviour is controlled by any extraneous motives or overpowering influences. The authors insist that normal human actions are “neither capricious nor

thoughtless”, but that most normal people have volitional control over what they do or do not do. Therefore, a person’s behaviour or action is ultimately determined by his or her own *intention* to perform or not perform that action.

A number of scholars have adopted the TRA in studies of customer behaviour, especially in relation to Internet adoption in the banking and financial services sector. Karjaluoto et al (2002:p266) demonstrated the validity of the two components of the TRA while investigating factors that affect customer attitudes toward online banking in Finland. Their findings showed, on one hand, that the customers’ prior experience with computers and the Internet were fundamental to the formation of their attitudes toward online banking, which were in turn responsible for their actual adoption. On the other hand, the study also confirmed that reference groups equally affected the customers’ attitudes and, by extension, their behaviours towards online banking adoption.

However, King and Gribbins (2002) argue that when studying Internet adoption from an organisational perspective, adoption models developed for measuring individuals’ behaviours toward the technology may not be adequate for measuring organisational behaviours. As a result, the scholars used a combination of the TRA and the Technology Acceptance Model (TAM) in their study of Internet technology adoption by seventy-six organisations in the US state of Illinois, including banks. Their research identified eight factors that influenced corporate customer adoption of Internet banking in the state. The TRA can therefore be used to study IB adoption behaviours at both organisational and individual levels.

### **2.3.2 The Theory of Innovation Diffusion (TID):**

The TID, also known as the Theory of Diffusion of Innovation, was first formalised by Everett Rogers in a book titled *Diffusion of Innovations* in 1962. In a 1995 update of the book (4<sup>th</sup> edition), Rogers (1995) explained that a person’s willingness and ability to adopt an innovation would be based on their awareness, interest, evaluation, and trial, followed by the actual adoption. The author first refined the theory in 1983 from its original form and proposed a five-stage process of

innovation adoption, which became known as the *diffusion of innovation* model. The five stages include:

- *Knowledge* – the first awareness of the existence, and understanding of the function, of the innovation.
- *Persuasion* – being urged to see the significance of the innovation.
- *Decision* – forming the intention to adopt (or not adopt) the innovation.
- *Implementation* – the innovation is put to use.
- *Confirmation* – the ultimate acceptance (or rejection) of the innovation.

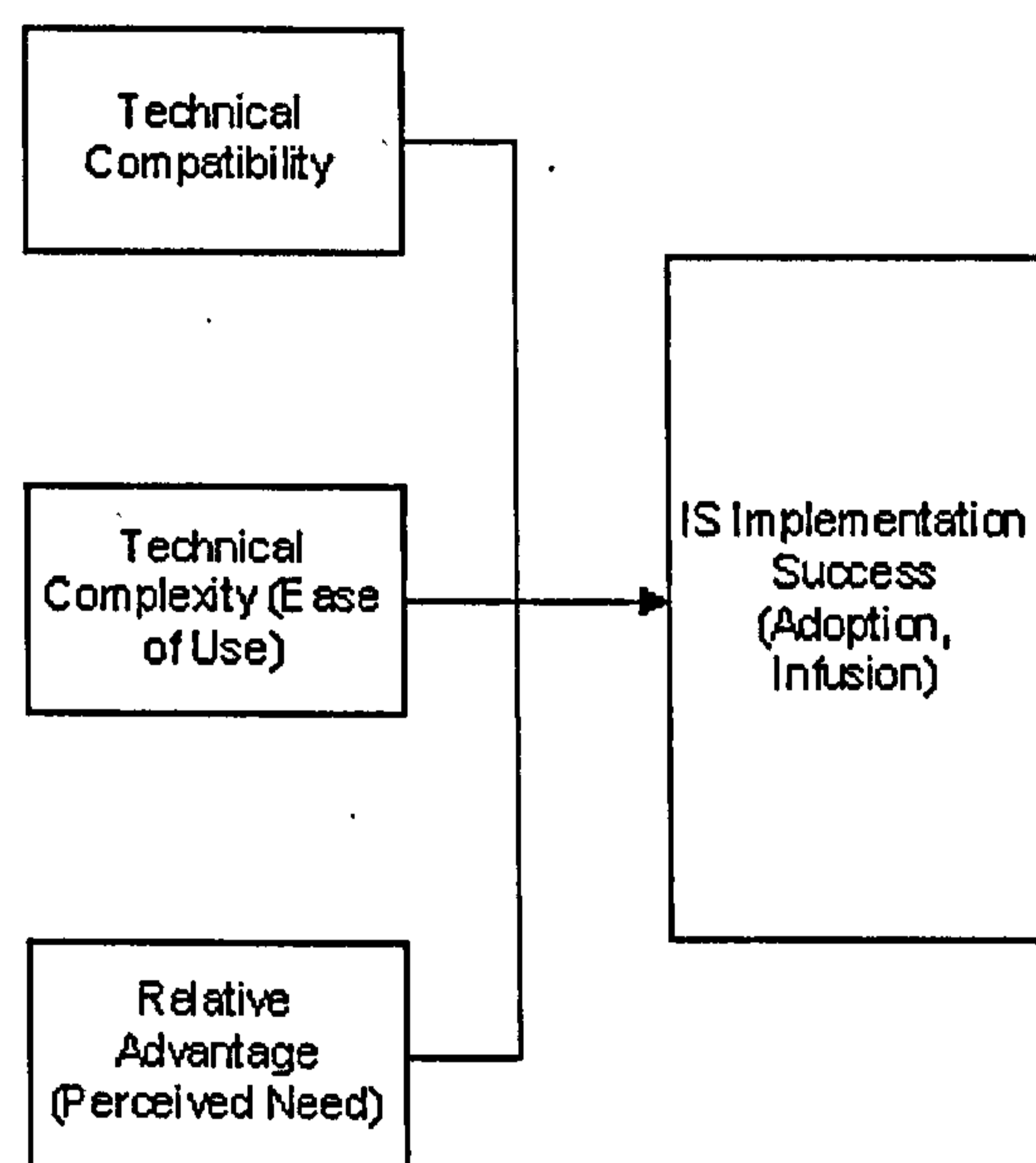


Fig. 2.2: Original model of the Theory of Innovation Diffusion (Rogers, 1962; 1995)

Based on the five stages above, the TID suggests that an individual first becomes *aware* of the existence of an innovation and thereafter forms an attitude, which may be favourable or unfavourable, toward the innovation. This attitude ultimately leads the individual to accept or reject the innovation. In a study of the relationship between consumer innovativeness, personal characteristics and online banking adoption, Lassar et al. (2005:p180) applied the TID in conceptualising the extent and the pace at which individuals adopt innovations. They called the concept the *personal innovativeness* of innovation adopters.

According to Evans et al. (2006), when the innovativeness of several people is aggregated across the society on a particular innovation and over a period of time, it becomes *diffusion*. This notion is in consonance with Rogers's (1995) premise, which holds that innovations permeate the society over time in an *S-curve*, as early adopters take up the technology first, followed by majority of other people, until the innovation becomes common among all the people. The author classified innovation adopters in the society on the basis of the time at which they make their adoption, relative to the time at which other people do. Consequently, he propounded five categories of innovation adopters which might be found in any society or industry.

The first category, classified as *the innovators*, make up 2.5% of the society. They are usually very educated, well-informed, venturesome, and great risk-takers, who usually adopt the innovation first. They are followed by *the early adopters*, also educated, popular social leaders, who make up about 13.5% of the whole group. The third category is *the early majority*, about 34% of the whole group. They are deliberate, rational decision takers with many informal social contacts. The next class are *the late majority* adopters, also making up 34% of the group. They are traditional and sceptical in their viewpoint and belong to lower socio-economic classes. Lastly, there are *the laggards*, 16% of the population who, according to Baker (1996), are usually dependent on neighbours and friends for information and would be reluctant to accept changes because of fear of cost and debt.

King and Gribbins (2002) note that the *theory of reasoned action*, the *theory of planned behaviour* and the *technology acceptance model* all took their roots from primary constructs of the theory of *innovation diffusion*. The scholars also confirm that the Roger's (1995) five adoption stages which individuals go through while adopting innovations have helped researchers in identifying the variables that influence innovation adoption decisions. Classified as the *characteristics of innovation* (Gerrard and Cunningham, 2003:p18), they include the *Relative Advantage*, *Compatibility*, *Complexity*, *Observability* and *Trialability* of the innovation. These concepts have been adapted and used in various empirical studies involving the adoption of technological innovations (Kolodinsky et al. (2004:p240).

Some other scholars have also identified additional characteristics of innovation which affect its adoption or rejection, including *Risk* (Locket and Litter, 1997; Black et al., 2001), *Accessibility*, *Convenience*, *Cost*, and *Job loss* (Black et al., 2001). Black et al. (2001) investigated the adoption of Internet financial services in the UK using the *innovation diffusion* characteristics. In studying the diffusion of Internet banking among Singaporean customers, Gerrard and Cunningham (2003) also used all the above innovation diffusion characteristics plus *Confidentiality*, *Proficiency* and *Customer innovativeness* to study the customers' attitudes towards Internet banking adoption. Findings from the study showed that all the investigated factors affected Internet banking adoption among the respondents, albeit to varying degrees.

### **2.3.3 The Theory of Planned Behaviour (TPB):**

The *Theory of Planned Behaviour* (TPB) is an extension cum refinement of Ajzen and Fishbein's (1980) *Theory of Reasoned Action* (TRA), but with an addition of the *behavioural control* component. This control factor was added by the authors in recognition of the individual's perception of the difficulty and risk involved in performing a given behaviour (King and Gribbins, 2002:p2). The TPB deals with the assumption that behaviour is performed at an individual's volition and, therefore, that adoption of a new product, service or technology depends on the individual's feelings, desire, wish, decision and intention to adopt or not adopt the innovation (Tan and Teo, 2000; King and Gribbins, 2002; Chai and Pavlou, 2004; George, 2004).

Similar to the TRA, the TPB also holds that the individual's *intention* to perform or not perform the behaviour ultimately leads to the actual performance or rejection of the behaviour (Ajzen, 2005:p118). In this sense, behaviour is thus premeditated and based on the individual's understanding of, and prior experiences with, the object, issue, or process involved (Taylor and Todd, 1995:p139), and also based on the individual possession or lack of the resources vital for the performance of the behaviour (George, 2004).

In explaining the TPB, Ajzen (2005:p118) proposes that three factors combine to delineate an individual's *intention* to perform an act as the evidence that the act is a *planned behaviour*. The first is the individual's *attitude toward the behaviour*, which the author describes as the individual's positive or negative evaluation of performing the particular behaviour of interest. The second factor is the individual's perception of the social pressure on him or her to perform or not perform the behaviour. This factor is termed the *subjective norm* since it involves "normative prescriptions" (ibid) from people whom the individual considers important to him or her in the society.

Thirdly, the individual's consideration of the barriers and facilitators that may hinder or enhance his/her ability to perform the behaviour also affects his/her attitude and the intention to perform or not perform the action (Taylor and Todd, 1995:p138) Hence, the third factor in the TPB model of behaviour determinants is *perceived behavioural control*, which is the person's perception of his/her ability to perform the behaviour based on his/her self efficacy (Ajzen, 2005:p118), evaluation of the difficulties and risks involved in performing the behaviour (King and Gribbins, 2002:p2), and the availability of the resources required for doing so (Ajzen, 2005:p118; George, 2004).

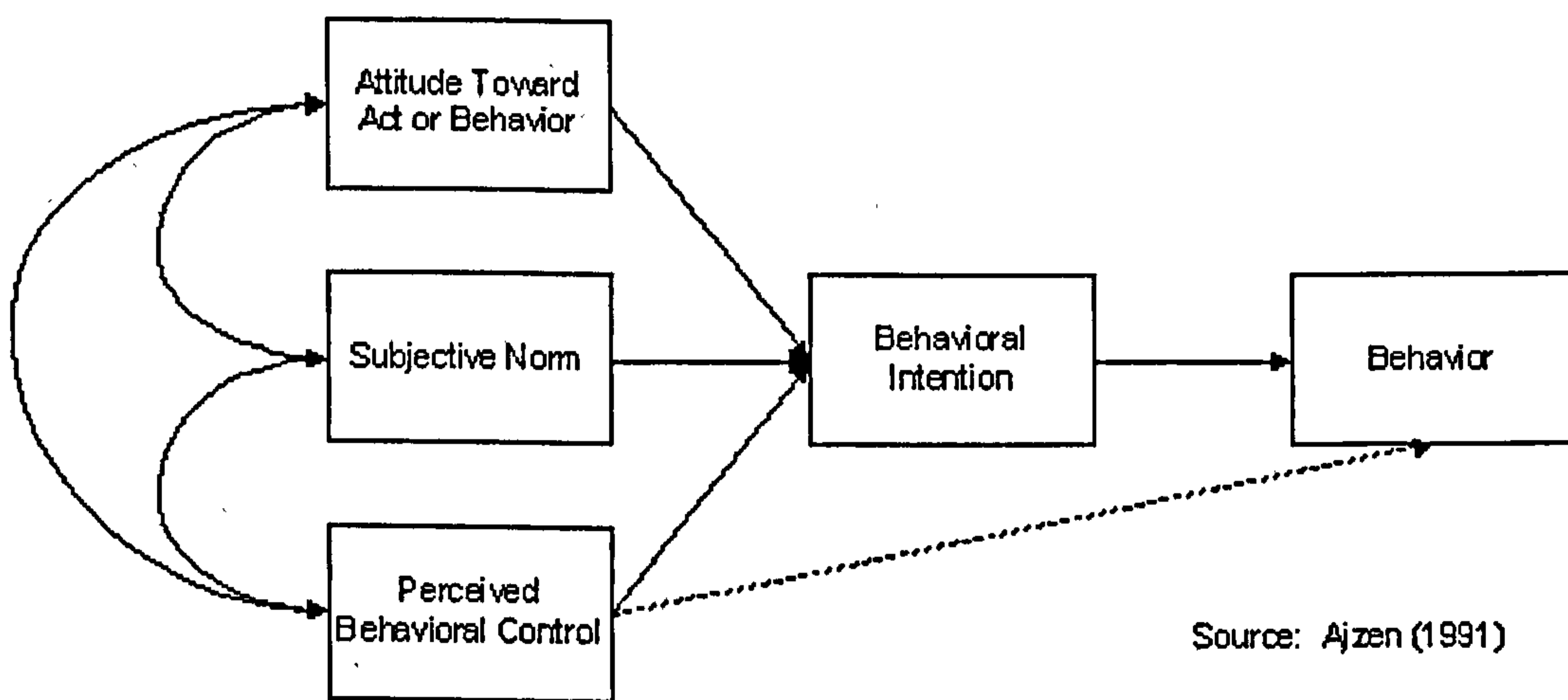


Fig. 2.3: Original model of the Theory of Planned Behaviour (Ajzen, 1985, 1991, 2005)

Applying the theory of planned behaviour (TPB) in their study of factors that influence Internet banking adoption in Singapore, Tan and Teo (2000:p8) identified four major attributes of technological innovation that influence online banking adoption. These include users' perception of the *relative advantage* of using the technology, its *compatibility* with their needs, its *complexity*, its *trialability*, and the *perceived risk* involved in adopting it. Liao et al. (1999) also employed the TPB in their study of virtual banking adoption in Hong Kong. The scholars found that TPB was useful in predicting customer behaviour in adopting ATM banking, and also that attitude toward virtual banking in general was dependent on the customers' perception of the relative advantage, compatibility, ease of use, demonstrability, and perceived risk of using the new banking channel (ibid:p73).

Other scholars such as Taylor and Todd (1995) and Shih and Fang (2004) have also used a "decomposed" version of the *theory of planned behaviour* in their investigations of consumer adoption intentions in Canada and Taiwan respectively. Taylor and Todd (1995:p137) report that several scholars have tried to refine the TPB model in order to find more precise ways to predict behavioural intention with it. These efforts have resulted into "decomposition," which involves representing the *attitudinal* and the *normative* beliefs of the model more precisely and also allowing for better understanding of the cross-over effects between the two components.

For instance, Shih and Fang (2004: p220) successfully validated a decomposed version of the TPB model in the context of adoption intention formation among Internet banking customers in Taiwan. Findings from the study showed that both the TRA and the TPB were useful in explaining the attitude of Taiwanese customers toward Internet banking adoption and in defining their intention to adopt. However, as in the study by Taylor and Todd (1995), only the decomposed beliefs about *relative advantage* and *complexity* were significantly related to adoption attitude or intention. This therefore shows that "decomposition" does not always lead to significant cross-over effects on behaviour.

#### 2.3.4 The Technology Acceptance Model (TAM):

Developed by Fred D. Davis in 1989, the TAM theory identifies two concepts, '*perceived usefulness*' and '*perceived ease of use*,' as the variables fundamental to a user's *intention* to adopt or not adopt a new technological process. TAM was originally used in two simultaneous studies to validate the two variables above as the fundamental determinants of user acceptance of Information technology (Davis, 1989:p319). The model predicts an individual's intention to start using a technology and, like the earlier behavioural models, it also suggests that adoption intention in turn determines the concrete action of adoption (Suh and Han, 2002; Wang et al., 2003; Lassar et al., 2004). Of course, Davis (1989) had developed the TAM as a modification of Ajzen and Fishbein's (1980) *Theory of Reasoned Action* (TRA).

'*Perceived usefulness*' refers to how relevant an individual perceives a new technological channel or process to be to his or her needs and situation. It is the extent to which people believe that the new system or application will help them do their job better (Davis, 1989:p320). It therefore defines the *relevance* of the technology to the needs of the user. On the other hand, '*Perceived ease of use*,' refers to how relatively easy the technological system or process is for the individual to use. It defines the *user-friendliness* of the system. It is not enough for people to see a new technological application as important and useful for performing their jobs. They want to also be sure that it is not too hard for them to use, and that the benefits of its utility are not surpassed by its difficulty or the amount of effort required in using it (ibid). Hence, the two components of TAM contribute to convince individual customers that they can use a piece of technology such as the Internet; that it is important for satisfying their needs; and that they would be better off adopting it.



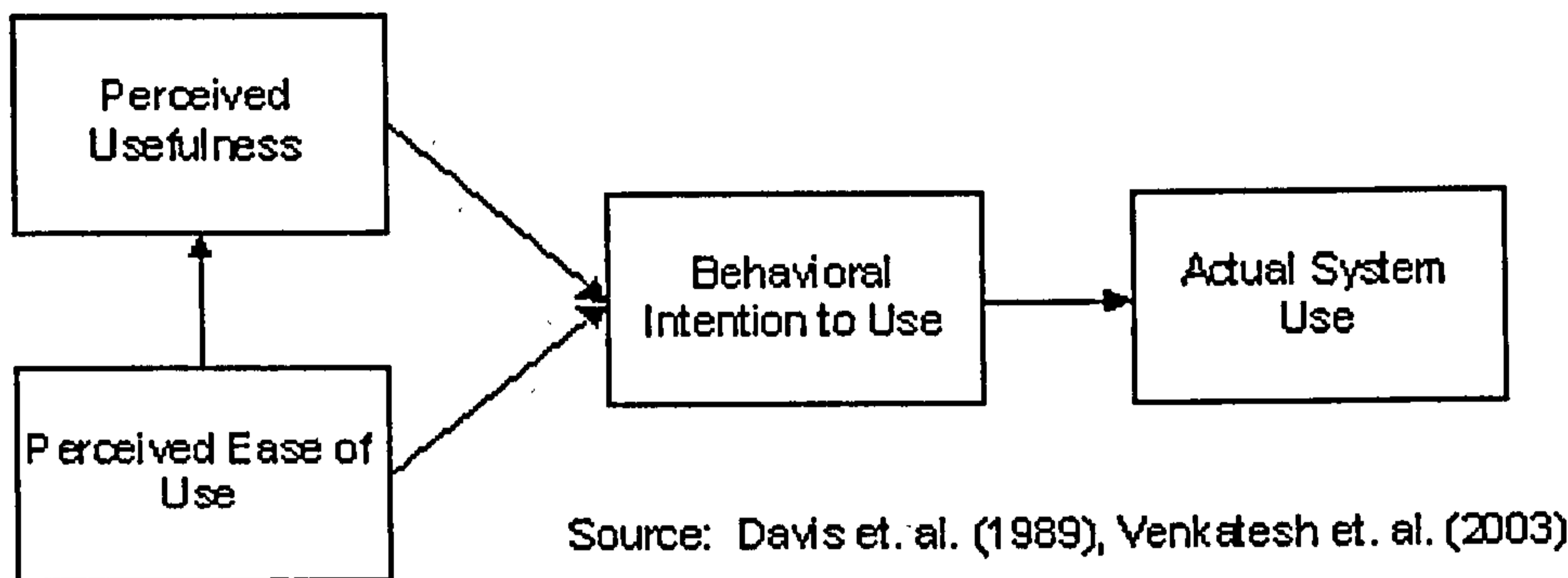


Fig.2.4: Original diagram of the Technology Acceptance Model (Davis, 1989)

Karjaluoto et al. (2002) applied and validated the original TAM model in their study of factors that affect customer attitudes toward Internet banking in Finland. However, Wang et al. (2003) and Eriksson et al. (2005), studying customer acceptance of Internet banking in Taiwan and Estonia respectively, found that '*trust*' was an additional variable that posed a remarkable influence on user willingness (or reluctance) to engage in online banking. Their findings not only confirmed the earlier assertions by Hoffman et al. (1999:p80) and Friedman et al. (2000:p39) that *trust* was also a necessary determinant of customer intention to adopt or not adopt the Internet technology, but also initiated questions about the comprehensiveness of the TAM model.

In addition, while studying the effects of *trust* on customer acceptance of Internet banking in South Korea, Suh and Han (2002) also validated the two components of TAM as antecedents of customers' trust. In this case they conceived the customer's placement of *trust* in the channel as the behaviour, rather than a behavioural antecedent. Nonetheless, owing to its great flexibility in accommodating other potential variables, the scholars pronounced TAM as the most widely used behavioural model for explaining factors that impact upon user acceptance of

information technology systems. A few other scholars thus applied the TAM model in their studies of Internet banking adoption but with additional intervening variables in the form of customer and/or web-channel characteristics.

Pikkarainen et al. (2004:p227) extended the TAM model by adding four other variables to the original two, including '*Perceived Enjoyment, Information on Online Banking, Security and Privacy, and Quality of Internet Connection.*' The scholars hypothesised the six factors as determinants of customer acceptance of online banking in Finland, but their factor analysis results indicated that only the first five factors significantly influenced the respondents' adoption behaviour while the last one (Quality of Internet Connection) did not have any impact on customers' Internet banking adoption.

Lastly, Lassar et al. (2005:p180) also used an extended version of TAM in their study of American customers' innovativeness and personal characteristics in adopting online banking. The extra variables they added to the model were *opinion leadership* in Internet processes and issues, customers' *opinion seeking behaviours, web experience, and intensity/length of web usage* (involvement). Others were customers' *comfort with the Internet technology, purpose of usage* ("utilitarian" or "hedonistic use") and personal demographic characteristics like *age, gender, household income, and level of education*. Surprisingly, and contrary to previous research findings elsewhere, four of the variables did not affect the e-banking adoption process among the US respondents, including customers' *comfort with the Internet technology, length of web usage, age of the customers and level of education* of the customers (ibid:p190). All the other variables significantly influenced Internet banking adoption among the respondents.

## **2.4 Gaps in the Adoption Literature:**

Most technology adoption scholars have tended to accept the idea that most adoption behaviours are rational and therefore based on the individual's *volition*, as proposed by Ajzen and Fishbein (1975; 1980). The concept of the individual's *volition* has therefore been entrenched in most of the theories earlier discussed in section 2.3, including the TID and TAM. However, with regard to *attitude-intention-*

*behaviour* relationships in technological innovations adoption, this study has identified two conceptual issues as gaps in the adoption behaviour literature which negate the role of *volition* in the behavioural propensities of individuals towards technology adoption. The first gap relates to *an individual's occupational/vocational training*, while the second is *the ever-shifting scope of modern technology applications*. Both of these concepts are contextual variables that are likely to negate or eliminate *volition* in the behaviour of individual adopters of new technologies.

In addition, the study has also identified a third gap in the technology adoption literature which relates to how scholars have studied antecedents of customer attitude/intention towards technology adoption before now. Most consumer behaviour scholars in the area have tended to concentrate on the effects of consumers' perceptions of the technological process or channel on their attitudes towards its adoption. There is therefore the general tendency in most of the existing models to illustrate only the quality, features and characteristics of the technological channel (e.g., the characteristics of the Internet banking channel) as the prime determinants of *customer attitude* and *intention* towards its adoption, while the preparedness of the individual for the adoption of the technology has been largely neglected. The three theoretical gaps are discussed in detail in the following three subsections. However, only the third gap mentioned above is directly pertinent to the present research and has therefore been synthesised into the conceptual framework of the study (see section 5.3 on page 115).

#### **2.4.1 Occupational/vocational training as a contextual negator of *volition* in technology adoption behaviour:**

Most extant theories involving the adoption and diffusion of innovations uphold the concept of *personal volition* and *volitional control* in the adoption behaviour of human beings (see Ajzen and Fishbein, 1980:p5). *Volition* implies that an individual's adoption of a new product, service, idea, or technology depends on his or her personal feeling, desire, wish, choice, preference, conscious decision, and rational intention to adopt or not adopt the innovation (Tan and Teo, 2000; King and Gribbins, 2002; Pavlou and Chai, 2002; George, 2004).

However, a few moderating variables were identified in some of the models as enhancers or inhibitors of the adoption behaviour. These include the social normative influences on the individual and perceived action consequences (in the TRA); the control which the individual has over the behaviour and the resources available to perform the behaviour (in the TPB); the awareness, interest and knowledge about the innovation (in the TID); the perceived usefulness and perceived ease of use of the innovation (in the TAM), plus the perceived convenience, security of using the innovation, and the available information on the usage of the technology (in the extended versions of TAM). It is generally accepted that none of these moderating variables eliminates the *volitionality* of the individual's behaviour.

Nonetheless, in the context of technological innovations, the above models seem to have over-looked the fact that *occupational* or *vocational trainings* may in fact negate and eliminate the concept of *volition* in technology adoption behaviour by making it obligatory for an individual to adopt a particular technology, regardless of his or her personal preference or desire. A priest, a coal miner, truck driver, a plumber, or a hair dresser does not have any occupational obligation to use a computer. He or she may decide to use it or not use it, based on his/her personal desire, preference or volition. But a modern day pilot, accountant, printer, publisher, engineer, banker, or general medical practitioner affiliated with the NHS has no choice but to adopt and use the computer, whether he/she likes it or not. In fact, the issue of volition becomes irrelevant as the individual is virtually "compelled" by his or her profession/vocation to use the technology.

The adoption behaviour is thus not based on *personal volition*, but on *occupational* or *vocational obligation* and *training*. The adoption itself is dictated *ab initio* by the training the person receives for the occupation or vocation. It is part and parcel of the skills and qualifications required for the occupation or vocation, without the option of personal preference or desire. In these modern-technology diffusion contexts, therefore, the *occupational training* negates the element of *volition* with regards to computer and Internet adoption behaviours. This researcher thus argues that *occupational/vocational training* should be recognised as an important variable that implicitly influences adoption behaviours in the context of computer and Internet technologies.

#### **2.4.2 Shifting scope of technology applications as a contextual negator of *volition* in technology adoption behaviour::**

Over the years, various technologies have initially been developed with specific uses and tasks in mind. But as time went by, their applications have kept changing and expanding to include other uses and the performance of other tasks. The computer is a typical example. The very early computers had been invented as super counting machines for calculating complex numerical figures. Over the years, the functions of the computer have come to include data processing, information recording, accounts keeping, graphic design, engineering design, architectural design, aeroplane piloting, flight management, ship navigation, games simulation, animation, word processing, publishing, statistical analysis, information dissemination, film production, broadcasting, and many more.

The Internet was developed in the late 1980s as a global network that could enable computers all over the world to access and communicate with each other on a public basis. According to the BBC, precisely on 6<sup>th</sup> August 1991, “the web went world wide” (Ward/BBC, 2006). The advent of this global public network has broadly shifted the applications of the computer technology into numerous aspects of human endeavour previously unanticipated. Peoples of all walks of life now find that they must use the computer and Internet in practising their professions, carrying on their jobs, doing their businesses, playing all sorts of games, communicating officially in various organisations, interacting with their loved ones, and especially in purchasing numerous products and services daily. The shifting scope of this monster technology therefore “compels” people not only to adopt the innovative processes that have emanated from its inception, but also to keep on updating their skills and adopting new convergent innovations that spring up from the root technology every now and then.

Thus, the *shifting scope of technology applications* affects the adoption behaviours of users by negating their *volition* when more new processes, applications and purposes are created, which they must keep up to date with. For instance, in the late 1980s when the personal computer was a little more than an electronic typewriter

or page setter with the popular WP51 programme, most companies first bought them for their secretaries in replacement of the electronic typewriters. Not many other categories of workers thought much of its adoption. Little did anyone know then that it would be used today by the graphic artist, the accountant, the doctor, the former stenographer, the house wife, the student, and even youngsters and children who use the PC to play numerous computer games today. Besides, the convergence of mobile phones, television, and radio with the Internet is producing even more shifts in applications, which individuals still have to keep up to date with. In view of the above trend, this researcher argues that the *changing scope of technological applications* also constitutes a negator of volition in technology adoption behaviour.

#### **2.4.3 Consumers' own readiness as a factor in the adoption of a new technology:**

As aforementioned, most of the existing models on technological innovation implementation, including Davis' (1989; 1995) TAM and Rogers' (1983; 1995) Theory of Innovation Diffusion (TID), have tended to examine only how the characteristics of the technological process or channel affect an individual's perception and attitude towards adopting it, and have ignored the individual's own state of readiness for adopting the technology. Even the Service Quality (SERVEQUAL) model and all its variants fall foul of this lopsidedness. Their primary focus seems to be only on evaluating the features and quality of the technological channel (i.e., its *readiness* for being adopted), while ignoring the fact that the individual faced with the adoption decision also needs to be ready and able to use the technology before adopting it. As a result, these models have overlooked the need to examine the individual's own personal characteristics as prerequisites for technology adoption as well.

For instance, the TID model presents three channel-related variables including complexity (i.e., ease of use), compatibility (i.e., usefulness) and relative advantage (i.e., benefits) as the only determinants of innovation adoption (see figure 2.2 on page 36). Similarly, the TAM theory proposes two channel-related variables (perceived usefulness and perceived ease of use) as the only antecedents of customer *intention* to use technology (see figure 2.4 on page 42). Many scholars in the area (except

Karjaluoto et al., 2002; Kolodinsky et al., 2004; Lassar et al., 2005; and a few others), have either adopted one of these two models verbatim or have added more *channel-related* variables to create their own variations of the models.

By so doing, they have also fallen into the same flaw of ignoring the need to equally evaluate the *customer's own readiness* for technology adoption (e.g., see Hamilton and Hewer, 2000; Tan and Teo, 2000; Suh and Han, 2002; Bradley and Stewart, 2002; Gerrard and Cunningham, 2003; Pikkarainen et al., 2004; Waite and Harrison, 2004; Cheng et al., 2006; and Durkin, 2007b). Apart from enumerating the demographics of their respondents and using that to classify them according to their level of technology adoption, none of the scholars has actually modelled a separate set of *customer-related* factors as evaluative variables that can determine customers' own *readiness* for adopting the new technology channel.

The present study therefore argues that the quality, features and characteristics of a new technology channel (i.e., *channel readiness* variables) are not the only factors that can affect an individual's *attitude* and *intention* towards the adoption of a technology. The study proposes that some customer personal characteristics and circumstances (i.e., *customer readiness* variables), such prior level of technology involvement, usage knowledge, skills and experiences, as well as access to computer and the Internet, constitute another vital set of factors that equally influence the individual's *attitude* and *intention* towards new technology adoption. It is therefore the position of this study that both the *channel-related* and *customer-related* categories of variables, as modelled in the present study, constitute the twin-determinants of customers' *attitudes* towards IB adoption which, in accordance with Ajzen (2005), influence their *intention* to adopt or not adopt.

## 2.5 Summary:

This chapter has introduced and discussed various behavioural concepts relating to human adoption of new products, services and technologies. Drawing from Psychology and Social Psychology literature, the initial concepts discussed included *attitude*, *intention* and the actual *behaviour*. Also discussed were the conceptual meanings, uses and benefits of the *Internet technology* as an *innovation*, especially in the consumer behaviour context of Internet banking adoption.

Furthermore, the chapter reviewed the various *theories* concerning the *behavioural acceptance* of innovations and technologies by individuals. A range of models developed and extended by different scholars for studying the adoption of new products, services and technologies were examined and related to the Internet context. In order to establish the relevance of the models to this research, a number of studies of customer adoption of Internet banking in various parts of the world which applied some of the models discussed were also reviewed.

Two important constructs, including *occupational obligation* and the *shifting scope of modern technology applications*, were identified as gaps in the technology adoption behaviour literature. They were explained as contextual variables that can dictate or change an individual's technology adoption behaviour by eliminating the concept of personal behavioural *volition*. Lastly, a third gap, customers' own readiness for technology adoption, was also found in the literature and has been proposed as a necessary factor that can also affect customer *attitude* and *intention* towards technology adoption. This factor has been incorporated into the conceptual framework of the present study (section 5.3 on page 115).



# **CHAPTER 3:**

## **CONSUMER ADOPTION OF INTERNET-BASED RETAIL BANKING:**

### **3.1 Introduction:**

In the previous chapter, an interpretation of the theoretical meanings and applications of key concepts of the research was made, including behavioural concepts such as *attitude*, *intention*, and *behaviour*. These concepts were reviewed in relation to online consumption behaviours. Other conceptual interpretations made also included *Internet technology* and *technological innovations diffusion*. Various behavioural theories and adoption models relating the above concepts to various consumption behaviour contexts were also reviewed, with particular attention to Internet usage behaviours of customers in the banking industry.

Going forward then, the main objective of this third chapter is to review in detail the evaluative tendencies of retail banking customers with regard to their perception, intention and the actual adoption of Internet banking as an electronic service delivery channel. First, the chapter will undertake conceptual interpretations of *retail banking* and *Internet banking*. The review of these two concepts will highlight the similarities and differences between *online* and *offline* retail banking service channels. Following these explanations, the chapter will review the extant literature on customer adoption behaviours towards *Internet banking*, with the objective of identifying and isolating *customer-related* and *channel-related* factors that have affected retail customer adoption of Internet banking in various parts of the world since its inception in 1995.

## **3.2 Conceptual Interpretations:**

Together with the *adoption* concept already discussed in chapter two, *retail banking* and *Internet banking* are the key concepts related to *online consumer behaviour* in the banking sector. Being specialised terminologies, the meanings of these concepts need to be well understood in order to be clear about their usage in this study. The following two subsections will therefore briefly clarify them, while the third subsection will draw all four concepts together for a clearer understanding of the context in which retail banking customers' adoption of Internet banking is being examined in this study.

### **3.2.1 The Retail Banking Concept:**

Retail banking is banking targeted at individual customers, couples, families, non-profit societies, charities and such small businesses, as against wholesale banking, which is targeted at big businesses, large corporations and government organisations. Retail banking was traditionally provided by commercial banks prior to 1990. According to Kohn (2004:p128), the concept of commercial banking is changing rapidly as both the nature of banking and the structure of the financial services industry in general have changed drastically in the last 25 years. With the deregulation and liberalization of the financial services industry in many countries (Ramayah et al., 2006), coupled with the rapid advancements in technology application in banking, most commercial banks, investment banks, trust banks, merchant banks, mortgage banks, chartered banks, and other previously non-bank financial institutions are now offering both retail and wholesale banking services at varying degrees around the world (Buckle and Thompson, 2004:p55). They have all transformed their operations into the *universal banking* business model, whereby each financial firm is now "free to engage in any form of financial activity" (Kohn, 2004:p132).

However, banking customers are still broadly categorised into two, retail customers and corporate (wholesale) customers. According to the scholars, retail (or consumer) banking reflects the original concept of what banks were traditionally set up to do - taking in deposits, packaging them and giving them out as loans - but it is at “the large-volume, low-value end of the business.” Wholesale or corporate banking, in contrast, occupies the small-volume, large-value end of the banking operations (Buckle and Thompson, 2004:p56).

Furthermore, retail customers’ maintenance of individual bank accounts is usually for the purpose of making deposits, receiving salaries, paying domestic bills and taxes, making withdrawals, transferring personal funds, taking out personal or small business loans and overdrafts, using credit/debit card services, and making or receiving payments for purchases and bills using direct debits and electronic funds transfer (Moore, 2000:p30). Depending on the retail customers’ volume of deposits, banks sometimes offer to place their funds in various types of small investment accounts that would yield interest for them over a certain period.

Consumer deposits were rediscovered by large banks in the early 1980s when these banks realised that their over-dependence on money market deposits was wrecking them because the “hot money” from the money markets was “easy to get and easy to lose” (Kohn, 2004:p 155). Many banks then turned back to wooing retail customers by selling stocks, bonds and mutual funds to them for their small time deposits, which would usually not mature until after several years. This way, banks began to enjoy another source of stable funds, while customers enjoyed better interest rates as both banks and investment brokers struggled for their patronage (ibid). In offering retail or consumer banking services, banks also act as intermediaries among all banking customers. Buckle and Thompson (2004:p58) note that the traditional role of banks has been to provide intermediation by way of receiving money from customers (deposits) and also paying out money to customers (withdrawals, loans and overdrafts). In doing this, they have to keep up with singular transactions of numerous individuals and groups day by day.

Before the advent of electronic service delivery channels, these transactions used to take place daily in the banking halls of each bank's several branches, very much like the retail transactions in a superstore. Banking was tedious and cash handling was labour-intensive and costly, especially in countries with large growing populations (Burton, 1994:p69). The need for automation was very glaring, and so when computerisation and electronic payment technologies came up, they were overwhelmingly embraced by the retail financial services industry in many countries. Presently, the scope of financial services offered by banks and non-bank financial institutions is extremely vast with very many participants in the industry, both in developed and developing countries. Moore (2000:p42) observes that despite the number of players and the sheer size of the industry in most countries, everyone is striving to achieve the same goal. They are all seeking to be "customer-centric," aiming for the highest level of retail customer service quality, attentiveness and operational efficiency. The above is an overview of *retail banking* as implied all through the present study.

### **3.2.2 The Internet Banking (IB) Concept:**

Liao et al. (1999:p63) and Moore (2000:p56) describe Internet banking (IB) as the provision of banking transactions via the Internet. They illustrate it as the process of carrying on normal banking operations over the Internet, enabling customers to acquire the daily banking services they need by using Internet-enabled personal computers from their homes or workplaces without going to any bank branch. High-street "brick and click" banks (Kolodinsky et al. (2000:p180) as well as virtual banks (those that exist only on the Internet) offer Internet-based transaction opportunities that extend "borderless" banking services to areas and regions not previously covered (Jun and Cai, 2001; Gopalakrishnan et al., 2003; Perumal and Shanmugam, 2004).

Tapping into the capabilities of the Internet, banks worldwide are now using “remote technological channels” (Durkin, 2007b:p219) to provide customers with innovative, real-time, online, and convenient modes of transactions from the comfort of their homes and workplaces. Since the turn of the new millennium, retail banking has moved rapidly to a stage that now enables customers to make their choices of service delivery channel(s) from several electronic options, including Internet banking (Moore, 2000:p16). The days of transacting only at the bank branches are gone.

However, some scholars have argued that even by simply having a non-interactive website to inform customers about its financial products and services, a bank could be said to be engaged in Internet banking. For instance, Daniel (1999), asserts that in its basic characterisation, Internet banking simply entails banks providing information about themselves and their financial products via their worldwide web sites. Nonetheless, it should be understood that the characterisation of Internet banking from a bank’s perspective depends on what stage or level of Internet technology adoption the bank is at. In his model of banks’ Internet adoption stages, Diniz (1998) spells out three distinctive phases of Internet banking implementation by financial firms, including *basic*, *intermediate*, and *advanced* stages (see table 6.3 on page 136). Obviously, financial institutions in various countries are at different stages of Internet banking implementation. Therefore, Internet banking should be conceptualised basically as the use of the Internet channel by a financial institution to *communicate* with its customers, irrespective of whether the communication is relational or transactional or both. This is the context in which *Internet banking* is being examined in the present study.

### **3.3 The Process of Customer Adoption of Internet Banking:**

Recognising that not all customers might like to transact online with them, most banks maintain parallel online and offline (click and brick) banking operations with a separate secured database of their online customers. A customer’s initial adoption of Internet banking therefore often involves a process whereby he or she has to specifically register for online banking in order to be added to the bank’s database

of online customers. It is usually assumed that the individual already has access to a personal computer with Internet connection and, of course, is able to use the computer and the Internet, both of which are necessary for using Internet banking services. Completing the Internet banking registration usually involves the customer filling out a form and providing details about himself or herself. Often times, the prospective online customer would already have been a regular offline customer of the bank before applying to become online customers (Sciglimpaglia and Ely, 2002:p8), but this is not always the case presently. Many young people opening their first bank accounts nowadays have the opportunity to open an Internet banking account straight away.

Taking the Royal Bank of Scotland (RBS) as a typical example: Apart from his or her personal offline account details already with the bank, a new online banking applicant also has to provide a personal identification number (PIN) of not more than 4 digits. In addition, he or she also has to provide 6 digits out of a 10-digit customer account number, while the bank will send the remaining 4 digits to him/her in an approval letter by post. Receiving the full 10-digit customer number with a temporary activation password indicates that the new bank account now exists online and can be activated for online transactions. Activation entails entering the account number, PIN number and temporary password successfully online, and then replacing the temporary password with a permanent one of about 10 to 20 digits (RBS, 2008).

For security purposes, every subsequent time the customer wants to log into his or her online account, he/she has to first enter the 10-digit customer number in a panel provided for it on the first IB web-page. Then the bank will separately request for 3 random numbers out of the 4-digit PIN and another 3 random numbers out of the 10-20 digit password. This three-stage security procedure is aimed at ensuring that the person logging in is the actual owner of the account. There is also a time-limit to the entry of the requested digits. If each entry is not made within the time-limit, the web-page will expire (*ibidem*). The above adoption procedure is fairly similar to that of most other online banking service providers.

Some customers spoken to informally during this research say they find this procedure reassuring in terms of the security of their transactions, but a few others say they find it a bit too cumbersome. A few other individuals have even registered for online banking but abandoned it, not having used it in several months. The stringent registration and logging-in procedures might therefore have been responsible for many customers' reluctance to adopt Internet banking. However, the need to ensure absolute security of Internet banking transactions undoubtedly is of paramount importance, especially in the virtual transaction situation where neither the banker nor the customer is physically present in one place. The following subsections will examine the *behavioural process* that characterises the retail customer's adoption of Internet banking and also illustrate what would constitute *readiness* for adoption from the perspective of both the customer and the banking web-channel.

### **3.3.1 The *Attitude-Intention-Behaviour* Relationship in the Process of Retail Customer Adoption of Internet Banking:**

The psychological process underpinning a customer's adoption behaviour towards Internet-based retail banking typifies Ajzen's (2005:p30) concept of the roles of *attitude* and *intention* as essential antecedents of *behaviour* in the Theory of Planned Behaviour (TPB). According to the scholar, both *attitude* and *intention* are the major ingredients for measuring and predicting *behaviour* (ibidem). However, a new customer's initial adoption behaviour is usually preceded by his/her *awareness* of the Internet banking opportunity as well as the required resources and procedure for using online banking services (Suganthi et al., 2001; Sohail and Shanmugam, 2003).

After becoming aware of the IB opportunity and benefits, the new customer may try out the process by completing the registration procedure outlined above. However, it must be noted that *registration* is not adoption. As earlier noted, IB adoption means full and regular usage of the online channel. A customer's trial during

the first few times of usage will help him/her to gauge how comfortable he or she is with using it, including his/her perception of the benefits and shortcomings of the new process. Again, it must be noted also that even *trial* in this sense does not amount to adoption. Kolodinsky et al. (2004: p242) argue that *trial* is only an early step in the evaluation of the new system before adoption. According to the scholars, “the easier e-banking is to try out, the greater the likelihood of adoption”.

During *trial*, the new customer’s perception of the benefits and shortcomings of the Internet banking channel reinforces or changes his/her *attitude* (positive or negative) towards the new process, depending on whether the benefits outweigh the shortcomings or vice versa (Kolodinsky et al., 2004). As the customer continues this *trial* phase of IB usage, his or her impression of the efficacy of the new system forms into an *attitude* towards it, which also leads to the formation of an *intention* to continue or not continue to use the new channel. In line with Ajzen’s (2005) TPB theory, the *intention* ultimately leads to the customer’s actual *behaviour* of full regular usage (adoption), partial/infrequent usage (partial adoption), or complete discontinuance (non-adoption) of the IB channel.

To sum up, therefore, the present study assumes that if the prospective online customer’s *trial* is successful, in that the IB channel is found to be beneficial, it will lead to the development of a positive *attitude* towards adopting the channel, which will also initiate the person’s *intention* to fully adopt it. The *intention* thus formed will finally give rise to the actual *behaviour* of full, continued and regular usage (adoption) of the IB channel. This *attitude-intention-behaviour* relationship is the core psychological process underpinning the cross-national investigation of retail customer adoption of Internet banking in the present study.

### **3.3.2 Customer Readiness for Internet Retail Banking Adoption:**

In the context of this study, *readiness* has been conceptualised as the state of preparedness for IB adoption. Hence, *customer readiness* means the customer’s state of being not only *willing* but also *able* and *prepared* to register and continue to use Internet banking. A customer’s *willingness* reflects his or her psychological state of



shedding off any reluctance towards the adoption idea. He or she becomes keen to try out the Internet banking channel. However, the position of the study in conceptualising *customer readiness* is that only the idea of being *willing* to use the channel is not enough to make a customer adopt Internet banking. He or she must also possess the *ability* to do so. *Ability* reflects the customer's conscious acquisition of the requisite knowledge, aptitude, technical skills and experience necessary for using the technology-based banking channel.

As a result, the *customer readiness* concept has been synthesised in the present study by harnessing the demographic and attitudinal characteristics of the customer which can affect his or her adoption capability. The customer's *ability* to try out and to use the IB channel continually is therefore essential for adoption to take place. Moreover, the factors which affect both the *willingness* and the *ability* of the customer to use the channel must be addressed in order to advance the adoption process. This study has identified the lack of evidence of dealing with this issue as a gap in the existing literature. The necessity for assessing the customer's own readiness for IB adoption seems to have been largely ignored. This researcher therefore argues that the evaluation process which precedes Internet banking adoption must be bilateral. The individual's *readiness* to embrace Internet banking must be evaluated side by side with the *readiness* of the bank's web-channel, both being the twin-antecedents of the adoption process.

The above notion becomes clearer on the conjecture that both the prospective online banking customer and the web-based banking channel must meet certain fundamental criteria before the customer can fully adopt Internet banking. The criteria are intervening customer-related and channel-related variables which constitute the requisite antecedents of customer adoption of Internet banking. They have been hypothesised as the core of the theoretical framework of this study, the details of which are presented in chapters 4 and 5.

### 3.3.3 The Internet Banking Channel's Readiness for Customer Adoption:

A bank that seeks to provide effective Internet banking services to its customers must have a website that is *ready* for customer adoption of its online financial services. This is absolutely essential since the bank's website is the distribution channel through which the Internet retail banking services are offered. Eight variables have been identified from the literature as the primary features that could collectively qualify a bank's website as being *ready* for customer adoption of Internet banking. The web-based services must be *easy to access and navigate* by customers (Zeithaml et al., 2002). They must be simple enough for even the newest online banking customers to understand and use without finding any aspects intellectually perplexing or operationally cumbersome.

The bank website must also be characterised by *very fast processing* of the services provided, without causing customers unnecessary delays (Ibrahim et al., 2006). It is vital that the channel is time-saving and not time-wasting since that would be one of its main advantages over the (offline) branch channel. In addition, the web-channel must contain *adequate and relevant registration information* (Waite and Harrison, 2004) which explains to customers and prospects the functions, benefits, requirements and procedures of the online channel. This helps not only in educating the customers on how to register for the online services, but also in making more effective use of the services provided.

Furthermore, the web-channel must be made *safe and secure* for customers (Zeithaml, 2002:p137) by ensuring that all security risks have been minimised to the lowest level, if not totally eliminated. Research has shown that the risks of privacy infringement, identity theft and financial loss constitute the greatest concern of Internet banking customers around the world (Eriksson et al., 2005; Lichtenstein and Williamson, 2006). Internet banking institutions must therefore not only provide *adequate security assurances* on their websites but also install and continue to update their online fraud prevention systems to ensure that customers' transactions remain private, confidential and safe.

Obviously, banks that offer Internet banking services must ensure *customer convenience* in terms of *constant (24/7) availability* of the web-based banking services (Gerrard and Cunningham, 2003; Pew, 2002). System down-time must be completely eliminated such that the online retail banking services will be available to customers any time of the day or night and every day of the year. This way, the innovative service distribution channel will maintain its consonant accessibility via the Internet and worldwide web technologies. This study argues that if all these characteristics are possessed by the website of the Internet banking firm, the website will certainly qualify as being *ready* to attract customer adoption of Internet banking.

However, it is noteworthy that possessing these characteristics can only successfully attract customer adoption of Internet banking if the customers are able to perceive them. The banks must therefore make the characteristics quite perceptible to customers by packaging and positioning them as assets for maintaining competitive advantage and operational efficiency (Awamleh and Fernandes, 2005) and also by giving them adequate awareness, visibility and promotion in their marketing communications campaigns. Details of all the web-related intervening factors are discussed in chapter four.

### **3.4 Summary:**

In the foregoing chapter, the concepts of retail banking and Internet banking were elucidated. The process of customer adoption of the Internet banking was also illustrated. Particular attention was paid to the *attitude-intention-behaviour* relationships in the adoption process. In addition, the notion of *customer readiness* and *web-channel readiness* as twin-antecedents of customer *attitude* to Internet banking adoption was also espoused in the chapter. The two concepts were argued as the essential categories of intervening factors that can affect retail customers' *attitude* and *intention* towards Internet banking channel adoption. The next chapter discusses those intervening factors in detail.

# CHAPTER 4:

## FACTORS THAT INFLUENCE CUSTOMER ADOPTION OF INTERNET-BASED RETAIL BANKING:

### 4.1 Introduction:

The last chapter presented a review of conceptual interpretations of retail banking, Internet banking and the process of customer adoption of Internet-based retail banking. The chapter also introduced the concept of both the customer's *readiness* and that of the web-channel for IB adoption, as well as the attitude-intention-behaviour relationships that underpin the adoption process.

In this chapter, a comprehensive review of factors that have influenced Internet banking adoption in various parts of the world since its inception in 1995 is presented. As shown in appendices 1A and 1B and on tables 4.1 to 4.3 below, 106 empirical studies published in the area of customer adoption of Internet banking between 1997 and 2008 were reviewed in this research. From these studies, 25 intervening factors which have affected Internet banking adoption around the world were identified and extracted. The factors have been classified here into two broad categories as listed out in figure 4.1 below, including 17 *customer-related factors* and 8 *channel-related factors*. A third category, *Environmental factors*, was identified from informal discussions with colleagues and some banking customers in Scotland and Nigeria while designing this research.

The *customer factors* consist of a host of demographic and attitudinal characteristics of individual customers which have affected IB adoption decisions in various parts of the world since its inception. *Channel factors* consist of the features and characteristics of the Internet banking website which have also influenced IB adoption decisions in various parts of the world since inception. Likewise, the *environmental* category comprises infrastructural and policy factors that might also have affected IB adoption in some countries. Very little has been published about this third category, but *availability of infrastructure* and *communications policies* were the two environmental factors mentioned in the various discussions.

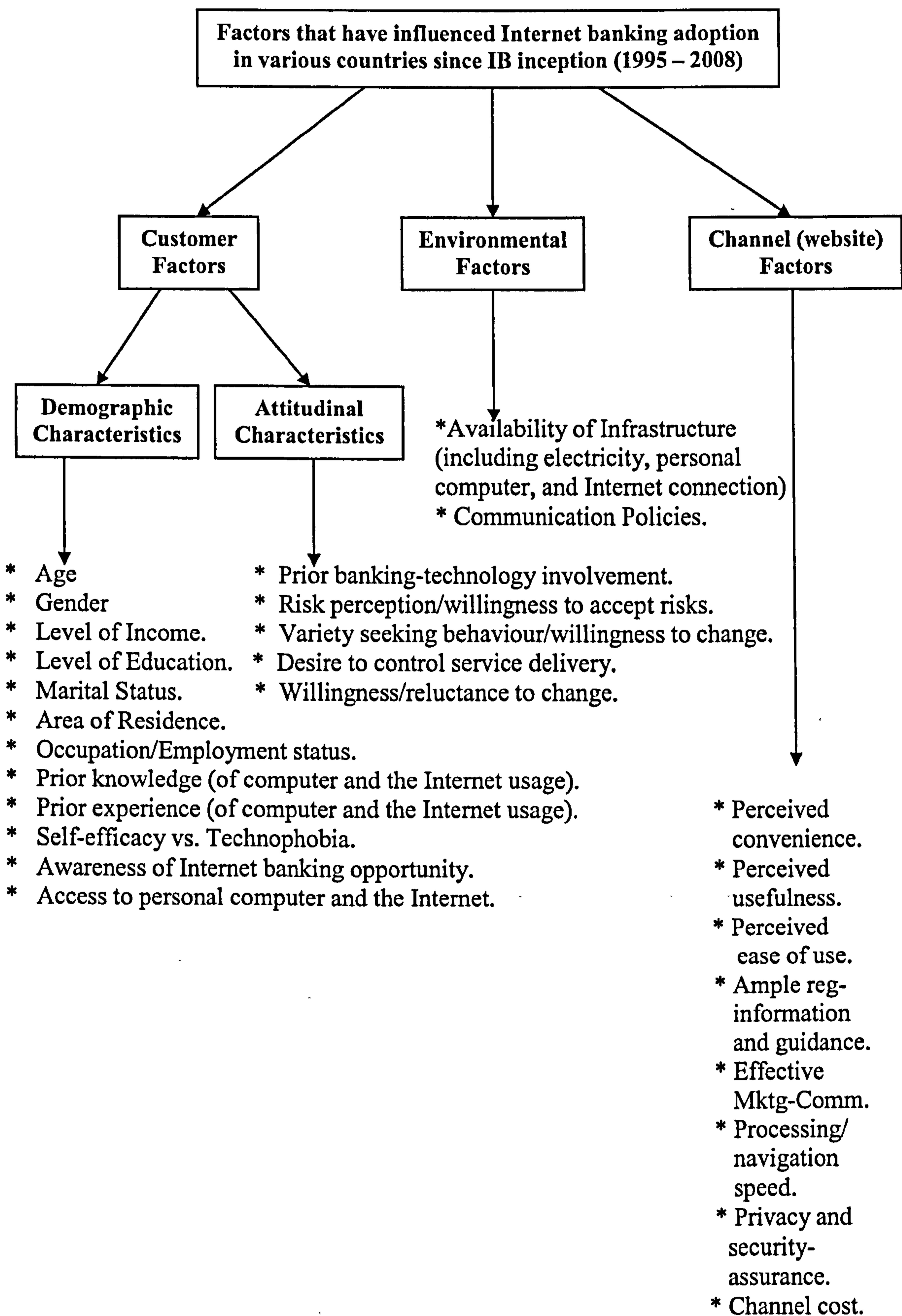


Fig. 4.1: Factors identified from the extant literature as antecedents of customer adoption of Internet banking. (Sources: the reviewed literature. See tables 4.1a, 4.1b, 4.2, 4.3 and appendices 1A & 1B)

The main aim of this chapter is to review the frequency of occurrence and influence of all the above factors identified from the extant literature published between 1997 and 2008 (see appendices 1A and 1B). The most consistently recurrent ones among them will then be isolated for further investigation in this cross-national research. In line with the research objectives, the isolated factors will be modelled for validation in the present study as the potential *universal antecedents* of retail customer adoption of Internet banking anywhere in the world, irrespective of cultural, economic and technological differences. The following subsections will review the existing literature with regards to how the factors have influenced IB adoption in various parts of the world since its inception in 1995.

## **4.2 Customer-Related Factors:**

Quite a number of scholars in various national contexts have identified and studied the influence of certain demographic and psychographic characteristics of banking customers on their service adoption behaviours in general (see appendices 1A and 1B). A few have also focused on Internet banking adoption behaviours. For effective review, these customer-related factors have been classified into two categories, including customer *demographic* characteristics and customer *attitudinal* characteristics. Only a few of the existing studies on Internet banking adoption behaviours are focused on these personal attributes of the customer (Sciglimpaglia and Ely, 2002). The impacts of the variables are reflected by the Internet banking adoption trends, as shown in the summaries of the literature presented in tables 4.1a and 4.1b below, as well as by their recurrence in the various empirical studies published over the years in the area of retail customer adoption of Internet banking, as shown in appendices 1A and 1A and on table 4.3 (page 85).

**Effects of customer personal characteristics on IB adoption trends:**

FACTORS	INFLUENCES & OUTCOMES	SOURCES
<b>CUSTOMER FACTORS:</b>		
<b>(A) Customer Personal Characteristics:</b>		
Age	Young and middle-aged adults, 25 to 49, mostly adopt Internet banking.	Barczak et al. (1997); Sathye (1999); Jayawardhena and Foley (2000); Karjaluoto et al. (2002); Jamal and Nassar (2002); Howcroft et al. (2002); Mattila et al (2003); Kolodinsky et al. (2004); Akinci et al (2004); Lassar et al (2005); Wan et al. (2005); Shergill & Li (2005); Ilett (2005); Laforet & Li (2005); Lichtenstein & Williamson (2006); Awamleh and Fernandes (2006); Amin (2007); Durkin (2007b); Hernandez and Mazzon (2007).
Gender	Little difference between male and female adoption pattern. No consensus among researchers. Ilett (2005) reports that gender is no more of consequence in the UK at all.	
Level of Income	Higher income earners are more likely to adopt internet banking than lower income earners.	
Level of Education	Mostly college/university graduates and professionals adopt internet banking.	
Marital Status	Young, married couples tend to adopt Internet banking more than single individuals.	
Area of Residence	Urban/city dwellers tend to adopt Internet banking more than suburban/ rural dwellers.	Laforet and Li (2005); Lichtenstein and Williamson (2006); Srivastava and Srinivasan (2007); Poon (2008) Polasik & Wisniewski (2008).
Occupation /Employment status	Adoption rate tends to be highest among people in professional and higher level occupations. Also, those in self and permanent employments tend to adopt more than part-time employees and the unemployed.	
Prior Knowledge/Experience of computer and Internet usage.	Prior knowledge and experience of computer and Internet usage are crucial facilitators of Internet banking adoption.	Li et al. (1999); Sathye (1999); Tan & Teo (2000); Thornton & White (2001); Chung & Paynter (2002); Wungwanitchakorn (2002); Polasik & Wisniewski (2008).
Technophobia vs. Self-Efficacy	Individuals who are overwhelmed by the complexities of computer and internet technologies usually have a low level of self-efficacy, innovativeness and confidence, which inhibits their adoption of Internet banking, and vice versa.	Mitchell (1994); Tan & Teo (2000); Thornton & White (2001); Thatcher & Perrew (2002); Lassar et al. (2005); Lichtenstein and Williamson (2006); Floh and Treiblmaier (2006); Amin (2007); Hernandez and Mazzon (2007); Aldas-Manzano et al. (2008).
Awareness of the Internet banking opportunity and its benefits	Customers' level of awareness regarding knowing, being sure, or not being sure whether their banks offer Internet banking was also found to have affected adoption in some countries. This borders on availability or lack of effective communication/information from financial firms.	Suganthi et al. (2001); Sohail and Shanmugam (2003); Kuisma et al. (2007); Laukkanen et al. (2008).
Access to computer and the Internet.	People who have regular or permanent access to personal computer (PC) and the Internet at work or home are more likely to register for Internet banking than those who do not.	Durkin (2007b); Hernandez and Mazzon (2007); Kuisma et al. (2007); Poon (2008); Polasik & Wisniewski (2008).

Table 4.1a: Effects of retail customers' personal *characteristics* on their adoption of Internet banking (Sources: the reviewed literature. See appendices 1A and 1B).

### Effects of personal attitudes on IB adoption:

(B) Customer Attitudes:	INFLUENCES & OUTCOMES	SOURCES
Level of prior banking-technology involvement.	Individuals who have very low level of prior technology involvement (including banking-technology) and/or low level of prior banking involvement in general will be more unwilling to adopt IB. Conversely, individuals with high technology involvement and a larger volume of prior banking activities tend to be more willing to adopt internet banking.	Ramsay and Smith (1999); Jayawardhena and Foley (2000); Chung and Paynter (2002); Liao and Cheung (2002); Wungwanitchakorn (2002); Magi (2003); Seethamraju (2004); Lassar et al. (2005); Maenpaa et al. (2007); Polasik and Wisniewski (2008).
Level of prior banking activities involvement.		
Risk Perception & level of risk acceptance	Risks associated with online identity theft, privacy encroachment and confidential information disclosure constitute the biggest obstacle to Internet banking adoption. People with higher levels of risk acceptance tend to adopt Internet banking more readily than those with lower levels. Risk is seen more as a consumer's attitudinal sensitivity than an attribute of the channel (Laukkanen et al., 2008)	Sathye (1999); Black et al. (2002); Chung and Paynter (2002); Munene et al. (2002); Fock and Koh (2006); Lichtenstein and Williamson (2006); Berger and Gensler (2006); Srivastava and Srinivasan (2007); Laukkanen et al. (2008).
Variety seeking behaviour	The desire for change or to seek out and compare alternatives propels some individuals to try out the internet banking channel as a service usage option, and can then lead them to adopt Internet banking.	McAlister and Pessemier (1982); Magi (2003); Sathye (1999); Srivastava and Srinivasan (2007).
Service delivery control desire	The desire to control online interactions and service choices was found to be a strong affecter of Internet banking adoption intention among retail banking customers.	Daniel (1999); Ramsay and Smith (1999); Gunter and Braun (2001); Thornton and White (2001); Henry (2005).
Willingness/reluctance to change.	The willingness or reluctance of customers to make/accept changes (with regard to new service channels) also affects Internet banking adoption. Srivastava and Srinivasan (2007) conceptualised the reluctance as "inertia for change", bordering on unwillingness to try.	Suganthi et al. (2001); Wungwanitchakorn (2002); Sohail and Shanmugam (2003); Srivastava and Srinivasan (2007).

Table 4.1b: Effects of retail customers' personal *attitudes* on their adoption of Internet banking (Sources: the reviewed literature. See appendices 1A and 1B).



#### 4.2.1 Customer Demographic Characteristics:

As can be seen from table 4.1a above, the main demographic characteristics which some of the scholars reviewed found to have affected customer adoption of Internet banking in their respective countries include *age, gender, level of income, level of education, marital status, and occupation* (Karjaluoto et al., 2002; Jamal and Nassar, 2002; Eriksson et al., 2004; Lassar et al., 2005; Kolodinsky et al., 2004; Shergill and Li, 2005; Wan et al., 2005; Ilett, 2005; Durkin, 2007b; Hernandez and Mazzon, 2007). Some of the scholars also found *place of residence* and *type of employment* as influencers of customer intention to adopt Internet banking (Laforet and Li, 2005; Lichtenstein and Williamson, 2006). Yet a few other findings show that customers' *prior knowledge* and *experience* of computer and Internet usage as well as *access to computer and the Internet* are the most important determinants of Internet banking adoption (Thornton and White, 2001; Chung and Paynter, 2002; Hernandez and Mazzon, 2007; Kuisma et al., 2007; Polasik & Wisniewski, 2008).

For instance, in a study of Internet banking adoption in New Zealand, Chung and Paynter (2002) confirmed that customers' *lack of prior knowledge* and *experience* of the Internet was a major inhibitor of online banking adoption there. In their own research, Lichtenstein and Williamson (2006) also note that *technophobia*, a term first used by Mitchell (1994) in reference to an aversion to new technology, was culpable for customers' lack of self-efficacy and innovativeness. As a result, it was found to be the key inhibitor of customer adoption of online banking in Australia. *Technophobia* is a condition in which some individuals are confounded by the technological complexities of computerisation and the Internet. This usually leads to a low level of self-efficacy in the attitude to, and usage of, computers in general (Mitchell, 1994; Thatcher and Perrewe, 2002; Floh and Treiblmaier, 2006).

There seems to be no consensus among consumer behaviour scholars regarding the extent to which any of these demographic factors influence Internet banking adoption or the ones which could be regarded as universal determinants of customer adoption of Internet banking. This is probably because the results of many of the existing studies show conflicting effects of customer personal characteristics on Internet banking adoption in different countries around the world. For instance, while the studies of Li et al. (1999), Thornton and White (2001), Chung and Paynter (2002), Karjaluoto et al. (2002), Jamal and Nassar (2002), Kolodinsky et al. (2004), Shergill and Li (2005), and Lichtenstein and Williamson (2006) found varying evidences of the significant influence of *age, gender, educational level, income level, and prior computer/internet knowledge and experience* on customer adoption of Internet banking, Ilett (2005) reported of the Future Foundation research which found that *gender* presently has no significance in determining internet banking adoption in the UK.

In New Zealand, female customers were found to be more sensitive to the issues of privacy protection and ethical standards than men and this made them more reluctant to adopt certain Internet banking services (Shergill and Li (2005:p11). In contrast, the number of women using internet banking services in many European countries has become equal to that of men, and has thus invalidated the influence of *gender* on Internet adoption in the region (Nielsen NetRatings, 2002). This trend has been predicted to likely be the case in several other developed and developing countries in a few years time. Besides, in the developing countries, the population of women engaged in activities previously considered the exclusive preserve of men has been growing steadily over the years.

Furthermore, while Wan et al. (2005) found that *consumer demographics* had a marginal influence on Internet banking adoption in Hong Kong, Laforet and Li (2005) found no correlation between *level of education* and the internet or mobile banking adoption by customers in China. The scholars therefore concluded that *education* had no influence at all on customer adoption of Internet and mobile banking services in China. Elsewhere, while the study of Wan et al. (2005) shows that customer's "*type of occupation*" is a major determinant of banking channel adoption in Hong Kong, no other study has confirmed this finding. Instead, Jayawardhena and Foley (2000) and Karjaluoto et al. (2002) found that high or low "*level of occupation*" (rather than "type") was a determinant of Internet banking adoption among customers in the UK and Finland respectively. These two studies show that customers with high-level occupations are more likely to adopt internet banking than those with low-level occupations.

Obviously, the level of occupation also reflects the *income level* of an individual, and Internet banking has been found to be most attractive to higher income earners and higher net-worth individuals (Kolodinsky et al., 2000:p181; 2004:p242; Lichtenstein and Williamson, 2006:p53). Moreover, in UK and Finland, as in most developed countries, menial "types" of occupation (say, dustbin carrying men working with Glasgow city council) are not necessarily low income earners as may be the case in developing countries. Hence, it is not their "*type*" of work, but their *level of income*, that can influence their intention to adopt or not adopt Internet banking.

On the influence of *marital status*, Kolodinsky, et al. (2004:p238) found that computer-based banking usage increased by 24% among *married individual* customers in the USA between 1999 and 2003, while it increased by 17% among *single female* customers and 25% among *single male* customers in the same period (ibid:p245). This indicated that while there was a higher increase in usage among *single male* users than *married individuals*, there was also a higher average usage among *married individuals* than *single individuals* (21%). The scholars therefore concluded that the gap between single and married individuals adopting Internet banking in the US was closing up.

Up to the year 2000, adopters in the US were more likely to be singles (Kolodinsky et al., 2000:p182), but the later findings suggested that the number of married adopters was fast catching with that of single adopters. In contrast, adopters in the UK are more likely to be married or partnered parents (Illet, 2005). The effect of *gender* was also observed in the study by Kolodinsky, et al. (2004) as it was noted that e-banking adoption occurred more among male customers than female customers in the US, unlike in the UK where research has shown that equal number of male and female customers now use Internet banking (Illet, 2005).

Lastly, the above findings show that strong differences and contradictions exist in the literature regarding the effects of customers' personal characteristics on their Internet banking adoption decisions. This obviously accounts for the lack of consensus amongst scholars in the area on which intervening variables could be regarded as universal affectors of Internet banking adoption. The major reason for the conflicting and shifting results over the years could be because most of the

personal characteristics of Internet banking customers are time-bound, in the sense their effects seem to have been changing over the years since Internet banking inception. Moreover, as the Internet technology becomes more common and more widely used in a particular country, the tendency is that its usage will continue to spread out to other age-brackets and socio-economic levels in the society. This notion is supported by Thornton and White (2001). The authors affirm that as each country's population matures in the knowledge, confidence and usage of computer and Internet technologies, changes in their usage patterns of online banking channels will continue to take place.

#### 4.2.2 Customer Attitudinal Characteristics:

Customers' attitudes reflect their psychographic profiles, which are usually based on their general "life style dimensions" (Wells, 1975:p197). These behavioural characteristics are usually manifested in their interactions with the goods and services they use, or do not use, as part of their lifestyles. A few of them have been identified as affectors of customer adoption propensities in the area of Internet banking. These include customers' *level of involvement with computer and Internet technology* in general and *with banking-technology* in particular (see Lassar et al., 2005; Floh and Treiblmaier, 2006; Maenpaa et al., 2007; Polasik and Wisniewski, 2008). Others are *risk perception and level of risk acceptance* (Chung and Paynter, 2002; Berger and Gensler, 2006; Srivastava and Srinivasan, 2007; Aldas-Manzano et al., 2008), *variety seeking behaviour* (Magi, 2003; Srivastava and Srinivasan, 2007), *the desire to control service delivery* (Ramsay and Smith, 1999; Gunter et al., 2001; Henry, 2005), and *the willingness or reluctance to change* (Suganthi et al., 2001; Sohail and Shanmugam, 2003).

*Customer Involvement* has been generally conceptualised as the degree of personal engagement with a product, service, system or technology by a customer, based on its perceived relevance to him or her (Beatty et al., 1988; Mattila et al., 2001; Lassar et al., 2005; Floh and Treiblmaier, 2006). These scholars perceive *involvement* as an important behavioural variable which affects consumers' channel selection, adoption and retention in both offline and online service contexts. Lassar et al. (2005) characterise *customer involvement with banking-technology* in terms of both the purpose of involvement ("utilitarian" or "hedonistic") and the level of involvement (depth and breadth of experience).

In a study of online banking adoption in the USA, the scholars found that the respondents' *web experience* as well as the intensity of their internet usage positively influenced their Internet banking adoption. Additionally, in a study of the changes in the UK banking sector following the advent of Internet banking, Jayawardhena and Foley (2000) identified the typical internet banking adopter as a "high involvement person, belonging to the upper middle class of the society", while in Finland, Mattila et al. (2001) identified the "senior citizens" (elderly people) as those with the least *involvement* in Internet banking.

On *risk perception and level of risk acceptance*, Chung and Paynter (2002) investigated Internet privacy issues in New Zealand and observed that to some people, the *internet risk and privacy concerns* were not a special issue, yet they were of great concern to other very sensitive people due to the invasive nature of online information gathering. The scholars noted that consumer attitudes towards

the issue of *privacy and security risk on the internet* influenced their online banking adoption. They therefore concluded that those who do not see the issue of privacy as any serious threat would readily adopt Internet banking, while the over-sensitive ones would be more reluctant to adopt any kind of online services.

On *variety seeking behaviour*, research has shown that consumers' willingness to adopt any form of web-based services is usually influenced by their natural *desire to seek out and compare varieties* of existing alternative products and services (McAlister and Pressemer, 1982). For some, this consumption attitude is purely a matter of economic shopping orientation whereby the interest is mainly to compare product prices and attributes from shop to shop or from website to website (Magi, 2003). For others, it is a matter of seeking out product or service alternatives for the sheer sake of variety (McAlister and Pressemer, 1982). These scholars identified three intrapersonal motives behind a consumer's direct *variety seeking behaviour*, including the genuine desire for "information", the simple desire for "alternation among the familiar", and the sheer "desire for the unfamiliar". Also, in a study of customer perceptions of alternative banking channels in India, Srivastava and Srinivasan (2007) identified three categories of variety seekers as *convenience seekers*, *control seekers*, and *innovation seekers*; and concluded that these psychographic factors were the prime determinants of the customers' choice of banking service channel.

However, *seeking control* is not intrinsically a dimension of *variety seeking behaviour* but a full behavioural tendency in itself. People who want to control their service delivery or purchase situations do not go about in search of varieties. They tend to stick to channels that offer them the power to control their situation.

The Internet technology empowers customers with that ability to control interactions with marketers (Hoffman et al., 2000). This *desire to control service delivery* has been shown to influence IB adoption in various places (Ramsay and Smith, 1999; Gunter and Braun, 2001; Thornton and White, 2001).

In web-based transactions, individual consumers are able exert more control over their choices of activities, brands, marketing information, online shops, and online service channels because their decision-making capabilities have been enhanced by the Internet technology (Henry, 2005). As these capabilities increase, consumers become more confident and therefore exhibit more *desire to control the online services* they receive (Ramsay and Smith, 1999). For example, in a study of consumer usage and attitudes toward financial distribution channels in Australia, Thornton and White (2001) found that *the desire to control service delivery* was a strong affecter of the respondents' Internet financial services adoption and retention.

Lastly, some customers' *willingness or reluctance to make/accept changes* can also affect their intention to adopt or not adopt Internet banking. While some people easily embrace changes in their lives once they perceive that benefits will accrue from them, others find it difficult to accept changes in their routines and lifestyles, even when they can see the necessity and benefits of the changes. Sometimes it is due to fear of uncertainty of the future or fear of inability to cope with expected adjustments to the changes, but at other times it is purely a matter domain-defending.



Domain defenders often are resistant to change. They insist on things being the way they have always been and on doing things the way they have always done it in the past. Sometimes, it is a way of hiding their inability to learn new ways of doing things or to cope with the pace of the change, especially in the context of technology diffusion. Srivastava and Srinivasan (2007) conceptualised this type of reluctance as “inertia for change” and found that it is also a major factor that influences banking channel choice in India.

In summary, as none of the above authors has studied the influence of these attitudinal propensities beyond their countries of origin or residence, it is obvious that there has also not been any consensus among them regarding the universality of the factors as determinants of IB adoption behaviours. Hence a cross-national study in the area becomes all the more imperative in order to establish those attitudinal factors whose influence on Internet banking adoption could be regarded as universally valid in different parts of the world.

### **4.3 Web-channel-Related Factors:**

The second and equally very important category of factors that have been found to have influenced customer adoption and retention of Internet banking in various parts of the world is the category related to the banking websites (See table 4.2 below and appendices 1A and 1B). Lichtenstein and Williamson (2006) investigated some of the variables in this category in Australia and characterised them as *process factors*. They consist of the features and benefits of the bank’s

web-channel through which retail financial services are delivered to online customers, including factors such as *convenience* (time saving ability), *relevance* (usefulness), *relative ease of use* (user friendliness), *adequate registration information and guidance*, *effective communications*, *speed of web navigation and service processing*, *security and privacy guarantees*, as well as *online service cost*. These variables reflect the overall desirability, efficiency, and quality of the Internet banking website, which must be perceptible to the customer.

While customers' demographics and attitudes are factors personal to the customer, the perceived web-channel or process factors are impersonal and external to the customer. They reflect the technology-driven attributes of Internet banks' websites, which customers are usually not able to alter or control. Customers can only react to them by deciding to adopt or reject the online services offered via the websites. The main influences of these channel factors on customers' decisions to adopt or not adopt Internet banking stem from the customers' perceptions of the functions, benefits, quality, relevance and reliability of the web-based channel as an alternative to branch-banking. Over the years since the inception of Internet banking, quite a few scholars have applied technology acceptance, innovation diffusion or service quality models to study these web characteristics in various countries (see table 4.2 below, as well as appendices 1A and 1B). As earlier noted, evidences of significant influence of some of these variables were found in some countries, while their influence was insignificant in others.

**Effects of web-channel factors on retail customer adoption of Internet banking:**

<b>CHANNEL FACTORS:</b>	<b>INFLUENCES &amp; OUTCOMES</b>	<b>SOURCES</b>
<b>(A) Website Attributes:</b>		
Channel Convenience	Convenience, in terms of time-saving, easy accessibility and 24/7 availability is seen as the most important channel attribute motivating Internet banking adoption among retail customers.	Daniel (1999); Li et al (1999); Bellman et al (1999); Ramsay & Smith (1999); Dellaert & Khan (1999); Thornton & White (2001); Liao & Cheung 2002; Howcroft et al (2002); Gerrard & Cunningham (2003); Bauer et al (2004); Durkin (2004;2007) Pew(2003; 2005); Wan et al (2005); Ibrahim et al (2006); Poon (2008); Laukkanen et al. (2008).
Perceived Usefulness	Perceived utility and relevance of the Internet banking channel is also a major motivator of adoption	Li et al. (1999); Tan & Teo (2000); Liao & Cheung (2002); Wang et al. (2003); Pikkarainen et al. (2004); Amin (2007).
Relative Ease of Use	Perceived flexibility, reliability, and user-friendliness of bank websites can motivate or inhibit customer adoption. "The easier e-banking is to try out, the greater the likelihood of adoption" (Kolodinsky et al., 2004: p242).	Lockett & Litter (1997); Aladwani (2001); Liao & Cheung (2002); Black et al (2002); Bradley & Stewart (2003); Wang et al. (2003); Kolodinsky et al. (2004); Bauer et al, (2005); Eriksson et al. (2005); Amin (2007); Hernandez and Mazzon (2007).
Adequate Registration Information and Guidance online.	Adequate registration and logging-in information online and offline can enhance service usage and therefore encourage adoption.	Ramaswami et al. (1998); Jun & Cai (2001) Waite & Harrison (2004); Wu et al. (2004); Pikkarainen et al. (2004); Wan et al (2005) Durkin (2007b); Kuisma et al. (2007); Laukkanen et al. (2008); Polasik and Wisniewski (2008).
Effective Communications of IB benefits, uses and relevance.	Effective communications of the uses, advantages and benefits of the IB channel to create awareness, inform, educate, guide, and reassure customers will boost service adoption, retention and relationship.	
Speed of Web-navigation and Service Processing.	As customers' needs and expectations grow and change, they become more discerning. Banks have to do more than relationship management to retain their patronage. Banks must ensure that their Internet banking web-channels are superior in terms of speed and efficiency of navigation and service processing. This has been found to affect channel choice, satisfaction and retention.	Patricio et al. (2003); Shih and Fang (2004); Gerrard and Cunningham (2005); Diniz et al. (2005); Siu and Muo (2005); Kassim (2005); Lee and Lin (2005); Ibrahim et al. (2006); Lichtenstein and Williamson (2006); Poon (2008).

<p>Privacy/Security Assurances &amp; Trustworthiness</p>	<p>Many individual customers would favour personal transactions with the bank branch staff (whom they can see and hold responsible) more than Internet banking, unless they receive firm guarantees that the privacy and security of their online transactions are being maintained at all times. "Consumers will not take advantage of these (benefits of the Internet channel) if they are not assured a proper level of protection" (Hamilton and Hewer, 2000:p139).</p>	<p>Daniel (1999); Sathye (1999); Ramsay &amp; Smith (1999); Grazioli &amp; Jarvenpaa (2000); Hamilton &amp; Hewer (2000); Miyazaki &amp; Fernandez (2001); Chung &amp; Paynter (2002); Liao &amp; Cheung (2002); Bradley &amp; Stewart (2003); Suh &amp; Han (2003); Gefen et al. (2003); Mukherjee &amp; Nath (2003); Nissenbaum (2004); Bauer et al (2005); Shergill &amp; Li (2005); Eriksson et al (2005); Fock and Koh (2006); Chang et al (2006); Lichtenstein &amp; Williamson (2006); Durkin (2004; 2007b); Nor and Pearson (2007); Chiou et al. (2007); Poon (2008); Polasik and Wisniewski (2008).</p>
<p>Channel Cost</p>	<p>In developed countries, the costs saved by financial institutions in transacting online, rather than having more branches, are passed on to customers, such that Internet banking services become cheaper for them. In developing countries, the costs of computer ownership, Internet connection, and extra fees charged for online banking services are major affecters of Internet banking adoption.</p>	<p>Ramaswami et al. (1998); Sathye (1999); Mols (1999); Mueter et al (2000); Hamilton and Hewer (2000); Suganthi et al. (2001); Li (2001); King and Gribbins (2002); Howcroft et al. (2002); Sohail and Shanmugam (2003); Singh (2004); Shih and Fang (2004); Laforet and Li (2005); Rotchanakitumnuai and Speece (2005); Brown and Molla (2005); Boateng and Molla (2006); Chiemeke et al (2006); Lichtenstein and Williamson (2006); Poon (2008).</p>

Table 4.2: Effects of website-related factors on retail customer adoption of Internet banking. (Sources: The reviewed literature. See appendices 1A and 1B).

The first factor, *channel convenience*, has been found to be a very fundamental motivator of consumer adoption of Internet banking as well as most other Internet-based commercial transactions. Li et al. (1999) studied the impact of perceived channel utilities, shopping orientation and consumer demographics on online buying behaviour and found that online purchasers are more *convenience-oriented* than offline purchasers and also that the more frequent online buyers are higher in *convenience orientation* than the less frequent online buyers.

The major element of *convenience* that appeals to online consumers was first identified by Bellman et al. (1999) as the *time-saving* aspect of convenience. In the Internet banking context, Pew (2002) found that *convenience*, in terms of the time-saving and 24-hours-a-day-7-days-a-week nature of the Internet, was the most important adoption motivator among US banking customers. The author thus declares that as far as Internet banking adoption is concerned “convenience is king”. However, in an international study of factors that motivate or constrain customers’ registration for Internet banking in the UK, Ireland, Sweden and the USA, Durkin (2007b) characterised *perceived time-saving* as a different factor from *perceived convenience*.

*Perceived time-saving* was seen as the quickness of the online transaction, while *perceived convenience* was described as the “24-hour access” of the Internet banking channel (Durkin, 2007b). Nonetheless, the rationale for the profundity of the *convenience* concept on customers’ choice of the Internet banking channel is the opportunity for customers to transact with their banks from the comfort of their homes or workplaces any time of the day or night, and also to exercise their preference for a transaction channel that saves their time and not keep them waiting on the queue, both in terms of the download speed and the efficiency of the services delivered via the channel (Wan et al., 2005; Durkin, 2007b).

Another major motivator of customer adoption of Internet banking is the *perceived usefulness* (relevance) of the Internet retail banking channel. Tan and Teo (2000) employed Ajzen’s (1985) *TPB* and Roger’s (1995) *TID* in their study to explain the influence of factors that determine internet banking adoption in Singapore and found that the *perceptible relevance* of the innovative channel was a very significant factor that influenced the decisions of online customers in the country. Li et al. (1999) had earlier found that customers who already made online

purchases generally perceived web-channels to be of a higher utility than those who did not, and that frequent online buyers saw the web as a more useful channel than occasional online buyers. Hence, customers who see the IB channel as useful for their banking needs are more likely to adopt it than those who are yet to discern its usefulness, or who have decided that it is not useful for their banking needs.

The *relative ease-of-use (or user-friendliness)* of the web-channel is the third factor in the web-attributes category. Together with 'perceived usefulness', this factor makes up the core of Davis' (1989) TAM model. Many scholars who have studied consumers' technology adoption behaviours since the 1990s have either adopted or adapted the TAM model in their studies. For instance, adapting the model to a study of direct banking services adoption in the UK, Lockett and Litter (1997) observed that the *complexity* of the technology-driven direct banking channel was a major concern of the consumers, which indicated that consumers would not adopt technology-based services if they found the channel perplexing. This notion was also supported by findings from a study carried out in Singapore by Liao and Cheung (2002) in which web-users' expectations of the *user-friendliness* of their Internet banking websites strongly influenced their Internet banking adoption decisions.

Wang et al. (2003) were the first scholars to test the TAM model verbatim in the Internet banking context. Researching the determinants of web-users' acceptance of Internet banking in Taiwan, the scholars confirmed that both *perceived ease of use* and *perceived usefulness* had a strong positive effect on the respondents' intention to use Internet banking systems. Also, Eriksson et al. (2005) used the TAM model to study customer acceptance of Internet banking in Estonia and confirmed that both *perceived usefulness* and *perceived ease of use* contributed significantly to consumers' intention towards internet banking usage and ultimately

led to actual usage adoption. Additionally, in a study of the effects of personal consumer characteristics and e-banking technology characteristics on electronic banking adoption among US consumers, Kolodinsky et al. (2004) also observed that the easier e-banking was for prospective customers to try out and use, the greater the likelihood that adoption would take place.

The next two web-channel characteristics are related. They include *effective communications* by banks about the relevance and benefits of the IB channel as well as *adequate registration information and usage guidance* on the IB website. Waite and Harrison (2004) researched the importance of *information* provision as a function of e-banking websites. They contend that all purchase transactions (online or offline) are perceived as risk-taking and therefore require *adequate information and guidance* for decision-making. Bellman et al. (1999:p34) had noted that *information searching* was the most important predictor of online consumer behaviour in general. *Information* is therefore valuable for not only making informed consumption decisions, but also reducing the perception of risks and uncertainties associated with transaction decisions. It also provides the much needed guidance to enable customers register successfully for IB and to navigate through the mesh of web functions as they use the Internet banking services. Waite and Harrison (2004) therefore concluded that the more *adequate and relevant information and guidance* is provided by an Internet banking website, the more likely it is that customers will adopt the IB services of that bank.

The incontrovertible necessity of *information* in Internet banking adoption was first highlighted by Sathye (1999) when the author observed that the *lack of awareness* of Internet banking was the main hindrance to IB diffusion in Australia in those early days. The scholar found that 68% of respondents in her survey were not aware or did not understand the benefits and relevance of Internet banking at

that time. Also, 86% of the personal customers and 78% of the business customers surveyed said that they preferred the benefits to be explained before they would be prepared to adopt Internet banking (ibid). This indicated that there was a huge necessity for more *effective communication* of the importance and benefits of the new channel by banks in the country.

The author therefore called on bank marketers to create more *awareness* of the IB channel by providing more *information* that emphasised the benefits of channel on their websites, educating customers about efforts being made to allay their security concerns, and developing closer bank-customer relationships. More recently, other scholars such as Waite and Harrison (2004), Durkin (2007b), Kuisma et al. (2007), and Laukkanen et al. (2008) have also observed the continued necessity and influence of *effective communication* and *adequate information and usage guidance* on IB adoption trends in the UK, Sweden, Ireland, USA and Finland.

Next is the all-important issue of *security and privacy concerns* about the safety of the Internet banking channel. The issue of *security and trust* happens to be one of the earliest and most pressing concerns of online customers following the incursion of the Internet technology into commercial activities (Daniel, 1999). Majority of the existing studies in the area of Internet banking contain in one context or another an element of customers' anxieties about the *security and privacy risks* associated with Internet transactions. Research has shown that the perception of uncertainty and risks is inherent in most business transactions but more so in the Internet context, where the parties in the transactions are not physically in the same place (Suh and Han, 2002).



Since online transactions are conducted remotely between Internet users in various places around the world, it is therefore believed that private and confidential information criss-crosses the world in a cyber-environment that is potentially prone to invasion, interception and theft. In a study of Internet banking adoption in Finland, Mattila et al. (2001) observed that the very low Internet banking adoption rate among elderly people in the country was attributed to their perception of the Internet channel as “a too detached and insecure method of banking.” The authors reasoned that this perception affected the *senior citizens’* adoption decision because they had been associating “bank transaction with human interaction” all their lives and could not easily come to terms with conducting banking transactions remotely with people they could not see or hold responsible if anything went wrong.

In the UK, Hamilton and Hewer (2000) reviewed the activities of some select UK financial services providers and the ways they marketed the Internet banking channel to their customers. The scholars found that most providers promoted the *customer-empowerment potential* of the Internet to their customers at that time, with their unique selling points being *increased consumer control, accessibility* and *convenience*. Only a few alluded to the *system of security* they had in place for protecting their customers from the risks associated with Internet banking. Nonetheless, the scholars maintained that the banking customers might not take advantage of the benefits of the Internet channel touted by the financial service providers without an adequate assurance “of a proper level of protection” provided by both the UK Government and the service providers themselves.

Chung and Paynter (2002) noted that *invasion of privacy* was the main security anxiety of online banking customers in New Zealand. They conceptualised privacy as “the right to be let alone”, which is compromised when individuals lose

a substantial measure of their control over their personal information and its usage. In their study of the effects of *privacy issues* on Internet usage in the country, the scholars found that websites which displayed *privacy statements* telling customers that their privacy rights were protected recorded more patronage than those without any such statements. They therefore concluded that Internet customers would always seek privacy protection, and that *privacy statements* on the banking website would offer great help in relieving customers' concerns about *security and privacy risks* associated with Internet banking.

Furthermore, Eriksson et al. (2005) studied customers' attitudes to the issues of *security, privacy and trust* in the Estonian banking sector. Findings from their study supported an earlier assertion by Jun and Cai (2001) that customers were more concerned with the *security* of Internet banking than they were with that of traditional banking, and also that customers' trust in Internet banking was dependent on their confidence in their banks' perceptible reliability and integrity. The scholars therefore asserted that concern for *trust* reflects customers' apprehension of Internet banks' trustworthiness in seeking to reconfirm their expertise and reliability, and also that *trust* is a major antecedent of Internet banking adoption.

Lastly, Lichtenstein and Williamson (2006:p57) report that the respondents in their study confirmed having considered Internet-based *risks* in making banking channel choices, but note that Australian banking customers have, over the years, largely adjusted to the risks associated with the Internet and are increasingly prepared to accept the risks. Hence, the study found *convenience* as a more important factor considered by present day Australian customers in making Internet banking adoption decisions than *security risks*. In this case, the scholars' findings also support those of Nielsen (2005), which indicate that though *security risks* are

still a major concern in other countries, Australian Internet users are presently more concerned with the *convenience* of the Internet banking channel than with its *risk*, much unlike the 1999 customers surveyed by Sathye (1999).

Finally, as shown in appendices 1A and 1B and table 4.3 below, the 25 factors listed out in figure 4.1 (page 62) were identified from the 106 studies published in the area of customer adoption of Internet banking between 1997 and 2008, which were reviewed in this study. Out of the seventeen *customer-related factors* identified, eight were found to have been most recurrent (above 20%) in the reviewed studies from different parts of the world (see table 4.3 below), while eight had waned and therefore had not been considered topical over the same period (see appendices 1A, 1B and 1C). The eight most recurrent factors include: *level of income, level of education, prior knowledge* of computer and Internet usage, *prior level of computer and internet experience, awareness* of the Internet banking opportunity, *access* to computer and the Internet, *prior banking-technology involvement*, and *risk perception/willingness to accept risks*.

For the *channel-related factors*, all eight variables identified in the reviewed studies were found to have consistently reoccurred (above 20%) throughout the years (see the last column of table 4.3 below). Detailed discussions and inferences made about each of the sixteen factors isolated for further investigation in this research are presented in the next chapter, but at this juncture this study assumes that while the waning influence of the nine *customer-related* factors not selected is likely to disappear altogether with time, all the eight *customer-related* and eight *channel-related* factors selected will continue to be relevant to IB adoption decision-making. This study therefore proposes that the 16 isolated factors possess some measure of *universality* which needs to be further investigated and validated cross-nationally in the present research.

**TABLE 4.3: Frequency-summary of factors that have influenced customer adoption of Internet banking around the world since IB inception - identified from 106 journal articles published between 1997 and 2008 (Summarised from appendices 1A & 1B):**

S/N	FACTORS	1997 - 2000		2001 - 2004		2005 - 2008		GRAND TOTAL	
		FREQUENCY	%	FREQUENCY	%	FREQUENCY	%	FREQUENCY	%
<b>A) CUSTOMER RELATED FACTORS:</b>									
1	Age	4	33	9	21	6	12	19	18
2	Gender	1	8	4	9	7	14	12	11
3	Level of Income	4	33	12	28	11	22	27	26
4	Level of Education	4	33	9	21	9	18	22	21
5	Marital Status	1	8	3	7	0	0	4	4
6	Occupation/Employment status	1	8	2	5	3	6	6	6
7	Residential Area	1	8	1	2	1	2	3	3
8	Prior Knowledge of computer & Internet	3	25	24	56	22	43	49	46
9	Prior Experience of computer & Internet	3	25	24	56	22	43	49	46
10	Self Efficacy vs. Technophobia (confidence)	2	17	10	23	7	14	19	18
11	Awareness of Internet Banking option/benefits	2	17	16	37	14	27	32	30
12	Access to PC & Internet	7	58	27	63	23	45	57	54
13	Prior Involvement with banking technology in general	4	33	18	42	23	45	45	42
14	Risk Perception & willingness to accept risks	2	17	16	37	17	33	35	33
15	Variety seeking behaviour/willingness to change	2	17	7	16	6	12	15	14
16	Control desire over service delivery	4	33	4	9	5	10	13	12
		N = 12		N = 43		N = 51		N = 106	
<b>TOTAL NUMBER OF PUBLICATIONS</b>									
<b>B) WEB CHANNEL-RELATED FACTORS:</b>									
17	Perceived Convenience	8	67	31	72	39	76	78	74
18	Perceived Usefulness (Relevance)	4	33	29	67	35	68	68	64
19	Perceived Ease of Use	6	50	30	70	36	71	72	68
20	Adequate information & guidance online	3	25	19	44	24	47	46	43
21	Effective marketing communications of IB uses & benefits	2	17	18	42	17	33	37	35
22	Processing/navigation speed & accuracy of IB the website	3	25	32	74	34	67	69	65
23	Security & privacy assurance online (antecedent to trust)	8	67	37	86	45	82	90	85
24	Channel cost	5	42	24	56	15	29	44	42
		N = 12		N = 43		N = 51		N = 106	
<b>TOTAL NUMBER OF PUBLICATIONS</b>									

Table 4.3: All factors that occurred more than 20 times (i.e., above 20%) were isolated for further investigation in the present study (Shaded in the last column).

#### 4.4 Summary:

In this chapter, two broad categories of factors which were found to have affected retail customers' adoption of Internet banking in various parts of the world were identified and reviewed from the existing literature. They were classified as *customer-related factors* and *web channel-related factors*. Conflicting accounts of the influences of these factors were reported. In reviewing the existing studies in the area published between 1997 and 2008, it was also observed that there had not been any consensus among the scholars regarding the presence and influence of many of the factors on banking customers' IB adoption behaviours in the countries studied. There were mostly conflicting findings in the literature concerning the effects of customers' demographic and attitudinal characteristics in different countries.

As shown in appendix 1B and table 4.3, the topicality of some of the customer-related factors appeared to have diminished over time, while that of the rest had persisted and grown with time, including all the channel factors. This is reflected by the frequency of their occurrence in the studies from different countries over the years. As earlier noted, due to lack of consensus among the scholars concerning these factors, there has not been any set of factors that could be regarded as *universal antecedents* of retail customer adoption of Internet banking anywhere in the world. However, the fact that the factors isolated in table 4.3 above are still significantly topical in various countries all these years is an indication that they possess some element of *universality* which should be further investigated. Investigating that *universality* is the major objective of this research, and therefore all the 16 factors isolated in table 4.3 above will be considered for inclusion in the framework of this research.

## **CHAPTER 5:**

### **CONCEPTUAL FRAMEWORK OF THE RESEARCH:**

#### **5.1 Introduction:**

In chapter 4, several existing studies in the area of Internet banking from different countries were reviewed and the factors that have been found to influence customer adoption of Internet banking in those countries were identified and classified. The reviewed studies were undertaken in countries such as USA, UK, Netherlands, Australia, New Zealand, China, Hong Kong, Singapore, Estonia, Finland, Taiwan, India, South Korea, Kuwait, Sweden, Germany, UAE, Turkey, Brazil, Romania, Republic of Ireland, Austria, South Africa and others. This indicates that the identified factors have variously affected the adoption behaviours of retail banking customers from both developed and developing nations around the world with considerable economic, cultural and technological differences.

The significance of the national locations of the studies reviewed in the last chapter is that they enabled the identification of the factors isolated for investigation in the present study. Some of the factors identified were present in many of the countries while a few were present in only a few countries (appendices 1A and 1B). The factors which occurred most over the years between 1997 and 2008 were assumed to have the highest potential of being the *universal antecedents* of retail customer adoption of Internet banking, and will therefore be examined further in this chapter for inclusion in the framework of the present research.

This study is exclusively focused on macro-level rather than micro-level factors because it is assumed that in order to establish a model of *universal antecedents* of Internet banking adoption behaviour, the intervening factors must

not be low-level issues that could be peculiar to an individual, such as a person's liking or dislike, trust or distrust of a *specific banking firm*. Instead, the factors are high-level issues that are likely to commonly affect (and be commonly perceived by) any group of customers anywhere in the world. However, the impact of such low-level issues as *trust* and *liking* are already inherent in macro-level factors such as *security* (a channel-related factor) and *willingness to accept risks* (a customer-related factor) as depicted in the conceptual study model (fig. 5.3 on page 117).

This chapter will provide further justification for the inclusion of the 16 factors isolated from appendix 1A, 1B and table 4.3 above in the conceptual model of the research by examining how each of them might contribute to the overall *attitude* and *intention* of retail banking customers towards Internet banking adoption. Inferences from the reviewed literature will be used to synthesise them into the conceptual framework of the research. The chapter will also argue the validity of subsuming the two environmental variables identified from informal discussions with colleagues and banking customers in Scotland and Nigeria into one of the 8 customer-related factors, *access to computer and the Internet*.

Furthermore, inferences from the innovation adoption literature will also be harnessed in developing both the conceptual and analytical models of the research. The conceptual model will present and explain the behavioural process involved in customer adoption of Internet banking by tracing the positional relationships of the proposed universal antecedents of IB adoption behaviour, while the analytical model will trace the hypothesised causal effects of the perceived *customer readiness* and *channel readiness* constructs on the behavioural decisions of the potential customers. Lastly, chapter 5 will conclude by providing a justification for each of the hypotheses in the analytical model, the testing of which will help to validate the *universal influence* of the 16 isolated intervening factors.

## **5.2 Inferences from the literature review and justifications for the factors included in the current study:**

According to Thornton and White (2001), changes in the use of online banking delivery channels will continue to occur as populations mature and as knowledge, confidence and computer usage experiences increase over the years. This notion has also been corroborated by Kolodinsky et al. (2004). The authors observed that many of the factors that affect IB adoption seem to be changing with time, as does the adoption pattern itself. This observation gives extra credence to the trend noticed in the course of reviewing the factors identified from the existing literature in chapter four. Hence, having isolated those factors that have occurred most pervasively in several countries over the years (table 4.3 above), this study argues that it is possible to validate some of them as *potential universal affectors of IB adoption*, and that those validated are likely to continue to influence retail customer adoption of Internet banking everywhere in the world in spite of passage of time. A list of the 16 factors isolated for consideration and inclusion in the research model is as follows:

### **(A) CUSTOMER-RELATED FACTORS:**

1. Level of Formal Education
2. Regular Source of Income
3. Prior Knowledge/skills of Computer and Internet usage.
4. Prior Computer and Internet usage experience.
5. Awareness of Internet banking, its benefits and advantages.
6. Access to Computer and the Internet (Infrastructure availability)
7. Prior Involvement with technology and banking in general.
8. Willingness to accept online risks.



**(B) WEB CHANNEL-RELATED FACTORS:**

9. Perceived Channel Convenience
10. Perceived Channel Usefulness
11. Perceived Ease of Use
12. Adequate registration Information/Guidance online
13. Effective Communication of Benefits/Advantages of IB.
14. Security Guarantee online
15. Speed of Website Processing/Navigation
16. No extra/hidden channel cost for IB services.

In the following subsections, inferences from the literature review are presented in order to further justify the inclusion of the above 16 variables in the conceptual framework of the present empirical study.

**5.2.1 Customer-related factors:**

Justifications for the inclusion of the above customer demographic and attitudinal factors in the model of the present study are presented as follows:

**5.2.1.1 Education and Income:**

Research shows that *education* and *income* are two factors that go hand in hand with regards to their influence on Internet banking adoption. Kolodinsky et al. (2004:p255) assert that among the US banking customers “*income* and *education levels* play a strong role in the adoption of a variety of technologies.” Although Laforet and Li (2005:p376) and Lassar et al. (2005:p190) found that the *level of education* has become of small consequence as an Internet banking adoption determinant in China and the USA respectively, findings from studies by Sarel and

Marmorstein (2003a; 2003b) support those of Kolodinsky et al. (2004), indicating that “*education and household income*” are still two major determinants of Internet banking adoption in the USA.

The scholars’ argument is also consistent with the result of an empirical study by Jamal and Naser (2002:p157) which also validates the significance of the *levels of education and income* in determining customers’ satisfaction in adopting and using Internet banking in the United Arab Emirates. Findings from the study of Kolodinsky et al. (2000) also revealed that electronic banking adoption increased among customers of higher net worth and higher level of education. Even in the research carried out by Lassar et al. (2005:p192), the *income* factor turned out as the most significant demographic factor that affected Internet banking adoption in the USA, thus confirming the earlier assertion by Kolodinsky et al. (2000) that Internet banking is most attractive to higher income earners.

Moreover, based on the current trends in many countries in which computer and Internet technologies have become a permanent feature of the educational system at every level, one can also infer that as the Internet technology continues to permeate wider spheres of the human society, a lot more people will become more “techno-savvy” (Kolodinsky et al., 2000) and this will in future impact positively on the number of people adopting Internet banking worldwide. Consequently, it is clear from the existing literature that *income and education* are still very strong factors that influence customer’ decisions regarding Internet banking adoption in many countries. As a result, these two factors can be regarded as possible *universal* determinants of IB adoption, and have therefore been included in the conceptual model of this research for further investigation.

#### **5.2.1.2 Prior Knowledge/skills and Prior Experience of Computer and Internet Usage:**

Research over the years has shown that Customers' *prior knowledge and skills of computer and Internet usage* as well as their span of *prior usage experience* are very significant personal factors that can affect customers' ability and intention to adopt the Internet medium in various service usage contexts, especially in the banking sector (see Tan and Teo, 2000; Thornton and White, 2001; Chung and Paynter, 2002; Polasik and Wisniewski, 2008). Tan and Teo (2000:p9) note that Internet banking is a "delivery channel that is compatible with the profile of the modern-day banking customer, who is likely to be computer-literate and familiar with the Internet." The scholars argue that the higher the computer and Internet *usage experience* of individual customers, the more they are likely to perceive the Internet as well-attuned to their modern lifestyle, and consequently the more they are likely to adopt it for banking purposes.

Moreover, as customers gain more knowledge and experience of new, technology-based channels of service delivery, they become more confident in using them as alternative and more modern ways of accessing and managing their bank accounts. According to Thornton and White (2001:p176), being more knowledgeable and experienced in the use of computer and the Internet for consumption transactions will increase customers' likelihood of Internet banking adoption. It stands to reason therefore that without the appropriate *knowledge* of computer and Internet usage as well as the experience of having been using them in the past, consumers will be unable to adopt Internet banking.

The influence of *prior knowledge* and *prior experience* as antecedents of Internet banking adoption cannot be over-emphasised as there is no other way to acquire the ability to use Internet banking but by first acquiring the *knowledge and experience* of using both the computer and the Internet. In the same vein, neither the necessity nor the influence of both factors can diminish or disappear with time. For example, measuring consumer innovativeness in the USA, Lassar et al. (2005) observed that web experience, in terms of duration of Internet use, has continued to affect IB adoption rate in the country.

Additionally, based on findings in their recent study of IB adoption in Poland, Polasik and Wisniewski (2008) concluded that “the more technology-savvy they (banking customers) are, the higher the probability of them conducting banking operations via the medium of Internet”. Hence, *prior knowledge* and *prior experience* of computer and Internet usage are permanent factors that will always affect an individual’s ability to adopt not just Internet banking, but also all forms of Internet-based service and purchase transactions. The factors are therefore strong potential candidates for *universal determinants* of Internet banking adoption and have been incorporated into the research model.

#### **5.2.1.3 Prior involvement with banking-technology in general (Technophobia versus Self-efficacy):**

Research in various countries has shown that some individuals’ low level or complete lack of *self-efficacy* with regards to Internet banking technology could be attributed to *technophobia* or “fear of new technologies” (Lichtenstein and Williamson, 2006). Such persons are often confounded by the intricacies and

complications of new technologies and as such may be incapable of making any effort to acquire the knowledge and skills required for using the technology, especially in the personal banking context. They often perceive the new technology as too complex and thus shy away from trying it. Some tend to believe that they will never be able to understand or learn how to use it, and this self-defeatist fear results in low level or total lack of *self-efficacy* in the use of technology or electronic gadgets (Thatcher and Perrewe, 2002).

Lassar et al. (2005) associate customers' *self-efficacy and confidence* with their "personal innovativeness", a concept which the scholars define as "the degree and speed of adoption of innovation by an individual". In a study of the influence of customer satisfaction on loyalty to, and retention of, online banking in Austria, Floh and Treiblmaier (2006) also argue that *technophobia* renders customers *less innovative*, as it negatively affects their ability to adopt and retain the technology-based products and services. One can therefore aver that there will be little likelihood of IB adoption occurring among customers who are not comfortable with technological innovations and therefore have no prior involvement with banking technologies such as ATM, electronic cards, and mobile phone banking.

However, Tan and Teo (2000) believe that if banking customers have the opportunity to try out the Internet banking innovation, their "fears of the unknown may be minimized." Other scholars agree with this notion, but insist that any new technology must be easy to try out and to use before technophobes can muster the courage to try it (Kolodinsky et al (2004). The general inference is therefore that if the Internet banking system lends itself to being easily triable, more people will feel more confident to test it out and may likely develop the *self-efficacy* needed to adopt it (Gerrard and Cunningham, 2003; Kolodinsky et al., 2004).

The concept of *self-efficacy* therefore ties in with the influence of *level of involvement in banking technology* on a potential customer's IB adoption decision. Lassar et al. (2005: p185) illustrate *self-efficacy* as a combination of the customer's "web usage intensity, length of web usage, and technology comfort." Potential customers with *higher prior involvement in banking technology* will more readily adopt IB than those with low or no prior involvement. According to Polasik and Wisniewski (2009) "customers who are familiar with other electronic distribution channels, such as mobile banking or payment cards, show greater proclivity to open an Internet account".

In addition, Thornton and White (2001:p177) note that as customers become more confident in using electronic systems, the adoption of various electronic banking channels increases while the use of offline branch services decreases. These assertions, made by scholars located in different parts of the world and at different points in time, typify the strong effect which customers' *prior of involvement* with other electronic banking devices and technologies has on their willingness and ability to adopt Internet banking. This study therefore assumes that the influence of customers' *level of involvement* is not likely to disappear with time and is also likely to be a *universal* one because the factor is not likely to be peculiar to people of any one particular country. Based on the foregoing, *prior of involvement with banking-technology* has been incorporated into the conceptual model of this study for further examination.

#### **5.2.1.4 Awareness of Internet banking opportunity and benefits:**

Over the years since IB inception, quite a number of scholars who have researched Internet banking adoption in different countries have alluded to the significance of *awareness creation* as a vital factor necessary for enhancing Internet banking adoption among potential retail customers (Sohail and Shanmugam, 2003; Waite and Harrison, 2004; Rotchanakitumnuai and Speece, 2004; Pikkarainen et al., 2004; Wan et al., 2005). Results of such studies generally point to the notion that many of the customers who have not used Internet banking in various countries are either *not aware* of its uses and benefits or feel that adequate information has not been communicated to them about the available online financial services and the security of the channel to enable them to make an adoption decision (Sathye, 1999; Wan et al., 2005).

The inference is therefore that without financial institutions transmitting adequate promotional information to potential customers, which should translate into a significant level of *awareness of the IB option, its benefits and advantages*, many potential customers will not know about the existence or benefits and advantages of Internet banking channel and, as a result, will not be empowered by the necessary information they need to make a decision regarding adopting the financial services offered through this platform. According to Waite and Harrison (2004:p76), the Internet medium plays an indispensable role in financial services distribution because it is an “information source for financial services and a consumer decision-making aid”. The obvious importance of this factor, and the fact that it has not diminished over the years, also provides justification for its inclusion into the conceptual framework of the present study for a cross-national investigation and validation of its universality.

#### **5.2.1.5 Access to Computer and the Internet:**

The availability of personal computers (PC) and affordable Internet connection is a prime consideration for Internet technology diffusion in any country because they are vital infrastructural requirements for the adoption of all Internet-based services and organisational operations, including Internet banking.

Research has shown that individuals who have regular or permanent *access to personal computer and the Internet* at work or home are more likely to register for Internet banking than those who do not (Kuisma et al., 2007; Durkin, 2007b; Poon , 2008; Polasik & Wisniewski, 2008). For instance, in a case-study investigation of factors that influence a UK bank's customers' registration for e-banking, Durkin (2007b) found that customers who had access to computer at work were more likely to register for e-banking than those who did not. Also, in a study of users' choice of e-banking channels in Malaysia, Poon (2008:p62) found that 81% of respondents in the study agreed that access to the Internet was an advantage in adopting e-banking services.

Other infrastructural facilities necessary for enhancing *access* include electricity, digital telephony and satellite communications. The availability of these facilities is quite indispensable in Internet banking implementation, especially in developing countries where they may not all be readily available. It is generally understood that without these infrastructural facilities being available, the Internet banking process will not be possible in the first place. For instance, without having *access to personal computers and Internet connection*, potential customers would not have been able to use the Internet banking services provided by financial institutions even if they wanted to.



Even where there are personal computers and broadband Internet connection, irregular supply of *electricity* could be a major problem hindering the rate of IB adoption, as is the case in Nigeria. Out of the country's population of 130 million people, only 10 million (7.7%) people use the Internet (Internet World Statistics, 2008). Apart from the very high cost of Internet connection in the country, the other major reason for the slow Internet penetration in the country is erratic power supply (Adenikinju, 2003). Both the *inadequate electricity supply* to power the technology and the *high cost of Internet connection* combine to make Internet banking in Nigeria accessible and affordable only to the affluent segment of the population and to large organisations.

Although inadequate infrastructure which generally translates into *lack of access to computer and Internet* seems to be a major problem mostly in the developing countries, it can be deemed an obvious hindrance to the *universal adoption* of Internet banking in the sense that it constitutes a basic problem of *access requirements* for Internet banking and will definitely impede its rate of adoption in any part of the world where the necessary enabling facilities are lacking or inadequate. Even among the developed countries, it is obvious that there are still different levels of infrastructural adequacy which affect the rates of Internet banking adoption between countries.

Based on the foregoing discussion, the two *environmental factors* identified from informal discussions with colleagues and some banking customers have also been subsumed into the *access* factor (see figures 4.1 on page 62 and 5.3 on page 117) because they are considered integral parts of the infrastructure that facilitates *access to the Internet* and therefore enables Internet banking usage. Availability of

all the *environmental factors*, including adequate electricity and communications policy, is likely to affect access to computer and the Internet, which is likely to affect customers' ability to adopt Internet banking. Hence they are part and parcel of the access factor. On the basis of the above reasoning, the factor of *access to computer and the Internet* has also been included in the conceptual framework of this research as having the potential for *universality* as a determinant of IB adoption.

#### **5.2.1.6 Risk perception and willingness to accept risks:**

Going forward to the factors relating to customers' attitudes, research has shown that risks associated with identity theft, privacy encroachment and wrongful disclosure of confidential information constitute the biggest obstacle to Internet banking adoption (Chung and Paynter, 2002). So, if one customer is more willing to trust and use the Internet banking system than another, it should be reasonably assumed that he or she has a higher level of *risk acceptance* than the other customer. In a study of the relationship between customers' *trust and commitment* and their willingness to try Internet banking services in Singapore, Fock and Koh (2006), observed that "higher levels of *trust and commitment* are significantly associated with a greater willingness to try Internet banking."

The above evidence supports the conjectural proposition of this thesis in subsection 3.3.2, page 57 that a vital part of *customer readiness* for Internet banking adoption is the customer's willingness to try the channel and to use it. Based on the evidence also, one can equally infer that a high level of trust, commitment and willingness to try the IB channel indicates that the customer has a

high level of *risk acceptance*. In a study of customers' selection of financial services distribution channels in the UK, Black et al. (2002:p169) found that the "*perceived risk* associated with the channel" has a significant influence on customer adoption of Internet banking in the UK. However, one may argue that in the context of Internet banking, it is not actually the risk (or the perception of it per se) that influences the customer's choice of adoption, but rather the customer's *willingness or unwillingness* to accept the risks generally associated with the online environment.

Consequently, the level of the customer's *willingness or unwillingness* to accept that though risks exist in the Internet channel, it is still worth taking the risk and using the channel for conducting financial transactions is what determines the his or her readiness to adopt or not adopt the IB channel. The *willingness to accept risk* may be either because he or she perceives the online channel to be more *convenient* than the other channels or that the overall benefits of the online channel surpass the perceived risks involved in using it. This kind of consideration is what actually determines the customer's willingness or otherwise to use the Internet banking channel, not necessarily the fact that he or she perceives the existence of risks in the channel.

However, the issues of *risk perception* and *security concerns* have always been associated with online transaction activities over the years, such that while their effects on online customer behaviours have not disappeared altogether, the concerns for them have rather lessened with time in some countries. For instance, Lichtenstein and Williamson (2006:p63) found that the *level of risk acceptance* among Internet banking customers in Australia has rather increased over the years,

with the effect that *security concerns* have become less of an inhibitor of Internet banking adoption in Australia than it used to be. As such, the scholars observe that *convenience* has now become the more dominant factor considered by Australian customers in their Internet banking adoption decisions and is currently rated as a more important concern in the country than *security risk*, a fact also confirmed by Nielsen (2005).

In effect, if a potential customer has a low *level of risk acceptance*, he or she will likely be reluctant to adopt Internet banking, but if his/her level of acceptance is high, there is the likelihood that adoption will take place, all other required conditions having been met. In view of the importance of the *level of risk acceptance* in Internet banking adoption, this study infers that the factor is a good candidate for potential *universal* status as a determinant of Internet banking adoption. The factor has therefore been included in the conceptual model of this study for further investigation.

In summary, the eight *customer-related* factors discussed above have been included in the design of the present study for further investigation. They have thus been hypothesised as the descriptors of *customer readiness* for IB adoption, which could affect adoption anywhere in the world. Figure 5.1 below shows these eight factors as components of first of the two-part *readiness* concept in the conceptual study model. It illustrates the relationship between the eight customer-related factors and the Internet banking adoption process as a behavioural decision process. The inference is therefore that the eight factors describe the *customer's readiness* for IB adoption, which affects his or her *attitude* towards IB, which in turn affects the *intention* to adopt or not adopt the channel.

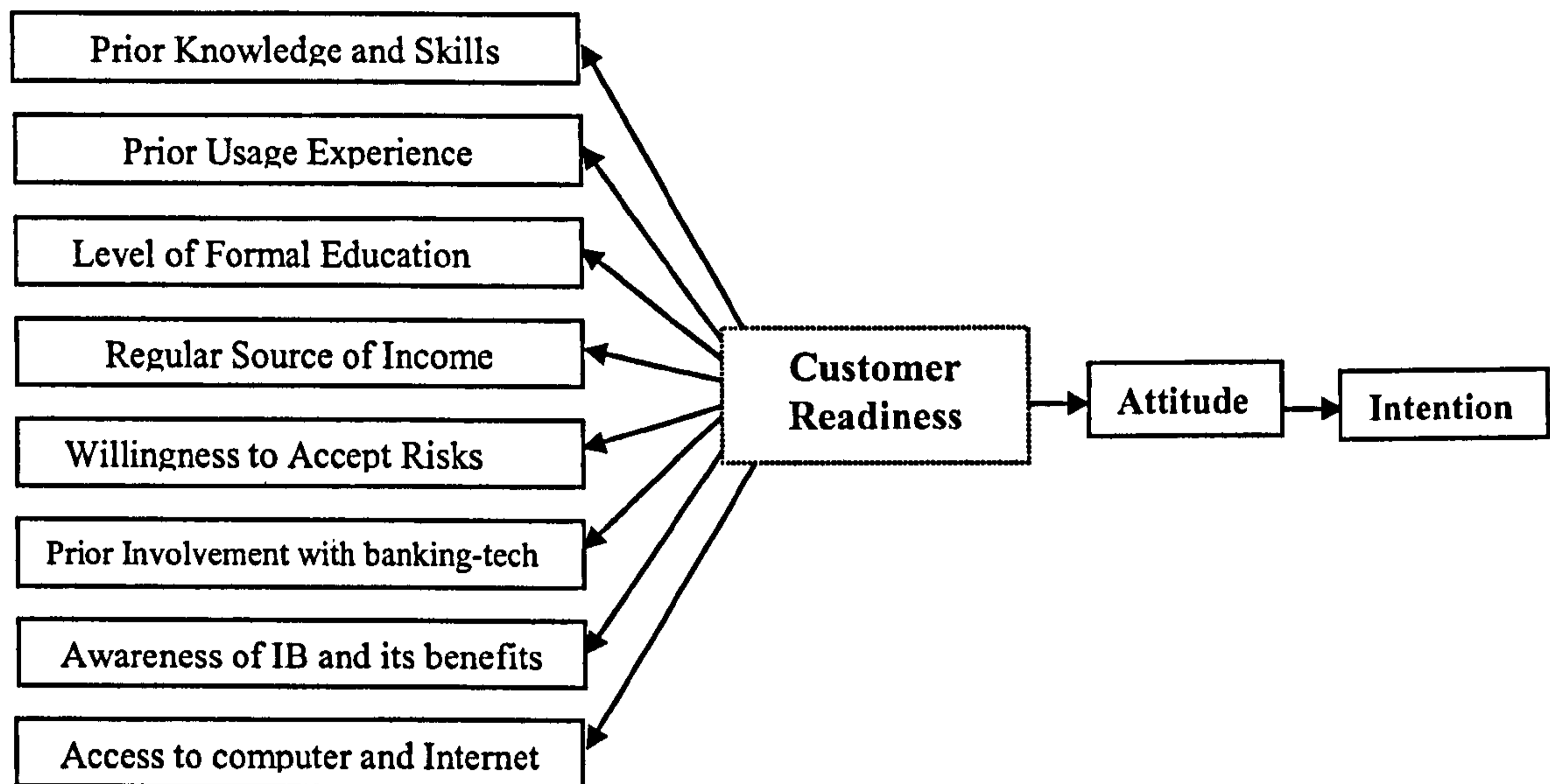


Fig. 5.1: Customer-related factors – the first category of intervening variables included in the conceptual framework of the present study.

### 5.2.2 Web-Channel Factors:

All the eight website-related factors identified from the available literature have also been included in the conceptual model of the study for further assessment. These include *perceived channel convenience*, *perceived usefulness*, *perceived ease of use*, *adequate registration information/guidance online*, *effective communication* of IB opportunity and benefits, *speed of web-processing and navigation*, *privacy/security assurance* and *channel cost*. The effects of these factors have also remained strong over the years since the advent of Internet banking in many countries. Evidences from the literature reviewed support the potential *universality* of the factors as determinants of IB adoption. The following subsections discuss these evidences and how they have remained significant influencers of IB adoption in several countries over the years.

### 5.2.2.1 Perceived Channel Convenience:

Several studies reviewed for this research indicate that *convenience*, in terms of time-saving, easy accessibility and 24/7 availability of online services, is the most important channel attribute facilitating retail customers' adoption of Internet banking in many countries (see Black et al., 2002; Howcroft et al., 2002; Pew, 2003; 2005; Bauer et al., 2004; Wan et al., 2005; Durkin, 2007; Poon, 2008; Laukkanen et al., 2008). In addition, Ibrahim et al. (2006) argue that the significance of *convenience* in Internet banking will be increasingly relevant and banking institutions will continue to increase their efforts to provide timely services to "an increasingly cash-rich but time-poor customer group." The scholars believe that this category of customers are the most willing to spend money on banking services that are convenient, accurate, and time-saving.

Moreover, there has been no instance in the existing literature when *convenience* has been found insignificant or irrelevant as a motivator of IB adoption since its inception. Consequently, one can infer that *convenience* as a web-channel attribute is a potentially *universal* factor. In every country where the Internet technology has permeated various aspects of social and commercial endeavours, *convenience* has often been cited as the primary reason for its diffusion. The factor has therefore been integrated into the conceptual model of this study for a cross-national investigation.

### 5.2.2.2 Perceived Usefulness:

*Perceived usefulness* is also somewhat related to *convenience* in that some dimensions of perceived usefulness can also describe convenience. For instance, in a study of the challenges facing Internet banking acceptance in Hong Kong, Liao

and Cheung (2002:p285) characterised the attributes of *usefulness* in terms of “service delivery speed, time-saving and accuracy” of transactions on the Internet banking website. These are similar variables to the ones used by other scholars to describe *convenience*.

Considering the prevalent use of the TAM model in online consumer research, there seems to have been a general consensus among researchers in the online banking sector that customer perception of the utility and relevance of the Internet channel is a major motivator of Internet banking adoption and retention (see Gerrard and Cunningham, 2003; Wang et al. (2003); Pikkarainen et al., 2004; Amin, 2007). Moreover, there is no evidence in the literature to suggest that the influence of *perceived usefulness* is restricted to any one particular country or culture. Hence, by including the factor in the conceptual model, this study makes the assumption that it is as good a *universal* motivator of Internet banking as the factor of *convenience*.

#### 5.2.2.3 Perceived Ease of Use:

The third channel-related factor is the relative *ease of use* of the web-channel as perceived by customers. As earlier noted, *perceived usefulness* and *perceived ease of use* are the two fundamental constructs in Davis’ (1989) original Technology Acceptance Model (TAM) for examining attitudes of individuals towards acceptance of technological innovations. Many scholars who have researched Internet technology adoption in general have borrowed the model in studying factors that affect customers’ adoption decisions (see King and Gribbins, 2002; Wang et al., 2003; Kolodinsky et al., 2004; Bauer et al, 2005; Eriksson et al., 2005; Amin, 2007; Hernandez and Mazzon, 2007).

While a few of the scholars tend to concentrate on customers' perception of the *ease of use* of the online services offered by banks (Liao and Cheung, 2002), others examine the *ease of use* of the Internet channel itself in comparison to other banking channels (Tan and Teo, 2000; Suh and Han, 2002; Lassar et al., 2005; Cheng et al., 2006). The present study examines universal adoption of the IB technological process rather than the individual services, and so is focused on the IB channel itself. Compared to other channels such as branch, ATM, telephone, digital TV and other methods of banking service delivery, the Internet channel is likely to be easier to use for some customers, while others will find it harder to use, based on other factors such as prior knowledge and experience, self-efficacy, technophobia and the level of involvement in banking-technology in general.

Nonetheless, what is obvious is that the easier the Internet banking process is to try out and to use, the more it is likely to be adopted by potential customers (Kolodinsky et al., 2004). The flexibility, reliability and user-friendliness of Internet banking websites can motivate or inhibit potential customers and thereby affect their decision to adopt or not adopt the channel. Tan and Teo (2000) support this view. Based on findings from a study of IB adoption determinants in Singapore, the scholars argue that the lower the perceived complexity of the Internet-banking technology, the more it is likely to be adopted by customers, and vice versa. Evidence from the literature tends to ascribe an underpinning *universality* to the two components of the original TAM model, but whether they are the only two antecedents of technology adoption is a matter to be determined at the end of the present study. Both factors have therefore been drafted into the conceptual model of the study.



#### 5.2.2.4 Adequate Registration Information and Guidance Online:

This next channel factor, *adequate registration information and guidance online*, refers to the availability of sufficient and appropriate information on the banking website regarding the registration requirements and usage procedures for engaging with the Internet banking channel. Most banking transactions (both online and offline) are risky because not only do they involve the customer parting with monetary value presumably in payment of purchases and bills, the registration, logging procedures and online transactions could also be long and tortuous, and therefore prone to mistakes. In affirmation of this situation, Waite and Harrison (2004:p68) note that online transactions are fraught with uncertainties. There is therefore a high need for *adequate online information and guidance* to enable customers make better decisions as they register for, log in to, and use the online banking services.

It is believed that *adequate information and step by step guidance* of new customers will reduce the risks, mistakes and uncertainties associated with online financial transactions. For instance, in a study of corporate customer perception of Internet banking in Thailand, Rotchanakitumnui and Speece (2004:p282) observed that “information quality” was the strongest factor that determined Internet banking adoption among the Thai corporate customers. The scholars note that a banking web site that contains “accurate, relevant and up-to-date information” will most likely attract and retain online customers more than any one that does not have adequate customer information and guidance because, according to the scholars, “customers who perceive better information quality are more likely to adopt Internet banking”.

There is no gainsaying the fact that the more online banking institutions can provide *adequate and accurate registration information and guidance* on their websites, the greater the likelihood that they will boost service adoption and retention. This notion appears to be potentially universal and since it has not been negated in any known study over the years, it was added in the present study model for further cross-national investigation.

#### **5.2.2.5 Effective Marketing Communications:**

By engaging in *effective marketing communications* campaigns both online and offline, bank marketers can use various promotional tools to create *awareness* for the IB channel, its benefits and convenience. *Effective communications* can also help to *inform, educate, and guide* customers on the *relevance and advantages* of the channel over other channels (Wu et al., 2004; Rotchanakitumnuai and Speece, 2004; Wan et al., 2005).

Integrated marketing communications tools such as direct marketing (DM) and customer relationship management (CRM) could also be used to woo and inform potential online customers as well as improve the relationship with them. *Effective marketing communications* is a typical variable likely to be necessary in every aspect of the global financial industry. It is likely to be seen as indispensable for promoting the Internet banking option and also developing customer relationships in every country. Based on this assumption, it seems to have an air of *universality* and has therefore been included in the conceptual model of the study for further investigation and possible validation as one of the universal determinants of retail customer adoption of Internet banking.

#### 5.2.2.6 Security and Privacy Guarantee Online:

The issues of *transaction security, privacy, and information protection* constitute another major factor at the centre of customer concerns about the safety of Internet banking. Sometimes, the risky nature of banking transactions in general is aggravated by a specific channel of transaction, which makes it possible for infiltrators and impostors to have unlawful access to a customer's private information and funds. Often times, the Internet channel is assumed to be the worst culprit in this regard. As a result, *adequate information protection* is absolutely essential in Internet banking. Sathye (1999:p329) was one of the earliest scholars to research the impact of *security and privacy concerns* on customers' intention to adopt Internet banking.

The scholar's study showed that 77% of individual customers who were aware of Internet banking in Australia in 1999 had a high reservation about the *security* of the channel. Subsequent research has also shown that as the number of Internet-based commercial transactions grew over the years, consumers in general became more sceptical about the safety of their private information on the Internet channel (Pikkarainen et al., 2004:p228). Having to supply personal information and card details on the Internet for payment of goods and services has yet to become 100% safe nearly 15 years after the inception of Internet banking. It seems of no wonder therefore that many individuals still prefer to carry out personal banking transactions through their bank branches, where they could personally transact with the bank staff and hold them accountable in the case of any problem (Howcroft et al., 2002:p116).

Most customers surveyed in related studies which dealt with issues of *security and trust* insisted that unless they received firm guarantees that the *privacy and security* of their online transactions were being maintained at all times, they would not adopt Internet banking or would not use it regularly. For instance, in a study of the ways in which UK financial institutions were marketing Internet banking services in 2000, Hamilton and Hewer (2000:p139) observed that “consumers will not take advantage of these (benefits of the Internet channel) if they are not assured a proper level of protection”. The need for *online security guarantee* and transparent trustworthiness in the Internet banking process is therefore absolutely crucial.

A number of other studies also point to the high importance of *online security guarantee* as a way of reassuring customers of the safety of the IB channel and encouraging them to adopt it. For instance, Bauer et al. (2005:p172) are of the opinion that *perceptible security and trustworthiness* is one of the most vital factors that can delineate the quality of the Internet banking channel. Their study shows that customers’ clear perception of *trustworthiness* on the channel helps them to make a positive adoption decision. However, as Mukherjee and Nath (2003:p8) also point out, if customers perceive an “opportunistic behaviour” on the part of the bank through its Internet portal, their trust will diminish. This means that if the customers suspect that the bank might be able to take undue advantage of them online, they will most likely not trust the channel and so will not adopt it for their banking transactions.

In a study of UK customers’ choice of banking channels, Howcroft et al. (2002:p117) found that nearly 50% of the respondents indicated *security concerns* as “extremely important in discouraging adoption”. The loss of private information

such as card details could lead to an innocent customer incurring a huge debt he or she does not know anything about. With the global prevalence of Internet fraud and personal information theft estimated to be costing about £1.7 billion annually in the UK (Taylor, J./Metro Newspaper, July 11, 2007), customers' fears of the financial risks associated with the Internet cannot be overstated. The obvious lesson is therefore that in order to build up customer *trust* in the e-banking channel, bank marketers must provide *adequate security guarantee* on their websites in the hope that such a promise will reduce customers' anxiety about risks in the channel or at least increase their level of risk acceptance, thereby encouraging them to adopt the channel.

According to Durkin (2007b:p227) "*reassurance about security*" on the Internet banking channel is still one of the two most important factors considered by customers when registering for Internet banking usage in the UK, Ireland, Sweden and the USA. The other one is *convenience*. It will therefore be perilous for any study of factors likely to affect Internet banking adoption on a global scale to ignore the issue of *security*. Based on the forgoing, it can therefore be inferred that the problem of IB *security and privacy risk* is a potentially *universal* one and that it is pertinent to investigate the issue further in order to validate its universality. Hence, the factor of *security and privacy guarantee* has been included in the conceptual model of the present study.

#### **5.2.2.7 Speed of Website Processing and Navigation:**

As Kassim (2005) notes, banking customers become more discerning and get more involved in details of their financial decisions as their needs and expectations grow and change. In the same vein, as they get accustomed to the evolving technologies of e-banking, they tend to demand higher quality of service.

Financial institutions must therefore do more than *relationship management* in order to retain their patronage. They must ensure that their IB web-channels are constantly updated in terms of *speed and efficiency of navigation and service processing* (Shih and Fang, 2004; Ibrahim et al., 2006).

The issue of website quality and operational efficiency has been found to affect channel choice, satisfaction and retention in all online commercial contexts. It is vital not only to increase retention of existing customers, but also to attract and convert prospective customers (Lichtenstein and Williamson, 2006). Without an accessible, easy to use, reliable, informative, and responsive Internet banking website, it will be very difficult to convince potential customers to adopt Internet banking. Therefore, a perceptible lack of high-quality website performance will obviously limit the financial firm's ability to attract and retain valued online customers and to maintain desired strategic advantage in the face of keen competition in the financial industry (Shih and Fang, 2004; Lee and Lin, 2005).

Yoo and Donthu (2001) developed the SITEQUAL model for determining the quality and usability of a website. The model contains four dimensions, including *ease of use, aesthetic design, processing speed, and security*. Other scholars have also used the model to test the appearance, design, functionality and reliability of a banking website as a financial service delivery system (see Bruner et al., 2005:p269; Yang and Fang, 2004:p308). For instance, in a study of customer choices of online financial securities brokerages in the USA, Yang and Fang (2004) found that *easy navigation* and *accurate service processing* were major factors considered by retail customers in their choice of brokerage web-channels, and that perceived lack of these factors was a huge *dissatisfier* for the customers.

Poon (2008) also investigated *website speed* as one of the factors affecting customer adoption of the e-banking channel in Malaysia, and found that “easy navigation and speed of e-transaction flow” were among the web quality dimensions that significantly affected customer decisions about Internet banking adoption in the country. Not having diminished or disappeared over the years, and being purely a matter of technological efficiency, *the processing and navigation speed* of the IB website cannot be attributed to any national or cultural peculiarities, and so can be ascribed with a status of universality if such a status could be validated cross-nationally. The factor has therefore been drafted into the framework of this research for cross-national investigation.

#### 5.2.2.8 Channel Cost:

The last web-related factor incorporated into the conceptual model of the present study is *channel cost*. Found in the existing literature to have significantly affected customer adoption of Internet banking in several parts of the world, the factor seems to readily possess an air of *universality* because cost consideration is a constant feature of decision making in every aspect of human consumption. Munene et al. (2002:p1734) note that the *costs* of purchasing products and services constitute the main source of *financial risk*, which is why there is always an apprehension at the back of every consumer’s mind to avoid a financial loss in every purchase situation.

In the context of Internet banking, evidence from existing studies shows that the Internet banking channel is the cheapest of all the financial services distribution channels and that cost is of prime consideration in the adoption of Internet banking both by banks and by the customers (Cuevas, 1998; Mols, 1999;

Hamilton and Hewer, 2000; Li, 2001). For instance, Hamilton and Hewer (2000:p137) assert that “the main advantage of the Internet is that transaction processing costs are much lower via this channel than more traditional channels such as the branch”. Table 5.1 below shows the relative costs of different banking channels and provides evidence that Internet banking has had the lowest per-transaction cost of all banking channels since its inception, and that it also has been sliding further down over the years as indicated by the difference in the two IB channel costs across the dates of the two publications.

**Average cost per transaction on different financial service channels:**

SN	CHANNEL	COST PER TRANSACTION (US\$)	
		Internet Magazine (December, 1996) US\$	Booz, Allen and Hamilton (1999) US\$
1	Branch banking	1.07	1.07
2	Telephone banking	0.54	0.54
3	ATM banking	0.27	0.27
4	PC banking (intranet – proprietary network)	0.15	0.15
5	Internet banking	0.13	0.01

Table 5.1: Average cost per transaction on different banking distribution channels.  
(Sources: Cuevas, 1998; Li, 2001).

The above notion is also supported by Li (2001) who argues that “cost and convenience” are the two prime advantages of the Internet medium as an alternative financial services distribution channel. Studies by some other scholars have also shown that the *cost* of obtaining online banking services can be a major motivator or inhibitor of IB adoption (see Mueter et al., 2000; Black et al., 2002; Burnham et al., 2003; Singh, 2004). It is believed that customers will increasingly



prefer the IB channel because it is convenient and also the cheapest channel option. Ultimately, the issue of *economic cost* in the online banking channel is a very fundamental one which customers in all parts of the world are likely to consider before taking up Internet banking.

The above observation is consistent with findings reported by AC Nielsen Consult (2002) which confirm the importance of *cost consideration* in Internet banking adoption in many markets. The findings suggest that customers would be most willing to adopt the Internet channel if *no extra or hidden cost* is charged to them for using online banking services. Given that the cost factor has remained significantly relevant over the years and does not seem to be peculiar to any specific market or region, there is therefore a strong necessity to factor it into any study aimed at investigating and validating potential universal antecedents of IB adoption. Consequently, *channel cost*, which Burnham et al. (2003) also categorise as *financial cost*, has been included in the conceptual model of the research for further investigation.

In summary, all the above 8 *web-channel* variables appear to have one thing in common. None of them seem to be a characteristic variable peculiar only to any one specific country, culture or region of the world. There is a clear universal undertone in the manifestation of their influence on IB adoption. In addition, the fact that the effects of these factors have consistently been discussed in the related literature from various parts of the world seems to lend credence to the assumption of *universality* in their regard. Nonetheless, such an assumption would only remain speculative until validated in an empirical study such as the present one.

Based on the foregoing inferences, therefore, all 8 web-channel factors have been drafted into the conceptual framework of the study. Figure 5.2 below presents the *web channel-related* factors together as the second component of the study model and depicts the flow of their causal effects in the overall process of IB adoption. The 8 factors are thus hypothesised as being responsible for the bank's *web-channel readiness* for customer adoption.

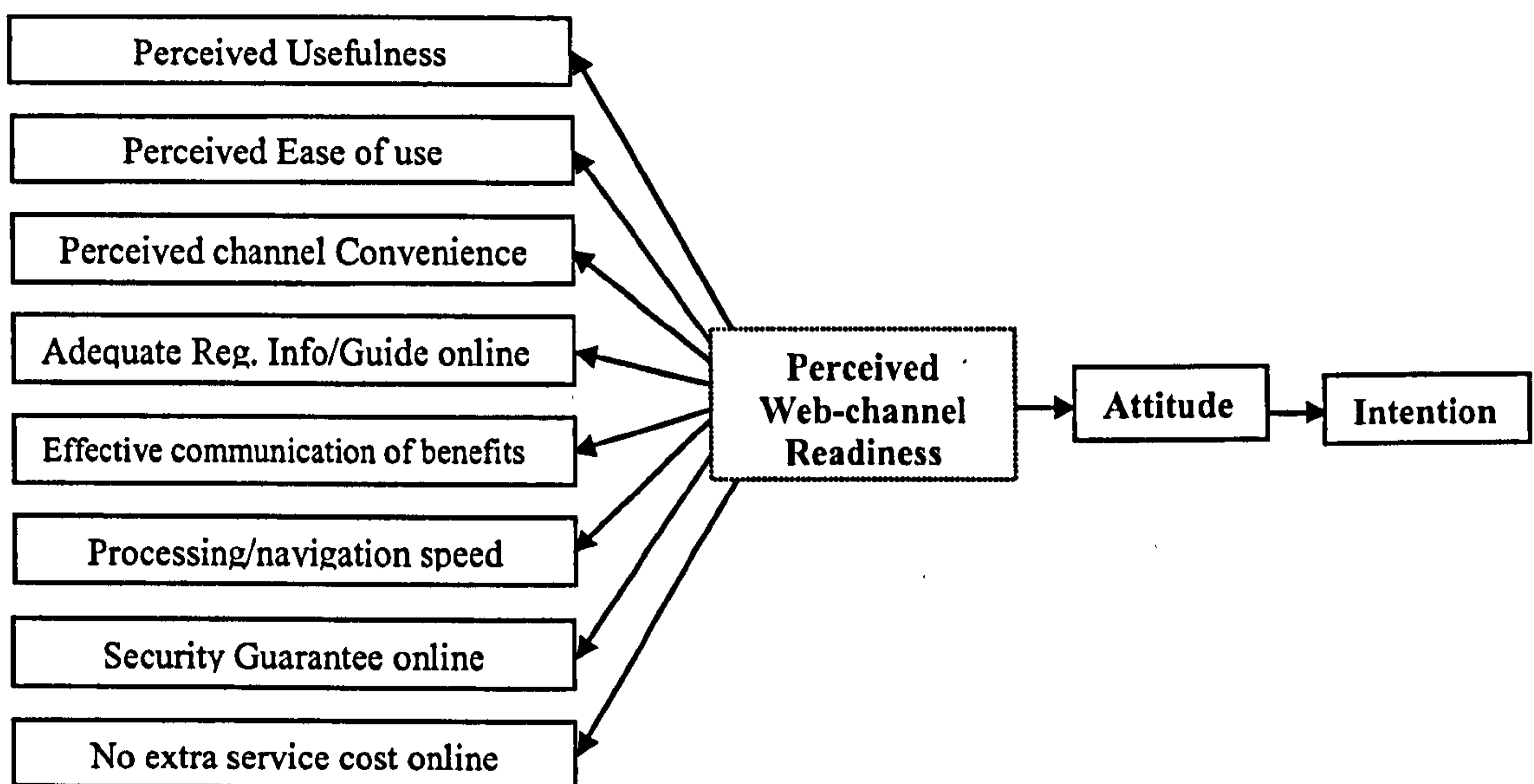


Figure 5.2: Web-channel factors – the second category of intervening variables included in the conceptual framework of the present study.

Lastly, all 16 *customer-related* and *perceived channel-related* factors discussed in this section have been variously found to have influenced customer adoption of the Internet banking channel in a number of countries with some degree of *universality* over the years since the advent of IB. Hence, having been identified and isolated from over a hundred studies published in the area between

1997 and 2008 (see appendix 1A and 1B) and having remained relevant over the years, the factors have therefore been modelled for validation in the present cross-national study as the probable *universal determinants* of retail customer adoption of Internet banking anywhere in the world, irrespective of cultural, economic and technological disparities.

### **5.3 Conceptual Framework of the Research:**

In line with the above inferences from the reviewed literature and the justifications provided for including the *customer-related* and *perceived channel-related* factors in the research design, an overall conceptual framework (figure 5.3 below) was generated to show the potential relationships between these intervening factors and retail customers' *attitude* and *intention* towards Internet banking adoption. Each of the two broad categories of intervening factors is hypothesised to have a *potential universal influence* on the ability and willingness of retail customers to adopt Internet banking. For reasons given earlier in subsection 5.2.1.5 on page 97, the third category of intervening factors (environmental factors) has been subsumed into the *customer-related* factor known as "access to computer and the Internet" (see figure 5.3 below). As illustrated in both the conceptual framework below and the actual research model presented in figure 5.4 on page 123, the influence of all the factors flows through the behavioural process depicted in the *attitude-intention-adoption* relationship to manifest in the customer's final decision about IB adoption.

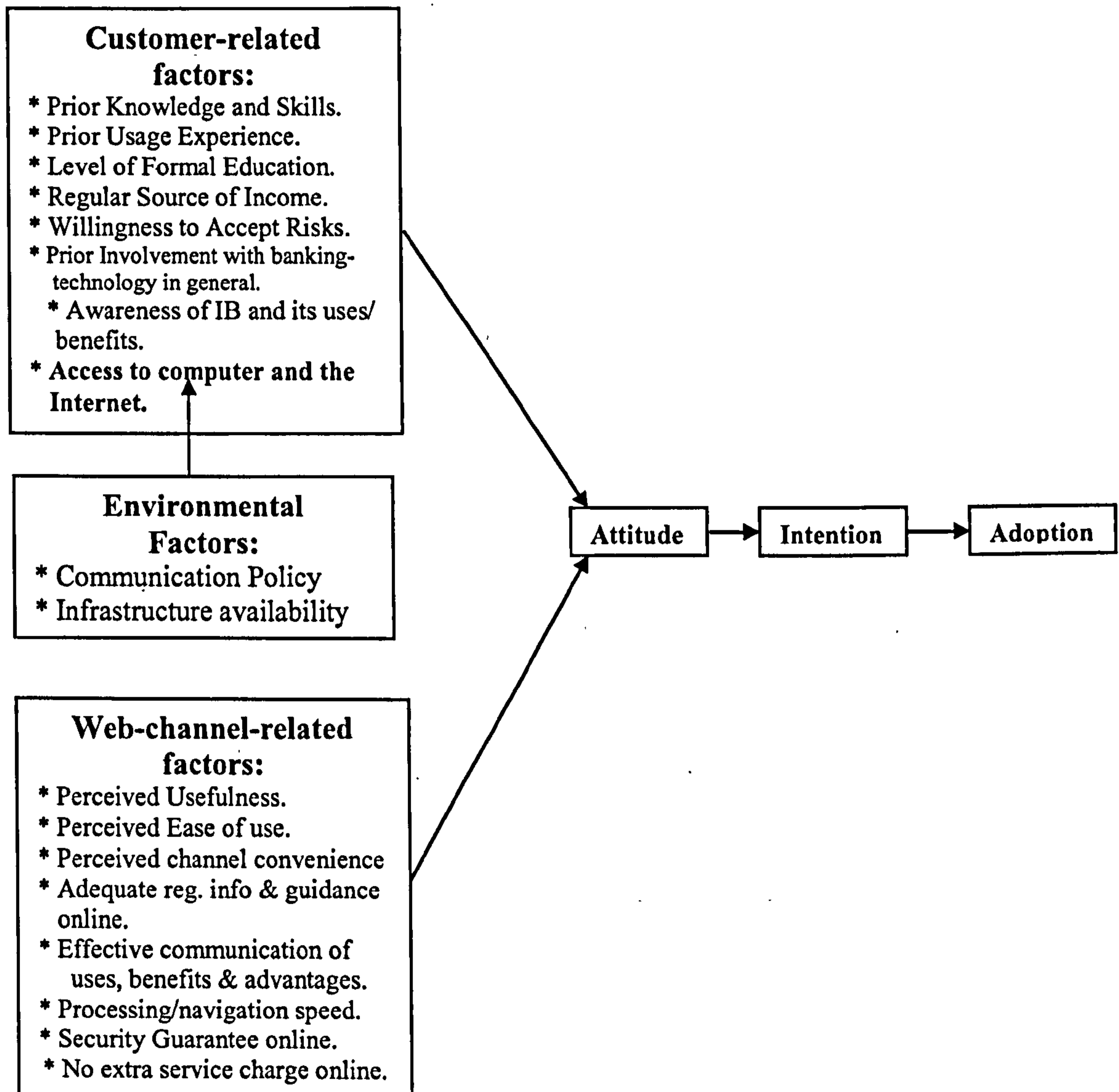


Fig. 5.3: Overall conceptual framework of the study indicating all the proposed intervening variables considered for investigation in the present research.

### 5.3.1 The Theoretical Anchor of the Research Design:

The above conceptual framework depicts the proposed behavioural process that underpins a potential customer's decision towards IB adoption. From the point of *awareness* through *trial* to the point of *actual adoption*, the customer is most likely to be influenced by the two broad categories of intervening variables which define his/her state of preparedness for adopting IB as well as the IB web-channel's own state of preparedness for being adopted. These two phenomena constitute the core essence of the present research and have been conceptualised in the study as *customer readiness* and *perceived channel readiness* for Internet banking adoption. The study hypothesises that these two groups of variables are the prime affecters of a potential customer's *attitude* towards IB adoption. In line with Ajzen (2005:p118), the study also proposes that the customer's *attitude* in turn affects his/her *intention* to adopt or not adopt the channel; and that the *intention* in turn determines the actual *behaviour* of adoption or non-adoption.

The study model has been developed as a combined adaptation and extension of two well known theories in the technological innovations adoption literature, including Rogers' (1983; 1995) Theory of Innovation Diffusion (TID) and Davis' (1989; 1995) Technology Acceptance Model (TAM). Additionally, the psychological aspects of the study, regarding banking customers' *attitudes* and *intentions* towards IB adoption, are based on Ajzen's (1980; 2005) Theory of Planned Behaviour (TPB) which, as indicated above, suggests that an individual's *attitude* towards a behaviour leads to his/her *intention* to perform or not perform the behaviour, which in turn determines his/her actual performance of that behaviour. The following sub-sections explain further how the above three theories have contributed to the development of the research design.

### **5.3.1.1 The conceptual idea underpinning the study:**

The underlying conceptual idea behind the research design takes root from the TID, which posits that a person's *willingness and ability* to adopt an innovation is based on his or her *awareness, interest, evaluation and trial* of the innovation, followed by the actual adoption or rejection. The individual first becomes aware of the innovation and, upon evaluation and persuasion, forms an *attitude* towards it, which may be positive or negative. It is this *attitude* that fundamentally leads the individual to either reject or accept the innovation (Rogers, 1995; Tan and Teo, 2000; King and Gribbins, 2002). Using an adaptation and extension of the TID, the present study attempts to cross-nationally investigate the two categories of intervening variables hypothesised in the study as the key mediators of the *attitude-intention-behaviour* interplay in Internet banking technology diffusion among retail banking customers.

### **5.3.1.2 The technology adoption framework of the study:**

The original TAM model developed by Fred Davis in 1989 has influenced the actual process of technology adoption appraisal in the present research by contributing the core structure of the study model. In the original TAM, the author suggests that the '*perceived usefulness*' and '*perceived ease of use*' of any new technology are the two fundamental factors that determine an individual's *intention* to use or not to use the technology. Formalised as a modification of Ajzen and Fishbein's (1980) TRA, the TAM model also subscribes to the argument that *intention* is immediately antecedent to adoption or rejection (Suh and Han, 2002; Wang et al., 2003; Lassar et al., 2004). Together with six other variables hypothesised as components of the *perceived web-channel readiness* factor, the above two fundamental variables of the original TAM have been recruited into the conceptual model of this research to form one of the two categories of factors that directly influence customer *attitude* to IB adoption.

### 5.3.1.3 Model adaptation and extension:

As aforementioned, most of the existing models on technological innovation implementation, including Davis' (1989; 1995) TAM and Rogers' (1983; 1995) Theory of Innovation Diffusion (TID), tend to examine only how the characteristics of the innovation process or channel affect an individual's perception and attitude towards adopting it. They therefore tend to focus only on the *readiness* of the technological process or channel for adoption while ignoring the fact that the individual faced with the adoption decision also needs to be ready and able to use the technology before adopting it. As a result these models have ignored the fact that an individual's own *readiness* for the technological innovation also affects his or her *attitude* and *intention* towards adopting it.

The present study attempts to fill this gap through a combined adaptation and extension of the above two theories. The research model has been designed as an adaptation (rather than adoption) of the two models because it is an alteration based on a combination of both theories. It is also an extension of each model because in developing it, the present study argues that the quality and features of a new technological channel (*channel readiness* variables) are not the only factors that affect an individual's *attitude* and *intention* towards adoption of the channel. By introducing the influence of the customer's personal characteristics (*customer readiness*) as the other half of the two categories of variables that influence technology adoption, the present research model is therefore an attempt to extend the two theories.

#### 5.3.1.4 The underlying behavioural framework of the study:

While the technological innovation adoption aspects of the present research model have been based on the TID and TAM theories as explained above, Ajzen's (2005) Theory of Planned Behaviour (TPB) has also influenced the underlying behavioural framework of the research in the sense that the behavioural process depicted in the *attitude-intention-adoption* relationship was hinged purely on the TPB. First developed by Icek Ajzen in 1985 and refined in 1991, the TPB mainly proposes that a person's behaviour is based on his or her personal volition, social norm, and perceived behavioural control. By inference, the adoption of a novel technology therefore depends on the individual's feelings, perceptions, and attitude towards the innovation, on social references and his/her perception of the difficulties and enabling circumstances that could affect the adoption behaviour (Ajzen, 2005).

Apart from *attitude*, the TPB also introduces the *intention* element into the behavioural process as an extension of the individual's *attitude* towards the innovation. Ajzen (2005:p118) argues that *intention* results from *attitude* and leads directly to the actual *behaviour*. Other scholars who subscribe to the TPB theory also agree that the *intention* to use or not to use a new technology is the immediate antecedent of the actual behaviour of adoption or rejection of the technology (Tan and Teo, 2000; King and Gribbins, 2002; Pavlou and Chai, 2002; George, 2004). The *attitude-intention-behaviour* relationship of the TPB has therefore been adopted into the conceptual framework of the present research as the behavioural axle of the study.



## **5.4 The Analytical Model and Hypotheses of the Research:**

Having integrated the technology-adoption and behavioural theories that underpin the conceptual framework of the present study, a full analytical research model was then developed (figure 5.4 below) which not only enumerates the hypothesised intervening variables in the adoption decision process but also traces the causal relationships between the two *readiness* constructs and the *attitude-intention* elements of the adoption process. The proposed model is therefore a visual representation of the hypothesised cause and effects relationships which define the roles of the various intervening variables in the decision-making process that characterises retail customers' adoption of Internet banking. The following subsections will clarify the genesis and rationale of the research hypotheses.

### **5.4.1 The Research Hypotheses:**

As shown in the analytical model below, there are five hypotheses proposed for validation in this study. All five are hinged on the overall assumption that unless a potential customer possesses the requisite personal characteristics that make him or her *ready* to adopt Internet banking and also finds that the target bank's website possesses the requisite characteristics that make it *ready* to be adopted for online banking services, he or she will very likely not adopt Internet banking. The reasoning behind this assumption is that even when the individual is fully aware of the Internet banking channel and tries it, the trial will likely not result in actual adoption unless all the requisite characteristics represented by the intervening factors in the model are adequately taken care of.

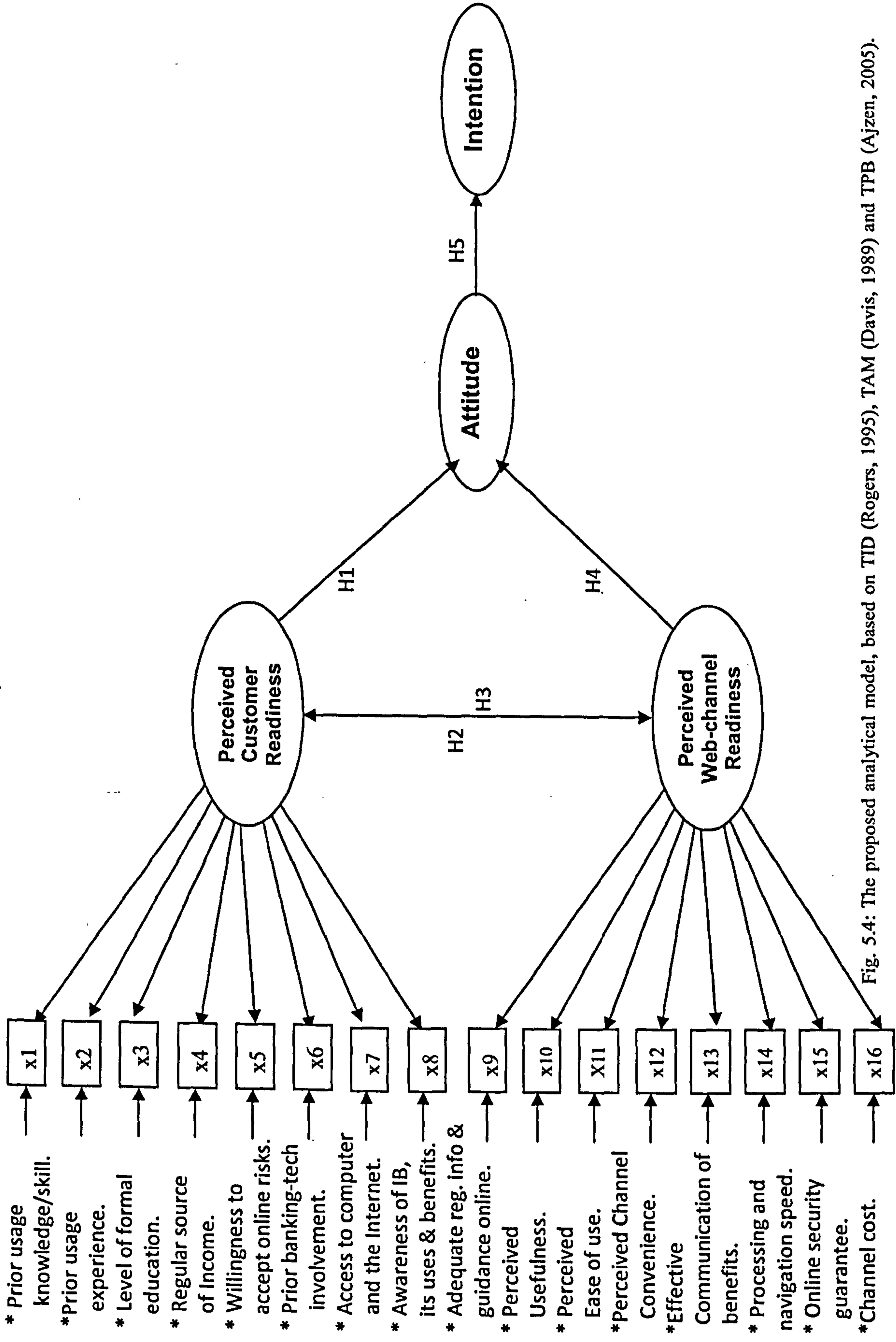


Fig. 5.4: The proposed analytical model, based on TID (Rogers, 1995), TAM (Davis, 1989) and TPB (Ajzen, 2005).

Waite and Harrison (2004:p68) note that *trial* is a key stage in innovation diffusion before adoption can take place. However, this study argues that for *trial* to translate into *adoption*, all the intervening factors that account for *customer readiness* and *perceived web-channel readiness* (as presented in the analytical model above) must have been adequately dealt with. These key assumptions form the basis of the research hypotheses. However, in order to lay out the framework for validating the influence of the intervening factors as antecedents of *customer readiness* and *perceived web-channel readiness* in the adoption process, the specific underlying notion behind each causal relationship in the behavioural process is presented and discussed in the following subsections:

#### **5.4.1.1 Hypothesised Influence of *Customer Readiness*:**

The main inference of the study regarding *customer readiness* for Internet banking is that potential customers need to be able and willing to adopt Internet banking before they can do so. Having the ability and willingness will afford them the state of preparedness for IB adoption, but in order to acquire this state of preparedness, they have to possess the requisite *customer readiness* characteristics listed in the study model (figure 5.4 above). In addition, the customer must be aware of the Internet banking channel, its uses, benefits and advantages, having sought and acquired some information from the target financial institution in order to enhance his/her *readiness* to use the new channel.

This study therefore proposes that a significant lack of these characteristics is tantamount to *unreadiness* on the part of the customer, meaning that he or she is not yet prepared to use the Internet banking channel and will therefore not adopt it.

In contrast, a significant possession of the characteristics will result in *customer readiness* for Internet banking adoption and will lead to adoption. Hence, the study will attempt to validate the intervening factors as characteristics that must be possessed by any potential retail customer in order to be *ready* to adopt Internet banking. Based on these assertions, the study proposes that possession of the *customer readiness* characteristics will positively influence the customer's *attitude* towards the Internet banking channel as well as his or her *intention* to adopt it (Ajzen, 2005). Consequently, the study puts forward the following two hypotheses regarding *customer readiness* for IB adoption:

- **HYPOTHESIS 1:** *A potential customer's readiness for Internet banking adoption has a positive impact on his/her attitude towards adopting it (H1).*
- **HYPOTHESIS 2:** *A potential customer's readiness for Internet banking adoption impacts positively on his/her perception of the web-channel readiness characteristics (H2).*

#### **5.4.1.2 Hypothesised Influence of *Channel Readiness*:**

For a potential customer to be able and willing to adopt Internet banking, the study also infers that the Internet banking website of the financial services provider must equally be *ready* to be adopted by possessing the requisite web-channel characteristics presented in the research model above. In addition, the study argues that any significant lack of these characteristics would mean that the channel is not *ready* to be adopted, and this will inhibit customer adoption. However, if a banking web-channel possesses a significant amount of the requisite characteristics, it will be *ready* for adoption and customers will most likely be motivated to adopt it. Based on this notion, the study also presents the following two hypotheses regarding *perceived web-channel readiness*:

- **HYPOTHESIS 3:** *Perceived web-channel readiness for customer adoption of Internet banking has a positive impact on customer readiness for Internet banking adoption (H3).*
- **HYPOTHESIS 4:** *Perceived web-channel readiness for customer adoption of Internet banking has a positive impact on customer's attitude towards adopting the channel (H4).*

#### 5.4.1.3 Hypothesised Influence of Attitude on Intention:

Ajzen (2005:p3) defines *attitude* as “a disposition to respond favourably or unfavourably to an object, person, institution, or event.” The term *disposition* suggests a perceptible display of character or outlook towards a target, and therefore supports the characterisation of *attitude* in this study as an expression of a person's inclination towards a particular behaviour consequent upon his or her evaluation of the prospects of performing or not performing the target behaviour. Being “favourable or unfavourable” means that *attitude* could be expressed negatively or positively towards the target behaviour.

Several innovation adoption behaviour scholars agree with Ajzen (2005) that an individual's *attitude* towards an innovation leads to his or her *intention* to adopt or not adopt it, which in turn leads to the *actual behaviour* of adoption or non-adoption (Ajzen and Fishbein, 1980; Davis, 1989; Rogers, 1995; King and Gribbins, 2002; Lassar et al., 2004). In the context of Internet banking adoption, this study hypothesises that *customer-readiness* and *channel readiness* will jointly elicit a *positive attitude* in a potential customer towards Internet banking and also that the *positive attitude* will equally lead to the customer's *positive intention* to adopt Internet banking. Similarly, if *readiness* is not established, a potential

customer will likely develop a *negative attitude* towards Internet banking adoption which will most likely lead an *intention not to adopt* the channel (Suh and Han, 2002:p251). On the basis of the above premise, this study also proposes the following hypothesis regarding attitude and intention:

- ***HYPOTHESIS 5: A potential customer's attitude towards Internet banking is positively related to his/her intention to adopt it (H5).***

## **5.5 Summary:**

In this chapter, rationale for the inclusion of the eight customer-related factors and the eight web channel-related factors into the conceptual model of the research was provided. Inferences from the reviewed literature published between 1997 and 2008 have helped in justifying the isolation and inclusion of these sixteen intervening variables into the research model.

The chapter also presented the process of synthesising both the conceptual and analytical models of the research. In building up the conceptual framework, an adaptation cum extension of two renowned innovation diffusion theories (TID and TAM) was made. The resultant framework was then hinged on Ajzen's (2005) behavioural model, the TPB. Subsequently, in order to depict the hypothesised effects of the *customer readiness* and *web-channel readiness* constructs on retail customers' behavioural disposition towards the adoption of Internet banking, an analytical model of the study was also developed depicting the numbered positions of the five research hypotheses (figure 5.4 on page 123). Finally, the chapter concluded by presenting and explaining the assumptions and inferences that gave rise to the research hypotheses, which are expected to be validated or refuted in the study.

## **CHAPTER 6:**

### **BACKGROUNDS OF THE NATIONAL STUDY LOCATIONS: SCOTLAND AND NIGERIA**

#### **6.1 Introduction:**

In chapter 5, inferences from the existing literature were relied upon in the development of the conceptual research framework as well as in providing justifications for the isolation and inclusion of sixteen intervening factors that have been assumed as the potential universal determinants of Internet banking adoption into the analytical model of the study.

Chapter 6 is principally aimed at discussing the backgrounds of the two national study locations (Nigeria and Scotland), especially the levels of Internet penetration and Internet banking service provision in both countries. In presenting the relevant background information on the countries one after the other, the chapter will also discuss and compare the economic, technological and cultural characteristics of the countries with a view to highlighting the differences between them as the main justification for selecting them for the present cross-national research.

#### **6.2 A Contemporary Profile of Nigeria:**

Sitting on a land mass of 356, 668.82 square miles (923, 768.00 square kilometres) in the West African sub-region (HRW World Atlas, 2006) with a population of 130.3 million people (UN, 2005; BBC Country Profile: Nigeria, 2007), Nigeria is the most populous black nation on earth. With a proven crude oil

reserve of 22.5 million barrels (Official Vice President's site, 2006), Nigeria is also the world's sixth largest exporter of crude oil and Africa's leading oil producer (BBC Country Profile: Nigeria, 2007). Unfortunately, the country's over-dependence on oil export, which accounts for over 90% of her export revenues, over 90% of foreign exchange earnings, and 80% of government revenues (Vice President's Official Website, 2006) means that all the other sectors of the economy are virtually neglected in favour of this perpetually controversial cash cow.

### **6.2.1 Economic Profile of Nigeria:**

Nigeria has a per capita GDP of US\$ 1,188 (Nationmaster, 2007) and a per capita GNI of US \$560 (World Bank, 2006). But, in spite of being the world's sixth largest exporter of crude oil and the world's 50<sup>th</sup> richest nation by both GDP and GNI (Nationmaster, 2007), over 60% of Nigeria's 130.3 million people still live below the poverty line. 20% of the children die before the age of five, about 12 million children are not in school, and the average male and female life expectancy in the country is only 47 years (Nationmaster, 2007; BBC News Online, 2007). Reasons for all these woeful tales of are traceable to misplaced developmental priorities, endemic corruption in high and low places, economic sabotage, and a public service system fraught with fiscal indiscipline and financial fraud, all of which have plagued the country over the past 30 years.

Diverted state funds and trade in stolen crude oil have impoverished the people and resulted in widespread agitation, advanced fee fraud and violent crimes among the younger generation in most parts of the country, especially in the Niger Delta area, which is home to most of the crude oil fields of the country (BBC



Country Profile: Nigeria, 2007). Below is an extract of what Jeffrey Tayler of *Atlantic Monthly* magazine (April 2006) published about Nigeria in an article titled "Worse Than Iraq?"

"Chief among the country's current woes is corruption. During the last twenty-five years, Nigeria earned more than \$300 billion in oil revenues - but annual per capita income plummeted from \$1,000 to \$390. More than two-thirds of the population lives beneath the poverty line, subsisting on less than a dollar a day. The country's elites bear most of the blame. Since Nigeria gained independence in 1960, its rulers - military and civilian alike - have systematically squandered or stolen some \$400 billion in government money. According to a 2004 World Bank report, 80 percent of the country's oil wealth accrues to 1 percent of the population. As the journalist Karl Maier, whose *This House Has Fallen* stands as the authoritative work on modern Nigeria, has put it, Nigeria is a "criminally mismanaged corporation where the bosses are armed and have barricaded themselves inside the company safe." (Tayler, 2006).

In addition, political corruption, oil bunkering and high-profile economic and financial crimes among the so-called elites of the country have continued to plague this nation that should have been one of the richest nations in the world by now had it been judiciously managed in the last 40 years. Greed-motivated and poverty-induced advance-fee fraud (aka 419) among both the haves and have-nots has so grossly ruined the international image of this former "giant of Africa" that any business initiative from the country is viewed with suspicion, and any electronic payment card issued by any Nigerian bank is outrightly rejected in international financial circles (Olesin, 2006; Ezeoha, 2005, 2006; Ayo and Babajide, 2006).

Nonetheless, economic analysts generally believe that by virtue of the present efforts to fight corruption at all levels in the country, initiated by the formation of the Economic and Financial Crimes Commission (EFCC), there seems to be a light in the tunnel for Nigeria (Ezeoha 2006). In addition, the 2005/2006 reorganisation and consolidation of the banking sector by the Central Bank of Nigeria is also seen as a right step towards rejuvenating other productive sectors of the economy and alleviating poverty among the people.

**Socio-economic statistics - Nigeria:**

	NIGERIA	
	Figure	%
Overall Population	130.3m	100
Population under 14 years	55.12m	42.3
Population 15 – 64 years	71.14m	54.6
Population 65 and over	4.04m	3.1
Total active labour force	50.13m	38.5
Gross Domestic Product (GDP)	US\$ 154.80b	
Gross Domestic Product per capita	US\$ 1,188	
Gross National Income (GNI)	US\$ 72.97b	
Gross National Income per capita	US\$ 560	
Gross Fixed Investments	US\$ 36.7b	23.7% of GDP
Real Growth Rate		6.4
Unemployment Rate		4.9
Gross Weekly Household Expenditure	£406.20	
Total fixed telephone lines	1.7m	
Total mobile/cellular phone lines	40.4m	
Number of Internet hosts	1,968	
Total number of Internet users	10m	7.2

Table 6.1: Socio-economic statistics of Nigeria (Sources: UN, 2005; World Bank, 2006; BBC Country Profile: Nigeria, 2007; Nationmaster, 2007; Internetworldstats, 2008; and CIA World Factbook, 2008)

### **6.2.2 Technological Profile of Nigeria:**

A successful improvement of the country's infrastructure in the area of information and communications technology (ICT) was one of the major achievements of the immediate past government of the country. A full digitisation of the country's telecommunication services and introduction of mobile telephony with GSM networks was achieved in 2001 (Internet World Statistics, 2008). By January 2007, there were over 35 million telephone subscribers in Nigeria, consisting of 1.7 million fixed line subscribers and over 33 million GSM mobile phone subscribers (NCC, 2007). This makes Nigeria the second largest mobile phone market on the African continent, and it was predicted that the country would possibly overtake South Africa by the end of 2007 in this area (Ayo and Babajide, 2006; Timesonline, 2007; BBC News Online, 2007).

Following the privatisation of NITEL, the country's first national carrier which became TELCO, and the introduction of a unified licensing regime in the country's telecommunications market in 2006, there are now a second national telephone carrier and over 200 other telecommunications companies providing fixed and mobile telephone services, value added services, as well as broadband capabilities to enhance Internet access and telecommunication in the country (Internetworldstatistics, 2008). Twelve out of the 38 licensed Internet Service Providers (ISPs) are operational in the country and there are 1, 968 Internet hosts providing Internet access capability to corporate, institutional, and private customers (Nationmaster, 2007; NCC, 2007)

However, a major issue militating against technological progress in Nigeria is the endemic problem of inadequate electricity supply. Solving the power generation problem of the country has posed an insurmountable challenge to every

successive government in the country since the 1970s. The country presently generates about 2500 megawatts of electricity, only 12.5% of the 20,000 megawatts needed for stable power supply in the country (BBC News, July 2007). According to Adenikinju (2003:p1521) “only 34% of Nigeria’s population has access to public power supply”. The author also observes that over 90% of firms in the manufacturing sector of the country resort to alternative self-generation of electricity in order to maintain their operations. They do so in spite of the high cost involved, because the public power supply is unreliable. “The average Nigerian firm experiences power failure or voltage fluctuations about 7 times per week, each lasting for about 2 hours without the benefit of a prior warning” (Adenikinju, 2000).

Nonetheless, Nigeria seems determined to overcome the issues slowing down her rate of technological advancement. In spite of all infrastructural inadequacies, the country is still the fastest growing Information and Communication Technology (ICT) market on the African continent (Ezeoha, 2006). Additionally, with the country’s Internet penetration figures increasing from 200,000 in 2000 to 10 million in June 2008 (7.2% of the population), Nigeria now has the highest Internet penetration rate in Africa, followed by Egypt (8.6 million/), Morocco (7.3 million), and South Africa (5.1 million) (Internetworldstats, 2008). There are over 2 million branded personal computers in the country. These are apart from the several millions of second-hand computers imported from Asia, Europe, and North America and the hundreds of thousands of generic clones assembled locally from disused computer scraps dumped on the country from the above regions.

### **6.2.3 Internet Banking in Nigeria:**

In anticipation of the “actual and potential competition from foreign banks” (Suganthi et al., 2001) and following the globalisation and liberalization of the financial services industries around the world (Ramayah et al., 2006), the Central Bank of Nigeria instituted a national consolidation exercise in the Nigeria banking sector in 2005. This exercise was similar to that carried out by the Malaysian Central Bank in 2000 which consolidated the country’s 23 banks into 10 financial groups (Suganthi et al., 2001). From a total of 89 banks in Nigeria before the consolidation exercise, there emerged 25 consolidated banks by December 2005. Each one of the newly consolidated 25 banks now has a paid-up share capital of at least 25 billion naira (CBN, 2007), an equivalent of about US\$200 million or GB£120 million at the time of recapitalisation. It is estimated that each bank should now be able to compete favourably in the international financial market both in Africa and elsewhere in the world, in terms of technology acquisition, infrastructure, and service provision.

All the 25 banks are now fully automated and have Internet websites. At least, 21 of them (84%) engage in one or two of the three levels of the Internet banking service model delineated by Diniz (1998) (see tables 6.2 and 6.3 below). In addition, they also offer other forms of electronic banking services such as e-cards, ATMs and telephone banking. This pace of development is certainly encouraging, especially when compared to that of other large developing economies. For instance, as at 2003, only 4 out of India’s 50 banks (8%) were offering intermediate level Internet banking services, while 27 banks (55%) merely had basic informational websites (Mukherjee and Nath, 2003:p9). By October 2008, all Indian 50 banks were offering varied IB services, but 55% still offer services at “entry level”, while only the 8% now offer services at advanced level (Mishra, 2008:p2).

The desk research of the websites of the 21 Nigerian banks offering Internet banking services shows that they offer all basic services listed in Diniz's (1998) model (see table 6.3 on page 136), while a few of them also offer three additional intermediate-stage transactional services, including account balance enquiry, funds transfer, and bills payment (Chiemeké et al., 2006; Ayo and Babajide, 2006). By so doing, it is evident that most of the newly consolidated banks in Nigeria have adopted Internet banking (Aghaunor and Fotoh, 2006; CBN, 2007). At least, their IB activities have gone beyond the basic definition of Internet banking originally proffered by Daniel (1999). The author had defined Internet banking as the ability of banks to merely provide information about themselves and their financial products via their worldwide web sites. Nigerian banks now provide online interactive financial transactions which conform to a more recent definition of Internet banking as "the ability of the customer to transact business with the bank through the use of the Internet" (Hain et al., 2002:p1).

In order to promote, guide, and regulate the introduction of electronic banking systems in Nigeria, the Central Bank of Nigeria in August 2003 released a set of detailed guidelines for all banks and financial institutions to follow in introducing online banking. The guidelines cover a whole range of electronic financial services provided via mobile telephony, automated teller machines (ATM), Internet banking, point of sale devices, international card schemes, electronic bill payments, and switches, and electronic funds transfer (CBN, 2003). For Internet banking, the apex bank directed that banks should institute proper procedures for maintaining their web sites which would ensure, among other things, regular updating, accuracy of information, security of transactions and customers' personal information, and properly maintained firewalls from their ISPs to protect their websites (*ibidem*).

### Post-consolidation deposit banks in Nigeria:

SN	BANKS	WEBSITES	INTERNET BANKING SERVICE CHANNEL
1	Access Bank Nigeria	<a href="http://www.accessbankplc.com">www.accessbankplc.com</a>	Adopter
2	Afribank Nigeria	<a href="http://www.afribank.com">www.afribank.com</a>	Adopter
3	Diamond Bank	<a href="http://www.diamondbank.com">www.diamondbank.com</a>	Adopter
4	Guaranty Trust Bank	<a href="http://www.gtbplc.com">www.gtbplc.com</a>	Adopter
5	Ecobank Nigeria	<a href="http://www.ecobank.com">www.ecobank.com</a>	Adopter
6	Equitorial Trust Bank	<a href="http://www.equitorialtrustbank.com">www.equitorialtrustbank.com</a>	Adopter
7	FCMB Bank	<a href="http://www.fcmb-ltd.com">www.fcmb-ltd.com</a>	Adopter
8	IBTC Chartered Bank	<a href="http://www.ibtc.com">www.ibtc.com</a>	Adopter
9	First Bank	<a href="http://www.firstbanknigeria.com">www.firstbanknigeria.com</a>	Adopter
10	Intercontinental Bank	<a href="http://www.intercontinentalbankplc.com">www.intercontinentalbankplc.com</a>	Adopter
11	UBA	<a href="http://www.ubagroup.com">www.ubagroup.com</a>	Adopter
12	Zenith Bank	<a href="http://www.zenithbank.com">www.zenithbank.com</a>	Adopter
13	Nigeria International Bank	NA (Formerly Citibank Nigeria Ltd)	NA
14	Fidelity Bank	<a href="http://www.fidelitybankplc.com">www.fidelitybankplc.com</a>	Adopter
15	Oceanic Bank Int.	<a href="http://www.oceanicbanknigeria.com">www.oceanicbanknigeria.com</a>	Adopter
16	First Inland Bank	<a href="http://www.firstinlandbankplc.net">www.firstinlandbankplc.net</a>	Adopter
17	Platinum Habib Bank	<a href="http://www.bankphb.com">www.bankphb.com</a>	Adopter
18	Skye Bank	<a href="http://www.skyebankng.com">www.skyebankng.com</a>	Adopter
19	Stanbic Bank	<a href="http://www.stanbic.com.ng">www.stanbic.com.ng</a>	Non-adopter
20	Standard Chartered	<a href="http://www.standardchartered.com">www.standardchartered.com</a>	Adopter
21	Union Bank of Nigeria	<a href="http://www.unionbankng.com">www.unionbankng.com</a>	Non-adopter
22	Unity Bank	NA	NA
23	Wema Bank	<a href="http://www.wemabank.com">www.wemabank.com</a>	Adopter
24	Spring Bank	<a href="http://www.springbankplc.com">www.springbankplc.com</a>	Adopter
25	Sterling Bank	<a href="http://www.sterlingbankng.com">www.sterlingbankng.com</a>	Adopter

Table 6.2: The 25 consolidated banks in Nigeria, 21 of which have introduced Internet banking services (Sources: Aghaunor and Fotoh, 2006; CBN, 2007; desk research of Nigerian banks' websites on 19/08/2007).

However, as Chiemeké et al. (2006) note, there is still a slow pace of movement by Nigerian banks towards the intermediary and advanced levels of the Internet banking model (see table 6.3 below). This is due to the high sense of insecurity in the Nigerian banking system which accounts for the reluctance of majority of retail customers to adopt Internet banking services. There is also the

issue of the high cost of acquiring the back-up technology and infrastructure needed to ensure security of interactive transactions on the internet, and the consequent high cost of Internet-based services which the banks pass on to their customers.

**Internet banking diffusion among the Nigerian financial institutions:**

	<b>BASIC</b>	<b>INTERMEDIATE</b>	<b>ADVANCED</b>
<b>Information Delivery</b>	<b>Electronic Brochure</b>	Search Engine	Subscription
	<b>News</b>	Reports download	Advertisement
	<b>Means of Contact</b>	Recruitment forms	Discussion group
	<b>Special Events</b>	Hot links	Interface Customization
<b>Transactional Channels</b>	<b>Opening Account</b>	<b>Balance Enquiry</b>	Electronic Cash
	<b>Cheque Book requests</b>	<b>Funds Transfer</b>	Electronic Signature
	<b>Card Requests</b>	<b>Bill Payments</b>	Electronic Cheques
<b>Customer Relationship</b>	<b>E-mail</b>	Investment Advisor	Video Conference
	<b>Suggestion forms</b>	Calculations	Chart
	<b>Complain forms</b>	Software Download	Services Development
<b>Security Measures</b>	<b>User Name</b>	Customer Code	Digital Signature/Certificate
	<b>Password/Change Password</b>	<b>Firewalls</b>	SSL 128 Bit Encryption

Table 6.3: Present level of Internet banking diffusion among Nigerian banks, based on Chiemeké's (2006) extended version of **Diniz's (1998) Internet Banking Model** (Sources: Chiemeké et al., 2006; CBN, 2007; and the desk research on Nigerian banks' websites (19/08/07 and 04/12/08).

It is roughly estimated that only 7.5% of the 10 million Internet users in Nigeria have actually used the Internet banking services of their banks, being about 0.75 million people (0.58% of the country's population), while about 0.6 million people (0.46% of the population) are currently using electronic payment cards



(NCC, 2006). However, these figures could not be confirmed by any of the 21 banks offering IB services in the country, leaving one to suspect that financial institutions in the country have still not deemed it necessary to commission a joint industry-wide national survey to empirically establish the actual number of individual customers who have truly adopted Internet banking in Nigeria. Several of the banks providing online financial services provide separate log-in procedures for corporate and individual customers on their websites and claim that thousands of their customers have signed up for Internet banking, but all official requests made to the banks, the CBN, the Chartered Institute of Bankers of Nigeria (CIB), the Federal Office of Statistics, and Federal Ministry of Finance for information on actual IB adoption figures in the country were unrequited.

Nonetheless, it is hoped that with all the efforts being made by the Nigerian government to increase the diffusion of broadband Internet connectivity and digital telecommunications in the country, the high cost of Internet access should be overcome within the next 10 years in order to enable tens of millions of non-users, who would otherwise have adopted Internet banking had it not been for the lack of Internet connection, to do so. An overview from the Economist Intelligence Unit's (EIU, 2006) also reported that low penetration of Internet-compatible personal computers was equally a major factor setting back the level of IB penetration in Nigeria. However, the cost of buying a PC has reduced drastically from what it was in 1991, and is still going down. It is hoped that as the economy continues to recover, more and more people will be able to afford their own PCs.

Another issue militating against the pace of Internet banking adoption in Nigeria has also been the unsuccessful attempts at achieving an enduring electronic payment system in the country. The failure to sustain an appreciable growth in the use of electronic payment cards for financial transactions in the country has not only been due to the risk of insecurity, but primarily due to the culture-bound attitudinal penchant of Nigerians for carrying and displaying cash. As a result, a whopping 90% of the money in the economy is freely circulating outside the banking system at every given time (Ojo, 2004). This has made the country a cash-based economy, unlike countries such as the UK and the US where only 4% and 9% of the money in the respective economies reside outside the banks (Ovia, 2002; Ojo, 2004; Ayo and Babajide, 2006).

The cash carrying culture of Nigerians has long been rooted in “ignorance, illiteracy, lack of security consciousness and lack of appreciation of the merits of digital payment” (Ovia, 2002; Ayo and Babajide, 2006). This attitude has also been responsible for beclouding many Nigerians, especially the uneducated ones, from even seeing the need to deposit their monies in the bank in the first place, not minding the digital one. However, it is hoped that a more aggressive strategy of customer education and awareness creation by the consolidated banks would be helpful in reversing this situation. Scholars and economic experts in the country believe that solving major problems such as providing top-level anti-fraud electronic security systems and appropriate legislations for security assurances in the banking sector will not only boost IB adoption but also enable the country’s e-commerce in general to soar (Bickersteth, 2005; Chiemeké et al., 2006; Ezeoha, 2005; 2006).

Lastly, according to financial scholars in the country, all economic pointers indicate that Internet banking will be very successful in Nigeria once the infrastructural problems are overcome and costs are driven down. There seems to be a consensus among them that Internet banking diffusion in the country is slowly but steadily gaining grounds as all the consolidated banks are currently investing in facilities that will enable them to provide secure online services to customers in due course. The initial success so far shows that customers could be educated and motivated to adopt Internet banking once the system is made absolutely secure and access and service costs are driven down (Bickersteth, 2005; Chiemekwe et al., 2006; Aghaunor and Fotoh, 2006; Ezeoha, 2005; 2006).

### **6.3 A Contemporary Profile of Scotland:**

“Scotland's often turbulent past, her extraordinary people, the rich diversity of her arts and culture, and many other (attractions) ... have produced a nation that treasures its past and keenly anticipates its future” ([visitscotland.com](http://visitscotland.com), 2007).

Until the SNP-led regional Government in Scotland proscribed the idea in August 2007, Scotland was marketed to tourists and visitors in many of her airports as “THE BEST small COUNTRY IN THE WORLD”. The uncanny emphasis on the word “small” by actually making its font size much smaller than the other words in the expression seemed to encapsulate the dilemma of this great historical citadel. Scotland is the land of the Scots, a distinct race and nation with over 8000 years of enviable history (*ibidem*), but today it is not an independent country of its own in the modern sense of independent nationhood. It is a part of the United Kingdom of Great Britain and Northern Ireland.

From the unification of the Scottish and English monarchy in 1603 through the passage of the Acts of Union by both the Scottish and English parliaments in 1707, even through the Scottish wars for independence, and after the 1999 devolution when the modern regional governance of Scotland was passed to a semi-dependent Scottish Parliament, Scotland has remained “the junior partner (to England) in many spheres” (ibid) of the United Kingdom. However, even though Scotland is only a part of the confederacy known as the United Kingdom, its nationhood remains intact because “one of the terms of the union was that Scotland should keep her own law courts and her own system for administering justice” (Somerset-Fry, 1982: p216).

Scotland is in the northern part of the United Kingdom and is one of the northern-most parts of Europe. The geography of Scotland is an agglomeration of uplands in the south, lowlands in the middle, and highlands and islands in the north, all totalling a landmass of 78, 132 square kilometres (Regional Trends No. 39, 2006). With a population of 5.095 million, Scotland constitutes 8.5% of the UK population (UK Office for National Statistics, 2007).

### **6.3.1 Justification for the selection of Scotland as “a country” in this study:**

Scotland has been chosen as a separate national study location in this research because its status in the United Kingdom does not diminish its nationhood as aforementioned. The devolution of governing powers to the Scottish Executive in 1999 was established, among other reasons, “as an exercise in re-establishing the legitimacy of government in Scotland” (ESRC, 2005: p4). On this basis, Scotland is governed by a separate executive; has a separate parliament; has Edinburgh as its

own national capital city; has its own national flag; and maintains its own separate judicial, legislative, penitential, sporting, educational, and fiscal systems under devolution (Nationmaster, 2007). “Scotland is a part of Britain, but also a distinct nation” says Olga Wojtas of *Times Higher Education* (4/12/2008: p22) in his review of Rab Houston’s (2008) recent book, *Scotland: A Very Short Introduction*. Citing the author, the reviewer maintained that “even after the union of the Scottish and English parliaments in 1707, education, local government, law and religion remain separate” (Wojtas, 2008).

Additionally, to the effect of devolution, Scotland is legally known and officially referred to as “one of the four constituent countries” which make up the United Kingdom; others being England, Wales, and Northern Ireland (Health Statistics Quarterly, No 33, 2007: p20). Scotland also prints its own version of the British Pound Sterling notes, known as the Scottish Pounds. Moreover, Scotland is officially treated by both FIFA and UEFA as a separate country in both world and European football tournaments. The nation also maintains separate football and rugby leagues from the rest of the UK.

Between 2005 and 2007, both Scotland and Nigeria competed as separate member-states of the Commonwealth of Nations for the right to host the 2014 Commonwealth Games. On 9<sup>th</sup> November, 2007, it was awarded to Scotland for the third time since 1930 (CGCS, 2008). Consequently, apart from pragmatic reasons of *proximity* and *convenience* detailed in subsection 6.4.5 (page 163), this study has adopted Scotland as a national study location to be studied alongside Nigeria on the basis of the above clarifications. In the context of this initial attempt to cross-nationally validate the potential universal determinants of retail customer adoption of Internet banking, Scotland and Nigeria have therefore been chosen as ideal start-off research locations.

### 6.3.2 Economic Profile of Scotland:

Table 6.4 below presents a summary of Scotland's economic profile as at 2007 alongside that of the UK. At 79.8%, the economic activity rate in Scotland is slightly higher than the UK average of 79.0%. Scotland's 2006 GDP per capita stands at US\$ 33,680 (CIA World Factbook, 2007), but at the same time the unemployment rate in Scotland stands at 5.9%, a little higher than the UK average rate of 5.5% (UK Office for National Statistics, 2007). In addition, Scotland ranks quite high in the proportion of people with lower than the average health standards in the UK and Europe, with cases of heart disease and strokes being "exceptionally high" in comparison to other European countries (Ross, 2005).

#### Socio-economic statistics - UK and Scotland:

	UK		SCOTLAND	
	Figure	%	Figure	%
Overall Population	60.21m	100	5.095m	8.5 of UK
Population under 16 years	11.74m	19.5	0.94m	18.4
Population of pension age and over (65yrs for men; 60yrs for women)	11.20m	18.6	0.97m	19.1
Population of <b>active adults</b> (16 – 64 for men; 16 – 59 for women)	37.27m	62.0	3.185m	62.5
Economic Activity Rate		79		79.8
Gross Domestic Product (GDP)	\$2.14 trillion		\$172 billion	12.4 of UK
Gross Domestic Product per capita	\$35, 542		\$33, 680	
GDP as Gross Value Added (GVA)	£1,005b		£82b	
GDP as Gross Value Added per capita		100		96.2
Employment Rate		74.4		75
Unemployment Rate		5.8		5.9
Gross Weekly Household Income	£554		£500	
Gross Weekly Household Expenditure	£406.20		£370.30	

Table 6.4: Socio-economic statistics of the UK and Scotland (Sources: Scottish Executive National Statistics, 2006; UK Office for National Statistics, 2007; General Registrar, Office for Scotland, 2007; Nationmaster, 2007; and CIA World Factbook, 2007)

A compilation of regional survey reports and national statistics published by the European Union in 2006 indicates that manufacturing accounts for 15% of Scotland's gross value added (GVA), amounting to about £82 billion in total or £16,200 per capita. Agriculture, hunting and fishing accounts for 2% of the GVA. Also, between 2000 and 2006 the Financial Services industry in Scotland grew by 55 per cent, while the overall Scottish economy grew by 13 per cent over the period (Scottish Enterprise, 2007). By the end of 2006, employment rate in Scotland stood at 75%, while unemployment stands at 5.9%, both slightly above the UK average. Similarly, the average gross weekly household income and expenditure for Scotland that year were £500 and £370 respectively, also slightly below the UK average (Regional Trends 39, 2006).

### **6.3.3 Technological Profile of Scotland:**

In 2000, the Scottish Enterprise published a study on e-commerce adoption in Scotland and benchmarked a five-stage adoption model which Scottish businesses would go through in adopting the Internet technology in their operations. The five stages (see fig. 6.1 below) included:

- *E-aware* - becoming aware of the uses, benefits, and advantages of electronic commerce technologies and of doing business online; and also going ahead to obtain the relevant gadgets and skills for doing so.
- *Connect* - acquiring the connectivity capability, including the modems and the internet connection needed for operationalising the innovation.
- *Market online* - developing an active website for real-time, two-way communication and marketing, offering goods and services online.

- *Transact* - conducting business dealings online by providing transactional services and opportunities for interactive customer relationships.
- *E-integrate business* - finally redesigning the entire business model of the firm to fit into the information and communication technologies (ICT) context made possible by the Internet and fully integrating all business operations and relationships into the new e-commerce model (Scottish Enterprise Network, 2000:p30).

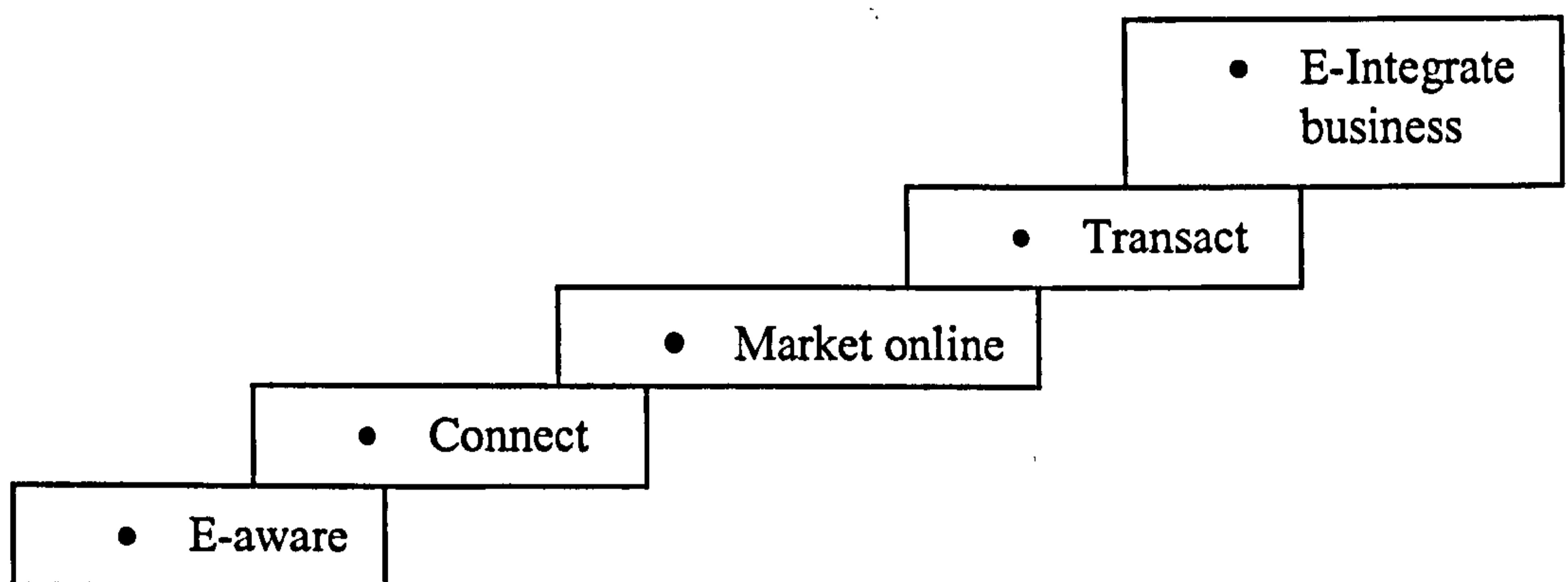


Fig. 6.1: E-business Adoption Model in Scotland (Source: Scottish Enterprise Network, 2000)

The study also detailed the need for greater access to newer telecommunication technologies in order to enhance the information technology platform, which would enable wider Internet connectivity in Scotland at that time. Four “dial-up” methods of connecting to the Internet were available then, but the most common ones used at that time included direct connection from a PC via a modem to a fixed digital telephone line (34%) and from a PC via a modem or via a company’s network server to an ISDN or leased line (49%) (ibidem: p25). The study was followed by the publication of a statement in 2001 by the Scottish



Executive titled “A Smart, Successful Scotland”. The document expressed the ambitions of the Scottish Government for the future economic growth and development of Scotland, and the prime target was to drive for a greater diffusion of broadband technology in Scotland by making “broadband connections more affordable and pervasive” (Scottish Executive: Connecting Scotland, 2002:p20).

However, the Highlands and Islands Enterprise, established in the 1990s, was instrumental to the successful implementation of broadband technology in Scotland. Aided by the European Union funding for Highlands and Islands Partnership, the H & I Enterprise stimulated an immense telecoms investment in the region in the early 2000s, enabling a successful management of the H & I projects under the UK Broadband Fund (*ibidem*:p17). BT championed the investment activities by initiating their satellite-based broadband diffusion hub in Scotland and Northern Ireland in November 2001 and subsequently extended the coverage across the UK (*ibidem*: p18). The quarterly update of UK’s Internet connectivity shows that broadband connection forms 86.1% of all Internet connections in the UK as at August 2007, while the dial-up method has declined to a level of 13.9% (UK Office for National Statistics, 2007).

Available statistics of computer technology penetration in Scotland at the time of the “e-Business Benchmarking” study indicates that by the year 2000, 52% of employees in Scotland were using PCs. During the same period the rates of PC penetration in Scotland-based businesses were 53% of micro businesses, 41% of small businesses, 44% of medium businesses, and 60% of large businesses (*ibid*: p21). According to Rowlatt (2001:p31-32), by 2001, 63% of businesses that had introduced PCs in the UK also had web access, with the financial services sector being the largest user of e-commerce. The author notes that apart from the financial sector, “e-commerce was used for just 0.9% of sales” at that time.

A lot has changed in the UK since then. Available statistics indicate that 98.5% of “all size bands” of all businesses in the UK are ICT-compatible and about 97.4% of “all size bands” of all businesses have Internet presence. (Office for National Statistics, 2007). The statistics also show that banking and financial services account for 61.8% of all businesses’ use of the Internet, while 38.2% Internet usage was for non-banking and non-finance related activities (*ibidem*). For household and individual Internet usage, the records also show that 48% of households in Scotland had access to the Internet by August 2006, while 59% of the active adults in Scotland (1.88 million people) had Internet access by the same period (Office for National Statistics, 2007).

#### **6.3.4 Internet Banking in Scotland:**

The history of Scottish banking began in 1695 with the formation of Bank of Scotland in Edinburgh. The bank monopolised banking in Scotland until 1727 when The Royal Bank of Scotland was founded. Over a hundred years later, a new generation of banks arose to compete with the two giant rivals, including Clydesdale Bank founded in 1838 (*cscb*, 2007). However, the last thirty years of the 20<sup>th</sup> century recorded the greatest growth activities in banking around the world with large-scale mergers and acquisitions coinciding with trade liberalisations and the incursion of technological innovations into the global banking industry.

In Scotland, The Bank of Scotland acquired the old British Linen Bank in 1971 and later in 1999 merged with Halifax, the largest mortgage banker in Britain, and thus joined Europe’s top league of banks. Earlier in the same 1999, The Royal Bank of Scotland had acquired the National Westminster Bank, a former English rival, and also set itself to becoming one of the world’s largest banks. However,

due to operational problems in the 1980s, The Clydesdale Bank was acquired in 1987 by National Australia Bank, but they retained its name and Scottish characteristics (*cscb*, 2007).

Presently, there are four banks that constitute the Committee of Scottish Clearing Bankers, including the Halifax Bank of Scotland (HBOS), now a member of the Lloyds Group since October 2008, the Royal Bank of Scotland, The Clydesdale Bank, and the Lloyds TSB Scotland. They jointly form the Scottish clearing house, although only the first three banks mentioned above are involved in printing the Scottish pound sterling notes (*ibidem*). Also, three out of the 59 building societies in the UK were founded in Scotland, including Dunfermline, Scottish, and Century (BSA, 2008). Hence, there are effectively 4 banks and 3 building societies that are of Scottish origin in the UK, but there are several other banks and building societies headquartered elsewhere in the UK which also have branches in various parts of Scotland.

The concept of electronic banking in Scotland was initially introduced in the early 1980s when the PC-based “Homelink” services were launched by the Bank of Scotland following those of the Nottingham Building Society (Tait and Davis, 1989). A few other banks in the UK followed, but the intranet-based home banking services did not gain significant customer acceptance and many banks had to discontinue their own (Daniel, 1999). However, the first UK bank to launch contemporary Internet banking was Nationwide, in June 1997, followed by the Royal Bank of Scotland (RBS) in July 1997 (Mortgage Finance, July 1997). This effectively made RBS the first financial institution in Scotland to introduce Internet banking, although they insist they were actually the first to hit the high streets with IB in the UK as a whole (*talentsscotland.com*, 2007).

Presently, all the banks in Scotland, as in the whole of the UK, have introduced Internet banking and are offering online transactional services to their customers at various levels of intermediate and advanced stages of Diniz's (1998) model of IB diffusion (see table 6.3 on page 137). A recent survey of the building society segment of the UK financial industry carried out by an IT company, TietoEnator, found that 54% of members of the segment were planning to introduce online savings channel before June 2009, while 92% of the respondents agreed that *Internet security* was still the highest concern of customers, followed by *ease of use* of the online channel (64%) and *low channel cost* to customers (23%) (Mortgage Finance Gazette, June 2008).

Before the global banking crash in September 2008, economic statistics released by the Scottish Enterprise showed that Scotland was the fifth largest financial services centre in Europe and the second largest among the UK regions. Prior to the crash also, two Scottish banks, The Royal Bank of Scotland (RBS) and the Halifax Bank of Scotland (HBOS) were among Europe's top banks by market value (Scottish Enterprise, 2007). However, following the slump in the global financial market precipitated by the collapse of Lehman Brothers Group of the USA in September 2008, HBOS was bought over by the Lloyds TSB Group in a 12.2 billion pounds deal (BBC, 2008).

As the global financial crisis deepened in the first quarter of 2009, several large economies around the world slipped into recession, including the USA and UK. Both the HBOS-Lloyds consortium and the RBS had to be rescued from collapse by the UK Government, which pumped £20 billion and £17 billion respectively into the two institutions. By March 2009, the government had taken over about 43% and 70% shares of the two banking firms respectively in order to forestall their disintegration (BBC, 2009).

Lastly, with regards to Internet banking penetration in Scotland, the UK average statistics for the percentage of active adults who have access to the Internet by purpose indicates that 42% of the active adults who already had Internet access in Scotland actually used it for personal banking and financial services in 2006. This puts the figure for individuals in Scotland who received Internet banking services in 2006 at about 0.79 million people, being 42% of 1.88 million active adults in Scotland or 15.51% of the region's population (National Statistics Omnibus Survey, 2006).

#### **6.4 Justification for choice of only two countries (Scotland and Nigeria) as the cross-national study locations:**

As earlier indicated, there are two main issues that gave rise to idea of this study. One is the prediction of possible future universal adoption of Internet banking by some scholars, including Li (2001), Bradley and Stewart (2003), Perumal and Shanmugam (2004) and Illet (2005). The other is the widespread reluctance of retail customers in various parts of the world to adopt Internet banking observed by scholars such as Mattila et al. (2001), Wang et al. (2003), Kuisma et al. (2007), and Laukkanen et al. (2008).

Over the years, the euphoria that ushered in the IB innovation has been overshadowed by customer resistance in many countries to embrace the IB channel (Laukkanen et al., 2008). The situation has even been made worse by the current global financial crisis referred to in the preceding subsection. In the UK, for instance, the demise of *Icesave*, the Internet banking division of the collapsed

Icelandic bank, *Landsbanki*, led to a lot of individuals and organisations losing their savings and investments. The result was further erosion of customer confidence in the banking system in general and in online banking in particular.

However, this researcher is of the opinion that if the possibility of future universal adoption of Internet banking is still tenable, then some of the intervening factors that have been identified in various parts of the world as influencers of Internet banking adoption decisions must be established as universal factors, so that bank marketers in various countries can harness them for preparing both their IB channel and their potential customers for IB adoption. This study was therefore conceived to validate the potential universality of the factors by investigating them cross-nationally.

This researcher realises that a complete validation of the universality of the isolated factors must involve several cross-national examinations of the factors in different parts of the world, but conducting multiple cross-national studies at this first instance is beyond the scope of this academic exercise. Hence, the present study has been focused on conducting an initial cross-national investigation of the factors in only two countries. The study also strongly argues that any cross-national study aimed at validating the factors must eliminate the bias of comparing similarities. The countries involved must therefore be totally different economically, culturally, and technologically. The reason for this position is that two or more countries that are totally dissimilar are less likely to readily contain the same intervening factors in their banking environment, and so if the proposed factors are actually validated in countries of absolute dissimilarity, their universality will be more strongly and convincingly established.

In this initial empirical survey, only two countries have been selected because a survey in more than two national locations will be beyond the researcher's capability to manage at present. Consequently, only two national locations have been selected in order that the scope of the research would be within the financial resources of the researcher, within the scope of response-access presently reachable by the researcher, and within the time-limit available for completion of a PhD research.

In addition, Scotland and Nigeria have been chosen as the two national study locations for this initial investigation. Being in two far-flung parts of the world, the two countries are economically, technologically and culturally very different as will be evidenced in the following subsections. However, apart from the reason of dissimilarities between the two countries, they have also been selected on the grounds of pragmatism. In presenting the differences between Scotland and Nigeria in the following section, both reasons will also be discussed in detail:

#### **6.4.1 Historical and Economic Differentiation:**

Scotland is a developed Western European country, home to one of the most prominent ethnic people of the Caucasian white race, known as the Scots. The Scots have been speaking English as their modern national language for 300 years, but their aboriginal language is Gaelic, which was generally spoken until it was officially replaced with English in 1707 through the Act of Union which declared English the national language of the United Kingdom (visitscotland.com, 2007). Presently there are still about 86,000 speakers of Gaelic language in the Northern Scotland and the Western Isles (geo.ed.ac.uk, 2007).

In contrast, Nigeria is a developing West African country, the most populous African country, the most populous black nation on earth (nationmaster.com, 2007), and home to some of the most industrious peoples of the black race. The nation known today as Nigeria came into being in 1914 when Lord Frederick Lugard, the first governor general of the British colonial protectorates along the River Niger, merged the northern and southern protectorates above and below the confluence of the rivers Niger and Benue into the geopolitical entity known as Nigeria. Both acts of colonisation and amalgamation thus brought together over 350 diverse ethnic peoples of completely different languages (Otitie/onlinenigeria.com, 2007) who never had any historical association with each other prior to colonisation. In order to harness these virtually insoluble tribes into one nation, the Christian religion, Western education and an imperial political structure of governance (popularly known as “divide and rule”) were imposed on the natives by the colonial British Government.

Unfortunately, some of the socio-economic problems of the country today are still traceable to the disunity among these infinitely diverse atomistic societies, welded together by Lugard’s unilateral fiat, who still find it difficult to co-exist as one peaceful, cohesive nation. As a result of colonisation, the English language also became Nigeria’s official language since independence in 1960. Although each tribe has retained its own ethnic language as the socio-cultural medium of communication within its own quarters and among its own people, English language remains the central language in all official, political, economic, inter-cultural and educational matters. The Hausa language spoken predominantly by the Hausa-Fulani tribes in the North; the Yoruba language spoken by the Yoruba tribe in the South-West; and the Igbo language spoken by the Igbo people in the South-East are the three most prominent among the hundreds of ethnic languages in the country.



**Comparison of the economic statistics of Nigeria and Scotland:**

	NIGERIA		SCOTLAND	
	Figure	%	Figure	%
Overall Population	130.3m	100	5.095m	100
Population under 16 years	55.12m	42.3	0.94m	18.4
Population of pension age and over	4.04m	3.1	0.97m	19.1
Population of active adults	50.14m	38.5	3.185m	62.5
Gross Domestic Product (GDP)	\$154.86b		\$172b	(£91b)
Gross Domestic Product per capita	\$1,188		\$33,680	(£17,789)
GDP Real Growth (2006 on 2005)		6.4		5.4
Gross National Income (GNI)	\$72.97b		-	-
Employment Rate		54		75
Unemployment Rate		4.9		5.9
Population below poverty line		60		17
Inflation Rate		10.5		3

Table 6.5: Economic statistics of Nigeria and Scotland (Sources: Nationmaster, 2007; CIA World Factbook, 2007; UK Office for National Statistics; General Registrar, Office for Scotland, 2007; EU, 2007; Scottish Executive National Statistics, 2006, 2008)

As shown in table 6.5 above, there is virtually no economic similarity between Scotland and Nigeria. Nigeria is nearly 30 times the size of Scotland, but Scotland's GDP is over 2 times that of Nigeria, and the per capita GDP of Scotland is also nearly 30 times that of Nigeria. Additionally, while over 83% of the people in Scotland live above the international poverty line, only about 40% of Nigerians resident at home live above the poverty line. The remaining 60% live below the poverty line (CIA World Factbook, 2007).

In summary, as far as economic indices are concerned, the two countries are very far apart. While Scotland qualifies to be referred to as a developed country, Nigeria is yet a developing country. Hence, given that this initial cross-national study needs to examine the isolated intervening factors between an economically developed country and a developing country, both Scotland and Nigeria have been selected for the study because they meet the criterion of economic dissimilarity.

#### 6.4.2 Technological Differentiation:

Table 6.6 below presents a comparison of Internet technology and Internet banking penetration figures between Scotland and Nigeria in order to highlight the differences in technology diffusion between the two countries. From the estimated values in the last row, the IB adoption figures in both countries seem to be similar, but when each country's figure is related to her total population, the difference between them become clear. The 15.51% Internet banking adoption level in Scotland dwarfs the 0.58% penetration level in Nigeria by far.

However, it must be noted that it was not possible for the researcher to obtain consolidated statistical data specifically detailing the actual number of Internet banking users in both countries. Hence, the estimates were calculated from statistics provided by some the official sources listed under tables 6.2 to 6.6 as already explained in subsections 6.2.3 (page 133) and 6.3.4 (page 146).

**Comparison of Internet banking penetration in Scotland and Nigeria:**

ITEMS	SCOTLAND	NIGERIA
National population	5.095 million	130.3 million
Number of Deposit Banks	4 (+ 3 building societies)	25
Internet transacting banks	4 (+ 3 building societies)	21
Internet penetration (individuals)	1.88 million (37% of population)	10 million (7.7% of population)
<b>Estimated Internet banking users (individuals)</b>	<b>0.79 million</b> (42% of Internet users or 15.51% of population)	<b>0.75 million</b> (7.5% of Internet users or 0.58% of population)

Table 6.6: Internet banking penetration in Scotland and Nigeria. (SOURCES: UN, 2005; UK Office for National Statistics, 2007; General Registrar, Office for Scotland, 2007; Aghaunor and Fotoh, 2006; Chiemeke et al., 2006; Internet World Statistics, 2008).

However, even though most of the statistics for Scotland used in this study have come from the UK Office for National Statistics, it must be noted that there seems to be a contention by Scottish researchers at the Centre for Public Policy for UK Regions concerning the reliability of the data presented by the Office for National Statistics on Scotland's economic growth. Researchers from Glasgow and Strathclyde universities at the centre claim they have found "large and difficult to explain discrepancies in the measurement of economic activity" between Scotland and the rest of the UK (Metro, August 30, 2007:p4). The important point, nonetheless, is that while the overall levels of economic and technological development in the two counties are totally different, Internet banking penetration levels appear similar in terms of raw figures, and this provides a rather good basis for balanced sampling between the two study locations.

#### **6.4.3. National Culture Differentiation:**

Plotting the cultural differences between Scotland and Nigeria, this study has relied principally on the five dimensions of national culture provided by Hofstede (2001) and Hofstede and Hofstede (2005). In their model of national cultures, the authors differentiate the culture-based orientations and tendencies of the peoples of 69 countries and 3 regions of the world in accordance with the five dimensions proposed by Hofstede and Bond (1984; 1988) (See Appendix 9). The 3 regions surveyed consist of 14 additional countries (Hofstede and Hofstede, 2005:p27), thus bringing the total to 83 countries from around the world. To justify the differentiation of nations along the lines of cultural orientations and also validate the 5 dimensions of national culture, Hofstede and Bond (1988:p8) argue that:

“if culture is as important in determining the fate of nations as Herman Kahn and others assume it to be, how then do we learn about culture? Mere description will not do; we need an approach that allows comparisons between countries – that is, an identification of cultural variations”

Following a comparison of their previous independent works with a subsequent “Chinese Value Survey” they conducted together in the Far East, Hofstede and Bond (1988) concluded that the common orientations and dispositions shared by a people which make them different from peoples of other nations are rooted in the manner in which they perceive and respond to their cultural values, and that a “people’s ways of thinking are culturally constrained” (Hofstede and Hofstede, 2005:p29). Thus they not only re-validated Hofstede’s original 4 dimensions of national cultures (Hofstede and Bond, 1980) but also added a new dimension which Hofstede (2001) refers to as “Long-Term versus Short-Term Orientation”. The 5 dimensions will be used in the following subsection to analyse the cultural differences between Scotland and Nigeria.

#### **6.4.4. Summary of the cultural differences between Scotland and Nigeria:**

This study holds it as granted that Scotland, being part of the Great Britain, shares exactly the same cultural index profile as Great Britain on all the tables of national scores for the five cultural dimensions propagated by Hofstede (2001), Hofstede and Bond (1984, 1988) and Hofstede and Hofstede (2005). Given that Scotland has been a part of the United Kingdom of Great Britain and Northern

Ireland since the past 300 years and since no separate indices were provided by the authors for Scotland, the index scores for Scotland have been assumed to be exactly the same as the ones recorded for Great Britain on the culture table (see appendix 9).

Similarly, no separate scores have been provided by the authors for Nigeria. Instead, they have provided scores on the five dimensions for “West Africa.” However, Hofstede and Hofstede (2005:p27) indicate that the three countries they refer to as “West Africa” are “Ghana, Nigeria, and Sierra Leone.” This study therefore assumes that by “West Africa” the authors also mean “Nigeria” and that the index scores on the five dimensions for West Africa are also exactly the same for Nigeria. This same assumption was made by Zagorsek et al. (2004:p20) in adopting the West African indices for Nigeria in their study which compared the influence of national cultures on leadership practices in United States, Nigeria, and Slovenia.

Consequently, on the basis of the above assumptions regarding Scotland and Nigeria, the table below is presented as the authentic comparison between the national cultures of the two countries. The table shows that there are clear differences in national cultural orientations between the peoples of the two nations. Based on the figures on the index table below, the study presents a summarised interpretation of the differences between the national cultures of Scotland and Nigeria in line with the five cultural dimensions provided by Hofstede and Hofstede (2005).

#### National Index Scores on Hofstede's Five Cultural Dimensions:

Country	PDI	IDV	MAS	UAI	LTO
Scotland (Great Britain)	35	89	66	35	25
Nigeria (West Africa)	77	29	46	54	16

Table 6.7: National Index scores for Scotland and Nigeria on the five cultural dimensions.  
Sources: Hofstede and Bond (1988); Hofstede (2001); Zagorsek et al. (2004).

##### 6.4.4.1. Power Distance (PDI) Scores:

With a PDI score of 77, Nigeria is a high power-distant nation in which hierarchy, seniority, superiority, older age, parenthood, status, rank, position, leadership, and governance are readily accepted and respected. There is usually a total subordination of children to parents, employees to employers, students to teachers, and the led to their leaders in the country. On the contrary, with a PDI of 35, Scotland is a relatively low power-distant country where people are encouraged to be independent and single-minded (de Mooij, 2004), and less importance is attached to hierarchical structures, social status, and age differences. Most people are on first name basis irrespective of their being older or younger, employers or employees, teachers or students and superior officers or subordinates. This orientation is totally at variance with what obtains in Nigeria, where people never call those older than them, their teachers, their employers or their superiors by the first name.

##### 6.4.4.2. Individualism/Collectivism (IDV) Scores:

The table reverses for the two countries on the second index as Scotland score higher than Nigeria on IDV. Scotland, like most countries in Western Europe, is a very high individualistic society where people are typically conservative about

their personal privacy and independence. “I” is emphasised more than “we” (de Mooij, 2004). Parents feel responsible for their children only while they are still below 18. Teenagers can hardly wait to be 18 to liberate themselves from their parents and become independent; and people generally feel little or no obligation towards their extended family members such as aged parents, grandparents, aunts, uncles, cousins, and other more distant relatives.

Nigeria presents a direct opposite of the above scenario. A very low IDV score indicates that the country is a highly communal society, as is the case with most African countries. Most people cherish and feel obliged to take care of extended family members, even the most distant ones, if they can. There is a shared tendency towards communal inter-dependence and interrelationships. There is nothing like liberating from one’s parents. Most Nigerian children leave their parents to start life on their own only when they have to relocate to a different town to join an older relative as an apprentice, or have completed a trade apprenticeship from home and need to start out on their own, or have graduated from college/university and secured a job, or have become full adults and secured a job which enables them to start their own families. It has very little to do with age.

Even so, children in Nigeria, no matter the age, do not break away to liberate themselves from their parents. The grown-up children see it as a moral obligation and a source of blessing that as soon as they become settled and able, they in turn start taking care of their aged parents and grandparents who took care of them while they were growing up. If they have the resources, they also usually feel obliged to help other less capable relatives in the community. As a result, there is a mutual understanding and society-wide expectation that the less privileged depend on the more privileged, and that the more privileged take care of the less privileged, who often accord them much reverence in return.

#### **6.4.4.3. Masculinity/Feminity (MAS) Scores:**

Both Scotland and Nigeria seem to be considerably high masculinity countries, although Scotland scores higher than Nigeria on the dimension. In consonance with high MAS societies, people in both countries seem to attach a great deal of importance to personal achievement, success, social status, richness, performance, and hero or celebrity worshiping. People in both countries also tend to be assertive and competitive. They also tend to engage in conspicuous consumption, although the targets of their loud consumptions may differ. For instance, while rich Nigerians would like to talk about their fleet of big cars, rich Britons would like to talk about the exotic places around the world where they had been or plan to go on holidays.

#### **6.4.4.4. Uncertainty Avoidance (UAI) Scores:**

From the above table, it is clear that Nigeria is a high uncertainty avoidance society, while Scotland is relatively lower on the scale as an uncertainty avoiding society. Nigerians are usually anxious about the uncertainties and ambiguities that are rife in their society. This is because the sheer magnitude and diversity of the country's population, coupled with an endemic inadequacy of virtually everything, usually makes every single opportunity highly competitive in the country. Rules and formal structural processes are therefore created in all aspects of work and social life in the hope of being able to deal with the uncertain situations. Unfortunately, in spite of all the rules and structures put in place, ethnocentric nepotism, fraternalism, and official corruption still aggravate most of the already competitive situations, resulting in more anxiety, aggression, distrust, and disunity among the people.



Conversely, the people of Scotland do not seem threatened by the uncertainties and ambiguities of life, and therefore there are little or no competitive strivings and conflicts in their society. As a result, social structures, operational processes, and work relationships are less strictly formalised. The people are therefore more result-oriented than process-oriented, believe more in common sense than in rules, and of course see no use in institutionalising ritualistic behaviours (Hofstede and Hofstede, 2005).

#### **6.4.4.5. Long-Term Orientation (LTO) Scores:**

On the dimension of long-term versus short-term orientations, the scores for both Scotland and Nigeria are low, although Scotland scores a little higher than Nigeria on the index. This means that they are both short-term-oriented societies, with Nigeria being worse. In accordance with the propositions of the aforementioned scholars, extravagance, immediate pleasure, and complacency are not unusual in such short-term-oriented societies. Suffice it to say then that the idea of “saving for the rainy day” is not quite appealing to the peoples of both Nigeria and Scotland, but instead the maxim of “enjoy today and let tomorrow take care of itself” seems agreeable to people in both cultures.

In summary, in spite of slight similarities between them, the Nigerians and Scots are fundamentally very different people in terms of their cultural orientations. While Nigerians are a high power-distant, collectivist, moderately masculine, uncertainty-avoiding and short-term oriented people, the Scots are a low power-distant, highly individualistic, masculine and short-term oriented people with a moderate level of uncertainty avoidance. Lastly, based on the clear socio-

economic, technological and cultural dissimilarities between the two countries, this researcher has come to the conclusion that they are two totally different countries and therefore suitable as national study locations for this cross-national research.

#### **6.4.5. Pragmatism: Another reason for selecting Scotland and Nigeria:**

Apart from the historical, economic, cultural and technological differences between Nigeria and Scotland, pragmatism is another reason for selecting the two countries for the present study. It is a lot more practical and a lot less costly for the research to be conducted in both countries because Nigeria is the home country of the researcher while he is a postgraduate student in Scotland. Having lived and worked in Nigeria all his life prior to October 2005, the researcher possesses a good knowledge of the Nigerian socio-economic environment. Conducting the survey in Nigeria is therefore not as cumbersome and costly as it would be if the research were to be conducted in any other developing country such as South Africa, Mexico or China. Access to respondents in Nigeria has also been a lot simpler than it would have been in any of the above countries. Nigeria has therefore presented the most pragmatic choice of a developing country for this cross-national study than any other country.

Similarly, having been living and studying in Scotland since 2005, the researcher has also become familiar with the literature on economic and commercial activities in Scotland. It has therefore been easier to study Internet technology adoption in Scotland than it would have been in any other developed country such as the USA, Germany or Japan. In addition, conducting the research field survey in Scotland has equally been far less cumbersome and less costly than it would have been in any of the above countries. Moreover, not having been a banking customer to any bank in any other developed country except Scotland, this

researcher believes that access to respondents in any other developed country would most certainly have been impossible. Hence, at the time of planning, Scotland was considered the most practical choice of a developed country for the study. Consequently, on a practical basis as well, Scotland and Nigeria are the best two choices for this initial cross-national examination of the proposed study model, and given the fact that they have been established in this chapter as two totally dissimilar countries, any similarities found in the research results between them will be adduced as potentially *universal*.

### **6.5. Summary:**

In the foregoing chapter, Scotland and Nigeria were presented as the two national locations for the study, and justifications for their selection were provided. The profiles of both countries were reviewed, and differences in their culture, economic history, technology and Internet banking penetration were highlighted in order to illustrate their qualification for selection. They were shown economically and technologically as two totally different countries, one being developed while the other is still developing. In addition, the national cultures of both countries were examined against the backdrop of Hofstede's (2001) national culture dimensions. This has helped to establish an intellectual basis for the clear cultural differences between the two countries.

Lastly, the chapter concluded by equally averring the practical expediency of adopting the two countries as the national locations for the present study. On the bases of dissimilarities and expediency, it was therefore concluded that the selection of both countries in the present study was justified, and that any similarities in the research findings between them would be assumed to be potentially *universal*.

# **CHAPTER 7:**

## **RESEARCH METHODOLOGY**

### **7.1 Introduction:**

In the preceding chapter, the economic, technological and cultural disparities between Scotland and Nigeria were used in justifying their selection as the two national study locations for this research. On the assumption that countries with dissimilar characteristics would be better for a cross-national study of potential universal antecedents of Internet banking adoption than those with similar characteristics, the chapter presented detailed differences between Scotland and Nigeria and therefore justified their selection as the study locations.

The current chapter is aimed at discussing the methodology of the research, including its underpinning philosophy, paradigmatic stance and methodological approach to data collection. Selection and justification of the multi-mode survey technique will also be presented in the chapter, as well as the design of the survey instrument, the sample size and sampling techniques, the pre-testing and review of the research instrument and the data collection administration process. Lastly, the chapter will be rounded off with the description and justification of the data analysis methods selected.

### **7.2 Philosophical Foundations of Research:**

Research is a systematic process of planning and executing an investigation into a specific phenomenon in order to obtain reliable answers to some specific questions about the phenomenon and to make it easier for others to understand and believe the results reported at the end of the investigation (Ghauri and Gronhaug,

2005). Being a methodical investigation, research is therefore said to be scientific. It is aimed at finding out the reality about the issue, problem, or event under investigation in terms of how, why, when, and where it exists or occurs, as well as the specific implications of its occurrence, for the purpose of making better informed decisions (ibidem).

Research Philosophy has been conceptualised as a set of perceptions and beliefs which underpin a researcher's perspective of a specific phenomenon, the reality of its existence, how to study it and the theories he or she advocates concerning it. Supporting this notion, Collis and Hussey (2003), assert that the philosophical foundation of research encompasses a researcher's worldview of the study of nature, truth and knowledge as they exist in human societies. Similarly, Creswell (1994) suggests that it deals with how the researcher perceives the existence of reality in nature and how he or she chooses to go about acquiring knowledge about it. Thus, these two aspects of a researcher's perception of the world (the existence of reality and the acquisition of knowledge about it) make up the philosophical foundations of research. They are commonly known as *ontology* and *epistemology*, respectively. The following subsection briefly discusses the two dimensions.

### **7.2.1 Ontology and Epistemology:**

Ontology and epistemology are the two philosophical pillars of research and form the bases of all the viewpoints and assumptions of any researcher. In order to properly define the philosophical underpinnings of his or her study, every researcher needs to establish a clear appreciation of these two precepts. A brief discuss on each is presented below to initiate the philosophical stance of this researcher:

### **7.2.1.1 Ontology:**

Ontology is defined by Crotty (2004:p10) as “the study of being”. It is an abstraction that enables researchers to learn the nature of reality and its existence. Hopper and Powell (1985) also note that ontology concerns itself mainly with how reality exists in nature, and that it is related to the nature and structure of reality. In Ontology, the question is raised as to whether reality exists in hard, tangible, and relatively immutable structures or whether it is the product of an individual’s own consciousness and subjective perception (Burrell and Morgan, 1979; Crotty, 2004).

The belief that reality exists immutably in nature irrespective of human conception, perception or intervention is known as *realism*, and realists tend to see reality as a concrete structure of unchangeable truth in nature (Morgan and Smircich, 1980). In contrast, the belief that reality takes only the form given to it as a result of human consciousness and interpretation is known as *nominalism or idealism*, and nominalists perceive reality as a projection of human imagination (ibid). However, no matter how reality is perceived, the actuality of its being or the fact that it does exist in nature is the focal point of philosophy. Research is therefore embedded in Philosophy in that it is a universally accepted process of investigating and establishing the existence of reality in different fields of human endeavour.

### **7.2.1.2 Epistemology:**

Epistemology deals with how knowledge about the reality that is believed to exist in nature is acquired. The Encarta World English Dictionary (2007) defines epistemology as “the branch of philosophy which studies the nature of knowledge and, in particular, its foundations, scope, and validity.” It deals with how people know what they know; how they know that reality exists; and how they get to

knowing how reality exists. Epistemology therefore encompasses the interpretations and meanings that are ascribed by observers of reality in an effort to obtain or construct knowledge about the reality and how it exists in the social world. According to Rose and Peterson (1965:p11),

“Facts do not simply lie around waiting to be picked up. Facts must be carved out of the continuous web of ongoing reality, must be observed within a specified frame of reference, must be measured with precision, must be observed where they can be related to other relevant facts. All of this involves methods.”

The above notion aptly captures the importance of a systematic study of reality in order to acquire the knowledge of how it exists, but the idea that “facts do not lie around waiting to be picked but instead must be carved out” is flawed because it seems to suggest that epistemology or indeed the philosophy of research is hinged on shaping up reality rather than discovering reality as it exists. The author seems to suggest that some manipulation of facts is involved, but if that is the case, then it means that researchers do not extract the facts embedded in social reality but rather alter reality in order to fashion out their own facts as they like.

This researcher believes strongly in the idea of studying reality and obtaining knowledge about a phenomenon as it exists without altering it. The effort to obtain knowledge in this way is regarded as objective, whereby reality is believed to exist naturally on its own, irrespective of the observer’s interpretation. However, some other researchers may choose to study reality by interacting or interfering with it. This method is regarded as subjective, whereby knowledge is believed to be dependent on the observer’s interpretation and construction (Creswell, 1994). However, it is the position of this researcher that even the subjective interpretation of reality or the facts surrounding it must not lead to an alteration of the way it exists.

However, Crotty (1998:p10) provides an acceptable explanation of the above opposing methods by noting that the fact that reality exists independently from any human consciousness “does not imply that meanings also exist independently of consciousness”. According to the author, meanings defer from observer to observer and from context to context, while reality remains fundamentally unalterable in its existence. Hence, while ontology deals with the objective or subjective understanding of the existence of reality, epistemology deals with the human observations and interpretations of how reality exists. The attachment of meanings to reality, whether from a realist or a nominalist perspective, is the main purview of epistemology (Creswell, 1994). It is the pivot that sustains and validates the methodological framework of any research.

### **7.2.2 Philosophical Research Paradigms:**

Paradigms are different worldviews held by individual researchers about the existence of reality and how to acquire knowledge of the reality. Different paradigms see reality differently. Creswell (1994) classifies the chosen worldview or perspective of a researcher as his or her own “philosophical paradigm”, and argues that it is this philosophical perspective that enables the researcher to ask questions about “everything that exists”, discuss the issues surrounding it, build up or confirm theories concerning the issues, and predict future trends about the phenomenon.

Supporting the above notion, Collis and Hussey (2003) state that in expressing a paradigmatic stance, a researcher makes a set of assumptions upon which his or her study of a particular phenomenon is based, and all his/her methods are expressive of his/her own conviction about the objective or subjective existence



of reality as well as how the knowledge about that reality should be acquired in a given context. This philosophical conviction influences the way the researcher approaches his/her study, observes the subjects, measures the constructs, collects data, analyses the information and interprets the findings (Guba and Lincoln, 1988). In so doing, the researcher establishes his/her own paradigmatic stance.

Based on the foregoing, it could then be concluded that since the paradigmatic stance of every researcher is hinged on his or her own philosophical convictions about how reality exists and how the knowledge of it can be acquired, there is therefore no one specific way of interpreting reality and no one way of obtaining knowledge of it. What seems permanent is the fact that reality exists but, according to Easterby-Smith et al. (2002), how it exists and how it is studied are a matter of the subjective philosophical perspectives of different researchers. Each researcher's own perspective often influences his or her research design and choice of data collection methods, thereby, articulating his or her paradigmatic stance. There are two major philosophical paradigms. On one hand is the objective paradigm, known as *Positivism*; and on the other hand is the subjective paradigm, known as *Interpretivism* (Creswell, 1994; Collis and Hussey, 2003).

#### **7.2.2.1 Positivism versus Interpretivism:**

Some researchers hold the view that reality is objective, singular, and exists irrespective and independent of the researcher. This perception is consistent with the *positivist paradigm* (Creswell, 1994; Easterby-Smith et al., 2002). According to Creswell (1994), researchers in the objective or positivist paradigm believe that reality exists in nature regardless of the researcher and is better studied objectively

from an external and detached point of view, without the researcher interfering with the phenomenon being studied. The underlying assumption here is that if such objectivity is maintained in the study, the knowledge outcomes will be seen to be unbiased and uninfluenced by the researcher's actions.

Positivists believe that research should be based on what the human sense can directly perceive objectively – that is, what can be seen, heard, touched, felt, tasted, or smelled – rather what is received from other people's dogmatic hearsays. The aim is to discover the true form and situation of any phenomenon at different times through a combination of "reason and observation" (Andreski, 1974). The evidence provided by the observation and reasoning process helps the researcher to deduce sound theoretical assertions that are capable of being retested and reconfirmed in subsequent research.

Popper (1963) maintains that what makes good theories good is that they are capable of failing. The author argues that the fact that they can be reconfirmed or refuted means that they are testable and therefore the testability of theories is the best scientific criterion for determining their acceptability. The reason is that if theories stand the test of time and are confirmed to be true, they become universal theories, the effects of which are replicable if the same phenomenon is found elsewhere. The positivist approach to research is therefore believed to enhance both theory deduction and testability, thereby enabling the replicability of research studies (Easterby-Smith et al. (2002).

In contrast, some other researchers hold the conviction that reality is subjective, multiple, and exists only in accordance with the researcher's interpretation of it. This view is consistent with the *interpretivist paradigm* and

reflects the stance of interpretivists, phenomenologists, and social constructionists (Remenyi et al., 2000; Collis and Hussey, 2003). Other researchers in this subjective paradigm include social constructionists, critical realists, ethnographers, and action research practitioners. In common, they believe that reality is shaped and reshaped by the circumstances and contexts in which it exists at different historical points in time (Creswell, 1994). The scholars argue that reality is “multi-faceted”, based on who is observing it; that it is socially constructed by the researcher, and therefore cannot exist irrespective of the researcher (*ibidem*).

To this end, interpretivists insist that the researcher is an integral part of the phenomenon being studied and, as such, the subjectivity of the study is justified by the sense which people (both the researcher and the respondents) make of the world around them (Creswell, 1994; Easterby-Smith et al., 2002; Collis and Hussey, 2003). This idea corroborates an earlier view expressed by Burrell and Morgan (1979) that as far as the interpretivist worldview is concerned, people make sense of the world in their communities, social groups, and organisations through the meanings, notions, feelings, and reasons they associate with various phenomena in the system in which they exist.

The argument of the interpretivists worldview is therefore that reality is socially constructed, and all meanings associated with it are based on the discerning abilities and perception of the social observers, who are part and parcel of the social group. In support of this view, Hackley (2001) also observes that the socially constructed phenomena are usually maintained through the norms, rites, rituals, and daily activities of all the participants in the society or organisation, including the observers (researchers) themselves. Table 7.1 below presents a summary of these differences and opposing views between positivists and interpretivists.

**The two main philosophical paradigms in research:**

	<b>POSITIVISM</b>	<b>INTERPRETIVISM</b>
<b>Ontology</b> -	Reality is singular and exists irrespective of human perception.	Reality is multiple and is socially constructed by human interpretation.
<b>Epistemology</b> -	Researcher is independent of subjects and studies reality objectively.	Researcher is involved with subjects and studies reality subjectively.
<b>Methodology</b> - (Approach)	<ul style="list-style-type: none"> <li>- <b>Deductive</b> approach – moving from theory to data; testing theories, models, or hypotheses, and making inferences.</li> <li>- Establishes causes and measures effects.</li> <li>- <b>Quantitative</b> data obtained.</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Inductive</b> approach – moving from data to theory; generating or confirming new theories from the data analysis.</li> <li>- Seeks opinions - how and why things are happening.</li> <li>- <b>Qualitative</b> data obtained.</li> </ul>
<b>Methods</b> - (Strategy)	<ul style="list-style-type: none"> <li>- Experiments, Surveys, Case studies, Secondary data analysis.</li> <li>- Formal, structured designs.</li> <li>- Data collection is objective, specific and precise.</li> <li>- Large sample size.</li> <li>- Location can be artificial.</li> <li>- Usually latitudinal studies – frequency (how pervasive; how widely found, rather than why)</li> </ul>	<ul style="list-style-type: none"> <li>- Ethnography, Case Studies, Action Research, etc.</li> <li>- Informal, fieldwork design.</li> <li>- Data collection is subjective and flexible.</li> <li>- Small sample size.</li> <li>- Location is natural.</li> <li>- Usually longitudinal studies – why (what opinions and feelings people have about the concept or phenomenon)</li> </ul>
<b>Techniques</b> -	<ul style="list-style-type: none"> <li>- Questionnaire, Interviews, Observation, Documentation.</li> </ul>	<ul style="list-style-type: none"> <li>- Interviews, Focus Group, Observation, Archival interaction.</li> </ul>
<b>Significance</b> -	<ul style="list-style-type: none"> <li>- Reliability is high.</li> <li>- Validity is low.</li> <li>- Generalises from sample to population.</li> <li>- Generates universal theory.</li> </ul>	<ul style="list-style-type: none"> <li>- Reliability is low.</li> <li>- Validity is high.</li> <li>- Generalises from one setting to another.</li> <li>- Generates localised knowledge.</li> </ul>

Table 7.1: Comparison of the two major philosophical paradigms in research (Based on information from Guba and Lincoln, 1988; Creswell, 1994; Remenyi et al., 2000; Easterby-Smith et al., 2002; Collis and Hussey, 2003; Bryman and Bell, 2003; Saunders et al., 2003; Silverman, 2005)

#### **7.2.2.2 Implications for Research Methodology:**

It is generally agreed among research methodology scholars that research designs, data collection methods, and analytical techniques are usually in conformity with the tenets of specific philosophical paradigms. For instance, Collis and Hussey (2003: p52) opine that “your choice of paradigm has implications for your choice of methodology”. Also, Guba and Lincoln (1988) point out that philosophical paradigms must also imply, and be reflected in, the researcher’s methodology. The authors argue that “methodologies would be meaningless congeries of mindless (research) choices and procedures unless they are rooted in paradigms.”

In view of the connection between philosophical paradigms and research methodology, Easterby-Smith et al. (2002) advise that establishing a preferred paradigmatic stance for a piece of research is necessary not only to situate the study in its proper philosophical perspective, but also to enable the selection of appropriate investigation technique(s) that will best reveal the right solutions to the identified problems or the right answers to the research questions. Below is a diagram (figure 7.1) illustrating an overview of the relationships between various research methods and the philosophical research paradigms they connect with.

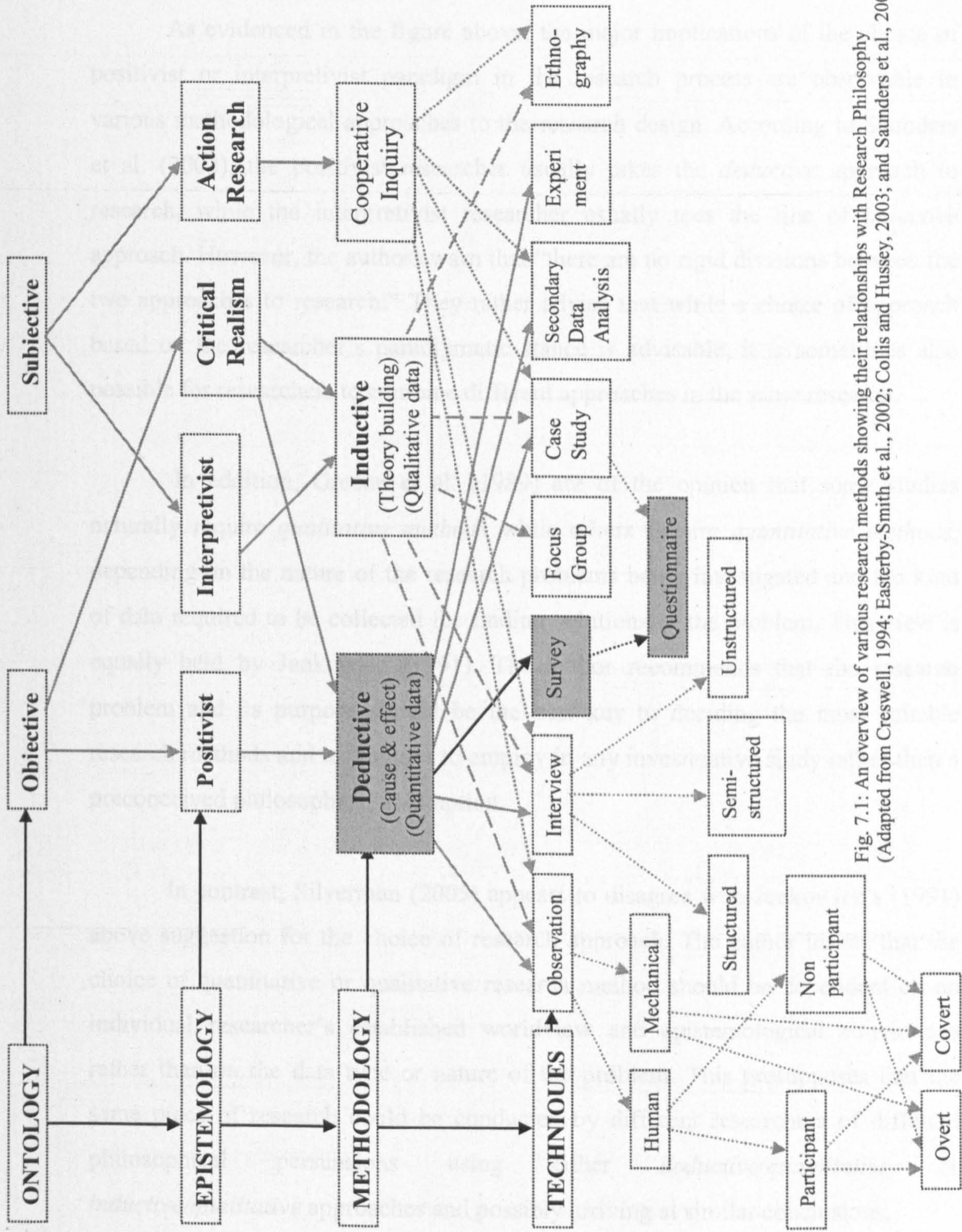


Fig. 7.1: An overview of various research methods showing their relationships with Research Philosophy (Adapted from Creswell, 1994; Easterby-Smith et al., 2002; Collis and Hussey, 2003; and Saunders et al., 2003)

As evidenced in the figure above, the major implications of the choice of positivist or interpretivist paradigm in the research process are observable in various methodological approaches to the research design. According to Saunders et al. (2003), the positivist researcher usually takes the *deductive* approach to research, while the interpretivist researcher usually toes the line of *inductive* approach. However, the authors warn that “there are no rigid divisions between the two approaches to research.” They rather advise that while a choice of approach based on the researcher’s paradigmatic stance is advisable, it is sometimes also possible for researchers to combine different approaches in the same research.

In addition, Greene et al. (1989) are of the opinion that some studies naturally require *qualitative methods* while others require *quantitative methods*, depending on the nature of the research problems being investigated and the kind of data required to be collected for finding solutions to the problem. This view is equally held by Jankowicz (1991). The author recommends that the research problem and its purpose should be the best key to deciding the most suitable research methods and techniques to employ in any investigative study rather than a preconceived philosophical assumption.

In contrast, Silverman (2005) appears to disagree with Jankowicz’s (1991) above suggestion for the choice of research approach. The author insists that the choice of quantitative or qualitative research method should be dependent on an individual researcher’s established worldview and epistemological convictions rather than on the data type or nature of the problem. This presupposes that the same piece of research could be conducted by different researchers of different philosophical persuasions using either *deductive/quantitative* or *inductive/qualitative* approaches and possibly arriving at similar conclusions.

Nonetheless, the major differences between *deductive* and *inductive* approaches to research are clearly defined in the literature. As summarised on table 7.1 (page 172 above), the *deductive* approach emphasises a movement from theory to data, involving the collection of *quantitative* data from a large sample of respondents in order to test certain hypothesised constructs or cause and effect relationships, statistically validate the proposed theories and then make them generalisable (Easterby-Smith et al., 2002; Saunders et al., 2003; Collis and Hussey, 2003). Positivist researchers in this domain often use a highly structured and straight-forward research design that ensures their independence from the research subjects (Saunders et al., 2003).

In contrast, the *inductive* approach emphasises theory generation, which involves collection and analysis of small numbers of *qualitative* data and using the resultant information to build theory (ibidem). The authors note that in this domain, the researcher may or may not be involved with the research subjects in a participatory relationship, and that the research structure is more flexible and interactive, with little or no need for generalisation of the conclusions.

### **7.2.3 Adoption of a paradigmatic stance and justification of the choice:**

Positivism is this researcher's preferred philosophical paradigm. Exponents of the positivist paradigm insist that research should be an impersonal and objective observation of social reality, with the researcher being independent, neither affected by, nor affecting, the subject of the research (Creswell, 1994;



Remenyi et al., 2000). This researcher fervently shares the above philosophical conviction and subscribes totally to the worldview that reality is independent of human beings and exists irrespective of whether we are aware of it or not.

As a firm believer in the natural law of *cause and effect* relationships, this researcher also supports the view that social phenomena should be studied as empirically as the natural sciences in order to measure objectively all possible truths and falsities concerning the “what, when, how, where, and why” of social problems (Creswell, 1994; Gill and Johnson, 1997; Saunders et al., 2003; Silverman, 2005; Ghauri and Gronhaug, 2005; Bell, 2005). According to these authors, a positivist researcher often applies a highly structured strategy to collect large and precise quantitative data from a sufficient sample size which will ensure the credibility of the results from the statistical tests and also enable generalised conclusions and inferences to be drawn about the wider research population. Pure positivism is therefore the chosen paradigm of this researcher and has been reflected in the research strategy and method adopted in this study.

The positivist paradigm is most suited to the present research because of the need to objectively investigate the cause and effect relationships between the intervening *readiness* factors and the Internet banking adoption behaviours of customers in the two national study locations. Besides, in line with Easterby-Smith et al. (2002) and Bryman and Bell (2003), the collection of quantitative data from a large sample of banking customers in each of the two countries and the use of statistical techniques to analyse the data also justify the researcher’s positivist stance. Consequently, both on the basis of this researcher’s worldview and on the nature and purpose of the present study, the positivist paradigm aptly reflects the philosophy that underpins the study, in line with the suggestions of the above methodology scholars.

#### **7.2.4 Selection of a methodological approach and justification of the choice:**

Creswell (1994) advises that the most important criterion for selecting a research approach is the nature of the topic of the study. Supporting this view, Saunders et al. (2003) explain that a topic that has “a wealth of literature” on it, which therefore enables the researcher to develop a good theoretical framework and hypothesis will be more effectively researched with the deductive approach. Both opinions above seem to echo the same views earlier expressed by Greene et al. (1989) and Jankowicz (1991).

Consistent with the researcher’s positivist stance, the *deductive methodology* as shown in figure 7.1 (page 174 above) was selected as the research approach for the present study. By the nature of the study, numerical data were required in terms of the prevalence, frequency of occurrence and level of influence of the intervening factors among respondents in the two national study locations. Based on this requirement, it was pertinent to collect data from a large number of respondents in both countries and statistically analyse them before any generalisation of the findings could be meaningful. Consequently, a *quantitative approach* to the study was more suitable than a qualitative approach, in accordance with the suggestions of Easterby-Smith et al. (2002) and Saunders et al. (2003).

##### **7.2.4.1 The Survey method is selected for data collection:**

Following the adoption of a *quantitative approach* to the study, the *survey technique* was then selected as the data collection technique. The process of arriving at this choice is reflected by the shaded boxes in figure 7.1 on page 174 above. Ghauri and Gronhaug (2005:p124) define survey as “a method of data

collection that utilizes *questionnaires* or interview techniques for recording the verbal behaviour of respondents”. Creswell (1994) also notes that *surveys* are “cross-sectional and longitudinal studies” which involve data collection by means of *questionnaires* or structured interviews for the purpose of “generalising from a sample to a population.”

Observably, *surveys* seems to be the most typical positivist approach to research. The advantages and disadvantages of the *survey* technique reflect all the previously mentioned characteristics of the positivist, deductive and quantitative research methodology. This opinion is supported by many methodology authors. For instance, Saunders et al. (2003:p92) note that, as a rule, *surveys* are “associated with the *deductive approach* ... allow the collection of a large amount of data from a sizeable population in a highly economical way ... and are perceived as authoritative by people in general.” Consequently, the *survey* method is one of the most popular and common data collection methods among business and management researchers (Remenyi et al., 2000; Saunders et al., 2003; Ghauri and Gronhaug, 2005).

In addition, Bell (2005) observes that *surveys* are usually employed for collecting “information from a representative selection of the (target) population” and that findings from the surveys are usually generalised to the whole population. Citing Moser and Kalton (1971), the author states that *surveys* are good for investigating “a cause and effect relationship or (throwing) fresh light on some aspect of sociological theory”. This is done by means of *questionnaires* or structured interviews which examine the “demographic characteristics, the social environment, the activities, the opinions, and the attitudes of some group of people” (ibidem).

Contrary to the belief of some people that quantitative research methods only produce numerical data, in terms of quantities, and do not enable the collection of the respondents' opinions or reflections, research has shown that *surveys* are equally effective in gathering "opinions, attitudes, and descriptions" from respondents, as well as in establishing cause-and-effect associations between variables (Ghauri and Gronhaug, 2005:p124).

Another advantage of the *survey* technique is that if it is well structured, it is one of the quickest and cheapest means of data collection (Remenyi et al., 2000; Bell, 2005). Citing Oppenheim (1966), Remenyi et al. (2000) note that using *questionnaires*, the *survey* method provides a good means of gathering large quantities of data or evidence very quickly and conveniently. Moreover, questionnaire-based surveys have the advantage of producing highly structured and standardised responses from large samples which also make for convenient and straight-forward statistical analysis, interpretation and generalisation (Creswell, 1994).

Surveys also have an advantage of being easily understood and generally regarded as authoritative in all disciplines and in all aspects of social investigation (Saunders et al., 2003). Most national and international statistics are results of surveys, be they public or private sector information. The United Nations, the European Union, the African Union, the World Trade Organisation, the Scottish Enterprise, and the national office of statistics of many countries mostly use *surveys* for their research. They also depend mostly on survey-generated information for building up and maintaining their database, establishing current social trends, and predicting future trends. The survey research method is therefore not only quite popular with business managers but also with governments and international organisations. An

example is the “Eurobarometer 56.0” survey (Christensen, 2001), which involved the collection of assorted data from all the EU countries on members of their population aged 15 years and above at that time.

However, just like every other data collection method, the survey does have its own limitations. The first issue with the survey method is the difficulty in proving that the sample selected is truly representative of the population (Bell, 2005). To minimise this problem, the author advises that great care must be taken to ascertain the characteristics of all members of the population and then ensure that the component groups of people in a known population size are proportionately represented in the selected sample.

The survey method also has the constraint of sometimes gathering relatively superficial evidence, especially using the *questionnaire* data collection technique (Remenyi et al., 2000:p57). According to the author, the questionnaire is good at eliciting information regarding “how much or how long or when” from respondents, but some scholars claim that it is usually deficient in providing answers to questions bordering on “why or how” some things happen. This seeming deficiency is most likely because such questions will usually elicit subjective answers of personal feelings and opinions from the respondents which may not be the bare facts of things but just a reproduction of their private emotions.

Additionally, the questionnaire-based survey also has the weakness of being susceptible to abuse, both from the researcher and from the respondents. Saunders et al. (2003) refer to this flaw as “the capacity to do it badly!” Many people have the tendency to tell others what they perceive the others want to hear. To fill out a

questionnaire is like doing the researcher a favour and if given an incentive to do it, some respondents might fill in what they think the respondents would like to see, rather than their own true response to the issue. To some researchers this is better than having the questionnaire thrown in the bin. It must however be noted that the questionnaire is not the only data collection technique guilty of this susceptibility. Interviews and overt, participant observations are equally guilty of it.

The questionnaire is also susceptible to abuse by the researcher or his agent, especially the paper-based questionnaire. Researcher-administered or research agent-administered surveys, whereby the researcher or agent fills the questionnaire while reading out the questions to the respondents, may also be abused. Not only that a respondent in such a survey may give only positive answers just to please the interviewer, the interviewer also may be filling just the answers he or she wants in the questionnaire, rather than the actual answers given by the respondents.

Anonymous, self-administered questionnaires, especially in mail and online surveys, tend to eliminate this bias induced by face-to-face contact between the interviewer and the respondent (Ghauri and Gronhaug, 2005). Mail survey respondents independently fill the questionnaires and post them back to the researcher without any personal contact between them. So also, online survey respondents simply log onto the survey website and fill the online questionnaire without any interference or help from the researcher or the agent.

Lastly, another typical limitation of the survey method is the danger of low rate of response to questionnaire-based surveys. Ghauri and Gronhaug (2005) suggest that, among other reasons, a low response rate could be caused by a questionnaire not being constructed with simple, concise, and unambiguous language that is understandable by anyone with the bare knowledge of the subject matter. It could also be caused by a questionnaire that is too lengthy, such that “a respondent gets tired or loses interest in answering the questions as the length increases.” (ibidem). To curb this flaw, the authors suggest that the survey instrument should be constructed with a plain and clear language understandable to anyone with a basic literacy level, and that the author of the questionnaire should be “conservative” in assuming “the level of knowledge and education necessary for the respondent to answer the questions” (ibidem).

#### **7.2.4.2 Justification for selecting the Survey Method:**

The questionnaire-based survey method of data collection was selected for this research because of several reasons. First is that by the nature of this study, a large volume of quantitative data was needed from the two national locations of the study in order to facilitate significant statistical analyses that would justify any generalisation of the universality of the factors in the research model. There are tens of millions of banking customers in both countries making up the overall research population. Large respondent samples were therefore needed from both countries. According to Silverman (2005:p8) quantitative surveys are better used for much larger samples than qualitative interviews in order to allow inferences to be made to the wider populations.

Also, Easterby-Smith et al.(2002) suggest that for a cross-national study involving the collection of large volumes of quantitative data, the survey method is about the best option at a researcher's disposal. The questionnaire-based survey method was therefore selected for the collection of the large amount of quantitative data needed from both Nigeria and Scotland in this cross-national study in order to ensure a significant generalisation of the findings to the wider populations.

Another reason for selecting the survey method was because various scholars agree that the survey method is one of the quickest and cheapest means of data collection (Remenyi et al., 2000; Saunders et al., 2003; Bell, 2005). Hence, within the limited time and financial resources available to this researcher for the study, the *questionnaire-based survey* was selected as the most reasonable option for the fast, economical, and convenient collection of the required large volumes of data from the two national study locations.

In addition, being a cross-national study in which the aim was to investigate the prevalence and influence of the identified factors simultaneously across the two selected countries, a standardised data collection instrument was necessary for collecting the data from the two locations. According to Easterby-Smith et al. (2002) and Bryman and Bell (2003), the survey method is a highly structured strategy for collecting standardised and precise quantitative data from a sufficient sample size which will ensure the credibility of the results from the statistical tests. Since the same type of data was required and the same research model was being tested simultaneously in both countries, it was therefore more reasonable to use the same standardised data collection instrument and the same procedures to collect data in the two countries. Such a standardised structure of investigation is usually regarded as highly empirical and reliable (Collis and Hussey, 2003).



Lastly, the survey method was also selected for this study because of the need to use an Internet-based method of data collection in the study. The primary focus of the research is on the subject of online banking consumer behaviour. One of the factors reported most widely in the literature as a fundamental necessity for the adoption of online banking is the consumer's prior knowledge and experience in using the computer and the Internet (Li et al, 1999; Sathye, 1999; Thornton and White, 2001; Chung and Paynter, 2002). It was therefore pertinent that majority of the respondents in the study should be versed in computer and Internet usage.

Consequently, while making the same questionnaire available in paper form for those respondents who did not have constant access to a computer or the Internet, this study has also relied to a larger extent on the web-based survey technique for data collection. The highly structured nature of the *questionnaire-based survey* makes it more easily adaptable to the Internet medium of administration than the other data collection methods. The survey method was therefore selected in order that it might be administered via the Internet also.

### **7.3 Data Collection Procedure:**

Fundamentally, the objectives of this study necessitated the collection of both secondary and primary data. In the following subsections, the sources of data and the overall data collection procedure employed in the study will be explained:

#### **7.3.1 Sources of the Data:**

Secondary data were obtained principally from the existing literature and also from the websites and documents of banks in both countries, international organisations, trade associations, news networks and financial regulatory bodies.

Others sources included official statistics of the two countries involved in the study. Primary data were collected by means of a questionnaire-based survey administered simultaneously in the two countries. Details of the sources and procedures of collecting the two data types are discussed below:

#### **7.3.1.1 Secondary Data Collection - Desk Research:**

The secondary data collection involved the reading and gathering of relevant information from the existing literature in the key areas of the study, examining the websites of all the banks in Nigeria and Scotland, and also studying relevant records of various local, national, and international organisations on the statistics of both countries. The secondary data collected were used in generating the factors investigated in the survey, in building the model of the study and in justifying the selection of both countries as the national study locations. They were also useful in providing substantial background and current information not only on the subject area in general, but also on the economy, technology and culture of two countries.

Apart from the books and journal articles containing the past and current pieces of research in the area of Internet banking and online customer behaviour, the other sources of secondary data included desk research of the websites of the 25 consolidated banks in Nigeria (see table 6.2, page 135), as well as the four major banks in Scotland that constituted the Committee of Scottish Clearing Bankers before the last quarter of 2008 (see subsection 6.3.4, page 146). The main desk research of the websites was conducted between 11<sup>th</sup> and 29<sup>th</sup> August 2007, while information re-confirmation continued throughout the rest of the study period. The

web-search was to confirm which banks offered Internet banking and to find out what online services they offered. It was also aimed at confirming at what level of IB diffusion the banks were (especially those in Nigeria) in accordance with Diniz's (1998) Internet Banking Model (see table 6.3, page 136).

Other secondary data sources were statistical information and archival documents made available on the websites of the Central Bank of Nigeria (CBN), Nigeria Communications Commission (NCC), the official website of the Vice President of Nigeria (2006), Nigeriaonline website, the UK Office for National Statistics, BBC News, Mortgage Finance Gazette, The Scottish Banker journal, the UK Government's Communications Act 2003 (chapter 21), the Committee of Scottish Clearing Bankers (CSCB), General Registrar Office for Scotland, the Scottish Executive National Statistics, the Scottish Enterprise, and the ESRC programme on Devolution and Constitutional Change. Other information sources included the United Nations country information, the European Union Regional Trends 39 (2006), the Nationmaster website, the Internet World Statistics website, the Visitscotland website, and the CIA World Factbook website.

#### **7.3.1.2 Primary Data Collection – The Field Work:**

The primary data for the study were collected by means of a questionnaire based survey. Two surveys were conducted simultaneously in Scotland and Nigeria using the same questionnaire. The primary data source included banking customers in both countries aged between 18 and 64 years. It was assumed that virtually all adults within the above age bracket were bank customers, but also that not all of them had access to the Internet or maintained online banking accounts. Hence, in order to ensure a "proper representativeness of the study samples" in both countries

and also collect “adequate, valid data” from the samples (Craig and Douglas, 2000; Ilieva et al., 2002), a *multi-mode survey method* which combined online and offline questionnaire administration techniques was employed in the two national study locations, in line with the suggestions of methodology scholars such as Dillman and Tarnai (1989), Dillman et al. (2001) and Wilson and Laskey (2003).

The multi-mode procedure involved the use of electronic and paper versions of the same questionnaire to collect the primary data. Ilieva et al. (2002) suggest that using only an online survey for data collection in an international marketing research may be too narrow as there are still very wide gaps between the levels of email and internet penetration in various parts of the world. The authors argue that as many people are still likely not to have access to the Internet, the sample of respondents reached only via the web-based method may not be truly representative of the desired study population. Similarly, Schaefer and Dillman (1998) warn that data collected using only the Internet medium may also suffer validity problems for the same reason. The authors therefore advise that applying a “multi-mode strategy of data collection”, whereby both online (e.g., web and email surveys) and offline (e.g., postal/mail surveys) are used concurrently in the same study, will eliminate the difficulty.

Couper (2000) also encourages academic researchers to adopt this same “mixed-mode survey” procedure, whereby several distribution options are employed in the administration of the survey so as to maximise the overall response rate of the study. Findings from a study by Ilieva et al. (2002) on the benefits and shortfalls of online surveys in marketing research indicate that the benefits of simultaneously using online and postal surveys for instance far outweigh the advantages of using any of them in isolation. Based on the above suggestions, therefore, this study adopted the “mixed mode” strategy and used

three techniques simultaneously in collecting the primary data. These include: *web-based survey*, *email survey* and *paper-based intercept survey*. The process and benefits of each technique are discussed in the following subsections:

#### **7.3.1.2.1 Web-based Survey:**

Lefever et al. (2007) classify the web-based survey as an online data collection method that uses a website to collect and store research data in real-time and in an appropriate format for statistical analysis. The authors suggest that web-surveys are efficient because they “guarantee a rather short time-frame for the collection of responses and are time and cost saving.” This method is the first of the two online data collection strategies employed in this study. It is a method that international marketing practitioners and academics have found appealing for the same reason that it offers “low costs and fast response rates” (Ilieva et al., 2002; Tingling et al., 2003). Previous research has also shown that 70% of researchers in the Marketing discipline have used web-based and email survey methods (Ilieva et al., 2002).

The method involves an interactive online questionnaire being designed and hosted on the Internet at its own website, and respondents are then encouraged to visit the survey site to complete and submit the questionnaire online. Gunn (2002) observes that the influence of web-based surveys on the survey process is currently growing profoundly. Mertler (2002) asserts that the web survey is “an efficient and convenient alternative to the more traditional methods of gathering information.” In the same vein, Archer, (2003) notes that employing the web-based survey reduces the cost to 13% of the traditional postal survey cost and also reduces the total number of hours spent on the survey to one quarter of the total time it takes to conduct the traditional postal survey.

As part of the cost and time saving advantages of the web-based survey, it also makes the general survey administration easier by removing the printing and mailing efforts and costs of the traditional survey method (Kaplowitz et al. (2004). In the same way, it also eliminates the time and effort spent on sorting the received paper questionnaires, collating and extracting data from them onto the computer for analysis. With the web survey, the completed questionnaires returned by the respondents already have data in electronic format, thus enabling easier input of the data into the analysis software (ibidem). For these and other advantages of the web-based survey, there has been considerable optimism among research scholars that the traditional offline methods of data collection might in future be displaced by the online survey methods (Couper 2000; Lefever et al., 2007).

Furthermore, the study of Deutskens et al. (2004) on response quality and response rates of online surveys indicates that higher response rates might be achieved with web-based surveys if the questionnaires are reasonably short, but that long questionnaires might equally achieve high response rates if they are properly designed and if proper incentives are given to the respondents for completing the questionnaire. To achieve success with a web-based survey, Carbonaro and Bainbridge (2000) suggest four important necessities that researchers should put in place for effective online data collection. These include:

- designing the survey to be very simple for respondents to complete,
- ensuring that the participants will find the survey website very easy to access,

- having an in-built security system in the survey site that guarantees credibility and respondents' anonymity
- making sure that the web survey necessitates only the most bare computer skill for its completion.

Lastly, Wilson and Laskey (2003) advise that while Internet-based research is efficient for recruiting specific groups like teenagers and business people who are difficult to reach by the traditional methods, it should still be used alongside the traditional survey methods in a mixed-mode approach, rather than as a standalone alternative to the conventional survey techniques. This suggestion reinforces the idea of the "mixed-mode survey" propagated by Schaefer and Dillman (1998), Couper (2000), Dillman et al. (2001), and Ilieva et al. (2002). Hence, not only did this research take full advantage of the above four issues suggested by Carbonaro and Bainbridge (2000), it also adopted the multi-mode method of data collection as earlier stated.

#### **7.3.1.2.2 Email Survey:**

The email is a computer-based communication process by which individuals and organisations exchange messages with each other in an electronic format and through connected networks like the Internet (Ranchhod and Zhou, 2001). Email survey is the second online technique to be employed in the mixed-mode approach to this study. Email surveys entail sending an electronic, non-interactive version of a survey questionnaire to prospective respondents (McDonald and Adam, 2003). The email either opens directly into the questionnaire or is accompanied by the questionnaire in the form of an attachment (Moss and Hendry, 2002). The email itself contains a cover message which explains the survey and appeals to the respondents to complete and return the questionnaire. Some email

survey respondents return the completed questionnaire the same way it is sent to them, while others prefer to print it, complete it offline, and post it to the researchers if their address is known.

Apart from being used to send questionnaires directly or as an attachment to respondents, email messages are also useful tools for leading potential respondents to the link of the web-based survey and also for sending reminders to them (Weible and Wallace, 1998). However, when a desired sample frame is small and known, and a database of the respondents' email addresses is available to the researcher, the email survey provides the fastest and cheapest means of distributing self-administered surveys (Parker, 1992; Ilieva et al., 2002).

Weible and Wallace (1998) note that web-based research supported by emails has the advantages of "faster responses, lower costs, flexibility, and high response rates (of around 70%)". Interestingly, Ilieva et al. (2002) also report that in their own study, some of the respondents who received paper copies of the questionnaire by post emailed them back asking for an electronic version of the questionnaire. This indicated to the scholars that the respondents found it easier and faster to complete survey questionnaires electronically than in their hand writing, especially as the electronically filled ones were found to be more complete and were received back much earlier than the paper ones.

Email survey also allows for 'personalisation' of survey interaction and communication between the researcher and the respondents, which Schaefer and Dillman (1998) found to be advantageous in obtaining higher response rates and more complete responses with the method. In their study, the authors found that 69.4% of email respondents completed 95% of the questionnaire, while 56.6% of the postal respondents completed 95% of the questionnaire. In addition, Weible and



Wallace (1998) observe that, used together, the online surveys (web-based and email) offer a lower response error than the offline survey in that the online responses are more complete and the quality of response is higher than that of paper survey response.

Lastly, relevant pointers in the available literature also indicate that email surveys are equally better used in conjunction with other survey methods. In full compliance with above suggestions, this study adopted the email mode alongside the web-based and paper-based intercept survey modes. Apart from serving as a questionnaire distribution technique, emails were also used initially to contact some of the respondents and then later as reminders, in line with Dillman (2007).

#### **7.3.1.2.3 Intercept (Paper-based) Survey:**

This offline technique was the third survey mode used in the study. It involved personally intercepting and handing out paper-copies of the same questionnaire to adults in streets where bank branches were located in some cities and towns in Scotland and Nigeria. The *snowball* method was also employed in the paper-questionnaire distribution whereby friends, colleagues, family members and students who helped to distribute the intercept survey were also briefed to request willing respondents to suggest/extend the survey to their own friends, colleagues and acquaintances too.

The convenience intercept survey method was used by White and Nteli (2004) to study customer attitudes to Internet banking in the UK. Other Internet banking scholars who have employed this convenience method include Pikkarainen et al. (2004) in Finland, Laforet and Li (2005) in China and Shergill and Li (2005) in New Zealand. Also, in a series of surveys conducted by Moss and Hendry

(2002), the Learning Strategy paper-questionnaires were manually distributed to students of the University of Sydney medical program while the End of Year surveys were administered on them via email and web-based methods. The response rates achieved by the three methods were 46%, 65%, and 64% respectively.

Ultimately, employing the web-based, email, and intercept survey modes in the present study helped to maximise the overall percentage of responses received from the two national study locations. The multi-mode also helped the researcher to save the time and cost that would have been spent had other methods such as postal survey been used. To publicise the survey, an advertising handbill titled "Help!" which was approved by the departmental ethics committee was printed and used in soliciting for qualified respondents to complete the study (see appendix 5). Displaying the address of the web-based survey, the leaflet was sent to various people who helped in administering the survey and also pasted on various notice boards on the university campus.

Similar information was also published on the website of *Facebook*, an online social network to which the researcher belongs. To ensure that neither the advert nor the interception method coerced people unduly to complete the survey and ran afoul of any tenets of research ethics, it was clearly stated on the questionnaire that respondents could skip any portion of the survey which they found uncomfortable, and that completing and returning a copy of the questionnaire meant that the respondent had willingly agreed to participate in the survey.

### 7.3.2 Questionnaire Design:

The term *questionnaire* has been defined as the “self-completion means” by which a researcher gathers information from the target respondents (Bell, 2005). However, the above definition seems to exclude certain types of interviews which some authors have referred to as questionnaire-based also. For instance, citing deVaus (1991), Saunders et al. (2003) characterise the *questionnaire* as inclusive of “all techniques of data collection in which each person is asked to respond to the same set of questions in a predetermined order”. The authors therefore argue that structured interviews, telephone interviews from a formal list of questions, as well as all other formats in which respondents answer structured research questions in the absence of the researcher are also included in the term *questionnaire*.

The vital issue, however, is that the *questionnaire* is a research document that contains all the questions which the researcher wants the sample respondents to answer, and the answers so provided will collectively form the data which the researcher needs to analyse in order to make inferences, generalisations, predictions, and recommendations concerning the subject matter of the study. According to Ghauri and Gronhaug (2005), questionnaire-based surveys are among the most widely used data collection methods in business studies. Saunders et al. (2003) also note that since each respondent is required to answer exactly the same set of questions given to others, the questionnaire is an excellent instrument for “collecting responses from a large sample prior to quantitative analysis”.

There are two broad categories of questionnaire, including self-administered (or respondent-completed) questionnaires and interviewer-administered (researcher/agent completed) questionnaires (Saunders et al., 2003; Ghauri and Gronhaug, 2005). The interviewer-administered questionnaire involves

the researcher or research agent(s) recording the answers provided by the respondents in person or by telephone (Saunders et al., 2003). In contrast, the self-administered questionnaires are distributed to the prospective respondents by means of the three survey methods discussed 7.3.1 above. The respondents write down the answers to the questions themselves and return the questionnaires to the researcher. It was this self-administered questionnaire format that was used in the present study, especially as the sample respondents were scattered far and wide in the two national locations of the study.

The questionnaire for the current research was designed using the SNAP computer software. SNAP was used because it permits a simultaneous construction of web, email, and paper versions of a questionnaire. In addition, SNAP enables a completed online questionnaire to be received instantaneously by the researcher as an email once the respondent clicks on "submit". It is a robust programme that not only allows the responses received as email to be exported back into its data mode as data cases but also makes it possible for all responses from the three versions of the questionnaire to be pulled together in the same data file for statistical analysis.

In designing a questionnaire for a cross-national or cross-cultural study such as the one used in this research, Ghauri and Gronhaug (2005) suggest that the instrument should be made compatible with the cultural nuances of the individual countries involved, taking care of the differences in language, clarity of meanings, familiarity of terms and expressions, educational levels, and religio-cultural sensitivities of the people in each culture. In the present study, even though English is commonly spoken and written as the national language in Scotland and Nigeria, care was taken to avoid any confusing technical or superfluous expressions and to ensure that the terms used in the questionnaire were clearly understandable by an average person with a secondary school education in either country. This was done

with the aim of ensuring that respondents in both countries interpreted the questions in exactly the same way, in order to provide similar “correct and clear answers” (ibidem).

Also, recognising the socio-cultural differences between survey respondents in Scotland and Nigeria in their attitudes towards survey participation, the questionnaire for the study was prepared in such a way that the section with the demographic questions was put at the end of the questionnaire. Expert opinion indicated that while Nigerians do not care whether personal questions about them are asked in the beginning or at the end of the questionnaire, survey respondents in Scotland do not like to be confronted upfront with questions about themselves in a survey. It seems to give them a feeling of invasion of their privacy. Such a questionnaire easily puts them off and might end up in the dust bin.

However, positioning the demographic section at the end of the questionnaire seems to help in soliciting response to personal questions in a less obtrusive way. Doing so tends to present the demographic section as an opportunity for the respondents to ground the expert opinions they gave in the earlier parts on a foundation of personal integrity. It also tends to subtly and indirectly suggest that without the demographic information, all the important information they provided earlier might not be completely effective for the research. Superior opinion received by the researcher indicated that this strategy would better predispose respondents in Scotland to participating in the survey. Hence, the demographic questions were shifted to the back to form the last segment of the survey. Details of the four parts of the questionnaire are discussed in the following three subsections.

### 7.3.2.1 Operationalising the Research Constructs:

Burgess (2001) asserts that the strength of any research analysis is dependent upon the quality of the data being analysed, and this in turn is dependent upon the design quality of the data collection instrument and the collection procedures. The author advises that to design a good quality questionnaire, the researcher must ensure that the right type of relevant questions are asked, and in the right way. He specified three simple steps for designing a questionnaire, including:

- Determining the questions to be asked, based on the objectives of the study and the identified sample frame.
- Selecting the question type for each question and specifying the wordings.
- Designing the question sequence and overall layout of the questionnaire.

The construction of the questionnaire used in this study was guided exactly by the above three steps.

Based on the central aim of determining how customers' personal readiness and the web-channel's readiness for Internet banking adoption could affect the customers' attitudes towards IB adoption, the questions in the questionnaire were grouped into four sections, as explained below:

**Section A: *Technology Involvement:***

Questions in this section were aimed at establishing the respondents' level of prior computer and Internet knowledge, experience, self efficacy (i.e., usage comfort) and level of usage satisfaction. The data collected in this section helped to establish the extent to which the above variables influenced the ability and willingness of the respondents to adopt Internet banking. Eleven questions relevant to the respondents' level of technology involvement were asked in this section (see table 7.2 on page 203/204).

Section B: *Diffusion of Internet Banking Innovation:*

This section contained questions that sought to establish the levels of general banking involvement and Internet banking usage/non-usage among the respondents. This involved measuring how long the individual respondent had been a bank customer, the types of Internet banking services they have used, their usage frequency and the duration of their IB involvement. The section also tried to elicit the users' perceptions, reservations and level of satisfaction with the channel, as well as the non-users' reasons for non-usage. There were nine questions in the section covering to the above issues.

Section C: *Customer Readiness, Channel Readiness and Customer Attitudes and Intentions toward Internet Banking Adoption:*

While only four questions were in this third section, each of the first two questions contains 8 items. The first question, which dealt with the *customer readiness* construct, was aimed at establishing respondents' level of agreement, or disagreement, with how a customer's personal characteristics influenced his or her readiness to adopt Internet banking. The second question dealt with the *web-channel readiness* construct. It sought to determine the extent to which the respondents agreed or disagreed with the importance and necessity of the 8 website characteristics to customers' ability and willingness to adopt Internet banking. The last two questions then measured the respondents' general *attitude* and *intention* toward Internet banking adoption. Each also contained 3 items.

**Section D: *Respondents' Demographics:***

This final section of the questionnaire contained questions that related to those demographic characteristics of retail customers that had been identified from the literature as having an effect on their Internet banking adoption decisions. These included factors such as gender, marital status, level of education, occupation, work status, and level of income. Eight (8) questions were asked in this section to cover the above variables, including one additional question about the city/town in which the respondent lived. This extra question was primarily meant to delineate the Nigerian respondents from those in Scotland in order to demarcate the two sample groups for easy data analysis.

**7.3.2.2 Sources and Assessment of the Measurement Scales:**

Regarding the actual composition of the research questionnaire, this study did not invent any new scales. Instead, as suggested by various scholars, including Kim and Prabhakar (2000:p541), Suh and Han (2002:p252) and Wang et al. (2003:p509), measurement scales contained in various previously validated research instruments in the area of Internet banking adoption were borrowed and combined in the present study. Some of the scales were adopted verbatim while others were modified combinations of related items from the different authors' scales. This method adopting and adapting various scales was used by Suh and Han (2002) in their study of trust as a major affecter of customer acceptance of Internet banking in South Korea and also by Wang et al. (2003) in their study of factors affecting customer acceptance and usage of Internet banking in Taiwan.



The verbatim or modified usage of previously validated measurement instruments has also been endorsed by various other scholars, including Straub (1989), Boudreau et al. (2001), Wu et al. (2004) and Shih and Fang (2004). For instance, Straub (1989) strongly affirms the legitimacy of employing previously validated research instruments where necessary, and Boudreau et al. (2001) also advise that doing so would not only boost the acceptability of the current research instrument but also increase its measurement efficiency. As summarised in table 7.2 (page 203 below), the sources of the measurement instrument in the present study include a combination of previously validated scales from authors such as Suh and Han (2002); Sciglimpaglia and Ely (2002); Wang et al. (2003); Kerem (2003); Kolodinsky et al (2004); Shih and Fang (2004); Lassar et al. (2005); Shergill and Li (2005); Laforet and Li (2005); Wan et al. (2005); and Cheng et al. (2006). These scholars have studied various perspectives of offline and online customer behaviour in the banking contexts of countries such as USA, Hong Kong, China, Estonia, Taiwan, South Korea and New Zealand.

All the scales adopted or adapted from the above sources were previously published in English language. There were therefore no transferability or location-context problems and no “confusing, difficult to understand and irrelevant” items in the scales (Soehadi et al., 2001:p288). This is also because the scales borrowed were previously validated in both developed and developing countries where English is either the native language or the second language. Moreover, the language characteristics in such countries are somewhat similar to those in the two national locations of the current study. Scotland is a developed English-speaking country and Nigeria is a developing country whose official language is also English. Table 7.2 below contains a summary of the measurement scales used in the research instrument.

**Types and sources of measurement scales used in the current study:**

Questions	Components being measured	Type of scale	Sources of the scales
<b>Section A: Computer/Internet usage knowledge &amp; prior experience</b>			
Q1	Knowledge of computer usage	Yes or No	Sciglimpaglia & Ely (2002)
Q2	Why not if "NO"	Open-ended	Researcher
Q3	Presently using the Internet	Yes or No	Sciglimpaglia & Ely (2002)
Q4	Why not if "NO"	Open-ended	Researcher
Q5	Frequency of computer usage	5-point multichoice	Lassar et al. (2005)
Q6	Frequency of Internet usage	5-point multichoice	" " "
Q7	Length of time of computer usage experience	5-point multichoice	" " "
Q8	Length of time of Internet usage experience	5-point multichoice	" " "
Q9	Computer self-efficacy (usage comfort)	5-point Likert scale	" " "
Q10	Internet self-efficacy (usage comfort)	5-point Likert scale	" " "
Q11	Level of satisfaction with computer and Internet usage skills	5-point Likert scale	" " "
<b>Section B: Internet Banking Diffusion</b>			
Q12	Respondent's banking needs provider	6-point multichoice	Researcher/Lassar et al. (2005) (adaptation)
Q13	Length of time the respondent has been a banking customer.	5-point multichoice	Lassar et al. (2005); Cheng et al. (2006) (adaptation)
Q14	Presently using Internet banking	Yes or No	Sciglimpaglia & Ely (2002)
Q15	Why not if "NO"	Open-ended	Researcher
Q16	Frequency of Internet banking usage	7-point multichoice	Lassar et al. (2005); Cheng et al. (2006) (adaptation)
Q17	Length of time of Internet banking usage	5-point multichoice	" " "
Q18	Recency of Internet banking usage	6-point multichoice	Lassar et al. (2005) (adaptation)
Q19	Types of Internet banking services used	15-point multiple choice	Shergill and LI (2005) (options rearranged)

Q20	Level of satisfaction with current Internet banking usage	5-point Likert scale	Lassar et al. (2005) (adaptation)
<b>Section C: Significance of customer and channel readiness attributes and attitudes/intention towards IB adoption</b>			
Q21: a - h	Customer Readiness for IB adoption	8- item x 5-point Likert scale	Suh and Han (2002); Wang et al. (2003); Shih and Fang (2004); Laforet and Li (2005); & Wan et al. (2005)
Q22: a - h	Website Readiness for customer adoption of IB	8-item x 5-point Likert scale	” ” ”
Q23a, b, c.	Attitude to Internet banking	5-point Likert scale	” ” ”
Q24a, b, c.	Intention to adopt Internet banking	6-point ordinal scale	” ” ” Also, Kolodinsky et al (2004)
<b>Section D: Respondents' demographics</b>			
Q25	Gender	2-point multichoice	Wan et al. (2005); Laforet and Li (2005)
Q26	City/Town of residency	Open-ended	Researcher
Q27	Age	5-point multichoice	Cheng et al (2006)
Q28	Marital/Relationship Status	2-point multichoice	Kolodinsky et al. (2004)
Q29	Highest level of education	8-point multichoice	Wan et al. (2005); Laforet and Li (2005).
Q30	Present Job Status	8-point multichoice	” ” ” Also Cheng et al. (2006)
Q31	Occupation/Profession	Open-ended	Wan et al. (2005); Laforet and Li (2005).
Q32	Income level	5-point multichoice	” ” ”

Table 7.2: A summary of the types and sources of the measurement scales used in the study questionnaire.

### 7.3.3 Sample Delineation and Sampling Technique:

Since the focus of the present study is on Internet banking adoption by retail customers rather than corporate customers, it was decided that the target respondents should be only the retail customers themselves. Besides, apart from a

desk examination of the websites of the banks in Scotland and Nigeria to confirm the availability of Internet banking services on their sites as well as their channel features, it was not necessary to survey the bank officials since their opinions might not represent the true interpretation of their customers' perceptions of their online banking channel. Moreover, according to Kassim (2005:p4), service customers are always in the best position to explain their own perceptions of service and channel quality as well as the reasons for their choices, attitudes and intentions towards the services they receive. For this reason, it was decided that only retail banking customers would be recruited and surveyed in the study.

Furthermore, due to the pervading nature of banking as a nation-wide service in most economies, personal banking customers are usually enumerated in tens or hundreds of millions, depending on the country's population. There are over 3 million retail banking customers in Scotland (cscb, 2007) and over 150 million of them in Nigeria (CBN, 2008). For a national study such as this one, which is not focused on any one specific financial firm, formal enumeration of such a huge research population therefore becomes a difficult issue to tackle, except if all the databases of all the financial institutions in each country were pulled together, which would involve enormous time and financial implications.

In the present study, a formal enumeration of the entire banking customer population in either country was not possible due to *time, access* and *cost* constraints, the study having been sponsored privately by the student-researcher. Besides, Dillon et al. (1994:p219) make it clear that a "complete enumeration of the group, called census, is rarely undertaken because it is usually much too expensive in terms of time, money, and personnel". However, for clarity of definition, the *theoretical population* of this study consists of the total number of

men and women aged between 18 and 64 years who maintain a banking account in any financial institution in Scotland or Nigeria, who know how to use and have had experience of using computer and the Internet.

Individuals below 18 years were excluded from the population frame because they are legally classified as minors in both countries. Those above 64 years were also excluded because they are above the active working age in both countries. 65 was the retirement age in Scotland at the time of this study. Also, the unofficial retirement age in Nigeria at that time was 60. People aged 65 and above were regarded as the vulnerable class of senior citizens usually protected by research ethics committees from sensitive research investigations in much the same way as children. Hence, they were excluded because an investigation of individual perceptions about any area of personal banking is usually considered sensitive (White and Nteli, 2004:p51).

As a result of the constraints mentioned above, the “*convenience-intercept sampling method*” (White and Nteli, 2004:p51; Shergill and Li, 2005:p4) and “*snowball sampling method*” (Klopper et al., 2006:p162) were employed as the sampling techniques in the study. The previous authors justify the use of *convenience-intercept* and *snowball* sampling in recruiting bank customer-respondents due to “the private and confidential nature of personal banking” (White and Nteli, 2004:p51). For obvious security reasons, most banks in Scotland and Nigeria would not release access to their customer databases to any private researcher and many individuals would also be reluctant to be formally enumerated or to assent to their private information being made available to just any researcher for a survey that would seemingly peer into their personal banking details.

In addition, being a foreign student made it even harder for this researcher to obtain access to any institutionally-kept database of potential respondents in Scotland such as voters' registers, customer databases, or indeed, databases of any organisation in the public or private sector due to security reasons. Hence, as a result of the inability to access an institutional database of retail banking customers or to formally enumerate the respondent population, it was also not possible to use any probability sampling method for establishing the sample frame or size for the study. The non-probability methods of *convenience-Intercept* and *snowball* were therefore used in the study.

The above hitch is not a new phenomenon in this research area as evidence from the methodology literature shows that *convenience sampling* is a "clearly accepted" method of Internet and email-based surveys. Bryman (2004) also indicates that *snowballing* is acceptable when convenience sampling is necessary even though it limits reliability of the research findings. However, Wilson (2006:p207) also notes that "sampling of potential respondents for Internet and email-based surveys generally takes the form of *convenience* samples". The *convenient-intercept sampling* method was conducted by employing colleagues, friends, relatives and students of the researcher to approach and request qualified members of the public who were willing to complete the survey either online or offline to do so.

*Snowball sampling* was also applied by asking willing respondents to kindly suggest the survey to their own relatives, colleagues and acquaintances, in line with Klopper et al. (2006:p162). The advantages of using the *convenience-intercept* method of data collection in this study were that it was cheap, quick, and easy to administer and that it also enabled the recruitment of a sample frame with a

wide diversity of respondent profiles, while maintaining “reasonable similarity to the population of interest” (Wilson, 2006:p207). The advantages of using *snowballing* were that it also helped to widen the scope of recruitment as well as the profile of respondents in both countries. It also helped to maintain response reliability by ensuring that only respondents who met the criteria for participation in the survey were recruited.

The *convenience-intercept* sampling method was used by White and Nteli (2004) to study customer attitudes to Internet banking in the UK. Other Internet banking adoption scholars who also employed the method include Pikkarainen et al. (2004) in Finland, Laforet and Li (2005) in China and Shergill and Li (2005) in New Zealand. Reasons proffered by these scholars for adopting the *convenience-intercept sampling* method included cost, time, and access constraints, the very same constraints experienced by this researcher in the present study. However, in order to ensure a fairly homogeneous sample frame, to have a controlled data collection exercise, and to clearly delineate the desired sample frame, three specific respondent characteristics were imposed as prerequisites for qualifying to participate in the survey, including that:

- Respondents must be between 18 and 64 years of age only.
- Respondents must know how to use a computer and the Internet (even if they were not using them at the time of the survey).
- Respondents must be current customers of a banking institution, whether online or offline.

These characteristics were used to define and identify the sample frame. Specific questions were asked in the questionnaire regarding these three characteristics, and during the data screening any deficiency found with regards to any of them resulted in the disqualification of the response involved.

In imposing the above preconditions, it was assumed that in both Scotland and Nigeria majority of male and female adults above the age of 18 would have at least a bank account and, therefore, would be a bank customer. Being within the above delineation qualified the person as a potential respondent in the study. Other than age, there seemed to be no other special demographic way to characterise a retail banking customer as both male and female individuals, whether maximum or minimum wage earner, work-life starter or retiree, and employed or unemployed, could maintain a bank account.

It was also assumed that apart from surveying those already using Internet banking, it was also necessary to collect the opinions of the non-IB users as long as they were banking customers. This was necessary in order to find out why they were not using Internet banking and also to determine their general attitudes and intentions towards Internet banking adoption. However, while it was assumed that a non-user who knows how to use a computer and the internet could be regarded as a potential IB adopter, an individual who does not know how to use a computer or the Internet at all was regarded as a non-starter because he/she cannot yet qualify as a potential IB adopter.

It was therefore assumed that asking for such a person's opinion about Internet banking adoption was pointless since there was no way anyone could adopt Internet banking without first being able to use a computer and the Internet. In the same vein, it was also decided that an individual who had no bank account and no plan to have one at all could not be in any position to provide a useful and informative perception about Internet banking.



#### 7.3.4 Target Sample Size:

Having defined the limiting characteristics of the desired sample frame, the next step was to select an appropriate target of sample size. Wilson (2006:p208) suggests that “the process of determining sample size relates to financial, managerial and statistical issues”. This implies that in deciding on a sample size, there should be a consideration of the cost of data collection, the time available for administering the survey, and the desired statistical power of the data collected. The present study was affected especially by cost constraint as earlier explained, in that the data collection exercise in the two counties was self sponsored by the student-researcher.

However, being mindful of the need to collect enough responses for extensive quantitative data analyses and a significant statistical power, the researcher decided to target a fairly large sample size of 500 responses from each country, giving a total of 1,000. Sathye (1999:p237) reports that “for populations of 10,000 and more, most experienced researchers would probably consider a sample size between 200 and 1,000 respondents”. Since the banking customer populations in both Scotland and Nigeria are far more than 10,000, the upper end of the suggested sample range was therefore selected for the two-group sample size.

Tull and Hawkins (1993:p556) also suggest six different methods of determining sample size from which a marketing researcher could select, including: “(1) *unaided judgement*, (2) *all you can afford*, (3) *the average of samples for similar studies*, (4) *required size per cell*, (5) *use of a traditional statistical model* and (6) *use of a Bayesian statistical model*”. The sample size of 1000 was selected for the present study in line with the 2<sup>nd</sup> and 3<sup>rd</sup> methods above. As already explained, the sample size was chosen on the grounds of what the limited funds at

the disposal of this self-sponsored student-researcher could reach, and the total figure of 1000 was “*all (he) could afford*” to survey in both countries at the time of the study.

Similarly, for the number (3) method, the authors advise researchers to consider selecting the “*average size for samples used in similar studies*” to their own (ibid: p.557). Research shows that sample sizes used in customer-focused studies so far published in the area of Internet banking range “between 114 and 1,167 respondents” (Laforet and Li, 2005:p370). Quite a number of scholars have sampled exactly 1,000 respondents, including Sathye (1999:p327), Kolodinsky et al. (2000:p2), Kolodinsky et al. (2004:p243) and Cheng et al (2006:p1561). Hence, on the basis of the above instances, it was also decided that 1000 respondents would be an adequate target sample size for the present study.

Moreover, two other points of argument and advice proffered by Wilson (2006:p209) have equally reinforced the decision to adopt a target of 1,000 respondents in this study. The author argues the two points as follows:

- “The homogeneity of the population of interest:  
If there are likely to be significant differences in the views and behaviours of the population, a large sample will be required.
- The likely response rate:  
If the refusal rates within a particular population of interest are likely to be higher than norm, then the sample of potential respondents will need to be larger”.

Pertaining to the first point above, it was decided that since there were several intervening variables involved in this study (16 in all) and a lot of people would likely have differing perceptions and opinions on them, a large sample size was therefore needed. Similarly, with regards to the second point, it was also decided that due to the access constraints earlier discussed, it should be assumed that response refusal rates would be high among the desired sample frame, and therefore a large amount of sample should be targeted in order to increase the possibility of achieving a large number of responses.

With reference to the *statistical significance* of sample size, it was also decided that a sample size of 500 responses from each country would amount to a *statistically acceptable* size and an adequate representation of the banking customer population as long as the sample subjects cut across the various age brackets within the stipulated 18 to 64 range and also possess the other two requisite characteristics for qualifying to participate in the survey. In a survey in Hong Kong, Cheng et al. (2006:p1561) targeted 1000 respondents but received 203 responses (20%) out of which 193 were used for statistical analysis. According to the authors, this was “a 19.3% effective response rate” which still qualified as *statistically acceptable* since it “exceeded the 19% (190) regarded as the minimum desirable percentage for statistical power” (ibid: p.1562).

Evidence from statistical analysis literature seems to support the authors' argument. In an analysis of the *impact* of sample size on statistical *power* presented by Hair et al. (2006:p11-12) for various levels of statistical *significance* (alpha = 0.01, 0.05, and 0.1), the authors suggest that to achieve the desirable statistical power of 0.8, a sample size of at least 190 was necessary, with an effect size of 0.35. The authors therefore advise that when the effect size is anticipated to fall

between small (0.2) and moderate (0.5), the “specification of a 0.1 significance level ( $\alpha = 0.1$ ) requires a sample size of 200 per group to achieve the desired level of 80 percent power” (i.e., 0.8). The general indication is therefore that researchers who carry out statistical analysis should aim at higher sample sizes in order to achieve greater response rates. 200 is generally regarded as *the ideal minimum statistically acceptable sample size* for achieving the desired statistical power of not less than 0.8 (ibidem). In view of the above suggestions, the decision to target a combined sample size of 1,000 in the present study was fully justified.

#### 7.3.4.1 Target Sample Size Distribution:

Out of the 1,000 targeted responses, 500 were expected to be recruited from each country. The distribution of the target responses among the three modes of survey is as contained in table 7.3 below. The inequality in the allotment of expected response figures of the three survey modes was justified by the trend observed in existing studies in the area. Wilson (2006:p209) confirms that “many researchers rely on past experience to determine an appropriate sample size”. Existing studies on Internet banking have shown that low response rates are generally common in the area of Internet banking research (Sathye, 1999:p327). Other scholars have also noted that low response rates are especially prevalent in email, intercept, and postal surveys (Malhotra, 1999; Akinci et al., 2004).

**Targeted sample size distribution:**

	Total Target	Web-based	Email	Intercept
<b>Scotland</b>	500	300	50	150
<b>Nigeria</b>	500	300	50	150
<b>Total</b>	1000	600	100	300

Table 7.3: Distribution of the targeted number of responses.

Due to the fact that the pilot study revealed that respondents found the web-based survey much easier and faster to complete than the other two versions, and since all respondents were allowed to choose which version they wanted to complete, it was therefore anticipated that most of them would prefer the web-based version. The largest share of the expected number of responses was therefore allotted to the web-based survey (see table 7.3 above). The email survey was expected to be the most tasking mode because it required the respondent to first save the questionnaire in his/her system, complete it and then re-attach it to an email sent to the researcher. For this reason it was expected that many of those who received the survey by email would click on the hyperlink on it and complete the web-based version instead. Hence, the smallest portion was allotted to the email mode.

Lastly, the email version also had a default bias in that it eliminated the anonymity of the respondent, which could make many people to avoid it. The decision was therefore taken to allot the smallest portion of the target sample size to the email version. The hyperlink to the web-based survey was also allowed to remain on the email questionnaire so as not to lose the recipients of the email version entirely on account of the loss of anonymity associated with it.

### **7.3.5 The Pilot Study: Pre-testing the Questionnaire:**

The three versions of the research questionnaire were pre-tested during a pilot study that spanned the two weeks between 22<sup>nd</sup> November and 6<sup>th</sup> December 2007. In Scotland, the survey was distributed among faculty members and postgraduate students of the Strathclyde Business School, while in Nigeria it was

sent as email attachment to the researcher's former work colleagues and clients through the researcher's relatives. A separate request for advice, comments, and opinions on the content and constructs of the instrument was also made to the respondents. 20 respondents were targeted and 20 responses were received. This figure was considered adequate for the required input necessary to modify and validate the questionnaire because it was consistent with the suggestions of Bauer et al. (2005) and Laukkanen (2007b), both of who consider 20 responses adequate for pre-testing an online survey. Below is an analysis of the responses from the pilot study.

**The pilot survey responses:**

	Web-based	Email	Intercept	Total	%
<b>Scotland</b>	10	1	1	<b>12</b>	<b>60%</b>
<b>Nigeria</b>	5	2	1	<b>8</b>	<b>40%</b>
<b>Total</b>	<b>15</b> (75%)	<b>3</b> (15%)	<b>2</b> (10%)	<b>20</b>	<b>100%</b>

Table 7.4: Summary of the pilot study responses

Before pre-testing the questionnaire, it was submitted to the departmental branch of the University of Strathclyde Research Ethics Committee for vetting and approval. Approval was granted by the committee with an advice from the chairman of the departmental committee to restrict the upper age limit of the respondents to 64 instead of 65 originally indicated. Since 65 was the retirement age in Scotland at the time of the study, it was considered that sampling those aged 65 or above would be inappropriate for the same reason already explained in subsection 7.3.3 (page 204).

Apart from the completed pilot questionnaires, valuable suggestions on the content and constructs of the instrument were also received from six of the respondents, including three senior faculty members of the Strathclyde Business School, one fellow doctoral researcher and a Nigerian middle manager of a departmental store. The suggestions were primarily on the reservation they felt about respondents' receptivity about providing information regarding the names of their banks (Q12), their present occupations/positions (Q31) and their incomes (Q32). An analysis of the 20 responses also showed that 8 respondents (40%) skipped the question about the names of their banks. The question about present occupation/position was omitted by 2 respondents (10%) and the one about income figure was left out by 12 respondents (60%) (See *Appendix 8* for some expert opinions and comments from the pilot study).

Another vital suggestion was the need to have an upfront instruction page or section that clearly reassures respondents about the anonymity of the survey and the confidentiality of the information they would supply. This was considered imperative in order to allay their fears due to the prevalence of identity theft and fraudulent online spam activities going on around the world at the time of the study. Other suggestions were to ask how much time, rather than how many times, the respondents spent using computer and the Internet, and to provide adequate justification in the research objectives regarding why non-users of Internet banking were also being surveyed.

There was no complaint about the clarity of language or comprehension of the questions in questionnaire. The issues raised were mainly on the sensitivity of some questions rather than the construction of the questionnaire. The suggestions

received were meant to reduce that sensitivity, avoid mid-way abandonment of the survey by respondents, reduce the rate of partial responses and enhance the likelihood of receiving complete and significant response. None of the pilot study respondents had any problem with the length of the questionnaire or the time it took to complete a copy. Apart from the issues mentioned above, nothing else was found offensive or intrusive about the questionnaire. As shown in *Appendix 8*, one expert opinion indicated that “the study looks an important one” (John Dunn, Finance and Accounting Department, SBS) while another wrote that it contained “good questions about general attitude to Internet banking which should come earlier” (Paul Hewer, Marketing Department, SBS).

#### **7.3.6 Questionnaire Revision:**

The affected sections of original questionnaire were modified in accordance with both the feedback of the pilot study respondents and the advice of three senior faculty members of Strathclyde Business School. A detailed note which assured respondents of their anonymity and the confidentiality of their information was included on the front page of the revised questionnaire. In place of the name of the respondent’s bank, Q12 was changed to “which of the following provides your present banking needs? (Tick only one)”, and the answer options included “a bank, a building society/mortgage institution, a non-bank finance company, a development finance institution, all the above, and none of the above”.

The question about the respondent’s profession/occupation (Q31) was left unaltered since it did not ask for anybody’s place of work or position and so was considered unobtrusive. Moreover, only 2 out of 20 respondents had skipped it in the pilot study. In the last question (Q32) about the respondent’s income, the actual income figures were removed and respondents were simply asked to indicate an



option that best described their own perception of their income level. The response options included: “Very low level, low level, medium level, high level, and very high level”. A series of supervision meetings were also held to discuss the findings from the pilot study as well as the questionnaire revisions. A final version of the questionnaire was then agreed with the research supervisor before being published on the Internet in December 2007 for the main data collection.

### **7.3.7 The Field Work: Primary Data Collection:**

The final version of the questionnaire was published online on 21<sup>st</sup> December 2007 to mark the commencement of the data collection period, which spanned the 4 months between 21<sup>st</sup> December 2007 and 30<sup>th</sup> April 2008. The reason for adopting the four-month duration was in order to allow enough time to communicate, publicise, distribute and retrieve the three versions of the survey in the two countries, a process which also involved the researcher travelling to and from Nigeria during the period. The duration was also meant to help in maximising the number of responses received from the multi-mode survey. Data were collected concurrently in Scotland and Nigeria.

In line with the practice suggested by Sathye (1999:p327) for overcoming low response rates, double the targeted number of *intercept* and *email* questionnaires were distributed in each country (i.e., 300 and 100 respectively). It was not possible to do the same for the web-based version for the obvious reason that one could not control the number of people completing the online version. The hyperlink to the survey website was posted on three *Facebook* social network sites, including the Glasgow city network, the University of Strathclyde network and the Nigerian network, to all of which the researcher belongs. *Facebook* messages were sent to all the researcher’s network friends soliciting them to complete the online

survey and also to pass the survey hyperlink to their own friends and acquaintances in other networks, such as Edinburgh, Dundee, Aberdeen, Saint Andrews, and Stirling.

As a result, the survey link was also posted on the Aberdeen and Dundee networks of *Facebook* by friends of the researcher's. The University of Strathclyde Information Office also kindly posted the online survey web address on the PEGASUS bulletin site, requesting qualified individuals willing to complete the survey to do so. Several copies the A4-size advertising flyer were printed and posted around the university campus appealing to people to kindly help the researcher complete his PhD by filling out the survey online or offline. Plastic bags containing copies of the paper questionnaire were also tagged onto the notice boards in the lobbies of four buildings on the campus, while the researcher also had one such bag on notice board beside his office door as part of the intercept mode.

The flyer was pasted on the notice board above each bag also appealing for individuals within the required age arrange to pick up and complete a copy. Some of the researchers' tutorial students also volunteered and helped in distributing the paper questionnaires to their relatives, neighbours, family and friends in various parts of Scotland. Both Pikkarainen et al. (2004:p228) and Waite and Harrison (2004:p70) used university students in their studies and justify using them as a ready and economical means of survey distribution as well as recruitment of respondents for Internet banking research.

The researcher also personally distributed copies of the paper questionnaire in Paisley and Glasgow. About 25 copies were kindly distributed in the researcher's local parish church in Paisley by the officiating priest on the 16<sup>th</sup> of March, 2008. After the service that same day, about 21 members of the

congregation completed and handed back their own to the researcher. In addition, the researcher personally distributed about 20 copies in Glasgow city centre by respectfully intercepting members of the public and handing them copies on his way to and from the university every day for 10 working days during the first two weeks in March 2008. A copy was offered to everyone met on the way, but not everybody was willing to participate. An average of 2 persons per day accepted the questionnaire, and to those who did, the researcher pointed out the address on the questionnaire to which they could return their completed copies.

In Nigeria, four individuals (two friends, a former schoolmate, and the researcher's brother) volunteered and distributed the survey in three major cities in the country. A banker-friend of the researcher's who works with one of the top 5 banks in Nigeria helped to forward the web-survey hyperlink to her colleagues in the banking industry and also to some of her close customers. Another friend and ex-co-worker helped to distribute the paper questionnaires in specific streets of Lagos city with a concentration of bank branches both on the mainland and the two Islands.

A former school mate working as an accountant in a federal parastatal organisation in Abuja also helped in distributing both the email and paper versions among civil servants in the capital city. She distributed about 100 copies of the email and paper versions, apart from passing on the web-address of the online version to several other respondents. In Enugu city, the researcher's youngest brother, a medical doctor with the University of Nigeria Teaching Hospital, distributed about 50 copies of the paper questionnaires among his professional colleagues. Through the above volunteers, three of the largest cities in the Western, Northern, and South-Eastern regions of the country were covered in the survey.

To boost the responses from the email version, the researcher also emailed the survey as an attachment to all his colleagues, friends, former colleagues, acquaintances and relatives in various towns and cities in Scotland and Nigeria, requesting them not only to complete and return the questionnaire but also to forward the attachment to their own relatives, friends, colleagues and acquaintances. They were also asked to print and distribute the survey as a paper version if the prospective respondent preferred to fill it by hand, especially for those without regular access to the Internet or electricity in Nigeria.

However, since the email version also contained a hyperlink to the web address of the online version, most of the respondents with Internet access simply clicked on the hyperlink and completed the online survey instead. Some of them then sent an email to the researcher or the distributor informing them what they had done. Consequently, the online survey returned far more responses than were targeted, while responses to the email version were far fewer than expected. At the end of the four-month data collection exercise, a total of 828 responses were received. (See section 8.2.1 on page 230 for details of the response level analysis). The following section introduces the types of data analysis carried out in the study, while the next chapter presents the results of the various statistical analyses computed with the data.

#### **7.4 Data Analysis Methods:**

This section discusses the types of statistical techniques used in analysing the data collected. Aside from the *descriptive analyses* of the respondent profiles and characteristics, other statistical tests carried out in the study included the

Kaiser-Meyer-Olkin (KMO) test of *sampling adequacy*; Exploratory Factor Analysis (EFA) for *data reduction* and *estimation of the interrelationships* among the variables and the latent constructs in the study model; Confirmatory Factor Analysis (CFA) to test the *internal consistency* (reliability and validity) of the measurement model as well as the scale measurement invariance between Scotland and Nigeria; and Structural Equation Modeling (SEM) to validate the final model of the research. These data analysis procedures are further described in the following subsections:

#### **7.4.1 Data Summarization and Descriptive Statistics:**

Descriptive analysis usually entails a summarization of “the statistical information of the sample profile” (Shergill and Li, 2005:p9). First, it involves the presentation of a summary of the vital characteristics of all the survey respondents in *tables* and *charts* in order to enable some comparisons within the sample. In summarizing the information, *frequencies* and *percentages* are commonly used in presenting respondents’ demographic and psychographic variables, such as genders, age ranges, educational levels, occupations, income, place of residence, preferences, attitudes and so forth.

While presenting the summary of the sample profile in “easy-to-understand summary tables”, *tabulation* and *cross-tabulation* also allow for the use of descriptive and inferential statistics to analyse the relationship patterns among the characteristics of the respondent sample (Wilson, 2006:p225). Two categories of statistical measures are used in determining such relationships, namely: *measures of central tendency* and *measures of dispersion* (Silver, 1992:p52; Sincich, 1992:p85; Wilson, 2006:p229).

Another important *descriptive statistic* in quantitative analysis is the *Statistical Power*, which is a “statistical inference test” that measures the probability that a data sample will correctly predict a hypothetical relationship which actually exists within a population (Hair et al., 2006:p10). It indicates the probability of the presence of *statistical significance* in a data set by showing its ability to “correctly reject a null hypothesis when it should be rejected” (ibidem). In the present study, *descriptive analysis* tables summarising the sample profiles and other characteristics of the respondents are presented in section 8.2.2 on page 232, while brief descriptions and justifications of the other relevant statistical measures employed in the research data analysis are presented as follows.

#### **7.4.2 Test of Sampling Adequacy with KMO:**

Aside from presenting a summary of the demographic profile of the study respondents, the next step in the data analysis was to test the statistical adequacy of the data collected. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was selected for the test because it has been widely used and recommended in the literature for this purpose (Karjaluoto et al., 2002:p265; Mattila et al., 2003). This test provides a statistical confirmation that the data size and data quality are adequate enough to reflect a true representation of the target population in measuring the constructs of interest (Karjaluoto et al., 2002:p265).

The minimum recommended level of KMO for asserting sampling adequacy is 0.5 (Malhotra, 1999). The test is also important in the sense that it stipulates the same 0.5 value as the lowest acceptable level for factors to be

included in the factor analysis (Mattila et al., 2003). The authors suggest that the higher above this figure the KMO of each factor is, the more significant the factor analysis will be. The KMO test was used in this study in accordance with the above authors' recommendations. Details of the KMO tests are discussed in subsection 8.3.1 on page 244.

#### **7.4.3 Tests of Factorial Validity and Model Invariance:**

This series of tests involves the various steps usually undertaken when validating the scales of a measurement model in multivariate statistical data analysis. They consist of methods of factor analysis of the multiple relationships that may exist between several dependent and independent variables in a study, as was the case in the present study. Two types of factor analysis may be used in multivariate analysis. One is Exploratory Factor Analysis (EFA), which is used in data reduction for generating a fewer number of factors from the original array of variables hypothesised in the model without losing the overall effects of the variables being measured.

The other is Confirmatory Factor Analysis (CFA), which is used in evaluating and validating the measurement model and also in testing the scale's measurement invariance when a cross-national research is involved (Steenkamp and Baumgartner, 1998). Given that the present research is a cross-national comparative study of Scotland and Nigeria on 16 attitudinal variables, both EFA and CFA methods were employed in confirming the classification of the variables into a fewer number of factors, evaluating the invariance of the measurement scales between the two countries and validating the reliability of the structural and measurement parameters of the research model.

#### **7.4.4. Tests of the Measurement Scales:**

In order to ascertain the *internal consistency* and *convergent validity* of a measurement model, several scholars have employed the *Cronbach's alpha* to assess the *reliability* and *validity* of the individual measurement items in the scale (Hair et al., 2006:p137; Ibrahim et al., 2006; Srivatsa and Srinivasan, 2007). According to Hair et al. (2006:p137), scale *reliability* denotes “the degree of consistency between multiple measurements of a variable”, while scale *validity* is “the extent to which a scale or set of measures accurately represents the concept of interest”.

In line with the scholars' advice, the commonly accepted lower limit for *Cronbach's alpha* value is 0.70. Any value above this figure will give an equitable assessment of the instrument's reliability. Based on this rule, the components of a particular scale can have different *means* and different *variances*, but their *covariance* must remain equal, which means that they must all have *one common factor* in the factor analysis. Similarly, in order to assess the overall *model-fit* of a research model aimed at establishing the cause-and-effects relationships between groups of independent and dependent variables, the scholars also recommend the Confirmatory Factor Analysis (CFA). Computing the CFA analysis therefore helps to confirm the research model as “an adequate representation of the entire set of causal relationships” implicit in the data collected (Suh and Han, 2002:p256).

#### **7.4.5. Test of Cross-national Measurement Invariance:**

Where a *cross-national* or *cross-cultural* investigation of such causative relationships is involved, Steenkamp and Baumgartner (1998) suggest that the measurement scale should additionally be subjected to a series of *measurement*



*invariance* tests. The authors argue that “assessing measurement invariance in a cross-national consumer research” is essential in order to ensure that the measurement scales used are capable of measuring exactly the same constructs in the same ways across the two or more different countries or cultures involved in the study.

The above notion clearly reinforces an earlier assertion by Bagozzi (1994) that in order to ensure the theoretical generalizability of consumer behaviour models and the operational applicability of their measurement scales across different countries, a research model designed and used in one country must be tested and shown to have invariant measurement attributes in all other countries where it is also used for measurement. In other words, the scale must display measurement equivalence between its country of origin and the other countries involved in the research. The aim is to make certain that, conceptually and operationally, the model is measuring the same variables in the same ways across all the countries involved.

#### **7.4.6. Structural Equation Modeling (SEM):**

According to Hair et al (2005:p710), SEM is a “multivariate technique combining aspects of factor analysis and multiple regression which enables the researcher to simultaneously examine a series of interrelated *dependence relationships* among *measured variables* and *latent constructs* (variables) as well as between several latent constructs”. It simultaneously uses a series of multiple equations similar to those of multiple regression to probe the structure of the interrelationships. In so doing SEM helps to test the research hypotheses and validate the structural model of the research as a true depiction of the factorial relationships inherent in the data from the sample.

By its nature SEM has three unique features. Firstly, it has the ability to simultaneously evaluate several dependent interrelationships among measured variables and constructs and between the constructs themselves and to specify the structural model of the interrelationships. Secondly, SEM can also integrate *latent* constructs/variables (unobserved or unmeasured variables) by exploring some relationship consistency among the observed and measured variables which can represent the unobserved ones. Thirdly, having determined the interrelationships among the measured variables in the *measurement model*, which shows how the measured variables integrate together to form the constructs, SEM is then used to specify the real *structural model* of the research that illustrates the association of the theory-based constructs with one another (Hair et al., 2005).

SEM is also a vital multivariate statistical analysis technique because it combines elements of both the *dependence* and *interdependence* analysis techniques. On one hand, its *dependence* feature is akin to multiple regression and it can also be used to explore the multiple analysis of variance (MANOVA) model. On the other hand, the *interdependence* feature of SEM is somewhat similar to Exploratory Factor Analysis (EFA), which is an interdependence multivariate technique, in terms of its exposition of how each variable is related to each construct (i.e., factor loading in Exploratory Factor Analysis).

However, the main difference between SEM and EFA is that while EFA specifies the measurement structure by exploring all the variables and identifying those variables that best define each construct (factor), SEM demands that the researcher first specify the variables that are related to each construct before estimating the loadings and determining the strength of the association. Both EFA and SEM were used in analysing the measurement model of the present study

because they are both multivariate techniques with reliable implementation modalities for examining the measurement and structural parameters of the model and validating the hypothesised relationships in the study.

Multiple regression should have been used assuming there was a single relationship of multiple independent variables predicting a single dependent variable, but in this case there were three relationships in which two independent variables were predicting two dependent variables, one directly and the other indirectly. Hence, in line with the analysis of the relationship between multivariate dependent variables (Hair et al., 2006:p16), the SEM analysis was also chosen as the best option for validating the structural and measurement paths of the present study model, as demonstrated in the next chapter.

## **7.5 Summary:**

In chapter 7, the entire methodological approach to the research data collection and analysis has been discussed. This included the philosophical perspective and paradigmatic stance of the research, the selection and justification of a multi-mode survey method for data collection, the design of the survey instrument, the selection of target sample size and sampling techniques, the pre-testing and review of the survey instrument, and the data collection administration procedure in both national locations of the study. Lastly, the various statistical methods selected for analysing the research data were also described and justified in this chapter.

## **CHAPTER 8:**

### **DATA ANALYSIS AND PRESENTATION OF RESULTS:**

#### **8.1 Introduction:**

In the preceding chapter, the methodological procedure employed in the primary data collection was discussed, starting with the philosophical background of the research. Other aspects included the selection of the data collection technique, the selection of target sample size and sampling process, the design and pre-test of the survey instrument, the fieldwork administration procedure as well as the selection of the statistical analysis methods for analysing the data collected. Justifications for all methodological choices made were equally provided.

The aim of this chapter is to present the findings from the study. In it, the procedures and results of the various statistical analyses computed are presented and discussed. Using SPSS and AMOS computer software, the analysis of the research data was commenced with data summarization and descriptive analysis of the respondents' profiles and responses to the variables measured in the survey. This is followed by the data reduction and factor extraction analysis, which was carried out by means of Exploratory Factor Analysis (EFA).

The subsequent section contains the procedure employed in the validation of the measurement model, including tests for internal consistency, measurement invariance and goodness of fit to the data across the Scotland and Nigeria sample data sets. Confirmatory Factor Analysis (CFA) technique in AMOS 16 software was used for this purpose. Aside from that, the *frequencies* of non-IB-user respondents in the two sample groups were *cross-tabulated* with their *intentions*

towards IB adoption and the results were used to classify *non-adopter* categories within the two sample groups. The essence was to identify the respondents' perception of the influence of the hypothesised factors on customer attitudes to IB adoption. Lastly, the chapter concludes with the testing and validation of final research model with the data from the two sample groups. SEM was used for this purpose. Comparisons of the research findings between the Scotland and Nigeria sample groups are also presented and discussed with the aid of tables and charts.

## **8.2 Survey Response and Sample Characteristics:**

This section examines the overall data collected from the three survey modes and presents a summary of the response level. In addition, preliminary descriptive statistics of the sample profiles are also presented to compare the characteristics of the respondents in the two sample groups:

### **8.2.1. The Response Level:**

The term *response rate* has not been used in this thesis because there was no definite total number of distributed questionnaires for the web-based survey against which the rate of response could have been measured. Hence, the *level of response* has been used to mean the quantity received compared to the targeted number. A total of 828 responses were received at the end of the 4-month data collection period. 18 responses were adjudged unusable and were discarded for reasons of duplication of responses, failure to meet the specified criteria for participation in the survey, and gross inadequacy of responses in some of the returned questionnaires. As shown in table 8.1 below, a final total of 810 responses from the two national study locations (81% of the target) were adjudged valuable and therefore used in the data analysis. The table also shows the number of responses received across the three survey modes and the two countries:

**Response levels achieved through the three survey modes:**

SURVEY TYPE	TOTAL RECEIVED		REJECTED	TOTAL USABLE CASES		SCOTLAND		NIGERIA	
	COUNT	%		COUNT	COUNT	%	COUNT	%	COUNT
<b>Web-based survey</b> Target = 600 (300 from each country)	555	93	8	547	91	424	141	123	41
<b>Email Survey</b> Target = 100 (50 from each country)	24	24	0	24	24	7	14	17	34
<b>Intercept paper survey</b> Target = 300 (150 from each country)	249	83	10	239	80	62	41	177	118
<b>TOTAL</b>	<b>828</b>	<b>82</b>	<b>18</b>	<b>810</b>	<b>81</b>	<b>493</b>	<b>98</b>	<b>317</b>	<b>63</b>
<b>TOTAL TARGET: 1000</b>	Over 1000			Over 1000		Over 500		Over 500	

Table 8.1: Response levels in the survey: Calculation was based on the original targeted figures rather than actual distribution figures since it was not possible to establish an actual distribution figure for the web-based survey other than the targeted figure.

As can be observed, while respondents in Scotland overwhelmingly participated in the web-based survey, respondents in Nigeria participated mostly in the paper-based survey. This disparity could be down to the differences in Internet access and availability of infrastructure such as personal computer and electricity supply between both countries. Figures on the table also seem to confirm the aforementioned trend of low rates of response to email surveys reported in the literature (Akinici et al., 2004). It was also in anticipation of this low response that the targeted figure for the email survey was made much lower than the two other modes.

However, pulling the responses from the three survey modes together, the overall response level looks quite good, indicating that the researcher's appeal in the handbill and on the *Facebook* network was very effective. For instance, the total figure for Scotland shows the magnitude of the effect of the appeal. The Nigerian figure also indicates a good response to the appeal. Hence, it could be safely argued that while the response to the email survey in either country was low, the overall response per country is excellent and therefore the data collection exercise was quite successful.

Moreover, the total figure for each country (493 and 317 respectively) is far more than the 190 suggested in the literature as the minimum *statistically acceptable* data size for embarking on a meaningful statistical analysis and for achieving the desired 0.8 statistical power (Cheng et al., 2006:p1562; Hair et al., 2006:p12). Confident in data size achieved, therefore, the study then progressed to statistical analysis, starting with the descriptive statistics of the respondents' demographics.

## **8.2.2 Sample profile and characteristics:**

Analysed and presented in the form of cross-tabulations and bar charts, the demographic data from the two national study locations are shown side-by-side in this section in order to compare the sample profile from both countries at a glance.

### **8.2.2.1 Gender:**

Table 8.2 below shows the number of male and female respondents who participated in the survey in both Scotland and Nigeria. What is noticeable at once is that more women participated in the survey in both countries than men. In

Scotland, 16% more women completed the survey than men, while in Nigeria, 7% more women than men completed it. Overall, about 13% more women participated in the cross-national survey than men.

**The respondents' gender distribution:**

Q25	Gender	Scotland	Nigeria	Total
What is your Gender?	Male	206	147	353
	Female	287	170	457
	Total	493	317	810
		60.9%	39.1%	100.0%

Table 8.2: Gender distribution of the survey respondents in the two sample groups.

Also, as can be seen from both tables 8.1 and 8.2 above, the overall response level analysis indicates that about two-thirds of the survey participants were resident in Scotland, while a little above one-third were resident in Nigeria. This is gratifying because in spite of all the initial concerns about access in Scotland, the survey turned out very successful most likely because of the web-based version distributed via the *Facebook* network.

**8.2.2.2. Age Range:**

The data presented in table 8.3 below show that participation in the survey in Scotland was highest among respondents in the 18 to 24 age bracket, while those in the 25 to 34 age bracket had the highest participation level in Nigeria. For both countries, the lowest participation came from those in the 55 to 64 age range, with less than 2% contribution to either country and to the overall total.



A noticeable trend in the overall total figure column is also that the increase or decrease in the survey participation is inversely related to the respondents' age range. The higher the age range, the lower the participation rate, and vice versa. This same trend is observed among the Scottish sample, but in the Nigeria sample, the next highest group after the 25 to 34 bracket was the 45 to 44 age range, even higher than the 18 to 25s. As will be seen later, the reason appears to be because many more students participated in Scotland than any other group, while salaried employees participated more than any other group in Nigeria.

**The respondents' age distribution:**

Q27	Age Range	Scotland	Nigeria	Total
To what age range do you belong?	18-24	287	58	345
	25-34	118	157	275
	35-44	54	71	125
	45-54	28	28	56
	55-64	6	3	9
	<b>Total</b>		<b>493</b>	<b>317</b>
		60.9%	39.1%	100.0%

Table 8.3: Age range frequencies from the two sample groups

**8.2.2.3. Relationship Status:**

The bar chart below presents a pictorial comparison of the respondents' relationship profile across the two countries. The chart shows that the overall study sample was mostly made up of single and married individuals (about 94%), while only few people in the other three categories participated in the survey. The darker

bars, representing the figures for Scotland, show that an overwhelming majority of the respondents in Scotland (about 360) were single individuals, while married respondents were a little less than 100.

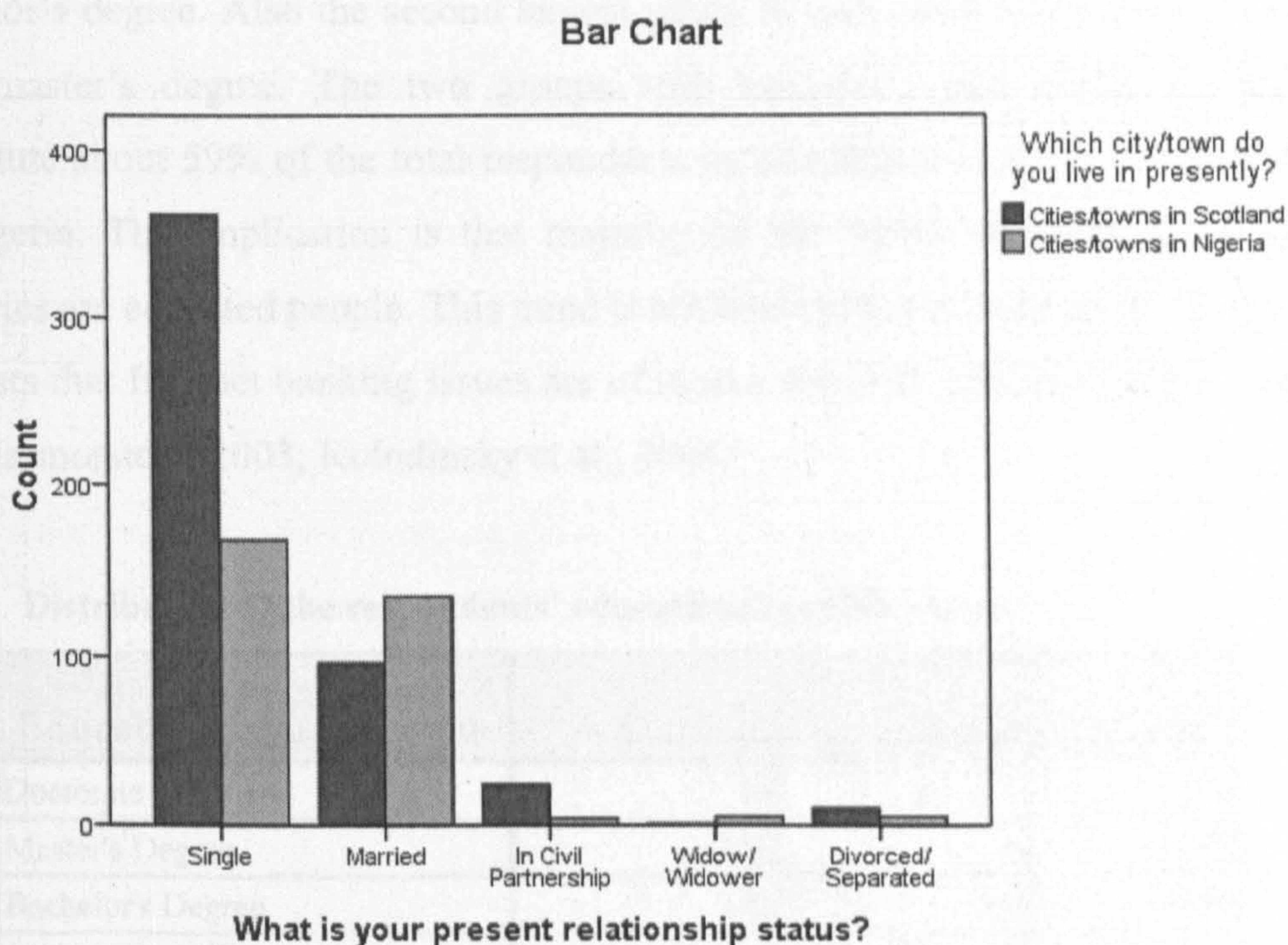


Fig. 8.1: Relationship profiles of the survey respondents.

The lighter bars for Nigeria indicate a close count between single and married respondents in the country, both falling between 130 and 170, and also accounting for majority of the Nigerian sample. A socio-cultural difference is noticeable in this characteristic between the two countries. While the concept of civil partnership is socially normal in Scotland, as a part of the wider UK society, it is not customary in Nigeria. Over 20 respondents in Scotland selected it as their relationship status, while only 4 respondents did so in Nigeria.

#### 8.2.2.4. Education:

The survey respondents' educational profiles in table 8.4 below indicate that in both countries, the largest group of participants comprises those with bachelor's degree. Also the second largest group in each country consists of those with master's degree. The two groups with bachelor's and master's degrees constitute about 59% of the total respondents in Scotland and about 74% of those in Nigeria. The implication is that majority of the survey respondents in both countries are educated people. This trend is not unusual as evidence in the literature suggests that Internet banking issues are of most interest to educated people (Sarel and Marmorstein, 2003; Kolodinsky et al., 2004).

#### Distribution of the respondents' educational qualifications:

Educational Qualification	Scotland	Nigeria	Total
Doctorate Degree	16	2	18
Master's Degree	112	78	190
Bachelor's Degree	177	157	334
College Diploma/ Professional Certificate	46	47	93
Post secondary	77	25	102
Secondary school	64	7	71
Primary school	1	0	1
No formal education	0	1	1
Total	493	317	810

Table 8.4: The educational profiles of the survey samples

However, in Scotland, quite a number of people with only secondary education (13% of the Scottish sample) also completed the survey, while in Nigeria only 8 people below post-secondary education filled the questionnaire. One could therefore assume that education might be a more significant factor in developing

countries than in the developed ones, especially as Lassar et al. (2005:p190) insist that they found *level of education* not a significant determinant of Internet banking adoption in the USA, contrary to the earlier findings of Kolodinsky et al. (2004).

#### 8.2.2.5. Occupation/Employment Status:

The respondents' nature of work was measured in two ways. The first was their occupation; that is, what they were currently doing for a living at the time of the survey. The second was a ranking of their work in terms of high, medium, and low level employment status based on whether they were professionals, skilled workers, semi-skilled workers, full-time students, students in part-time employment, unskilled workers, etc.

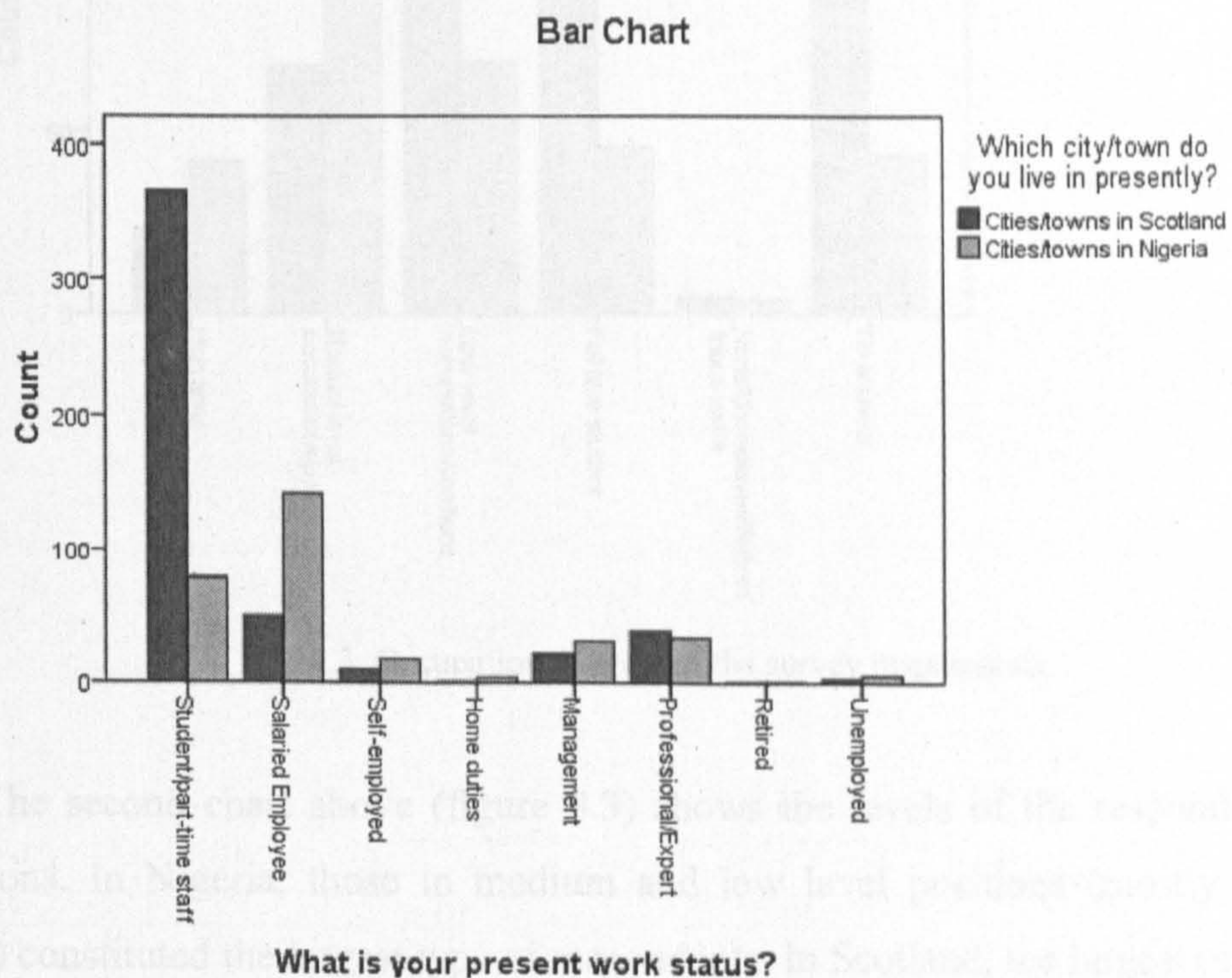


Fig. 8.2: Present employment status of the survey respondents.

From bar chart above (figure 8.2), it could be seen that the highest group of respondents in the Scotland sample were students/students with part-time jobs, while the highest group in the Nigeria sample were salaried employees. There were also quite a number of professionals and those in management positions in both countries. In addition, judging from the earlier educational profile of the sample, one could surmise that majority of the students were postgraduate students already having at least their first degrees.

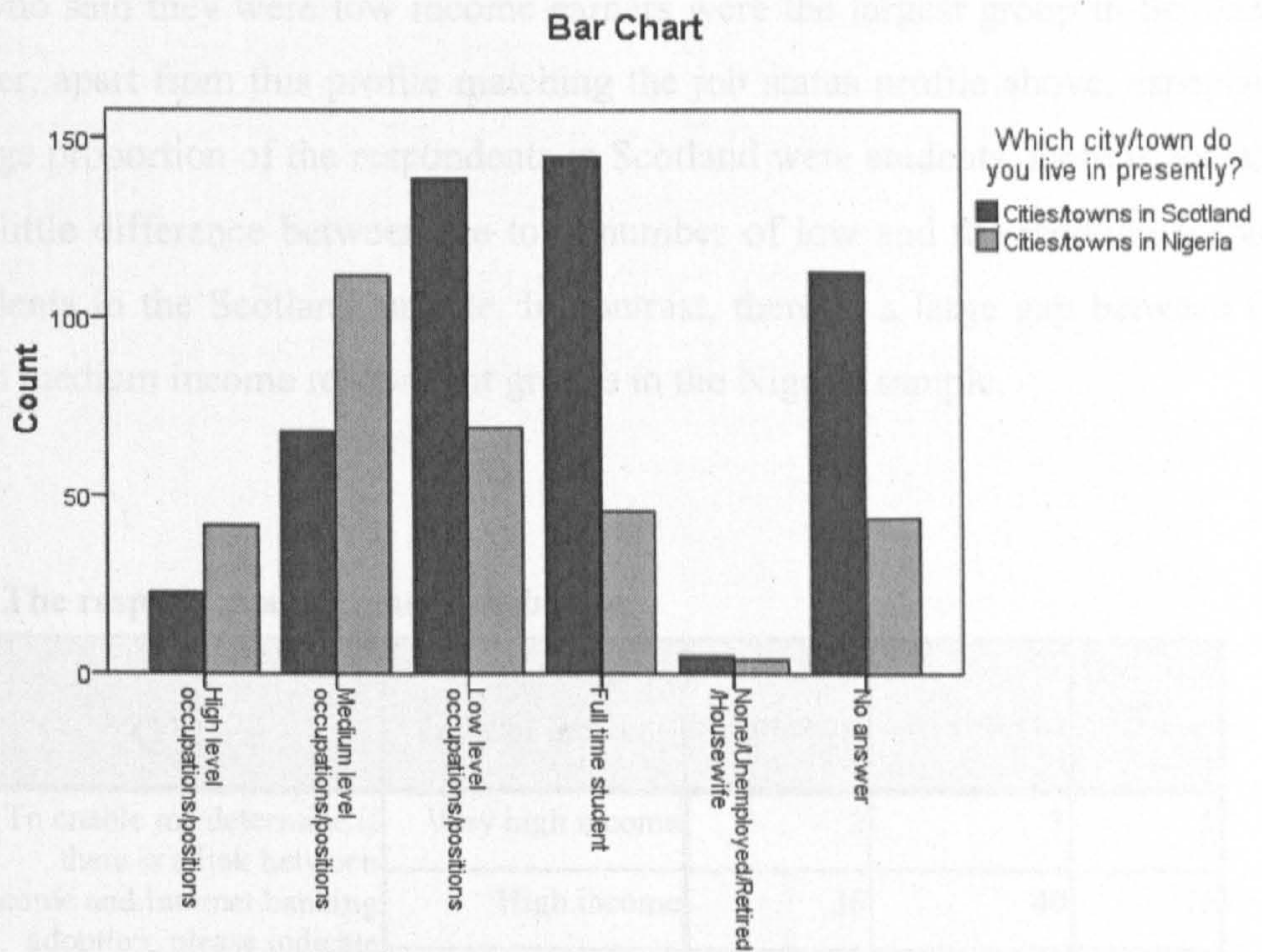


Fig. 8.3: Occupational levels of the survey respondents.

The second chart above (figure 8.3) shows the levels of the respondents' occupations. In Nigeria, those in medium and low level positions (mostly civil servants) constituted the largest type of respondents. In Scotland, the largest groups were those in full-time education and low-level occupations, mostly part-time

working students too. There were several missing cases for this variable because some of the respondents either did not want to specify their employment level or felt it was an unnecessary duplication of effort after having supplied their job status.

#### 8.2.2.6. Income level:

The table 8.5 below indicates that those who classified themselves as medium income earners were the largest participants in the survey in Nigeria, while those who said they were low income earners were the largest group in Scotland. However, apart from this profile matching the job status profile above, especially as a large proportion of the respondents in Scotland were students, there is actually only a little difference between the total number of low and the medium income respondents in the Scotland sample. In contrast, there is a large gap between the low and medium income respondent groups in the Nigeria sample.

**The respondents' income distribution:**

Q32	Level of income	Scotland	Nigeria	Total
To enable me determine if there is a link between income and Internet banking adoption, please indicate which one below best describes your present income level	Very high income	2	3	5
	High income	36	40	76
	Medium income	162	189	351
	Low income	182	48	230
	Very low income	111	37	148
	Total	493	317	810

Table 8.5: The income profiles of the survey sample groups

It is noteworthy that while there is definitely a huge disparity in real income terms between the two countries, the idea of using the respondents' own perceptions of their level of income tends to level off this disparity. The comparison is therefore not of real income but of the relative income brackets within each country's own employment environment.

### 8.2.3. Sample Groupings:

This section summarises the data on the major observed constructs of the study in the form of a comparison between *users* and *non-users* of Internet banking in the two countries. Descriptive statistics about their *actual usage*, and *attitudes, intentions* vis-à-vis their perceptions about *customer and channel readiness* for Internet banking adoption were analysed. It would have been interesting to find out the relationship between each mode of survey administration and the type of responses from people targeted via that mode, but this could not be done without a bias in this case because many people contacted by one mode migrated to other modes and completed the survey via modes other than the ones through which they received the survey in the first place.

For instance, as indicated in subsection 7.3.4.1 (pages 213/214) and in the last paragraph of subsection 7.3.7 (page 221), some respondents who received the email surveys forwarded to them simply clicked on the hyperlink of the web-survey and completed that one instead of the email survey they received. Some who received paper survey also copied the web address of the online survey and simply completed that one instead. In other words, there was an obvious overlap between the web survey administration and the other two modes which would not

allow response analysis in accordance with survey administration groupings. However, the overlap is deemed advantageous because it has eliminated a bias which would have existed if analysis were made in line with such sample grouping.

It would have meant that those who completed the survey by hand were people who could not use computer and the Internet or who did not have them while those who completed the email and web-based surveys knew how to use computer and the Internet and had them. However, this would have been a dangerously erroneous assumption which would have biased the response analyses. Conversely, the evidence from the field work which showed that some respondents who received the paper or email survey actually preferred to complete the web-survey is an indication that the decision was not based on whether they knew how to use computer and the Internet or had access to them, but on the simple fact that they found the web-based survey most convenient.

It was also not a case of asking web-related questions to people who were frequent or infrequent web users but rather a case of people choosing their most convenient mode at that very point in time. Some people in Nigeria who received the email survey as an MS word attachment also chose to print and fill it by hand in order to maintain the anonymity, which returning it by email actually erased in some cases. Based on the forgoing, the only sample groupings in the data analysis of this study were made along the lines of users and non-users of Internet banking as well as the various categories of non-users of Internet banking (see sections 9.4 on page 325 and 9.5 on page 329 respectively). Moreover, the few responses from participants who indicated that they could not use computer and the Internet were disqualified and not used, because it was made clear that the study was for those who could use computer and the Internet, even if they did not have access to these facilities at the time of completing the survey.



### 8.2.3.1. Internet Banking Users and Non-users:

As aforementioned, non-users of computer and the Internet were disqualified from participating in the survey for reasons already given in subsection 7.3.3 above (page 204), but non-users of Internet banking who possess computer and Internet usage skills and prior experience were not disqualified even though they had not adopted Internet banking. This is because their opinions and attitudes were considered vital, given that they actually constitute the main potential segment targeted by bank managers in the drive for Internet banking take-up. Hence, among other objectives, the present study set out to determine what factors might motivate or hinder their adoption of Internet banking and what might influence their future *intentions* towards adopting the new channel.

**IB user and non-user groupings:**

	Scotland	Nigeria	Total
Users	371	184	555
Non-users	122	133	255
Total sample	493	317	810

Table 8.6: Internet banking user and non-user respondents in the two sample groups.

The above table indicates that about 75% of the respondents in the Scotland sample were already using Internet banking, while about 58% of the Nigerian respondents were using it too. This also means that 25% and 42% of the respondents in the two countries respectively were non-adopters. In the overall

number of research respondents from both countries, there was an average ratio of 2:1 between adopters and non-adopters. Apart from the general attitudes indicated in the following section, statistical analyses were later used to determine further differences of opinions between these user and non-user groups.

### **8.3 Data Reduction and Factor Extraction:**

Likert-style scales were used in collecting data on the 16 variables hypothesised in the current research as indicator variables that influence customer attitudes towards Internet banking adoption. A list of the 16 variables included in the research model is presented below in the order of their corresponding question numbers in the survey. All the names of the variables below have been summarised from the original questions in the survey instrument:

1. Q21a – Prior Computer and Internet Usage Knowledge.
2. Q21b – Prior Computer and Internet Usage Experience.
3. Q21c – Level of Formal Education.
4. Q21d – Regular Source of Income.
5. Q21e – Access to Computer & Internet.
6. Q21f – Awareness of Internet Banking; its benefits and advantages.
7. Q21g – Prior Involvement with technology in banking in general.
8. Q21h – Willingness to Accept Risks online.
9. Q22a – Perceived Adequate Registration Guidance (on the IB channel).
10. Q22b – Perceived Ease of Use (of the IB channel).
11. Q22c – Perceived Effective Communication (of IB benefits/advantages).
12. Q22d – Perceived Usefulness (of the IB channel)
13. Q22e – Perceived Convenience (of the IB channel)
14. Q22f - Perceived Speed of web processing/navigation (the IB channel)

15. Q22g – Privacy/Security guarantee online (on the IB channel)

16. Q22h – No extra/hidden online channel charge (for the IB services).

However, a question that had to be answered before seeking to validate the study model was whether all the above variables modelled in the study were actually 16 different and independent predictors of a banking customer's *attitude* to Internet banking or if there was "a lesser number of underlying factors" (Friel, 2008) that could adequately predict the customer's *attitude* to IB adoption.

The rationale for dealing with the above question first was that if it was possible to find fewer underlying factors that could adequately represent and explain the retail banking customer's *attitude* to Internet banking, then it would be possible to reduce the number of variables from 16 to a more manageable quantity. In other words, before model testing analysis, it was necessary to first determine the following: (i) if the 16 variables were independent factors or whether some of them correlated with each other in "measuring the same thing" (*ibidem*); (ii) if there were any underlying factors that might possibly hold several of them together; and (iii) if it was possible to reduce the number of variables without losing any information regarding the customers' *attitude* dimensions. In order to resolve the above three issues, exploratory factor analysis (EFA) was computed with each sample dataset using SPSS 16.

Identifying the underlying factors would not only help to pull all the 16 variables together into a fewer number of components that could explain customer *attitude*, but could also help in reducing the complexity of the model structure in terms of the number of variables to deal with in validating the model. In line with the suggestions of Coughlin and Knight (2007) and Friel (2008), the following five assumptions were made in undertaking exploratory factor analysis:

- That the sample sizes from the two national study locations (493 cases from Scotland and 317 from Nigeria) were large enough to yield reliable estimates of the correlations among the variables.
- That the 16 variables constituted a linear combination of some underlying, hypothetical and unobserved factors.
- That there were no outliers among the 493 and 317 cases of the two sample groups.
- That the underlying unobserved factors were common to two or more of the 16 variables, while others might be unique to each variable.
- That the unobserved factors were independent of one another to a large extent.

Based on the above assumptions, two main tests were conducted with SPSS in carrying out the exploratory factor analysis, including *sampling adequacy* and *factor extraction and identification* tests, results of which are presented in the following subsections.

### **8.3.1. Test of Sampling Adequacy and Data Roundedness:**

In order to confirm that the study data conformed with the five assumptions made above and therefore that they were suitable for factor analysis, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and the Bartlett's Test of Sphericity, which investigates "the presence of correlations among the variables" (Hair et al., 2006) were calculated using SPSS 16. According to Coughlin and Knight (2007), KMO values of between 0.5 and 1.0 indicate that factor analysis might be useful with the data, while values below 0.5 show that factor analysis

might not be useful; but the higher the value (closer to 1.0), the better. The results of the KMO and Bartlett's tests for the two sample groups in the present study are presented in tables 8.7a and 8.7b below:

**KMO and Bartlett's Test - Scotland:**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.847
Bartlett's Test of Sphericity	Approx. Chi-Square
	2591.436
	Df
	120
	Sig.
	.000

Table 8.7a: KMO and Bartlett's tests of the Scotland sample data set.

**KMO and Bartlett's Test - Nigeria:**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.854
Bartlett's Test of Sphericity	Approx. Chi-Square
	1767.199
	Df
	120
	Sig.
	.000

Table 8.7b: KMO and Bartlett's tests of the Nigeria sample data set.

Based on the above decision rules, it was clear that the data from the two national data sets supported the use of factor analysis on the 16 indicator variables of the study model. The KMO scores of 0.847 for Scotland and 0.854 for Nigeria (tables 8.7a and 8.7b) were both indicative of the possibility of condensing the 16 variables into smaller sets of underlying factors for the two data sets, especially as both values fall within Kaiser, Meyer, and Olkin's "meritorious degree of common variance" (Friel, 2008:p20). The 16 variables were therefore considered factorable from the two data sets.

In addition, since the decision rule is that "the Bartlett's test of sphericity (sig.) value should be 0.05 or smaller" (Pallant, 2007) and the sig. values in the above two tables are both 0.000 respectively, the data samples were also

considered to be adequate and to contain significant variable correlations. The implication of the sig values was that the 16 variables were suitable for factor analysis, using the two data sets, and that some underlying relationships did indeed exist among the variables. Consequent upon the above results, the study progressed to exploratory factor analysis (EFA) in order to discover the intercorrelations among the 16 variables and to explore the possibility of reducing them into a fewer number of variables bunched up in the two hypothesised factors or, to rearrange them into three or four underlying factors without losing any information.

### **8.3.2. Factor Extraction by Exploratory Factor Analysis (EFA):**

The main objective for conducting EFA analysis was to find out if the two *readiness* factors hypothesised in the conceptual model would be confirmed in a two-factor solution in EFA or if a three- or four-factor solution would emerge as a better option for re-grouping the variables. The first step taken in conducting EFA was to compute intercorrelation matrices with the 16 variables for both data sets in order to determine the level of collinearity or common variance that existed among the variables. SPSS 16 was used for the computation. (See appendices 10 and 11 for the *correlation* and *covariance* matrices computed for the original unconstrained study model with the Scotland and Nigeria data sets). The matrices have been presented in the appendix section because they are too long to be inserted in the body of the thesis.

Following the correlation matrix, an initial solution, containing three component factors, was extracted using the Principal Component Analysis (PCA) method (see appendices 12a and b). PCA explores the correlation matrix for interrelationships among all the variables in order to determine if some of them could be grouped together as common components, which would reduce the overall

number of underlying factors (Pallant, 2007). PCA plots the communality among variables and shows the extent to which each variable correlates with all the other variables in the matrix. Below are two tables (8.8a and 8.8b) containing the communalities of the 16 variables from EFA of the two data sets in the study. As can be seen, none of the 16 items was problematic since none of them had an unusually low extraction value, although q21h (willingness to accept risks online) had the only extraction score less than 0.4 in the two samples.

**Communalities:**

**- Scotland sample**

	Initial	Extraction
q21a	1.000	.625
q21b	1.000	.581
q21c	1.000	.511
q21d	1.000	.603
q21e	1.000	.475
q21f	1.000	.407
q21g	1.000	.465
q21h	1.000	.316
q22a	1.000	.476
q22b	1.000	.495
q22c	1.000	.567
q22d	1.000	.653
q22e	1.000	.666
q22f	1.000	.590
q22g	1.000	.510
q22h	1.000	.442

**- Nigeria sample**

	Initial	Extraction
q21a	1.000	.744
q21b	1.000	.754
q21c	1.000	.347
q21d	1.000	.502
q21e	1.000	.532
q21f	1.000	.542
q21g	1.000	.513
q21h	1.000	.456
q22a	1.000	.495
q22b	1.000	.560
q22c	1.000	.562
q22d	1.000	.594
q22e	1.000	.581
q22f	1.000	.617
q22g	1.000	.532
q22h	1.000	.412

Tables 8.8a and 8.8b: Communalities of the 16 variables in the two sample groups (Extraction method was Principal Component Analysis, PCA)

The two TVE tables below (8.9a and 8.9b) also show the *eigenvalue* (sum of squared loadings) of each of the 16 variables as well as the percentage of the total variances explained by each variable as a component of the *readiness*

phenomenon in each sample dataset. By showing the rotated sums of squared loadings, each of the tables also gives an indication of the initial number of factors extracted by EFA from the 16 variables, using Principal Component Analysis (PCA). Looking at the TVE tables below as well as the *pattern matrices* in appendices 12 a and b, it would appear that a three-factor solution had emerged from the analysis, but Pallant (2007:p190) suggests that to decide on the initial number of extracted factors, researchers should consider only those components in the total variance analysis (TVE) table which have “an eigenvalue of 1 or more”.

**Total Variance Explained – Scotland:**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.808	30.048	30.048	4.808	30.048	30.048	4.351
2	2.405	15.031	45.079	2.405	15.031	45.079	2.644
3	1.170	7.311	52.389	1.170	7.311	52.389	2.712
4	1.102	6.885	59.274				
5	.903	5.646	64.920				
6	.796	4.972	69.892				
7	.724	4.523	74.415				
8	.666	4.161	78.576				
9	.592	3.702	82.278				
10	.499	3.118	85.396				
11	.467	2.921	88.317				
12	.444	2.776	91.093				
13	.427	2.669	93.762				
14	.385	2.407	96.169				
15	.341	2.133	98.302				
16	.272	1.698	100.000				

Table 8.9a: Initial factor extraction by Principal Component Analysis method in SPSS for the **Scotland** dataset.



**Total Variance Explained – Nigeria:**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.080	31.748	31.748	5.080	31.748	31.748	4.577
2	2.469	15.430	47.178	2.469	15.430	47.178	3.332
3	1.195	7.469	54.647	1.195	7.469	54.647	2.003
4	.936	5.850	60.498				
5	.859	5.367	65.865				
6	.745	4.659	70.524				
7	.696	4.353	74.876				
8	.605	3.784	78.660				
9	.587	3.668	82.329				
10	.519	3.244	85.573				
11	.476	2.973	88.546				
12	.460	2.873	91.419				
13	.401	2.505	93.924				
14	.386	2.411	96.335				
15	.315	1.972	98.306				
16	.271	1.694	100.000				

Table 8.9b: Initial factor extraction by Principal Component Analysis method in SPSS for the **Nigeria** sample dataset.

Examining the two tables more closely, it was clear that while four components in the Scotland sample group had eigenvalues more than 1, only three components had more than 1 in the Nigeria group. Hence, if Pallant's (2007) suggestion above were followed, 4 factors would be extracted for the Scotland sample while 3 would be extracted for the Nigeria group. In addition, while the 4 factors for Scotland would explain a total of 59% of the variances in the country's dataset, the 3 for Nigeria would explain 55% of the variances in the dataset.

However, Pallant (2007) is of the opinion that the eigenvalue calculation method in principal component analysis tends to extract too many components, with a bit of inconsistency between the extracted components. By the author's argument, it would seem that even the 3-factor solution indicated in the above TVE tables were too many in the current situation, especially as it was not possible to interpret what the 3 factors seemingly extracted in the *pattern matrices* shown in appendices 12A and 12B actually were.

It was possible to see that the first component represented the IB channel features and that the second one represented customer characteristics, but it was not possible to interpret and label the third component as it had a mixture of both channel and customer attributes which could not meaningfully measure any specific construct. This lack of interpretability made the 3-factor solution unacceptable, especially as it was inconsistent between the two datasets. A decision was therefore made to consider another suggestion by Pallant (2007) that researchers should examine the *Scree Plot* of the PCA factor extraction and select only those components situated above the "change (or elbow) in the shape of the plot" (ibidem: p190).

The two scree plots from the PCA analysis are shown in figures 8.4a and 8.4b below. Looking at the two scree plots, and based on the author's recommendation, it would seem that only two component factors were actually above the elbow of the plot line and therefore that a two-factor solution should be retained for each group. However, to confirm the exactitude of the *scree plot* criterion, the author also suggests another method of determining the number of factors to be retained in exploratory factor analysis.

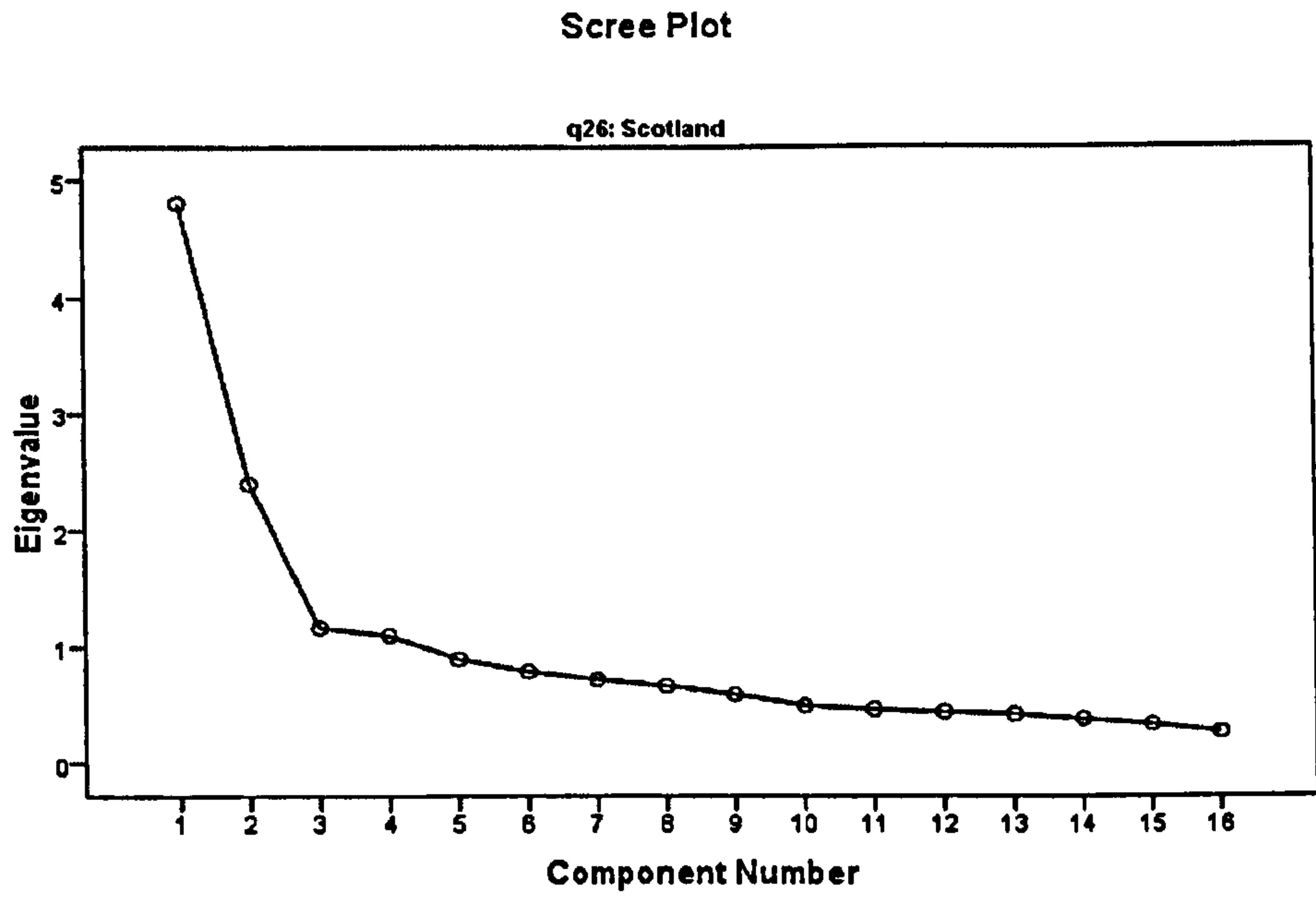


Fig. 8.4 a: Scree Plot of factor extraction by PCA for the Scotland data set.

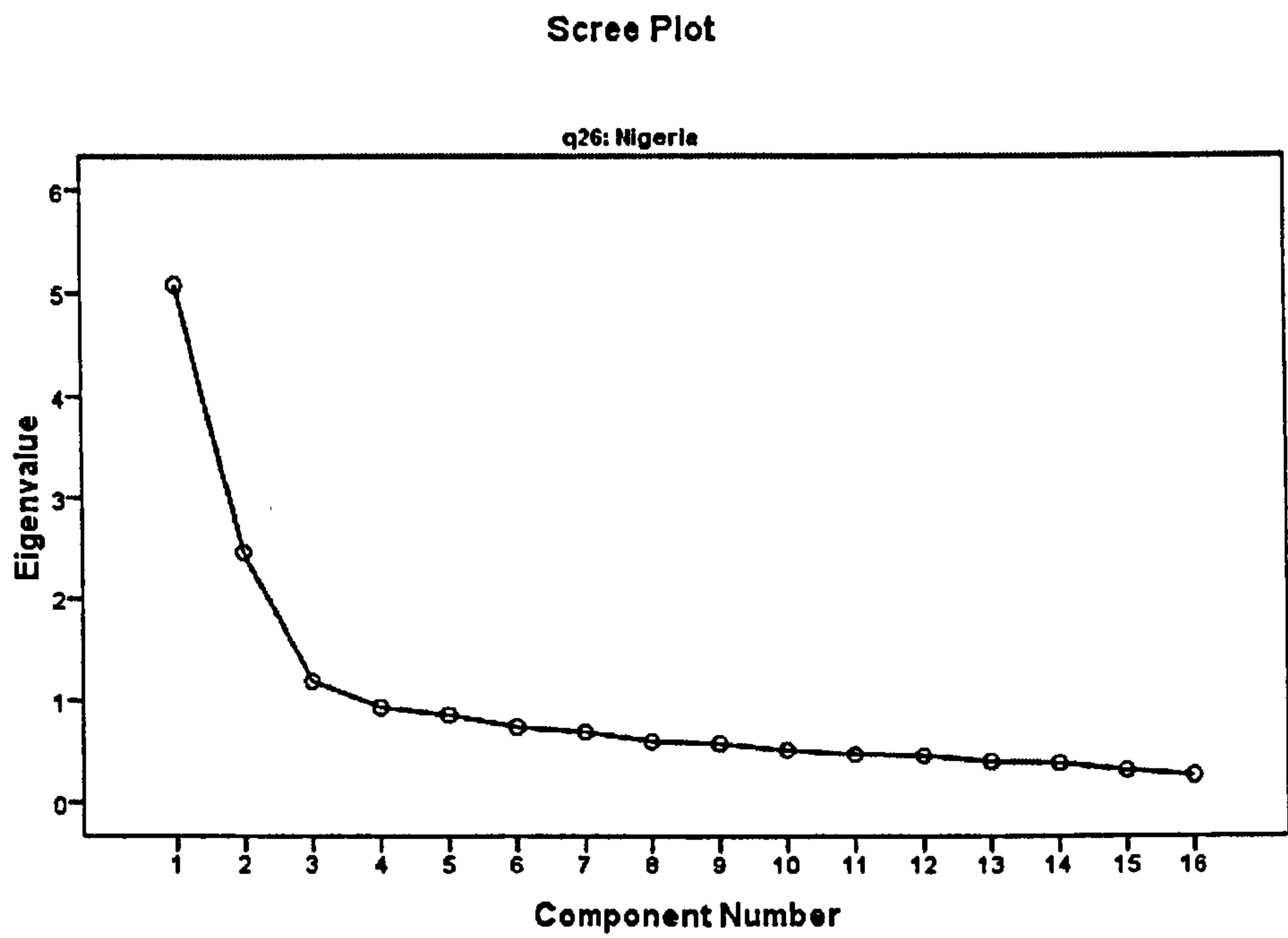


Fig. 8.4 b: Scree Plot of factor extraction by PCA for the Nigeria data set.

The alternative criterion involves comparing the obtained *Total Variance Explained* table with a randomly generated principal component analysis table computed with the Monte Carlo PCA software developed by Marley Watkins (2000) and hosted on Pallant's (2007) book website. Taking the same number of variables and cases for each dataset specified by a researcher, the software computes a parallel random number of replications (say 100) of the principal component analysis with the information, and releases a result of the average eigenvalues for the specified number of variables from the randomly generated data. The researcher then compares each of his/her own obtained eigenvalues with those from the parallel average eigenvalues table released by the Monte Carlo PCA software.

Two of such parallel PCA tables containing average eigenvalues for 16 variables were computed for the Scotland and Nigeria sample groups for comparison with the eigenvalues obtained in the current study. The parallel PCA results for the two groups are presented below in tables 8.10a and 8.10b respectively. Pallant (2007:p191) advises that from the researcher's own *Total Variance Explained* (TVE) table, each component should be compared with the corresponding one in the parallel random table and retained as a factor only if its initial eigenvalue is higher than the one in the parallel random table or dropped if it is lower.

Comparing the TVE tables above (8.9a and 8.9b) with the parallel random PCA tables below (8.10a and 8.10b), it became obvious that only the first two components in the TVE tables have initial eigenvalues higher than the ones in the parallel random tables in both sample groups, thus confirming the "scree plot elbow" result, which also suggested that only a two-factor solution should be retained for each of the two national datasets in the study.

**PARALLEL RANDOM PCA FOR SCOTLAND:**

05/08/2008 12:48:36

Number of variables: 16

Number of subjects: 493

Number of replications: 100

```

*****
Eigenvalue #      Random Eigenvalue      Standard Dev
*****
  1             1.3238                .0358
  2             1.2539                .0258
  3             1.2041                .0238
  4             1.1578                .0196
  5             1.1162                .0177
  6             1.0804                .0165
  7             1.0445                .0182
  8             1.0079                .0157
  9             0.9715                .0159
 10             0.9399                .0173
 11             0.9071                .0154
 12             0.8736                .0160
 13             0.8387                .0174
 14             0.8037                .0182
 15             0.7621                .0206
 16             0.7146                .0241
*****

```

**Table 8.10a: Parallel random PCA for the Scotland sample**

SOURCE: Monte Carlo PCA for Parallel Analysis

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**PARALLEL RANDOM PCA FOR NIGERIA:**

05/08/2008 12:49:25

Number of variables: 16

Number of subjects: 317

Number of replications: 100

```

*****
Eigenvalue #      Random Eigenvalue      Standard Dev
*****
  1             1.4035                .0472
  2             1.3206                .0367
  3             1.2496                .0297
  4             1.1932                .0266
  5             1.1430                .0277
  6             1.0949                .0234
  7             1.0501                .0204
  8             1.0058                .0198
  9             0.9647                .0198
 10             0.9238                .0199
 11             0.8841                .0192
 12             0.8434                .0202
 13             0.8038                .0193
 14             0.7574                .0235
 15             0.7087                .0266
 16             0.6533                .0337
*****

```

**Table 8.10b: Parallel random PCA for the Nigeria sample**

SOURCE: Monte Carlo PCA for Parallel Analysis

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Based on the foregoing, a decision was made to retain the two *readiness* constructs originally hypothesised in the study model, but also to analyse them further in order to confirm which of the 16 variables would actually load on which factor. The next step then was to determine the factor loading scores of the 16 variables on each factor (Friel, 2008:p12). In the present study, this entailed repeating the principal component analysis and “forcing” a two-factor solution on the study model (Pallant, 2007:p192) by calculating the loading scores of each of the 16 variables on each of the two factors extracted.

Please refer to appendices 10 and 11 for the *correlation* and *covariance* matrices of the original study model as well as appendix 13 for the *total variance explained* matrix of the 2-factor solution. They were computed by means of PCA analysis of the two data sets. According to the above authors, the results would indicate which variables have the highest loadings on which of the two factors and thus make it possible to confirm exactly what the two latent factors actually measured. From the *total variance explained* tables, it was clear that the two-factor solution explained 55% of the total variances in both the Scotland and Nigeria datasets respectively. The two-factor solution therefore turned out to be a better option than the three-factor solution, which would have explained only 52% and 55% of the variances in the two data sets respectively. The two-factor extraction was therefore confirmed as a better choice to make the research model more efficient in representing the hypothesised measurement objectives of the study and in explaining the data from the two sample groups.

Additionally, in order to be clearer as to whether the factor loading scores actually supported the two-factor solution and to see how the 16 variables aligned themselves in terms of the factors they loaded onto, the factors were rotated by means of the Oblimin rotation method in SPSS 16. Results of the rotation also revealed a clear-cut two-factor solution as shown in the *Pattern* matrices below (tables 8.11a and 8.11b), in which all questions 21a to 21h loaded onto one factor and all questions 22a to 22h loaded onto the other factor, a clear confirmation that they measured two separate constructs.

However, as the *Structure* matrices below (tables 8.12a and 8.12b) also show, there were some cross-loadings by 6 of the 16 variables (21a, 21f, 21h, 22a, 22c, and 22d). Nevertheless, since each of the 6 cross-loading variables scored significantly on its main factor (above 0.4) while scoring less than 0.4 on the other factor, they were not automatically dropped but were earmarked as potential candidates for elimination in CFA analysis. It could then be seen that the other 10 variables loaded very significantly onto their separate factors, thereby confirming a clear two-factor solution. It was decided that the two latent constructs would be further investigated as the hypothesised exogenous constructs of the study model in order to determine their appropriateness in representing the two separate (customer-related and channel-related) *readiness* factors hypothesised in the study.

**Pattern Matrix (16 items):**  
- Scotland sample

	Component	
	1	2
q21a		.499
q21b		.536
q21c		.730
q21d		.751
q21e		.616
q21f		.557
q21g		.659
q21h		.391
q22a	.632	
q22b	.674	
q22c	.684	
q22d	.779	
q22e	.763	
q22f	.766	
q22g	.665	
q22h	.632	

- Nigeria sample

	Component	
	1	2
q21a		.638
q21b		.635
q21c		.568
q21d		.677
q21e		.735
q21f		.570
q21g		.648
q21h		.392
q22a	.678	
q22b	.723	
q22c	.697	
q22d	.723	
q22e	.741	
q22f	.787	
q22g	.747	
q22h	.661	

Tables 8.11a and 8.11b: Oblimin rotated *factor pattern matrices* showing the loading patterns of the 16 variables in the 2-factor solution (PCA Rotation Method: Oblimin with Kaiser Normalization).

Furthermore, having used EFA to confirm the two latent exogenous variables of the study model, it was decided that CFA should be used to test the validity, goodness-of-fit and measurement invariance of the model across the two sample groups, especially as virtually all the 16 variables above had factor loading scores of approximately 0.5 or above which, according to Hair et al. (2006:p129), “are generally considered necessary for practical significance”. CFA was helpful in deciding whether or not to drop any of the variables, and the appropriate ones to drop without hampering the validity of the hypothesised model, especially considering those that cross-loaded between the two factors.



**Structure Matrix (16 items):**  
- Scotland sample

	Component	
	1	2
q21a	.336	.552
q21b		.571
q21c		.676
q21d		.696
q21e		.612
q21f	.337	.607
q21g		.661
q21h		.429
q22a	.672	.320
q22b	.692	
q22c	.728	.348
q22d	.785	
q22e	.749	
q22f	.747	
q22g	.666	
q22h	.604	

- Nigeria sample

	Component	
	1	2
q21a		.638
q21b		.617
q21c		.542
q21d		.671
q21e		.728
q21f	.354	.623
q21g		.677
q21h	.399	.468
q22a	.693	
q22b	.741	
q22c	.730	.308
q22d	.754	.303
q22e	.752	
q22f	.774	
q22g	.715	
q22h	.621	

Tables 8.12a and 8.12b: Oblimin rotated *factor structure matrices* showing the loading structures of the 16 variables in the 2-factor solution (PCA Rotation Method: Oblimin with Kaiser Normalization).

Based on the decision not to drop any variable yet at this stage, all the 16 variables were listed out under the factor they loaded more onto. Usually, the reason for listing out variables under the factor they load most onto is in order to generate appropriate labels for the extracted factors, but in the present study the listing was done as a confirmation that EFA supported the two hypothesised *readiness* constructs in the study model by showing that all the customer-related variables loaded onto the *customer readiness* factor while all the channel-related variables loaded onto the *perceived channel readiness* factor.

Following the confirmation of the two hypothesised *readiness* constructs by the two-factor solution from the Oblimin-rotated PCA factor analysis, the 8 variables loading onto each of the two constructs were listed out fully under the latent factor they loaded onto and each factor label was then given the acronym, *ChR* for *Perceived Channel Readiness* and *CuR* for *Customer Readiness*, as shown below:

**FACTOR 1: *Perceived Channel Readiness (ChR):***

1. Q22a – Adequate registration guidance online (on the IB channel).
2. Q22b – Perceived ease of use (of the IB channel).
3. Q22c – Perceived effective communication (of IB benefits/advantages).
4. Q22d – Perceived usefulness (of the IB channel)
5. Q22e – Perceived convenience (of the IB channel)
6. Q22f – Perceived speed of web processing/navigation (on the IB channel)
7. Q22g – Privacy/security guarantee online (on the IB channel)
8. Q22h – No extra/hidden service charge (for the IB services)

**FACTOR 2: *Customer Readiness (CuR):***

1. Q21a – Prior computer and Internet usage knowledge/skills.
2. Q21b – Prior computer and Internet usage experience.
3. Q21c – Level of formal education.
4. Q21d – Regular source of income.
5. Q21e – Access to computer & the Internet.
6. Q21f – Awareness of Internet banking, its benefits and advantages.
7. Q21g – Prior involvement with banking technology in general.
8. Q21h – Willingness to accept risks.

The analytical model of the study was used to hypothesise the above two exogenous categories of variables (*ChR* and *CuR*) as the key determinants of a retail customer's *attitude* and *intention* towards Internet banking adoption. Hence,

the overall proposition of the present study is that the two latent factors (ChR and CuR) jointly and directly affect *customer attitude* (CAT), which also directly affects *customer adoption intention* (CAI) as illustrated in figure 8.5 below. Given that *intention* ultimately leads to actual usage *behaviour* according to Fishbein and Ajzen's (1980) theory of reasoned action (TRA), Ajzen's (1991) theory of planned behaviour (TPB) and Davis' (1989) technology acceptance model (TAM), the study therefore argues that *perceived channel readiness* (ChR) and *customer readiness* (CuR) are the two fundamental determinants of retail customer adoption of Internet banking.

Consequent upon the foregoing, the analytical model of the research (figure 8.5 below) is a 4-factor model in which the two exogenous variables (CuR and ChR) and the two endogenous variables (CAT and CAI) define both the hypothesised causal structure of the model and the individual hypotheses in the research. Data on the two endogenous factors (CAT and CAI) were collected by means of the three-item scales listed below:

**FACTOR 3: *Customer Adoption Attitude (CAT):***

1. Q23a – General attitude to Internet banking.
2. Q23b – Belief about the relevance of Internet banking.
3. Q23c – General feeling about adopting Internet banking.

**FACTOR 4: *Customer Adoption Intention (CAI):***

1. Q24a – Customer's general intention regarding Internet banking adoption
2. Q24b – Intention to use Internet banking in the next banking transaction.
3. Q24c – Intention to use Internet banking more often than other banking channels.

**Hypothesised causal structure of the analytical research model:**

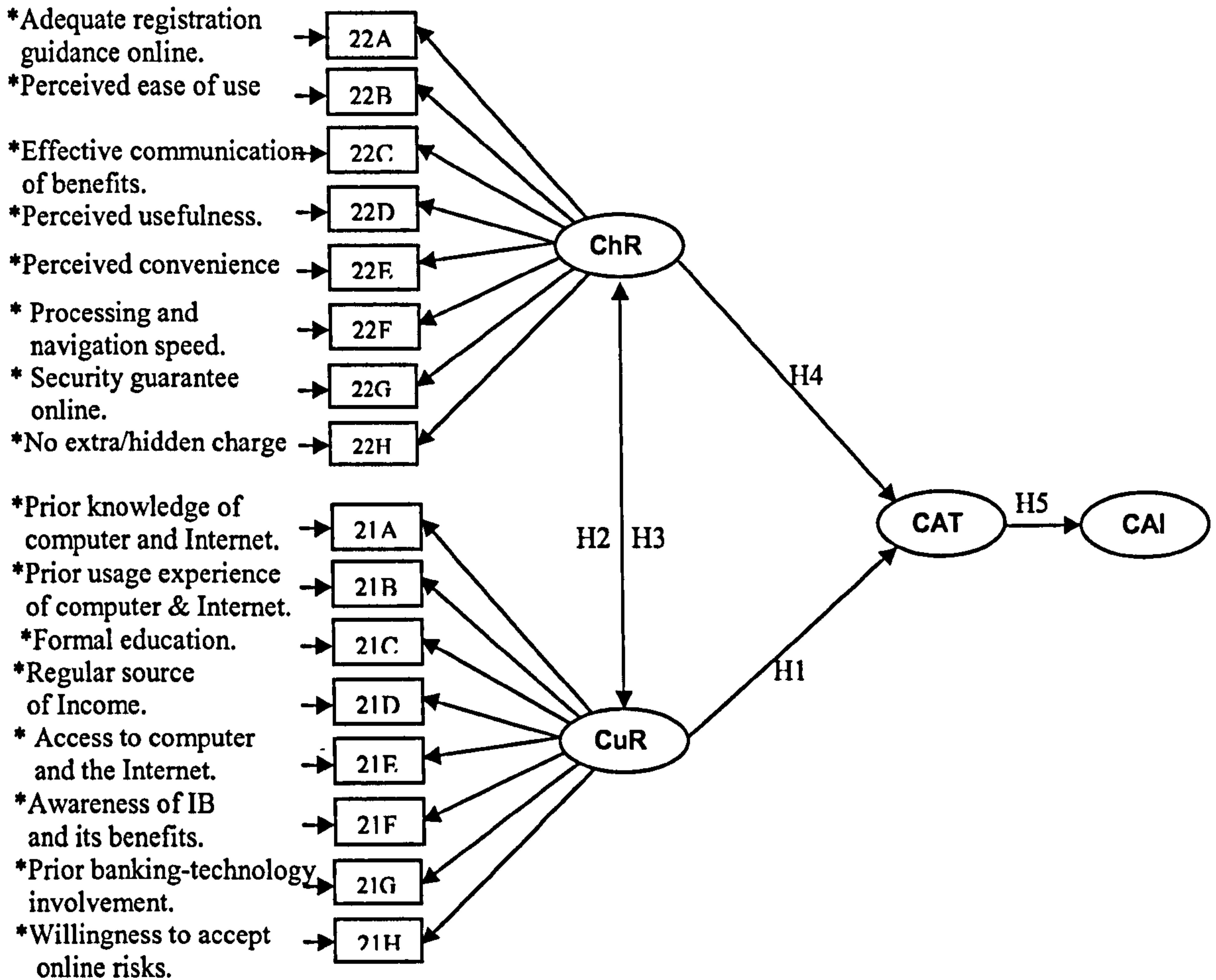


Fig. 8.5: The original analytical model of the research showing the research hypotheses before CFA analysis.

The analytical model above visually illustrates the study hypotheses earlier discussed in subsection 5.4.1 (page 122). Having specified the key factors and variables in the structure of the proposed model, the next step in the data analysis was to statistically test the reliability of the measurement scales in the model, the factorial validity of the theoretical constructs, the measurement invariance of the

model between the two national sample groups and the validity of the overall causal structure of the model, all of which helped to “determine the adequacy of its goodness-of-fit to the sample data” (Byrne, 2001:p6) as well as the validation of the research hypotheses. Reliability and factorial analysis procedures in SPSS 16 and AMOS 16 software were employed for the above purposes, the results of which are presented in the subsequent sections.

### **8.3.3. Test of Composite Reliability (Convergent Validity and Internal Consistency) of the Original Study Model:**

The full correlation tables for the original study model are contained in appendices 10 and 11. The *composite reliability* of the scale measuring each construct in the original unconstrained model was tested in SPSS 16 in order to ascertain its “*construct validity and internal consistency*” (Suh and Han, 2002:p.256). The *Cronbach’s alpha* value of each latent construct and the *factor loading scores* of all items measuring it determine the scale’s *composite reliability*, in terms of its *internal consistency and construct/convergent validity* (ibidem).

According to the authors, *composite reliability* (i.e., *internal consistency and convergent validity*) indicates how stable each single measurement item would be throughout data replications from the same sample source. The results of the *composite reliability* tests of the original study model are presented in table 8.13 below. According to Hair et al. (2006:p137), a reliable measurement scale should have a Cronbach’s alpha value of at least 0.6, while Fornell and Larcker (1981) advise that values above 0.7 are significantly better indicators of scale reliability.

**Results of convergent validity and internal consistency (composite reliability) tests of the scales in the original study model:**

Construct	Item reliability (Factor Loadings)		Composite reliability (Cronbach's Alpha)		Total Variance Explained (TVE)	
	Scotland	Nigeria	Scotland	Nigeria	Scotland	Nigeria
Recommended value	>0.50	>0.50	>0.50	>0.50	>0.50	>0.50
<b>Customer Readiness:</b>						
CuR 1 (Q21a)	0.55	0.64	0.75	0.78	0.52	0.55
CuR 2 (Q21b)	0.57	0.62				
CuR 3 (Q21c)	0.68	0.54				
CuR 4 (Q21d)	0.70	0.67				
CuR 5 (Q21e)	0.61	0.73				
CuR 6 (Q21f)	0.61	0.62				
CuR 7 (Q21g)	0.66	0.68				
CuR 8 (Q21h)	0.43	0.47				
<b>Channel Readiness:</b>						
ChR 1 (Q22a)	0.67	0.69	0.86	0.87	0.56	0.58
ChR 2 (Q22b)	0.69	0.74				
ChR 3 (Q22c)	0.73	0.73				
ChR 4 (Q22d)	0.79	0.75				
ChR 5 (Q22e)	0.75	0.75				
ChR 6 (Q22f)	0.75	0.77				
ChR 7 (Q22g)	0.67	0.72				
ChR 8 (Q22h)	0.60	0.62				
<b>Customer Attitude:</b>						
CAT 1 (Q23a)	0.42	0.40	0.44	0.43	0.50	0.50
CAT 2 (Q23b)	0.69	0.66				
CAT 3 (Q23c)	0.77	0.79				
<b>Customer Intention</b>						
CAI 1 (Q24a)	0.70	0.78	0.50	0.60	0.50	0.54
CAI 2 (Q24b)	0.83	0.85				
CAI 3 (Q24c)	0.40	0.40				

Table 8.13: Results of convergent validity and internal consistency (composite reliability) tests of the scales in the original unconstrained research model

The above table shows that the scales measuring *customer readiness* and *perceived channel readiness* constructs display high Cronbach's alpha and good average variance extracted values, thereby indicating very good *internal consistency* and *convergent validity* across both sample groups. In contrast, the scales measuring *customer attitude* and *intention* have not shown as much *composite reliability* as the first two despite having very high factor loading scores.

Hair et al. (2006:p137) attribute this type of low Cronbach's alpha value to the few number of items in the measurement scale, but the high factor loading scores imply a good *convergent validity* between the items in the scale. Moreover, Cronbach's alpha has been known to sometimes under-estimate scale reliability even when other model fitness indices are above the required cut-off points (Garson, 2008:p16).

Suh and Han (2002:p253) describe the test for *convergent validity* as investigating to what degree multiple attempts to measure the same construct are in conformity with each other, while *discriminant validity* test examines to what degree the measures of different constructs are dissimilar from each other. In line with Cheng et al. (2006:p1563), the Cronbach's alpha reliability test in SPSS 16 was used in determining the *internal consistency* of the measurement scales in the present study. Similarly, exploratory factor analysis (EFA) in SPSS was used to test the *convergent validity and item reliability* (factor loading scores) of the scales, while confirmatory factor analysis (CFA) was used for assessing the *construct validity* and overall *model fit*. Hair et al. (2006:p777) assert that for good *convergent validity*, the factor loading score for each item in a scale should be "0.5 or higher, and ideally 0.7 or higher".

As shown in table 8.13 above, this factor loading criterion was accomplished by 19 out of the 22 items in the 4 measurement scales across both sample groups. Only 3 items had factor loading scores below the 0.5 criterion in the two groups, including *willingness to accept online risks* (CuR8), *general feeling towards IB adoption* (CAT1) and *intention to use IB more often than other banking channels* (CAI3). This indicated low contribution of the items to the description of the latent factors. However, Etezadi-Amoli and Farhoomand (1996:p71) are of the opinion that factor loadings above 0.4 could still be regarded

as “high correlations between items and their corresponding factors”. In this case then only one could conclude that all the scale items were fairly significant in describing “their corresponding factors” (ibidem).

In addition, comparing the above results with the factor loading scores recorded by Cheng et al. (2006:p1564), it was concluded that the factor loadings in the present study generally indicate “an acceptable significant level of internal validity” (ibidem: p1563) of the model. However, it is also evident that by not attaining 100% factor loading scores above the 0.5 cut-off level (Straub, 1989:p160), the scales in the model did not prove overall to be impeccably perfect descriptions of the latent constructs of the study. This gave a strong indication that not all the scale items might be necessary in the final SEM model. As a result, the need for further model fitting tests for overall *construct validity* was confirmed.

#### **8.4 Tests of Factorial Validity, Model Fit, and Invariance of the Original Model by Covariance Structure Analysis (CSA):**

Series of validity and model fit tests in *covariance structure analysis* were computed by means of confirmatory factor analysis (CFA) in AMOS 16 graphics in order to assess the overall *factorial validity*, *goodness-of-fit*, and *measurement invariance* of the original, unconstrained model of the study across the two sample groups (Scotland and Nigeria). *Factorial validity* tests of the 4 constructs in the original model (CuR, ChR, CAT and CAI) were computed. *Goodness-of-fit* analysis of the original model was also conducted, and then several assessments of *measurement invariance* were carried out on the model between the two sample groups as detailed in the following subsections. Figure 8.6 below is AMOS 16 diagram of the original analytical model of the study:



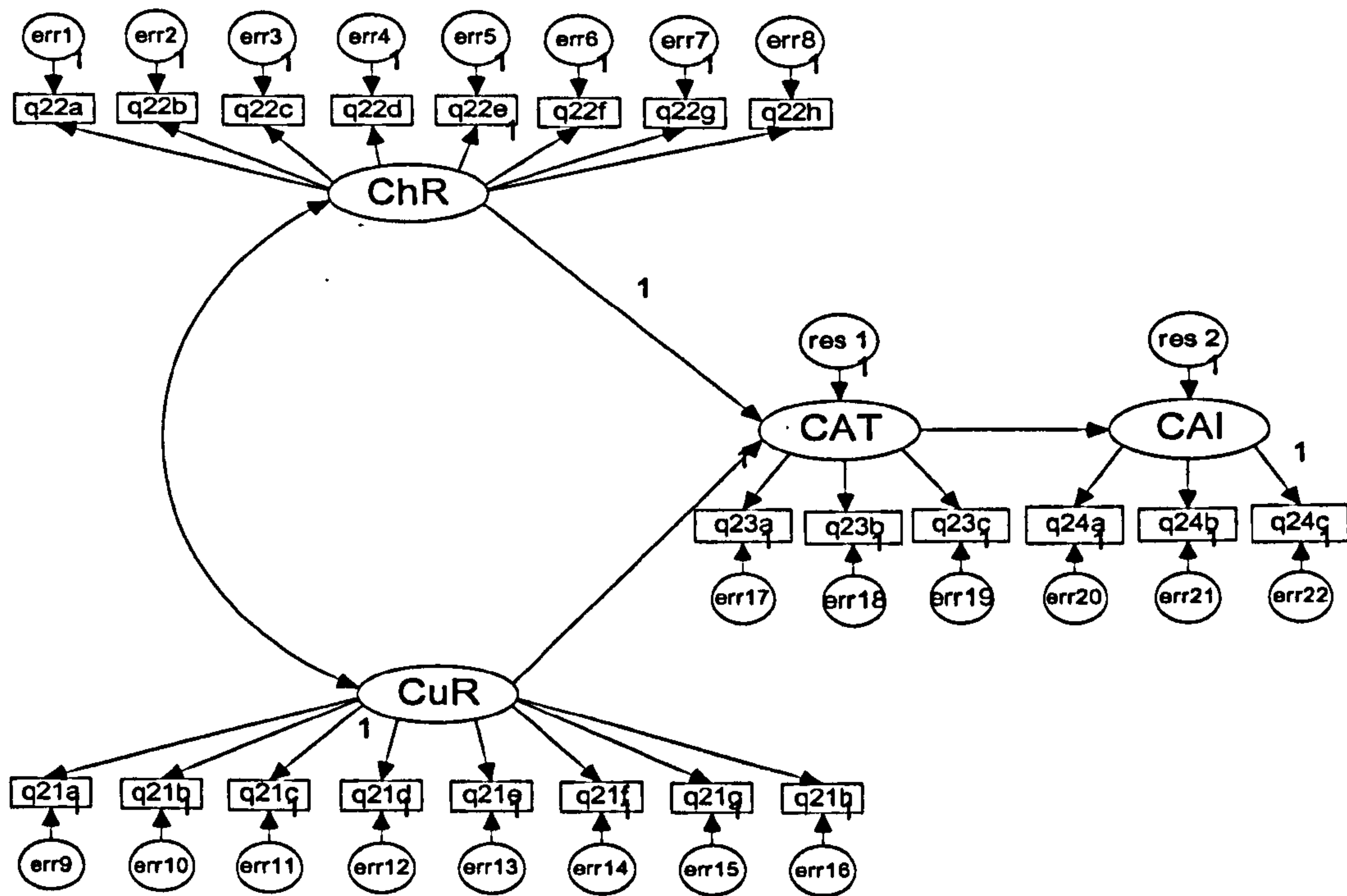


Fig. 8.6: AMOS 16 design of the original study model before any constraint was imposed and before model-fit and invariance tests were computed by CFA.

#### 8.4.1. Factorial validity test of the original unconstrained study model:

In computing the factorial validity test of the original hypothesised model, a single factor model was specified for each of the 4 constructs in the model and CFA was run separately for each of them. Table 8.14 below shows the results of the factorial validity test for each of the 4 model constructs. To facilitate an uncomplicated assessment of the model fit indices, the cut-off points recommended in the literature for combining absolute and incremental fit indices (Hu and Bentler, 1999), have also been included in the table. These cut-off points have variously been used and suggested by Straub (1989), Chau (1997), Hu and Bentler (1999), Byrne (2001), Kline (2004), Hair et al. (2006), and Garson (2008).

**Results of factorial validity tests of the constructs in the study model:**

Construct	Chi-Square	P-value	DF	GFI	AGFI	RMR	NFI	CFI
Recommended values	--	< 0.05	--	>0.80	>0.80	<0.08	>0.90	>0.90
Customer Readiness (CuR)	366.88	0.00	20	0.90	0.82	0.06	0.77	0.78
Perceived Channel Readiness (ChR)	341.75	0.00	20	0.90	0.83	0.02	0.87	0.87
Customer Adoption Attitude (CAT)	11.19	0.00	1	0.99	0.95	0.02	0.75	0.75
Customer Adoption Intention (CAI)	4.20	0.04	1	0.99	0.98	0.02	0.97	0.97

Table 8.14: CFA model-fit results of the factorial validity test of each construct in the original unconstrained model.

The first model fit implication evident in the above table is that the chi-square statistics for the first two constructs (CuR and ChR) were rather quite significant at 20 degrees of freedom. This was the first indicator that a considerable difference might exist between the proposed model and what the final study model might be. However, Suh and Han (2002:p253) argue that since chi-square statistics are usually “too sensitive to sample size”, a large sample size such as the one in the present study (N = 810) might likely result in a significant chi-square even when the differences between the proposed and actual models are minor.

In contrast, the chi-square statistics for the last two constructs in the model (CAT and CAI) seem to be reasonably low and suggestive of a good conformity between the proposed and actual model, especially with 1 degree of freedom each. Consequently, with two high and two low chi-square statistics in the original proposed model, it was concluded that the differences between the proposed and the actual model might not be too large after all. However, the disparity seemed to make the elimination of some of the items in the original scales all the more necessary.

For the other model fit indices, including p-value, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), root mean square residual (RMR), normed fit index (NFI), and comparative fit index (CFI), all the four latent constructs attained values that surpassed the recommended levels in four of them (p-value, GFI, AGFI, and RMR). The value of the last construct (CAI) actually surpassed all the recommended levels for all six indices, but the first three constructs achieved slightly lower than the recommended levels for NFI and CFI.

The underlying implication of the above results is that the four constructs seemed to have performed quite well with regards to *absolute fit indices* (GFI, AGFI, and RMR), which “basically compare the hypothesized model with no model at all” (Byrne, 2001:p82), while they have not done as well regarding the *comparative/incremental fit indices* (NFI and CFI), which compare the proposed model with an independent model. However, the overall fit indices indicated that the four constructs in the original proposed model achieved only a satisfactory rather than a maximum level of *factorial validity* and therefore further adjustments and constraints on their indicator variables were necessary in order to refine them.

#### **8.4.2. Goodness-of-fit and measurement invariance tests of the original model, from no constraint to various constraints:**

Having established that the four constructs in the original proposed model possessed an acceptable level of *scale reliability* and *construct validity*, the next step was to test the overall *goodness-of-fit* of the entire model. Just as the construct validity of each individual factor was tested by specifying a one-factor solution for it and then running CFA, the input matrix predicted by the full hypothesised four-factor model was assessed for conformity with the actual data matrix from the survey by running CFA for its overall *goodness-of-fit* analysis.

However, since the present study involves a comparison of two national and culturally different sample groups which were surveyed with the same instrument, it was necessary to also test the study model for *measurement invariance* between the two groups at the same time, as suggested by Steenkamp and Baumgartner (1998). Achieving *measurement invariance* between two or more sample groups therefore means achieving exactly the same *goodness-of-fit* indices for the same model with data from the two or more sample groups by computing CFA simultaneously for the groups using the single proposed model (Byrne, 2001:p180). The author advised, however, that it would be easier to achieve invariance if a baseline fit was first achieved for each sample group separately with the model before testing it for invariance simultaneously across the two groups. This helps in the prior determination of the path locations where imposition of equality constraints might be necessary.

*Model-fit* and *factorial invariance* assessments of the full model (figure 8.6 on page 266) were computed separately and simultaneously with AMOS 16 across the two sample groups. The results did not indicate a satisfactory model fit. From the simultaneous two-group CFA analysis, the chi-square was 5895.22 with 412 degrees of freedom. This very significant chi-square indicated a rather considerable “badness of fit” of the model, meaning that the covariance structure of the original study model was considerably different from the covariance matrix observed from the survey data (Garson, 2008:p35).

Besides, negative variances were reported for the residual variance on *customer adoption intention* in the Scotland group (CAI: res 2 = -0.08) and for two error variances in the Nigeria group, including error variances on *the general feeling about using Internet banking* (q23c: err19 = -0.002) and *the intention to use IB in the very next banking transaction* (q24b: err21 = -0.02). This indicated an over-description of *customer attitude* (CAT) and *customer adoption intention* (CAI) by the scale items loading onto them, on account of model misspecification. The solution was inadmissible and therefore necessitated a drastic reduction of the number of observed indicator variables and/or an imposition of some stringent constraints on the regression paths of the original model.

At this point, several adjustments were made to the original model and CFA was re-run for each adjustment. During these initial adjustments, the observed variables with the lowest factor loading scores between the two *readiness* factors were dropped from the model. These comprised four items describing *customer readiness* (CuR), including *prior computer and internet knowledge* (q21a), *prior*

*computer and Internet usage experience* (q21b), *awareness of Internet banking* (21f) and the *willingness to accept online risks* (q21h). Two of these items were also the cross-loading ones in the *factor structure* matrix (table 8.12a and 8.12b on page 258). In addition, three lowest scoring scale items from the *perceived channel readiness* (ChR) construct were also dropped, including *adequate registration information/guideline online* (q22a), *privacy/security guarantee online* (q22g), and *no extra/hidden online service charge* (q22h).

These items were dropped from their respective scales because of the fact that their loading scores were the lowest and this also meant that their impacts or contributions to the description of their respective constructs were already largely subsumed in other variables within the same scale. Additionally, the fact that they cross-loaded meant that they were not pure exclusive descriptors of any one of the two *readiness* constructs, and therefore allowing them to remain in the scales would mean that the constructs were no more independent of each other because the contributions of those variables overlapped between the two constructs.

From the *customer adoption intention* (CAI) construct, one variable, *customer intention to use IB more often than other banking channels* (Q24c), was also dropped due to over-description of the factor, as indicated by a negative residual on it. CFA was re-run following all the above adjustments and an admissible solution was achieved in the form of the second model shown in figure 8.7 below.

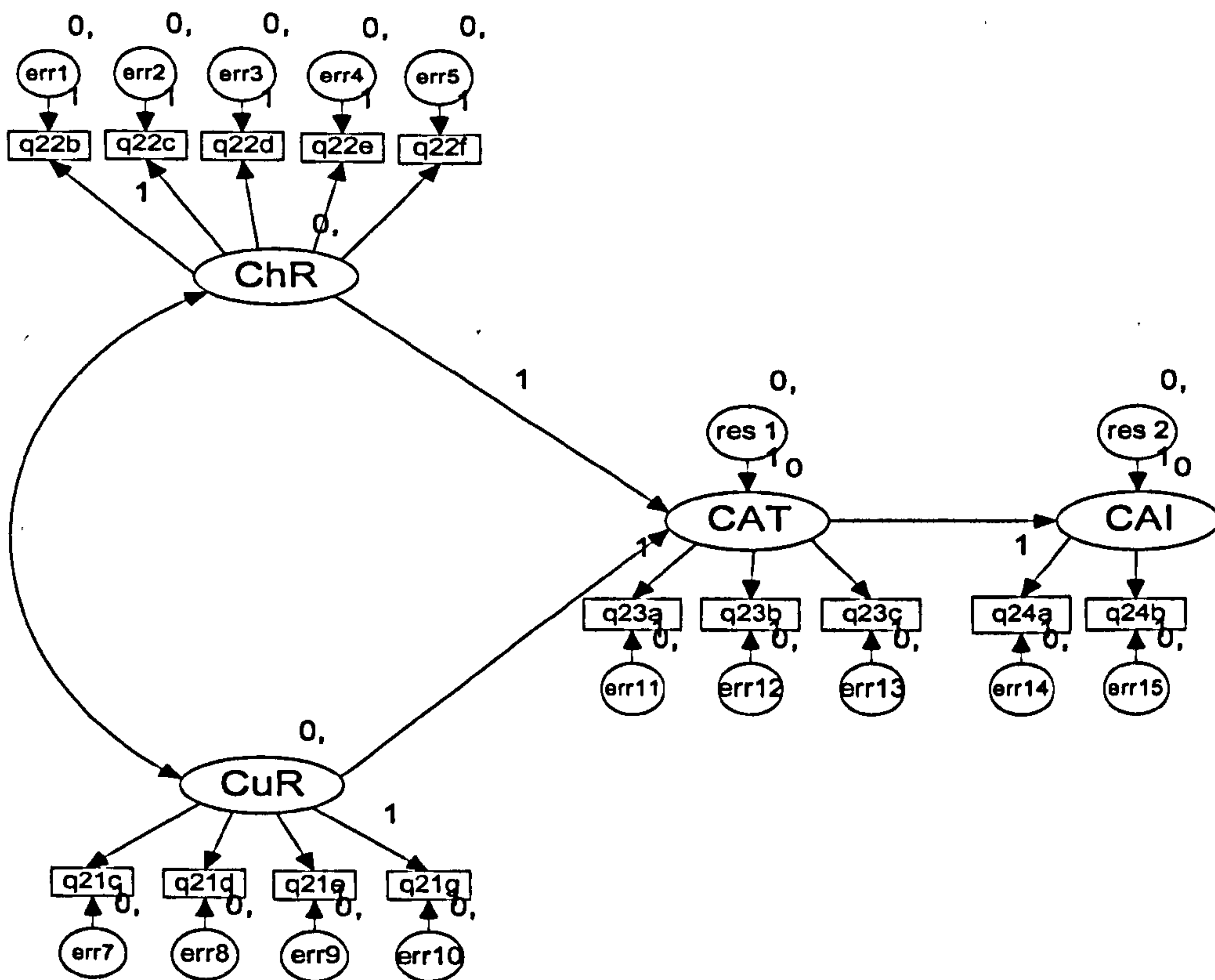


Fig. 8.7: The second version of the proposed model after the initial adjustments were made.

However, even though CFA produced an admissible solution for the adjusted model between both data sets with a chi-square of 741.85 and 148 degrees of freedom at 0.000 probability level, its *goodness-of-fit* indices were considered not yet satisfactory, as shown in table 8.15 below. Particularly, the GFI, AGFI, NFI, CFI, PCFI, RMSEA, and PCLOSE values were not quite consistent with the cut-off levels recommended in the extant literature for a good model fit (See Hu and Bentler, 1999:p28; Loo, 1999:p215; Byrne, 2001:pp82-85; and Suh and Han, 2002:p257).

**Overall goodness-of-fit test results for the second version of research model:**

Fit Indices	Model Score	Recommended value
Chi-square	741.85	-----
p-value	0.00	< 0.05
Degrees of freedom	148	-----
CMIN/DF	5.01	2.00 - 5.00
Goodness-of-fit index (GFI)	0.88	> 0.90
Adjusted goodness of fit index (AGFI)	0.83	> 0.90
Root mean square residual (RMR)	0.06	< 0.08
Normed fit index (NFI)	0.76	> 0.80
Comparative fit index (CFI)	0.80	> 0.90
Parsimony comparative fit index (PCFI)	0.65	> 0.70
Root mean square error of approximation (RMSEA)	0.07	< 0.06
Probability of close fit (PCLOSE)	0.00	> 0.50

Table 8.15: Goodness-of-fit indices of the re-specified version of the model from CFA analysis.

Following the above goodness-of-fit results considered not yet acceptable, more adjustments were made on the revised model in order to refine it further. Series of CFA goodness-of-fit tests were also run in AMOS 16 for the various adjustments. The main problem observed remained that of over-description of the endogenous factors (CAT and CAI).

Theoretically, the above problem meant that either the direct regression of *attitude* (CAT) to the *intention* (CAI) construct was too strong due to insufficient descriptor variables loading onto *intention* or that the combined regression of the two *readiness* constructs (CuR and ChR) to *attitude* (CAT) was too strong due to either insufficient descriptor variables loading onto *attitude* or too many overlapping descriptor variables from the two *readiness* constructs causing a combined over-powering effect on the *attitude* construct. This reasoning was based on the fact that progressive improvements in the fit indices occurred as more of the scale items were dropped from the model.



Subsequently, the two lowest scoring items among the remaining ones loading onto *customer readiness* (CuR) were dropped, including *level of formal education* (q21c) and *regular source of income* (q21d), while one previously dropped item, *awareness of Internet banking* (q21f), was added back to the scale. In addition, two extra items loading onto *perceived channel readiness* (ChR), including *perceived effective communications* (q22c) and *perceived speed of web processing* (q22f) were dropped for the same reason that they were the lowest of the remaining items in the scale. One item loading on *customer attitude* (CAT), *general attitude to Internet banking* (q23a), was also dropped from the scale in order to eliminate the over-description.

Dropping all items with loading scores below 0.6 not only helped to eliminate the over-description of the endogenous constructs, but also did not reduce the cumulative variance percentage of the factor loadings as much as dropping any of the other remaining items per scale might have done. In addition to dropping the above scale items, five regression paths were constrained to be equal to 1 (see figure 8.8 below) between the two sample groups, including the regression of *ease of use* (q22b) on *perceived channel readiness* (ChR), *access to computer and the Internet* (q21e) on *customer readiness* (CuR), *belief about the relevance of IB* (q23b) and *general feeling about adopting IB* (q23c) on *customer attitude* (CAT), and *general intention regarding IB adoption* (q24a) on *customer adoption intention* (CAI). The regression of *perceived channel readiness* (ChR) on *customer attitude* (CAT) was also constrained to be equal ( $r.w. = 0.45$ ) between the two sample groups as part of the measures to solve the over-description problem.

Figure 8.8 below shows the final model that resulted from all the constraints above. However, as a result of all the pruning measures aimed at solving the problem of over-description of the two endogenous variables (CAT and CAI), the scales measuring them were reduced to two-item scales and this resulted into a “Heywood case” (Garson, 2008:p105), in which the residual variance on CAT and the error variance on CAI became negative values. Both Hair et al. (2006:p794) and Garson (2008:p105) advise that a “Heywood case” could be eliminated by constraining the “offending indicator” to a minute positive value. Consequently, the residual variance on CAT was constrained to be equal to 0.005 and the error variance of q24b loading on CAI was also constrained equal to 0.01 across the two sample groups in order to purge the negative values as suggested by Hair et al. (2006:p794).

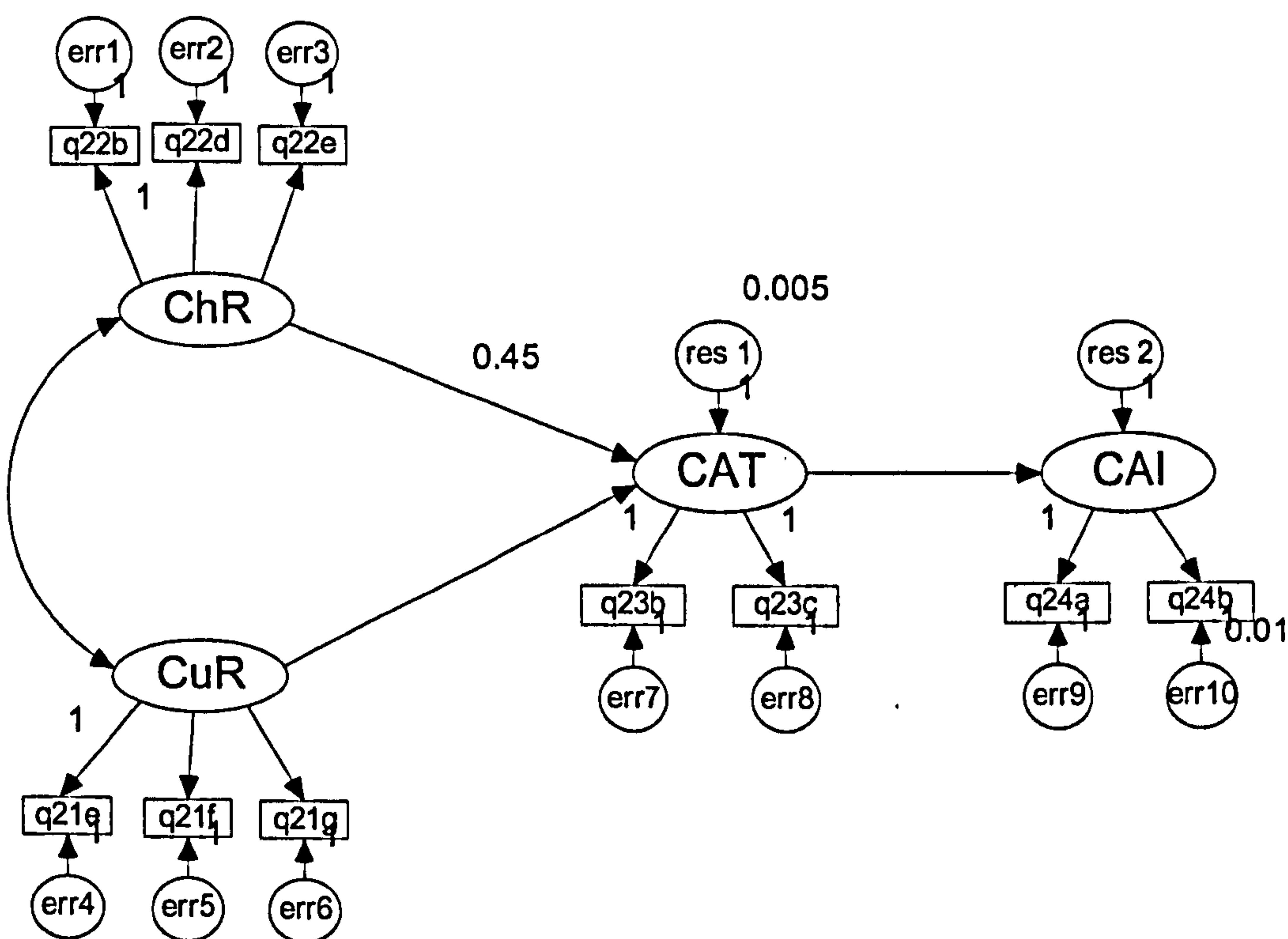


Fig. 8.8: The final study model constrained invariant between the Scotland and Nigeria samples groups.

In the end, following the imposition of all the above constraints, accompanied by several standardised CFA two-group *invariance* and *model-fitting* tests, an admissible solution with significant model fit indices was finally achieved with the model shown in figure 8.8 above. Since the CFA of this last version of the model was simultaneously run between the two data sets and also produced significant identical goodness-of-fit indices, it was therefore considered successfully constrained to be invariant between the Scotland and Nigeria sample groups. Garson (2008:p34) notes that models that have “fewer indicators per factor” tend to exhibit better overall fit than those with several indicators. Thus the model which produced the best fit to the study data among all the adjusted models tested turned out to be a four-factor model with a total of 10 scale items instead of the 22 items in the original model. Details of the *goodness-of-fit*, *invariance* and *reliability* tests conducted with this final model are presented in the following subsections.

#### **8.4.3. Goodness-of-fit and measurement invariance tests of the final constrained model:**

Confirmatory factor Analysis with standardised estimation in AMOS 16 was used to test the goodness-of-fit and scale invariance of the final model above. This was performed by running CFA simultaneously with the data from the two sample groups. In his “ten commandments of structural equation modelling”, Thompson (2000:p232) advises that multiple fit indices should always be reported in every SEM research. This involves testing and presenting a combination of absolute, incremental (relative), and parsimony fit indices for each SEM model. In line with the above suggestion, the results of the multiple goodness-of-fit and invariance tests conducted with the final study model across the two sample data sets are presented below in table 8.16 showing the combined model fit indices.

**Overall goodness-of-fit test results for the final research model:**

Fit Indices	Final Model Score	Recommended value
Chi-square	211.75	-----
p-value	0.00	< 0.05
Degrees of freedom	70	-----
CMIN/DF	3.03	2.00 - 5.00
Goodness-of-fit index (GFI)	0.95	> 0.90
Adjusted goodness of fit index (AGFI)	0.92	> 0.90
Root mean square residual (RMR)	0.03	< 0.08
Normed fit index (NFI)	0.88	> 0.80
Comparative fit index (CFI)	0.92	> 0.90
Parsimony ratio (PRATIO)	0.78	>0.70
Parsimony goodness-of-fit index (PGFI)	0.61	>0.60
Parsimony normed fit index (PNFI)	0.69	>0.70
Parsimony comparative fit index (PCFI)	0.71	>0.70
Root mean square error of approximation (RMSEA)	0.05	< 0.06
Probability of close fit (PCLOSE)	0.48	> 0.50

Table 8.16: Overall CFA goodness-of-fit indices of the final research model constrained invariant between the Scotland and Nigeria sample groups.

According to Byrne (2001:p187), the model fit and invariance testing procedure of mining out the final constrained model from an original unconstrained one implies that the final “constrained model is nested within the initial model”. In the current study, the final model (Fig. 8.8 above) had to be extracted from the original model (Fig. 8.6 on page 266) through the imposition of all the constraints described in subsection 8.4.2 above (page 269). In addition, Hair et al. (2006:p757) confirm that “nested models can be formed by deleting a path(s)” in the original unconstrained model. This observation thus justifies the methods of model pruning and constraints used in the present study to extract the final model from the initial one. Accordingly, the views of the above two authors provide the necessary justification for all the various scale item deletions and path constraints imposed on the original version of the study model in order to achieve a final version with a superior model fit.

Regarding *measurement invariance* of the model, Lee and Hershberger (1990:p314) note that “equal fit is a necessary result of model equivalence”. The first confirmation of measurement equivalence across the Scotland and Nigeria sample groups in the final constrained model was the fact that all the combined absolute, incremental and parsimonious fit indices of the final model (see table 8.16 above) were identical for the two sample groups (Hair et al., 2006:p828). According to these scholars, this indicates that the same factor structure is common to both groups, and equally confirms that *measurement* and *factor structure* invariance was achieved between both groups with the final constrained model.

SEM models are said to be invariant when they replicate identical sets of *covariance* matrices (Lee and Hershberger, 1990:p314). Hence, in yielding the same *covariances* for Scotland and Nigeria (see table 8.23 on page 302), the final model was also successfully constrained to be *equivalent* between the two sample groups. As is consistent with the evidence provided by Hair et al. (2006:p828), identical fit indices also indicate *factor structure equivalence* in that they show “how accurately the measurement model reproduces the observed covariance matrix” across the sample groups. In the current study, this also confirms that *factor structure equivalence* was attained by the final model between the Scotland and Nigeria samples.

Furthermore, Byrne (2001:p221) confirms that obtaining a permissible solution in AMOS with significant identical goodness-of-fit indices using one research model and data from two or more different sample groups simultaneously is a firm indication that both *measurement* and *structural* equivalence has been achieved by the model across the groups. Besides, the final model was also shown to be *recursive* for both sample groups. With 130 distinct sample moments of

estimation, 60 distinct parameters estimated, 70 degrees of freedom and Chi-square of 211.75 at 0.000 probability level, the model was confirmed as *unidirectional* and therefore adjudged to be a self-repeating *admissible solution* in both samples. In line with Cheng et al. (2006:p1563), this kind of recursiveness has eradicated “any concern about multi-collinearity effects” in the research model.

With regards to the model’s *goodness-of-fit* indices in table 8.16 above, it can be seen that all the recommended cut-off values were surpassed by the final model indices except PCLOSE which, though not more than 0.5, is approximately 0.5 and therefore still acceptable. On the basis of these superior multiple fit indices, it was concluded that a significantly good data fit was achieved by the final model across both sample groups. Specifically, Byrne (2001:p182) notes that the three crucial goodness-of-fit indices necessary for evaluating a multi-group SEM model are “the chi-square statistic and the CFI and RMSEA values”. Undoubtedly, the final model has performed quite well on these three important criteria.

Firstly, compared with those of the original unconstrained model, the *chi-square statistic* and degrees of freedom of the final model are far less significant, which according to Garson (2008:p35) is an indication of a much better model fit. While the ratio of the chi-square of the original unconstrained model (5895.22) to its degrees of freedom (412) is 14:1 [otherwise measured as  $CMIN/DF = 14.309$  in the CFA analysis], the ratio of the chi-square of the final invariant model (211.75) to its degrees of freedom (70) is 3:1 [being  $CMIN/DF = 3.03$  in the CFA model fit summary]. The suggested values of  $CMIN/DF$  in the literature have ranged between 2 and 5, but an average figure of 3.0 has been used and recommended by Loo (1999:p215). Hence, the  $CMIN/DF$  value of 3.03 in the final model indicated a considerably good model fit, at 0.000 probability level.

Secondly, for *comparative fit index* (CFI), which compares the hypothesised model with the independent model, the score of the final constrained model (0.92) also surpassed the suggested minimum cut-off value of 0.90 (Hair et al., 2006:p749). In line with Garson's (2008:p43) explanation, this would mean that about 92% of the covariation in each sample data set could be reproduced by the final model in Scotland and Nigeria. Thirdly, with a score of 0.05 for *RMSEA*, the final model was also quite within the recommended range of 0.03 to 0.08 for root mean square error of approximation (Hair et al., 2006:p748). In fact, Hu and Bentler (1999:p28) suggest that in combination with absolute fit indices, *RMSEA* should be 0.06 or less for a good model fit. Hence, with a value of 0.05, the *RMSEA* of the final study model satisfactorily surpassed the author's recommendation across both sample groups.

Regarding model parsimony, Thompson (2000:p232) advises that researchers using SEM to analyse data should always "seek parsimonious models". The level of parsimony of a model is relative to its complexity or simplicity. A model's complexity relates to the number of its estimated parameters, which affect the goodness or badness of its fit to the sample data (Byrne, 2001:p82). In general, parsimony fit indices measure the degree of fit of a model for every parameter estimate in the model (Hair et al., 2006:p710). Parsimony was initially measured by two indices, including the values of the model's *parsimony ratio* (PRATIO or PR) and the *parsimony goodness-of-fit index* (PGFI), both of which were introduced by James et al. (1982) to deal with the complexity of a hypothesised model.

PRATIO indicates the ratio of a specified model's degrees of freedom (*DF*) to the maximum degrees of freedom obtainable (i.e., to the *DF* of the independent or null model), while PGFI is an adjustment to a model's goodness-of-fit index (GFI) using the PRATIO. Parsimony ratio was subsequently used in adjusting other goodness-of-fit indices and this led to the addition of two extra parsimony measures to the above indices, including *parsimony normed fit index* (PNFI) and *parsimony comparative fit index* (PCFI) (Byrne (2001:p83). The rationale for seeking model parsimony is that in relation to data from the same sample source, a parsimonious model will exhibit a better *internal consistency* and *discriminant validity* than a non-parsimonious one. Hence, the frugality of a model's estimated parameters is essential in attaining significant parsimony indices.

Lastly, consistent with Garson (2008:p45), parsimony indices are generally lower than the other fit indices they adjust because they tend to "penalise for lack of parsimony" when complex models are merely used for the sake of obtaining high model fit indices. The author asserts that as far as parsimony indices are concerned, "the 0.95 cut-offs do not apply". Hence, the recommended lower limits of the parsimony indices are: PRATIO > 0.7, PGFI > 0.6, PNFI > 0.7, and PCFI > 0.7 (Byrne, 2001:p84; Thompson, 2000: p232). As shown in table 8.16 above, all the parsimony indices of the final model also surpassed the above recommended cut-off values, except for PNFI which, at approximately 0.7, also attained the recommended minimum, and therefore indicated as a good normed fit measure of model parsimony too. All the parsimony fit indices adjusted with PRATIO therefore confirmed the final study model as a "parsimonious model" (Thompson, 2000: p232).



**8.4.4. Test of reliability of parameter estimates of the final constrained model with the two sample data sets:**

Examining the final study model further, another important technique employed to determine the authenticity of the model in representing the *covariance structure* relationships among the research constructs was to test the *reliability of the parameter estimates* of the final constrained model across the two sample datasets. The two diagrams below (Fig. 8.9 and Fig. 8.10) present the AMOS 16 graphic output results of the CFA *standardised parameter estimation* of the path coefficients in the final SEM model when computed with the two datasets of the Scotland and Nigeria samples simultaneously.

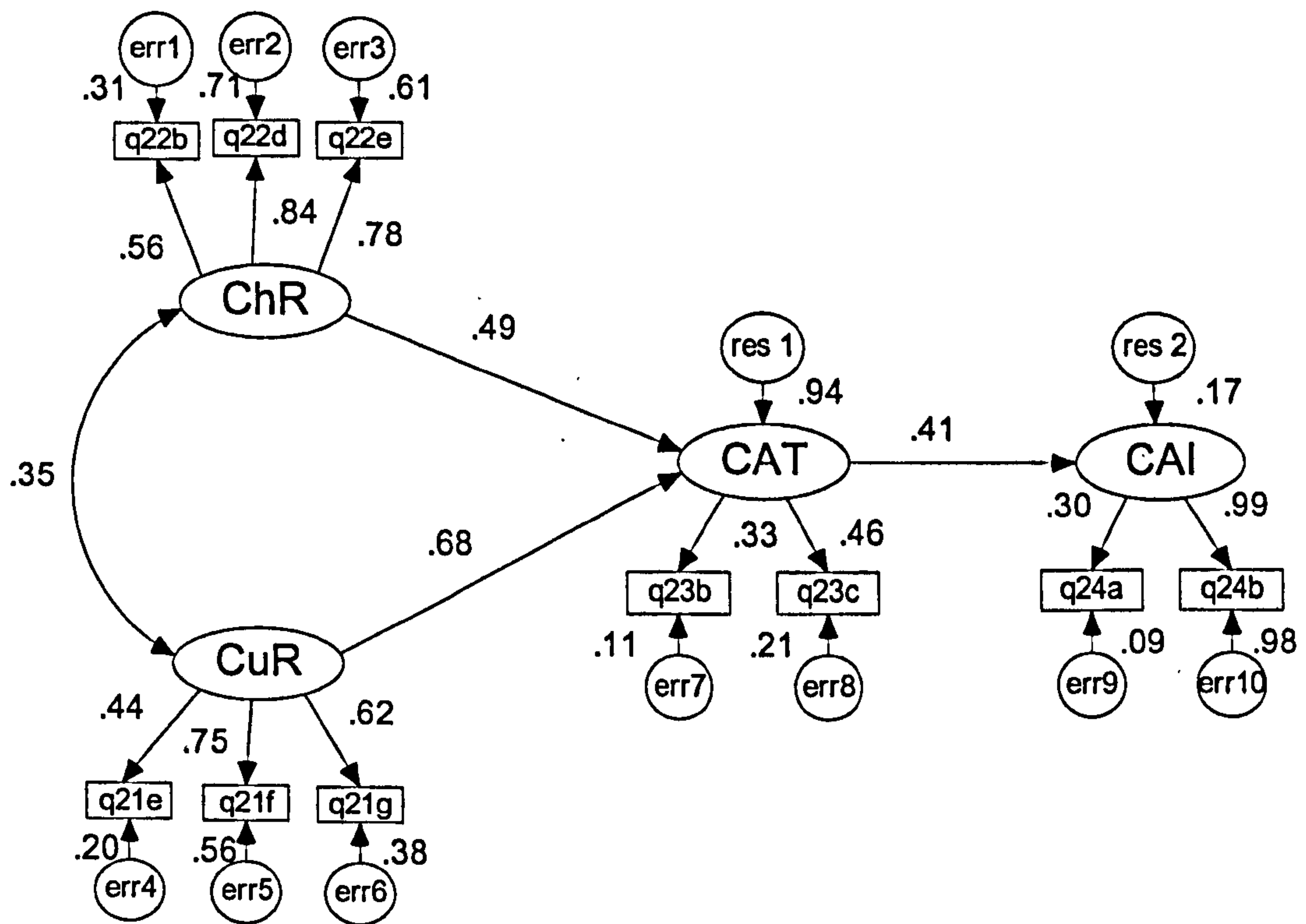


Fig. 8.9: Standardised measurement coefficients of the final SEM model when tested with the **Scotland** data set (All path coefficients were statistically significant).

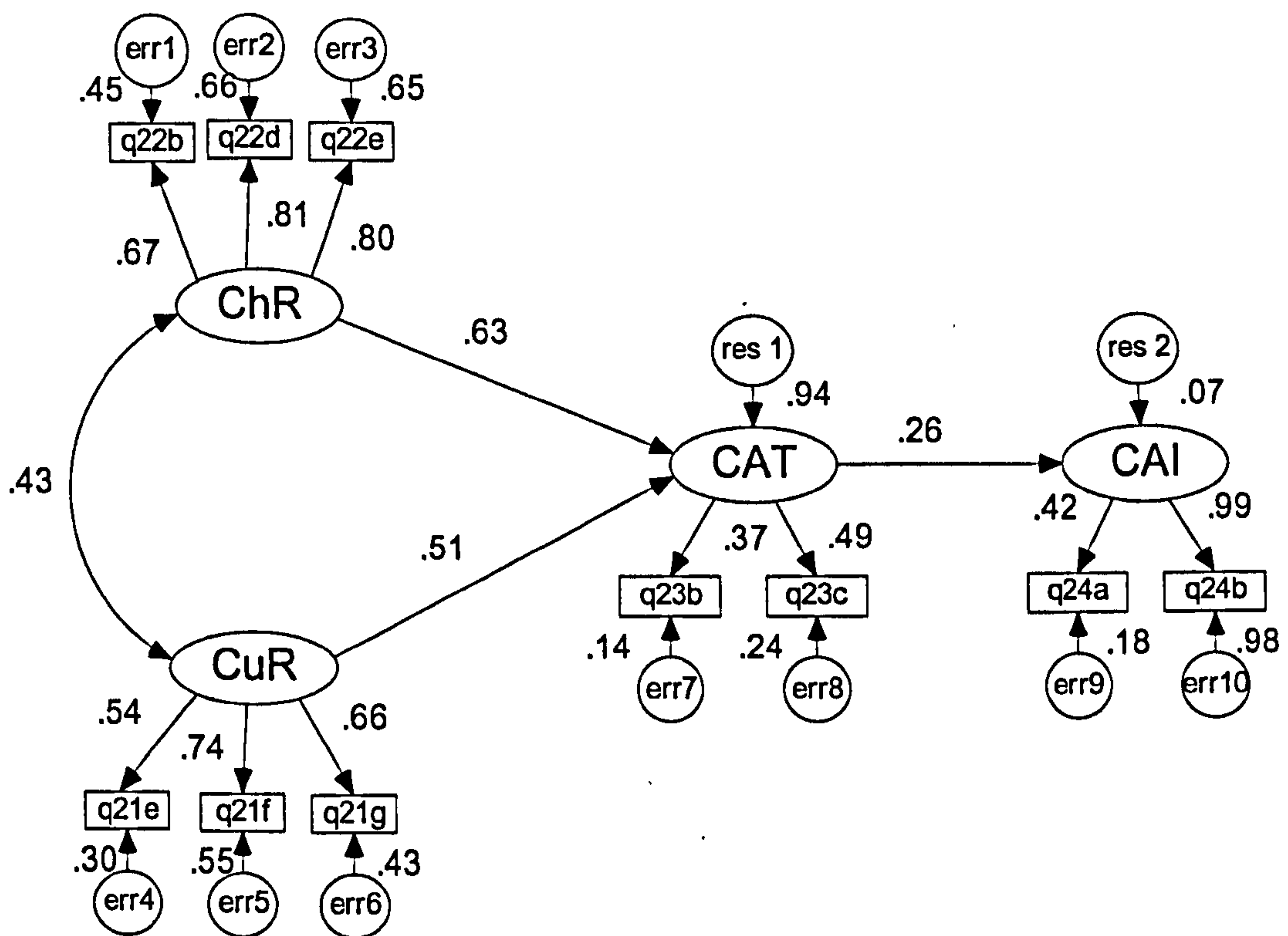


Fig. 8.10: Standardised measurement coefficients of the final SEM model when tested with the Nigeria data set (All path coefficients were statistically significant).

From the two AMOS graphic outputs above, it can be seen that the standardised parameter estimates of all the structural and measurement paths in the final SEM model are statistically significant for both sample groups. For instance, in terms of the measurement paths, the regression coefficients of all indicator variables describing the two exogenous constructs (CuR and ChR) are above 0.4 in both sample groups, while those of all the variables describing the endogenous factors (CAT and CAI) are 0.3 or above. These results general indicate significant reliability of the measurement path parameters across both samples. Similarly, all the covariance and inter-construct path coefficients are approximately 0.3 or above, also indicating significant reliability of the structural path parameters across both samples.

To further test the *reliability* of the above parameter estimates in the final model, *Critical Ratio* (CR) statistic was employed, as recommended in the literature (Cheng et al., 2006:p1564). According to the authors, the CR “represents the parameter estimate divided by its standard error (SE)”. The scholars also advise that for any parameter estimate to be acceptable as statistically significant, its CR must be greater than *plus or minus* 1.96 (i.e.,  $CR > \pm 1.96$ ). The *Critical Ratio* (CR) calculations for all freely estimated parameters in the final model are presented in tables 8.17 and 8.18 below for the Scotland and Nigeria samples respectively.

**Results of reliability tests of the parameter estimates by *Critical Ratio* (CR) statistic (Scotland):**

	Factor regression		Standardised Estimate	S.E.	C.R.
CAT	<---	ChR	0.49		
CAT	<---	CuR	0.68	0.07	9.22
CAI	<---	CAT	0.41	0.06	6.66
ChR3 (q22e)	<---	ChR	0.78	0.13	6.27
ChR2 (q22d)	<---	ChR	0.84	0.13	6.43
ChR1 (q22b)	<---	ChR	0.56		
CuR2 (q21f)	<---	CuR	0.75	0.20	3.81
CuR1 (q21e)	<---	CuR	0.44		
CuR3 (q21g)	<---	CuR	0.62	0.16	3.94
CAT 1 (q23b)	<---	CAT	0.33		
CAT2 (q23c)	<---	CAT	0.46		
CAI2 (q24b)	<---	CAI	0.99	0.49	2.03
CAI1 (q24a)	<---	CAI	0.31		

Table 8.17: Critical ratio (CR) results computed from the standardised regression weights in the final model using the **Scotland** data set.

**Results of reliability tests of the parameter estimates by Critical Ratio (CR) statistic (Nigeria):**

Factor regression			Standardised Estimate	S.E.	C.R.
CAT	<---	ChR	0.63		
CAT	<---	CuR	0.51	0.06	8.47
CAI	<---	CAT	0.26	0.07	3.53
ChR3 (q22e)	<---	ChR	0.81	0.09	8.56
ChR2 (q22d)	<---	ChR	0.82	0.10	8.11
ChR1 (q22b)	<---	ChR	0.67		
CuR2 (q21f)	<---	CuR	0.74	0.15	4.92
CuR1 (q21e)	<---	CuR	0.54		
CuR3 (q21g)	<---	CuR	0.66	0.15	4.36
CAT 1 (q23b)	<---	CAT	0.37		
CAT2 (q23c)	<---	CAT	0.49		
CAI2 (q24b)	<---	CAI	0.99	0.28	3.52
CAI1 (q24a)	<---	CAI	0.43		

Table 8.18: Critical ratio (CR) results computed from the standardised regression weights in the final model using the Nigeria data set.

As is evident in the tables above, all the *critical ratio* (CR) indices computed from the path regression analysis were greater than  $\pm 1.96$  in both sample groups. Standardised regression weights were used in calculating the critical ratios instead of maximum likelihood estimates because it has been claimed in the literature that maximum likelihood estimates have the tendency to bloat critical ratios (Cheng et al., 2006:p1564). Hence, in order to ensure analytical rigor, even at the risk of diminished statistical significance, the critical ratios in the above tables were computed with standardised parameter estimates, which are generally smaller than maximum likelihood parameter estimates.

Nonetheless, even with the smaller standardised parameter estimates, all the CR values in the present study surpassed the recommended minimum of  $\pm 1.96$ . Even the lowest inter-construct path regression weight between CAT and CAI in the Nigerian sample (0.26) also recorded a *critical ratio* (CR) of 3.53. Consequently, these results confirmed that all the parameter estimates in the final SEM model of the study were statistically significant across both sample groups and therefore were entirely within the acceptable range of *reliability*. This was also a firm indication that *convergent validity* was achieved by the final invariant model (Hair et al., 2006:p777) across the Scotland and Nigerian sample groups.

#### **8.4.5. Test of composite reliability of the final constrained model with the two sample data sets:**

In addition to the above reliability tests of the final model parameter estimates, the *composite reliability* of the scales in the final constrained model was also re-evaluated in order to ensure its *convergent validity* and *internal consistency* across the two sample groups. SPSS 16 was used to compute the *item* and *composite scale reliabilities* for the four constructs in the final model. Table 8.19 below shows the *item* and *composite reliability* values of the scales as well as the total percentage of the cumulative variances explained collectively by the indicator variables for each construct in the final invariant model.

**Results of convergent validity and internal consistency (composite reliability) tests of the final research model:**

Construct	Item	Item Reliability (Factor loading)		Composite Reliability (Cronbach's Alpha)		Total Variance Explained (TVE)	
		Scotland	Nigeria	Scotland	Nigeria	Scotland	Nigeria
Recommended value		>0.50	>0.50	>0.50	>0.50	>0.50	>0.50
Customer Readiness (CuR)	CuR 1	0.67	0.74	0.63	0.70	0.58	0.61
	CuR 2	0.81	0.81				
	CuR 3	0.79	0.80				
Channel Readiness (ChR)	ChR 1	0.75	0.79	0.77	0.80	0.70	0.71
	ChR 2	0.87	0.87				
	ChR 3	0.86	0.87				
Customer Attitude to IB Adoption (CAT)	CAT 1	0.78	0.77	0.50	0.50	0.60	0.60
	CAT 2	0.78	0.77				
Customer Adoption Intention (CAI)	CAI 1	0.81	0.84	0.50	0.60	0.65	0.71
	CAI 2	0.81	0.84				

Table 8.19: Results of convergent validity and internal consistency (composite reliability) tests of the measurement scales in the final model for the two datasets.

According to Hair et al. (2006:p777), a standardised *composite reliability* estimate of 0.5 or above with a *total variance explained* (TVE) percentage of 50% (i.e., 0.5) or higher indicates good *convergent validity*. However, the authors also concede that the situation in which a construct has lower item loading estimates but higher percentage of variance explained (above 0.5) could equally be considered as an acceptable indicator of *convergent validity* since it means that “more of the variance in the measure” has been explained than what is left as error variance.

As is observable from table 8.19 above, the measurement scales of the final model show far more reliability than the ones in the original model for each of the four constructs. Apart from *customer attitude* (CAT) in both sample groups and *customer intention* (CAI) in the Scotland group which did not surpass the recommended *composite reliability* values ( $> 0.5$ ), all other item and construct reliability indices in the final model surpassed the recommended values across both sample groups. Additionally, all the *total variance explained* (TVE) measures for all the four constructs surpassed the recommended value ( $> 0.5$ ) across the two sample groups.

Even the CAT construct, which had the weakest *composite reliability* values of 0.48 and 0.47 for Scotland and Nigeria respectively (approximated as 0.5 in the table above), also had TVE percentages of 60% in both sample groups, thereby exceeding the 50% recommended TVE cut-off point. Hence, the CAT construct was also considered as having displayed a reasonable measure of *scale reliability* in the final model. In the overall analysis, therefore, it was concluded that the final study model has achieved a suitable level of *convergent validity* and *internal consistency* with all its four constructs and across both sample groups.

Moreover, this *composite reliability* test of the final research model (table 8.19 above) has also shown that the three *customer readiness* dimensions (*access*, *awareness* and *involvement*) were able to explain 58% and 61% of the variance in the *customer readiness* construct in the Scotland and Nigeria samples respectively. In the same test, it was also observed that the three *channel readiness* dimensions (*ease of use*, *usefulness*, and *convenience*) also explained 69% and 71% of the variance in the *channel readiness* construct in the two samples respectively. This indicates the ability of the indicator variables to predict their associated constructs.

**8.4.6. Test of *construct reliability* (CR) of the final model as an alternative test of scale reliability and convergent validity:**

As suggested in the existing literature, apart from alpha coefficients, which are commonly used in testing the reliability of model constructs, *construct reliability* (CR) test is an alternative test of *scale reliability* and *convergent validity* which is “often used in conjunction with SEM models” (Hair et al., 2006:p777). Computed for each factor in the model, the value of CR is obtained by dividing the squared summation of all the loading estimates on each factor by the amount obtained in adding the total residual/error variances for the factor to the same squared sum of all item estimates loading onto it (ibidem). For instance, where factor loading estimate =  $\lambda_i$  and the residual/error variance =  $\partial_i$ , then *construct reliability* (CR) value will be calculated as follows:

$$CR = \frac{\left[ \sum_{i=1}^n \lambda_i \right]^2}{\left[ \sum_{i=1}^n \lambda_i \right]^2 + \left[ \sum_{i=1}^n \partial_i \right]}$$

According to the authors, the recommended lower-limit value for good *construct reliability* (CR) is 0.7. Hence, CR must be more than 0.6, but it could also be between 0.6 and 0.7 as long as other complimentary *construct validity* indicators demonstrate significant reliability values too (ibidem). Tables 8.20 and 8.21 below show the results of the *construct reliability* (CR) values calculated for the four constructs in the final model of this study with the data from the two sample groups.



**Construct Reliability (CR) test of the final SEM model for Scotland:**

Construct	Items	A	B	C	D	E	C+E	$\frac{C}{C+E}$
		$\lambda_i$	$(\sum \lambda_i)$	$(\sum \lambda_i)^2$	$\theta_i$	$(\sum \theta_i)$	$(\sum \lambda_i)^2 + (\sum \theta_i)$	CR
CuR	CuR 1	0.44	1.81	3.276	0.20	1.14	4.42	0.74
	CuR 2	0.75			0.56			
	CuR 3	0.62			0.38			
ChR	ChR 1	0.56	2.18	4.752	0.31	1.63	6.38	0.75
	ChR 2	0.84			0.71			
	ChR 3	0.78			0.61			
CAT	CAT 1	0.33	0.79	0.624	0.11	0.32	0.94	0.66
	CAT 2	0.46			0.21			
CAI	CAI 1	0.30	1.29	1.664	0.09	1.07	2.73	0.61
	CAI 2	0.99			0.98			

Table 8.20: Construct Reliability test of the final SEM model computed in AMOS 16 with the standardised path estimates for the **Scotland** sample group.

**Construct Reliability (CR) test of the final SEM model for Nigeria:**

Construct	Items	A	B	C	D	E	C+E	$\frac{C}{C+E}$
		$\lambda_i$	$(\sum \lambda_i)$	$(\sum \lambda_i)^2$	$\theta_i$	$(\sum \theta_i)$	$(\sum \lambda_i)^2 + (\sum \theta_i)$	CR
CuR	CuR 1	0.54	1.94	3.76	0.30	1.28	5.04	0.75
	CuR 2	0.74			0.55			
	CuR 3	0.66			0.43			
ChR	ChR 1	0.67	2.28	5.20	0.45	1.76	6.96	0.75
	ChR 2	0.81			0.66			
	ChR 3	0.80			0.65			
CAT	CAT 1	0.37	0.86	0.74	0.14	0.38	1.12	0.66
	CAT 2	0.49			0.24			
CAI	CAI 1	0.42	1.41	1.99	0.18	1.16	3.15	0.63
	CAI 2	0.99			0.98			

Table 8.21: Construct Reliability test results of the final SEM model computed in AMOS 16 with the standardised path estimates for the **Nigeria** sample group.

Unlike the measurement scale reliability tests (table 8.19 on page 287), in which SPSS factor-loading scores were used for the reliability calculation, the standardised regression coefficients of the indicator variables in the final SEM model computed by means of AMOS 16 (see figures 8.9 and 8.10 on pages 282 and 283) were used in calculating the *construct reliability* (CR) values presented in the above two tables. The standardised estimates were used in accordance with the suggestion by Hair et al. (2006:p777) that they are usually applied when a research data analysis involves an SEM model, as was the case in the present study.

From the results in the last column of each table above, it is clear that all the *construct reliability* (CR) indices of the final model are greater than 0.6 (CR >0.6). This confirms that the model generally displayed a good level of *scale reliability* and *convergent validity* across the two sample groups. Specifically, the *construct reliability* (CR) indices of the two exogenous factors, *customer readiness* (CuR) and *perceived channel readiness* (ChR), surpassed the ideal requirement of 0.7, while the indices for the endogenous variables, *customer attitude* (CAT) and *customer adoption intention* (CAI), also fell within the acceptable range of 0.6 to 0.7 (Hair et al., 2006:p778).

Noteworthy also is the fact that the CR indices displayed by the model constructs are significantly similar between the two different sample groups. Two conclusions were therefore drawn from these CR results: Firstly, that there is *internal consistency* within each measurement scale and within the model as a whole because all the indicator variables consistently described the same latent constructs across the two datasets in the same way. Secondly, similarities between the CR indices in the two tables also added credence to the *measurement invariance* of the final model by way of its analogous representation of the data from the two different sample groups.

#### **8.4.7. Test of *discriminant validity* of the final constrained model across the two sample data sets:**

Having successfully established the *convergent validity* of the scales in the final model, it was also necessary to assess their *discriminant validity*. According to Hair et al. (2006:p137), *discriminant validity* indicates how far two “conceptually similar” scales that measure different constructs are distinct from each other. Testing for *discriminant validity* involves an examination of the *average variance extracted* (AVE) for each construct in a set of correlated constructs and the squared value of the correlation between them. Achieving *discriminant validity* therefore means ensuring that different items in two or more different scales are less likely to cross-load onto constructs other than the ones they are measuring (ibidem: p810). Suh and Han (2002:p257) suggest that *discriminant validity* is tested by “comparing the squared correlation between two constructs with their respective average-variance-extracted measures”.

In line with Fornell and Larcker’s (1981) criterion for determining *discriminant validity*, if the *average variance extracted* (AVE) for each construct in a pair of correlated constructs is higher than the value of the squared correlation between them, then *discriminant validity* has been successfully displayed by the scales measuring the constructs. Hair et al. (2006:p778) not only support this computation method, but also confirm that it is a better technique to test for *discriminant validity* than the correlation specification method. An inter-construct correlation was computed for all the four latent constructs in the final model in order to calculate their *discriminant validity* and table 8.22 below shows the results of the calculation across the two sample groups.

The assessment was computed with standardised correlation estimates rather than the maximum likelihood values in order to make use of the *covariance* between CuR and ChR in the model. All correlations of all latent constructs in a model are necessary for *discriminant validity* evaluation (Fornell and Larcker, 1981), and so the *standardised covariance* of CuR and ChR was used because when standardised, *covariance* becomes *correlation* (Bentler, 2007:p8).

**Discriminant validity tests of the four latent constructs in the final SEM model:**

Scotland						
Latent Constructs	Factor-loading scores	Communality values	Average Variance Extracted	Inter-construct Correlation	Squared Correlation	
CuR:	CuR1	0.674	0.7591	0.35 CuR $\leftrightarrow$ ChR	0.12	
	CuR2	0.807				
	CuR3	0.790				
ChR:	ChR1	0.749	0.8295		0.49 ChR $\leftrightarrow$ CAT	0.24
	ChR2	0.874				
	ChR3	0.860				
CAT:	CAT1	0.776	0.7759	0.68 CAT $\leftrightarrow$ CuR		0.46
	CAT2	0.776				
CAI:	CAI1	0.807	0.8068		0.41 CAI $\leftrightarrow$ CAT	0.17
	CAI2	0.807				
Nigeria						
Latent Constructs	Factor-loading scores	Communality values	Average Variance Extracted	Inter-construct Correlation		Squared Correlation
CuR:	CuR1	0.736	0.7836	0.43 CuR $\leftrightarrow$ ChR	0.19	
	CuR2	0.814				
	CuR3	0.799				
ChR:	ChR1	0.790	0.8428		0.63 ChR $\leftrightarrow$ CAT	0.40
	ChR2	0.867				
	ChR3	0.870				
CAT:	CAT1	0.771	0.7714	0.51 CAT $\leftrightarrow$ CuR		0.26
	CAT2	0.771				
CAI:	CAI1	0.843	0.8426		0.26 CAI $\leftrightarrow$ CAT	0.07
	CAI2	0.843				

Table 8.22: Results of discriminant validity tests of the final SEM model, using the Fornell and Larcker (1981) criterion for discriminant validity.

According to the authors, the *average variance extracted* (AVE) for each latent construct is obtained by computing the square root of the average of all communalities of the scale items measuring that latent construct. If the AVE of each construct in a pair of correlated constructs is higher than their squared correlation, then discriminant validity has been established (Fornell and Larcker, 1981; Suh and Han, 2002; Hair et al., 2006). Evident in the above table is the fact that the AVE values for all the four latent factors in the model are higher than the values of all the *squared correlations* between them in both the Scotland and Nigeria sample groups. The results therefore confirm that *discriminant validity* has been aptly demonstrated by all the four scales in the final invariant model of the study across the two sample groups in accordance with the suggestions of the above scholars.

### **8.5 Tests of Invariance, Reliability, Mean Comparison, and Model Fit of the Final SEM Model by Latent Mean Structure Analysis (LMSA):**

Prior to this point, all the analyses of the study model performed in section 8.4 were focused on the *covariance structure* of the model across the two sample groups. In this section, the *latent mean structure* of the final model was also examined, in order to find out any differences in the *means* of the latent variables of the model between the two sample groups. Garson (2008:p68) notes that *latent mean structure* analysis is necessary when research involves comparisons of two or more independent samples (as was the case in the present study) or when a model is designed for repeated measures, because in both circumstances the researcher might expect to find differences in the *means* of the variables.

According to author, the purpose of *mean structure analysis* is to test for *latent mean* differences between groups, which therefore presupposes that there must be more than one group to be compared (with a multigroup model) before *latent mean structure analysis* can be carried out. As a result, the *chi-square* and *model fit* values in latent mean structure tests are indicative of how well both the model *covariance* and *mean structure* fit the data from the two or more sample groups involved (ibidem). Byrne (2001:p227) corroborates the above notion, observing that when differences in *latent mean structures* are tested, the observed means assume non-zero values, and so the *intercept parameters* are also taken into account, unlike the singular analysis of *covariance structures* in which the observed means are assumed to be equal to zero because the observed variables are measured as deviations from their *means*, thereby rendering the intercepts of the regression equations unnecessary.

In addition, Joreskog and Yang (1996) explain that since the *means* of the observed variables (in *latent mean structure analysis*) are functions of the other parameters in the model, all *intercepts* in the model must also be estimated alongside all the model parameters. Consequently, a test of the *means* of latent variables in a model always involves an examination of both *covariance structures* and *latent mean structures*. Accordingly, the scholars agree that *latent mean structure analysis* (LMSA) provides a more comprehensive model test than singularly analysing *covariance structures* in SEM because it seeks to determine the *regression coefficients* that best predict the *means* of *endogenous latent variables* from the *means* of *independent latent variables* in the model (Garson, 2008:p68). This prediction can be further explained with the following equation proffered by Byrne (2001:p228):  $\mu_y = \alpha + \beta\mu_x$  (where  $\mu_y$  is the *mean* of the dependent variable  $y$ ;  $\alpha$  is the *intercept* which defines the *mean* of  $y$ ;  $\beta$  is the

*coefficient* (multiple) of the *mean* of the observed independent variable  $x$ ; and  $\mu x$  is the *mean* of the independent variable  $x$ ). The equation illustrates how the *mean structure* is incorporated into a model by the addition of two new parameters,  $\alpha$  (the *intercept*) and  $\mu x$  (the *mean* of the observed independent variable  $x$ ).

With the above equation, the *mean* of the dependent variable ( $y$ ) is decomposed and expressed in terms of the other model parameters ( $\alpha$ ,  $\beta$ , and  $\mu x$ ). It is this decomposition that has given rise to the phrase “*mean structure analysis*” (Byrne, 2001:p228). Invariably, analysing models with *structured means* entails simply expanding the *covariance structure* with the *intercept* ( $\alpha$ ) and the *mean* of the observed independent variable ( $x$ ) in order to find the *mean* of the latent dependent variable ( $y$ ) (ibid).

#### **8.5.1 Procedure and computation of the latent mean structure analysis (LMSA):**

At this juncture, the final SEM model of the study was re-specified differently for the Scotland and Nigeria sample groups in order to compute the *latent mean structure analysis*. Re-specifying two different versions of the model for the two sample groups was necessary in order to hold one down as the “reference” group for comparison with the other, as is necessarily done in *latent mean structure analysis* (Byrne, 2001:p229). However, all the constraints imposed on the final model in section 8.4 above were retained because, according to the author, simultaneous multigroup analysis of *latent mean structures* allows for severe imposition of constraints on the model, unlike the single group analysis in which such constraints might have resulted in over-identification of the model.

Figures 8.11 and 8.12 below are the re-specified versions of the final study model for the Scotland and Nigeria sample groups respectively. The re-specification was made by means of AMOS 16 graphic software. In the two SEM models, the *means* of the two exogenous (independent) constructs (ChR and CuR) were labelled for free estimation in the Scotland group, but constrained to be zero in the Nigerian group. In line with Byrne's (2001:p235) suggestion on factor re-labelling, the Nigerian group therefore serves as the "reference" group for comparison of *latent mean structures* with the Scotland group. The *covariance* of ChR and CuR was labelled similarly (*chrcur*) for both groups in order to be freely estimated. The *variances* of the two constructs were also allowed to be freely estimated in both groups as implied by the empty space after each comma following the *mean* labels and zeros.

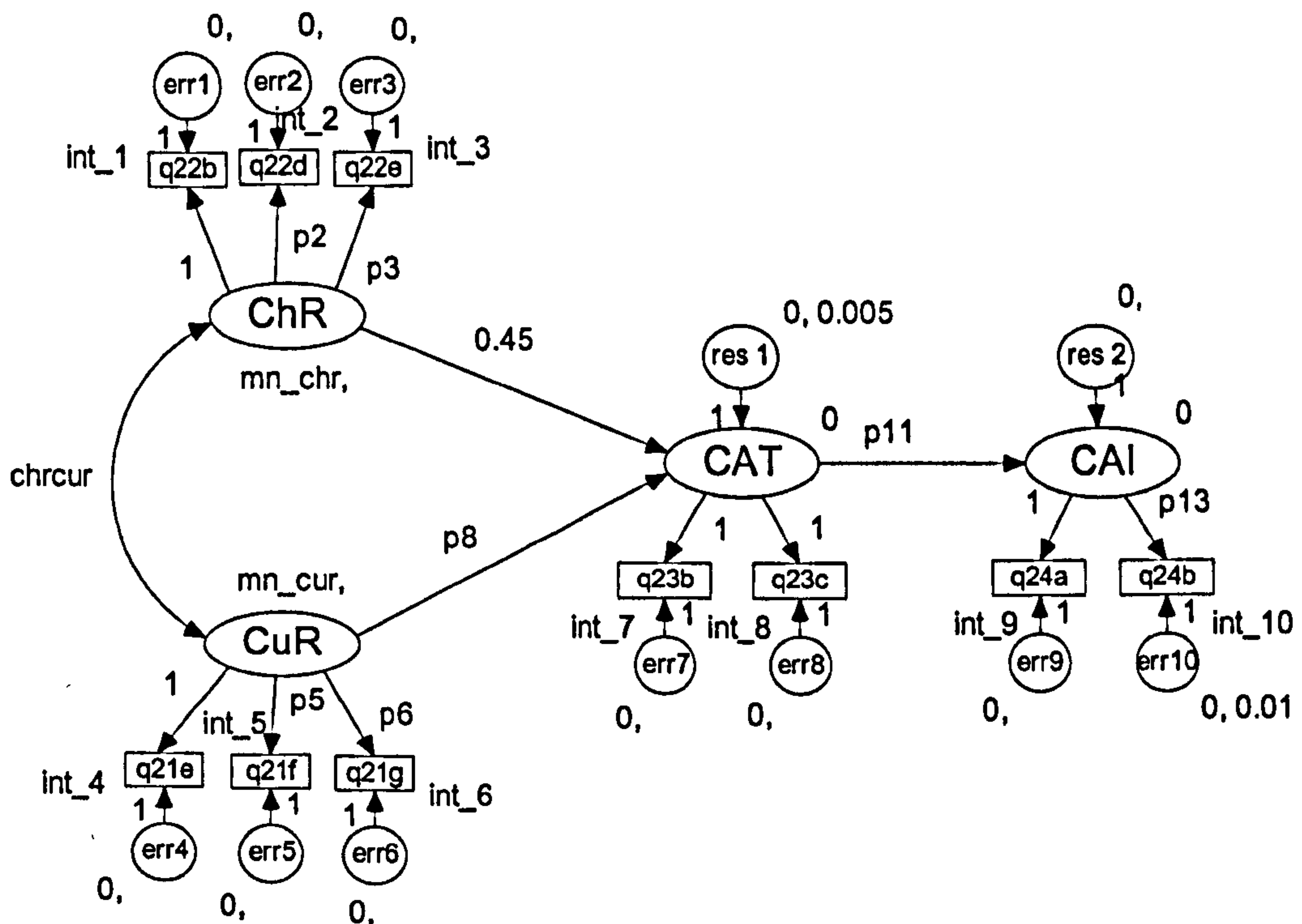


Fig. 8.11: Re-specification of the final model for *latent mean structure analysis* (Scotland).



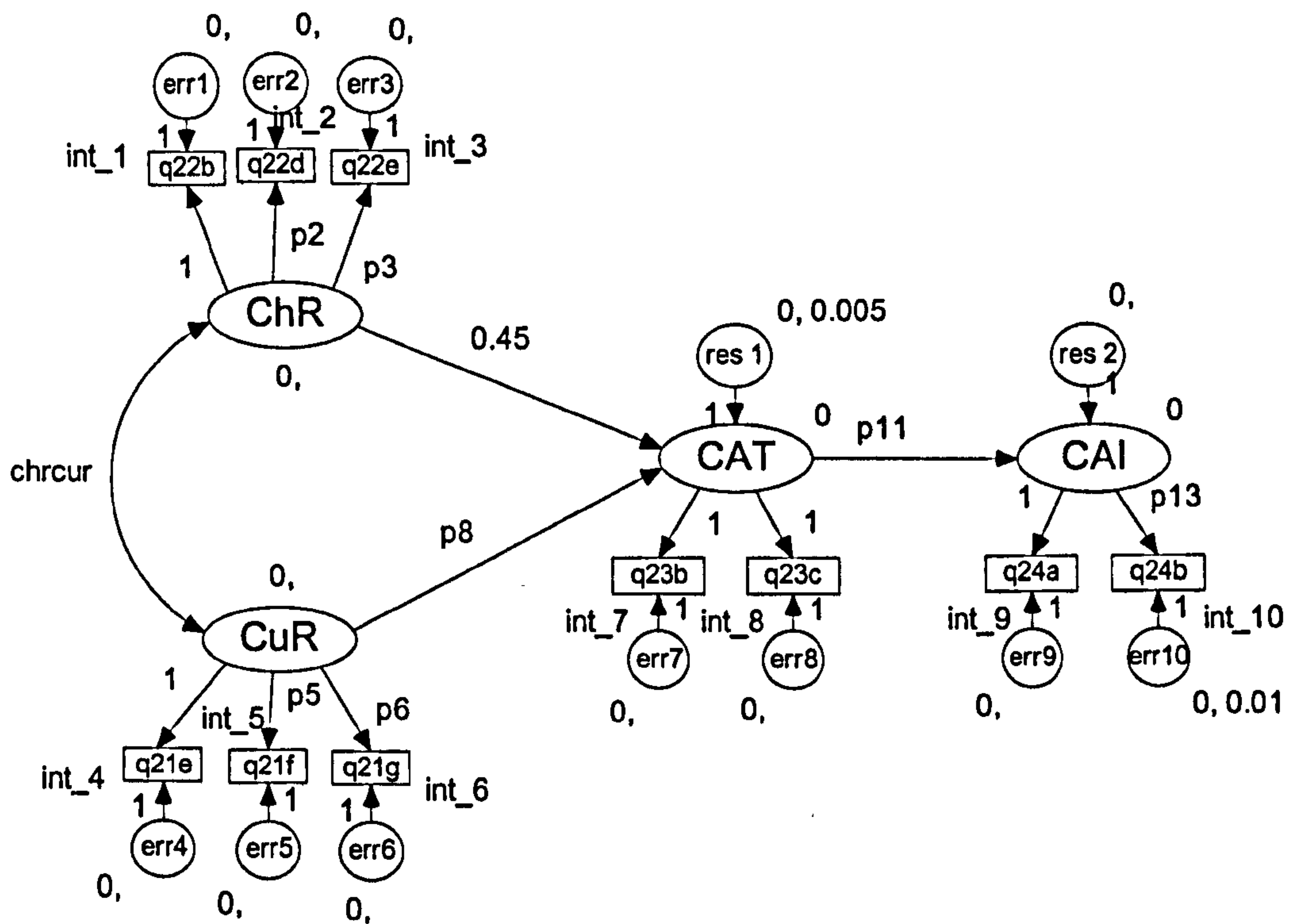


Fig. 8.12: Re-specification of the final study model for *latent mean structure analysis* (Nigeria).

Except those already constrained to be 1.0 (or any other value, e.g., 0.45), the means of all other *path coefficients* (factor loadings of the observed variables and inter-constructs regression weights) were similarly *labelled* numerically in both models (p1 to p13) so as to be freely estimated in both groups. The *means* of all *error terms* were constrained to be zero because they did not need to be freely estimated, but the *error variances* (plus *covariances* had there been any) were freely estimated in both groups as implied by the empty spaces following the commas after the zeros. In addition, all *intercepts* of all observed measures (indicator variables) were labelled numerically for free estimation across both groups (int\_1 to int\_10), while the *intercepts* of the unobserved endogenous constructs (CAT and CAI) were constrained to be zero in both groups as they were not required to be freely estimated.

Lastly, the *means* of the *residuals* were also not needed for the analysis and so were constrained to be zero in both groups, while their *variances* were allowed to be freely estimated, as implied by the empty space following the comma after each zero, except where already constrained (as in the case of the *variance* of res1 = 0.005 in the present study). Having fully re-specified the two models for the two groups, the two-group CFA computation was then run simultaneously in AMOS 16 with data from the two sample groups. The graphic outputs of the parameter estimation results for the two groups are presented below in figures 8.13 and 8.14 respectively.

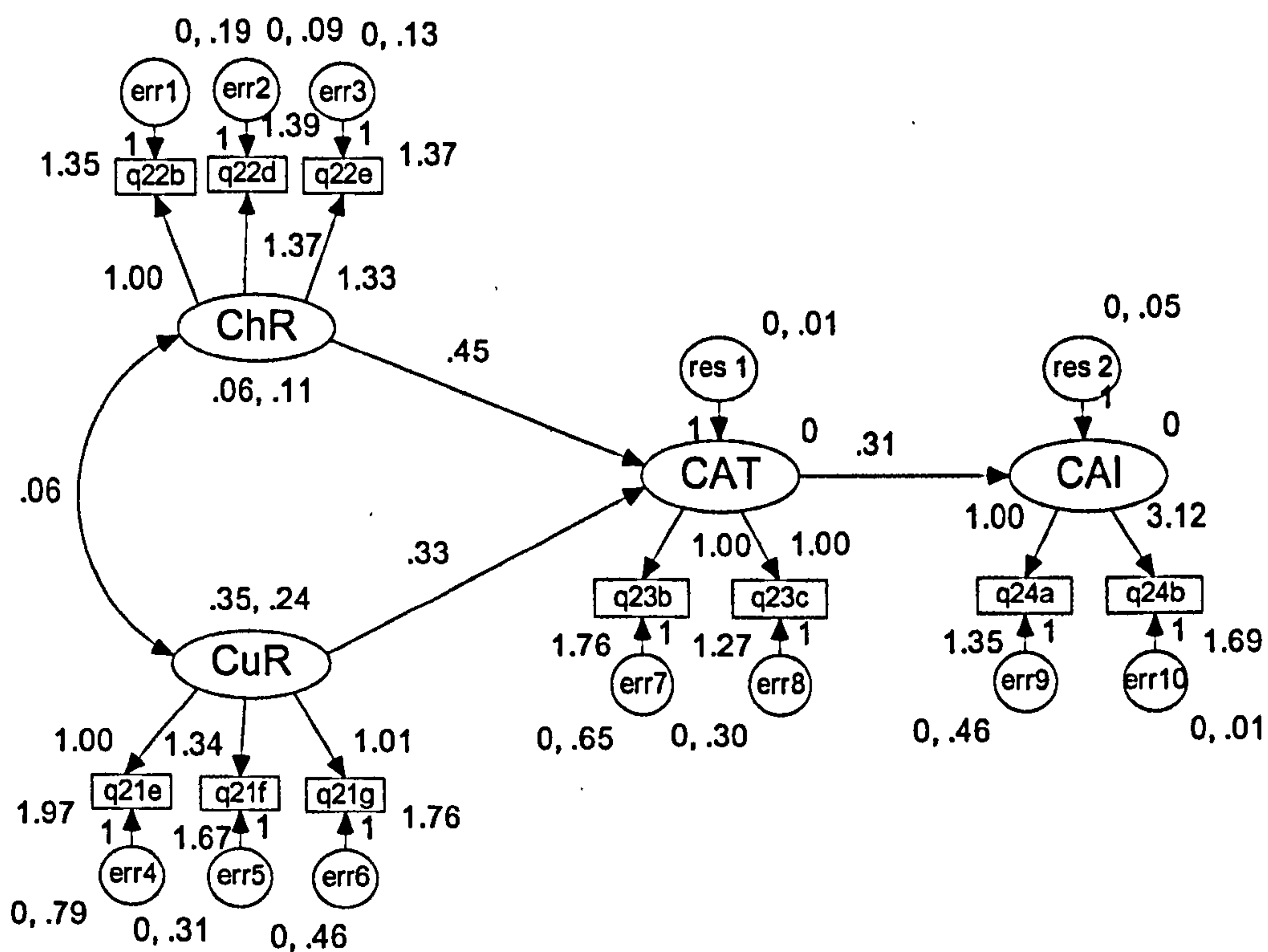


Fig. 8.13: Result for **Scotland**: Maximum likelihood parameter estimates (unstandardised).

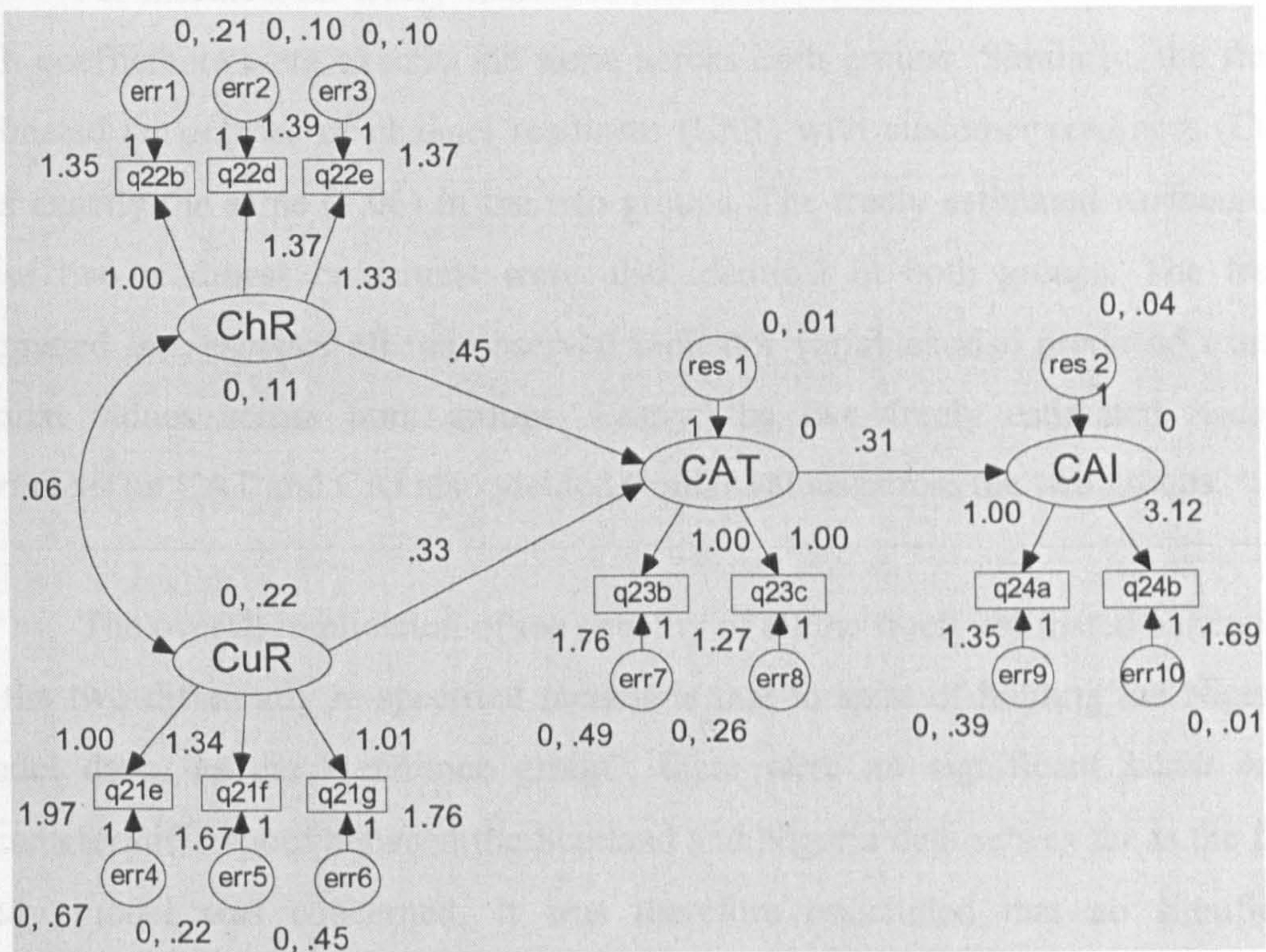


Fig. 8.14: Result for **Nigeria**: Maximum likelihood parameter estimates (unstandardised).

Although both standardised and maximum likelihood estimates were computed in the analysis, the maximum likelihood estimates from the AMOS graphic outputs have been presented in the diagrams above in order to illustrate all the paired estimated parameter values, including *means*, *variances*, *covariances*, *path coefficients*, and *intercepts*. Standardised estimation diagrams only show path coefficients, inter-construct covariances, and intercepts, but do not show the *mean* and *error variance estimates*, which are important for *latent mean structure* comparison. A close look at the *parameter estimates* in the two figures above would indicate that all freely estimated parameters of the re-specified models came out with exactly identical values across the two sample groups.

For instance, all freely estimated *means* of the measurement and structural path coefficients were exactly the same across both groups. Similarly, the freely estimated *covariance* of channel readiness (ChR) with customer readiness (CuR) was exactly the same (0.06) in the two groups. The freely estimated *variances* of these two readiness constructs were also identical in both groups. The freely estimated *intercepts* of all the observed indicator variables also produced exactly similar values across both groups. Lastly, the two freely estimated *residual variances* on CAT and CAI also yielded similar values across the two groups.

The overall implication of the equality of all the freely estimated parameters in the two differently re-specified models is that in spite of holding the Nigerian model down as the “reference group”, there were no significant *latent mean* parameter differences between the Scotland and Nigeria data sets as far as the final study model was concerned. It was therefore concluded that no significant differences existed in the *covariance* and *means* of the latent variables of the final study model between the Scotland and Nigeria sample groups and that the final model similarly represented findings implicit in the two countries’ data sets.

### **8.5.2 Test of *scalar invariance* of the final SEM model by latent mean structure analysis:**

Following the interpretations of the *latent mean structure analysis* results, it was also necessary to expatiate further on four main areas of this method of data analysis, including: assessment of the *scalar invariance* of the final two-group model, statistical significance (*reliability*) test of the estimated parameters, comparison of the *latent mean estimates* between the two sample groups, and evaluation of the overall *goodness-of-fit* of the final “structured means model” (Byrne, 2001:p239). Table 8.23 below shows a textual presentation of the results.

**Parameter estimation and critical ratio results of the *latent mean structure analysis*:**

Parameters	Scotland			Nigeria		
	Estimates	SE	CR	Estimates	SE	CR
<b>Regression weights:</b>						
Customer Attitude <---Channel Readiness	0.45			0.45		
Customer Attitude<---Customer Readiness	0.33	0.04	7.95	0.33	0.04	7.95
Customer Adoption Intention<--Customer Attitude	0.31	0.05	6.59	0.31	0.05	6.59
q22e<---Channel Readiness	1.33	0.08	16.51	1.33	0.08	16.51
q22d<---Channel Readiness	1.37	0.08	16.41	1.37	0.08	16.41
q22b<---Channel Readiness	1.00			1.00		
q21f<---Customer Readiness	1.34	0.12	11.21	1.34	0.12	11.21
q21e<---Customer Readiness	1.00			1.00		
q21g<---Customer Readiness	1.01	0.09	11.24	1.01	0.09	11.24
q23b<---Customer Attitude	1.00			1.00		
q23c<---Customer Attitude	1.00			1.00		
q24b<---Customer Adoption Intention	3.12	0.32	9.79	3.12	0.32	9.79
q24a<---Customer Adoption Intention	1.00			1.00		
<b>Means (Scotland):</b>						
Channel Readiness (ChR)	0.06	0.03	2.15	0.00		
Customer Readiness (CuR)	0.35	0.05	7.49	0.00		
<b>Intercepts:</b>						
q22b Perceived Ease of Use (of the IB channel)	1.35	0.03	52.50	1.35	0.03	52.50
q22d Perceived Usefulness (of the IB channel)	1.39	0.03	46.50	1.39	0.03	46.50
q22e Perceived Convenience (of the IB channel)	1.37	0.03	46.79	1.37	0.03	46.79
q21e Access to Computer & Internet	1.97	0.04	44.79	1.97	0.04	44.79
q24b Intention to use IB in the next transaction	1.69	0.03	57.45	1.69	0.03	57.45
q24a General intention about IB adoption	1.36	0.03	52.92	1.36	0.03	52.92
q23b General belief about the relevance of IB	1.76	0.03	56.14	1.76	0.03	56.14
q21f Awareness of IB, its benefits and advantages	1.68	0.04	38.37	1.68	0.04	38.37
q21g Prior Involvement in banking technology	1.76	0.04	44.70	1.76	0.04	44.70
q23c General feeling about the IB adoption idea	1.27	0.03	50.06	1.27	0.03	50.06
<b>Covariances:</b>						
Channel Readiness <--> Customer Readiness	0.06	0.01	6.60	0.06	0.01	6.60
<b>Variances:</b>						
Channel Readiness	0.11	0.01	8.48	0.12	0.02	7.49
Customer Readiness	0.24	0.04	6.26	0.22	0.04	5.67
res 1	0.01			0.01		
res 2	0.05	0.01	4.65	0.04	0.01	4.53
err10	0.01			0.01		
err1	0.20	0.01	13.82	0.21	0.02	11.16
err2	0.09	0.01	7.98	0.10	0.01	7.18
err3	0.13	0.01	10.25	0.10	0.01	7.31
err4	0.79	0.06	13.97	0.67	0.06	11.10
err9	0.46	0.03	15.48	0.39	0.03	12.32
err7	0.65	0.04	15.20	0.49	0.04	12.08
err5	0.31	0.04	7.56	0.22	0.04	5.72
err6	0.46	0.04	12.48	0.45	0.04	10.51
err8	0.30	0.02	14.71	0.26	0.02	11.65

Table 8.23: Parameter estimation and critical ratio results from the *latent mean structure analysis*.

According to Lee and Hershberger (1990:p314), reproducing identical sets of *covariance structure* estimates from independent sample datasets with the same model is a major indicator of *invariance* in an SEM model. Similarly, Byrne (2001:p221) posits that obtaining a permissible solution with identical and significantly good model fit indices simultaneously in two-group CFA analyses using one model and data from two or more different sample groups is a firm indication of *measurement* and *structural invariance*. Hence, in yielding the same *covariance structure* estimates for Scotland and Nigeria and also a common permissible solution with good fit indices in the *latent mean structure* analysis, the final SEM model of the study was deemed to have been successfully constrained to be *equivalent* between the Scotland and Nigeria sample groups.

### **8.5.3 Test of *convergent and discriminant validity* reliability of the final SEM model by latent mean structure analysis:**

As earlier mentioned, the *reliability* of each freely estimated parameter in an SEM model is determined by the statistical significance of its *critical ratio* (CR) which is calculated by dividing the parameter estimate by its *standard error* (SE) (Cheng et al., 2006:p1566). According to the authors, the CR of each parameter estimate must be greater than plus or minus 1.96 ( $CR > \pm 1.96$ ) for it to be classified as *reliable*. As shown in table 8.23 above, all the freely estimated parameters of the final study model were statistically significant as their *critical ratios* (CR) all surpassed the  $\pm 1.96$  cut-off value without exception and were identical in both the Scotland and Nigeria sample groups. Hence, all the freely estimated parameters of the final SEM model were adjudged *reliable* across both datasets.

These results firmly indicate that *convergent validity* was effectively achieved by both the *customer* and *perceived channel readiness* constructs in the final model as all freely estimated regression weights of their indicator variables (see table 8.23 above) were statistically significant, all being above 1.0 and having CRs above  $\pm 1.96$ . In the same vein, satisfactory *discriminant validity* was equally achieved by the model in view of the fact that the *covariance* between channel readiness (ChR) and customer readiness (CuR) was less than 1.0 for both sample groups (Kelloway, 1995:p219).

At 0.06, the freely estimated *covariance* between the two factors was far below 1.0, which (following the author's argument) was a clear indication that none of the two factors was "redundant" and that their "distinctiveness as measures" of different forms of *readiness* for Internet banking adoption was quite glaring. *Discriminant validity* was therefore confirmed. In addition, the fact that identical *covariance* values (0.06) were estimated by AMOS for the two re-specified models for Scotland and Nigeria also confirmed that *measurement invariance* was accomplished by the model between the two sample groups.

#### **8.5.4 Comparison of the *latent mean estimates* between the two sample groups from results of the latent mean structure analysis:**

Regarding the *latent means* of the two correlated constructs (ChR and CuR) in the model, the objective for comparison was to determine whether or not the *means* were "significantly different" between the Scotland and Nigeria sample groups. Consistent with Byrne's (2001:p241) suggestion, since the latent factor *means* for the Nigeria sample were constrained to be zero, as the "reference group"

while those for Scotland were freely estimated, the *means* of the two constructs estimated for the Scotland sample therefore represented the differences in the latent *means* between the two groups.

Looking at the two *mean* values in table 8.23 above, 0.06 for *perceived channel readiness* (ChR) and 0.35 for *customer readiness* (CuR), one would observe that the differences in the latent *means* of the two sample groups were generally not significant. At 0.06, the difference in the latent mean of *perceived channel readiness* between the two samples was virtually insignificant, while that of *customer readiness* was somewhat significant at 0.35. This seems to indicate that while the respondents' perception of the importance of *perceived channel readiness* for Internet banking adoption was similar between the two countries, their perception of the importance of *customer readiness* seemed to differ slightly. The implication is that the level of importance attached to *customer readiness* was less in the Scotland group than the Nigerian group, while similar levels of importance were attached by the two groups to *perceived channel readiness*. Similarly *perceived channel readiness* was perceived by both groups as more important than *customer readiness* in relation to customer adoption of Internet banking.

#### **8.5.5 Test of *goodness of fit* of the final SEM model by latent mean structure analysis:**

The final evaluation of the invariant SEM model of the study was for its goodness of fit, using the *latent mean structure* analysis. Apart from the parameter estimates discussed above, the latent mean structure analysis also yielded significant goodness-of-fit indices as shown in table 8.24 below. All the model fit indices were identical for the two sample groups, meaning that in spite of all the



constraints imposed on the observed indicator variables and intercepts, the final re-specified model demonstrated a considerably good fit to the data from the two different sample groups (Byrne, 2001:p241). This is evidenced by the fact that the multiple fit indices in the table below all surpassed the recommended cut-off values, except the CFI (0.88) which, at approximately 0.9, also indicated an acceptable comparative model fit.

**Goodness-of-fit results of the final SEM model from LMSA analysis:**

Fit Indices	Final Model Score	Recommended value
Chi-square	289.04	-----
p-value	0.00	< 0.05
Degrees of freedom	86	-----
CMIN/DF	3.36	2.00 - 5.00
Normed fit index (NFI)	0.84	> 0.80
Comparative fit index (CFI)	0.88	> 0.90
Parsimony ratio (PRATIO)	0.96	>0.70
Parsimony normed fit index (PNFI)	0.80	>0.70
Parsimony comparative fit index (PCFI)	0.84	>0.70
Root mean square error of approximation (RMSEA)	0.05	< 0.06
Probability of close fit (PCLOSE)	0.16	> 0.50

Table 8.24: Overall goodness-of-fit indices of the final invariant SEM model computed by latent mean structure analysis across the two sample groups.

Considering the indices individually, the ratio of the chi-square of the model (289.04) to its degrees of freedom (86) was 3:1, which was why CMIN/DF was equal to 3.361. Being much lower than the maximum cut-off value of 5.00 (Loo, 1999:p215), the CMIN/DF of the model was therefore an indication of a considerably good model fit at 0.00 probability level. The incremental/comparative indices (NFI and CFI) also indicated good model fit. At approximately 0.90 the CFI index was also indicative of a reasonably acceptable model fit since nearly 90% of the covariation in the sample data could be reproduced by the final model in both countries (Garson, 2008:p43).

With regards to model parsimony, all the three parsimony indices of the model (PRATIO, PNFI and PCFI) also surpassed the minimum expected values regarded in the literature as indicative of good model fit (Byrne, 2001:p84; Thompson, 2000: p232). The results therefore reconfirmed the model as being “parsimonious” and at the same time well-fitting to the data from the two sample groups. The last two indices in the table, root mean square error of approximation (RMSEA) and probability of close fit (PCLOSE) (equally known as P-value in LISREL), also indicated a good model fit. Hu and Bentler (1999:p27) advise that RMSEA should be lower than 0.06, while Garson (2008:p47) also suggests that it should not be more than 0.05 at the lower 90% confidence and not more than 0.08 at the higher 90% confidence limit.

Apart from having RMSEA of 0.05, the current model also scored 0.05 at the lower 90% confidence level and 0.06 at the higher 90% limit, and therefore fell comfortably within the ideal range suggested in the literature as indicative of a good data fit. In addition, PCLOSE (P-value), which is also related to RMSEA, helps to determine whether or not to reject “the null hypothesis that RMSEA is no greater than 0.05” (Garson, 2008:p47). According to the author, if PCLOSE is less than 0.05, the null hypothesis is rejected because it means that the RMSEA is greater than the acceptable range.

In the current analysis, PCLOSE of the final model was 0.16. It did not fall below the 0.05 minimum level, and so the null hypothesis was accepted, given that RMSEA of the model was within the ideal range for a good model fit, as shown above. Lastly, three absolute fit indices, the root mean square residual (RMR), goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI) were not reported by AMOS in the *latent mean structure analysis* because, as Byrne (2001:p241) notes, they are usually not computed in analyses where *means* and *intercepts* are among the model parameters. In summary, it was concluded that on the basis of all the above results, the final invariant SEM model of the study was significantly well-fitted to the data from the two sample groups.

## **8.6. Hypotheses Testing:**

Having successfully validated the final SEM model as invariant between the Scotland and Nigeria sample groups and also as having a good fit to the data from the two sample groups, the next step was to examine the research hypotheses using the standardised measurement coefficients from the two-group analysis performed with AMOS 16. Figures 8.15 and 8.16 below show the standardised regression weights of the final model for both samples, computed by the regression of all the structural paths with the two datasets simultaneously. The hypothesised causal relationships among the latent variables were then evaluated. According to Cheng et al. (2006:p1566), the veracity or falsity of research hypotheses in SEM analysis is determined by the significance or otherwise of the standardised inter-construct regression weights in the model structure. These are represented by the thicker lines in figure 8.15 and 8.16 below.

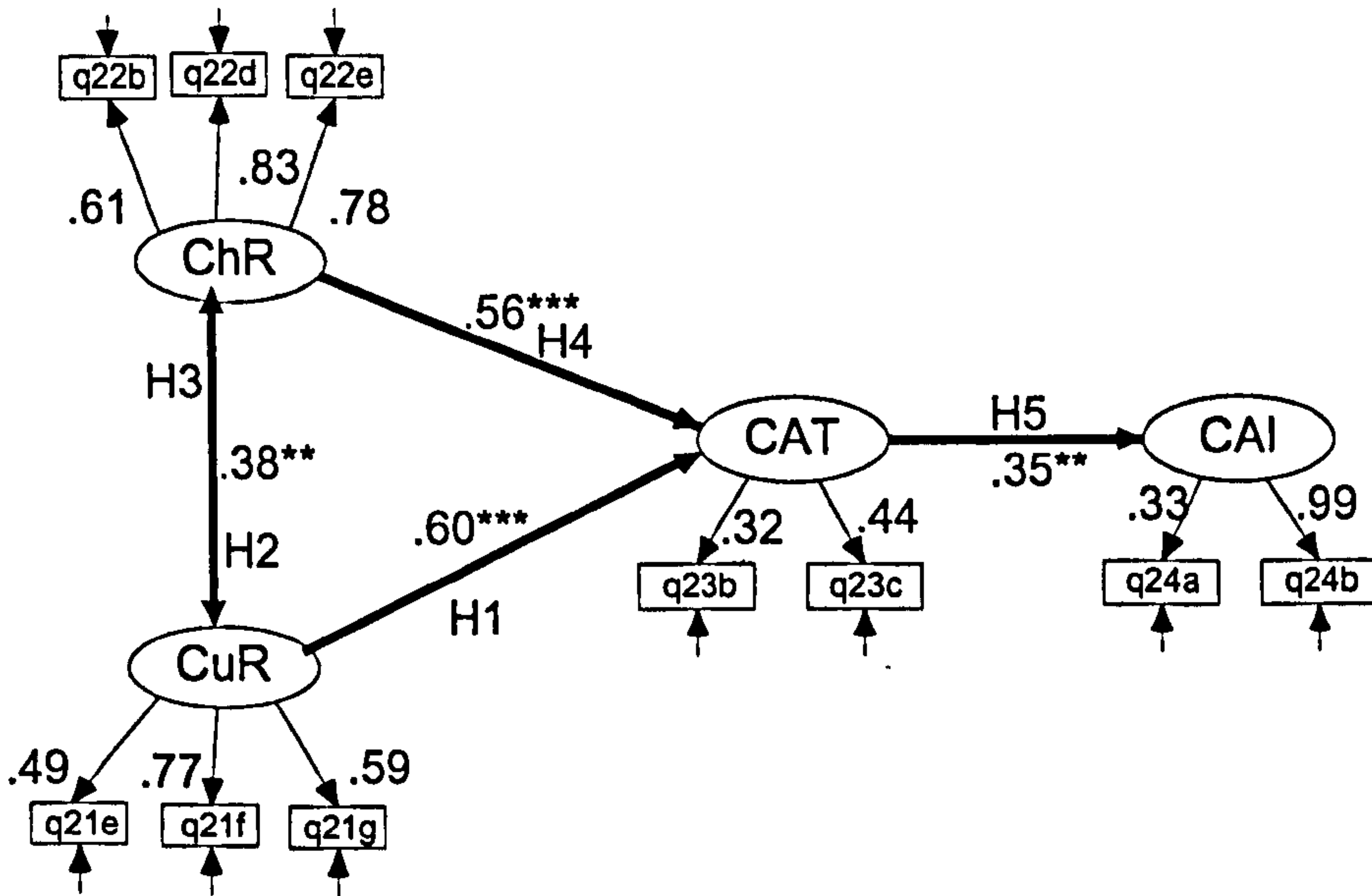


Fig. 8.15: Standardised measurement and structural path coefficients of the final SEM model from the Scotland data set.

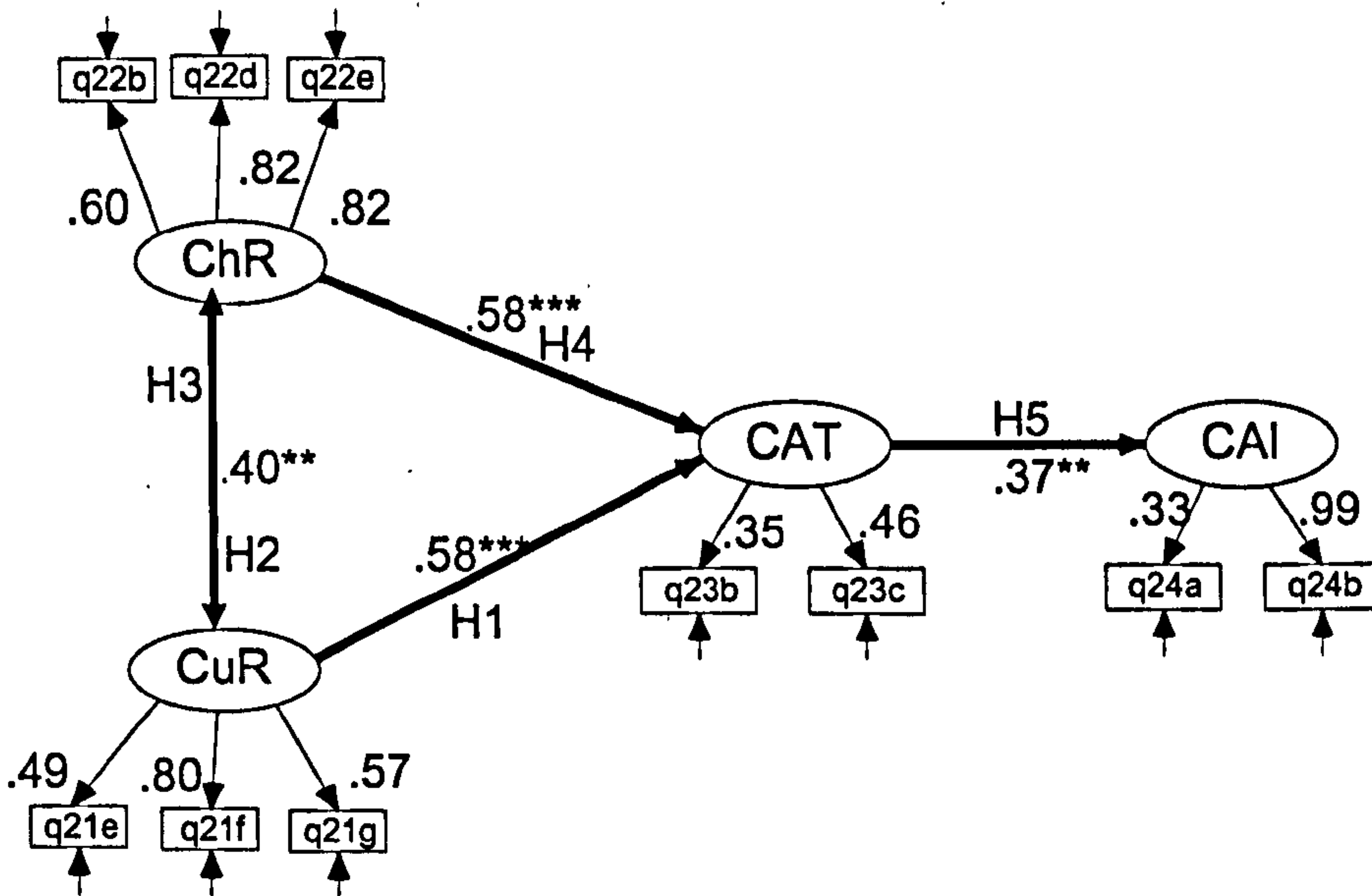


Fig. 8.16: Standardised measurement and structural path coefficients of the final SEM model from the Nigeria data set.

**8.6.1. Hypothesis Test Results: Implications for the causal relationships hypothesised in the study model:**

While the standardised measurement and path regression coefficients from the two-group *latent mean structure* analysis of the final research model are visually illustrated in figures 8.15 and 8.16 above, the detailed text results are presented in table 8.25 below. From the path diagrams above, it could be seen that the hypothesised direct relationships of the four latent constructs in the model were all supported, given that all their path coefficients were statistically significant. All the regression weights were above 0.3 and none was a negative value.

**Text results of the standardised measurement and structural paths coefficients in the final SEM model:**

Parameters	Scotland	Nigeria
Customer Attitude to Internet Banking (IB) <---Customer Readiness (H1)	0.60	0.58
Channel Readiness <--> Customer Readiness (H2 & H3)	0.38	0.40
Customer Attitude to Internet Banking (IB) <--- Channel Readiness (H4)	0.56	0.58
Customer Adoption Intention <--Customer Adoption Attitude (H5)	0.35	0.37
q22b Perceived Ease of Use (of the IB channel) <--- Channel Readiness (ChR)	0.61	0.60
q22d Perceived Usefulness (of the IB channel) <--- Channel Readiness (ChR)	0.83	0.82
q22e Perceived Convenience (of the IB channel) <--- Channel Readiness (ChR)	0.78	0.82
q21e Access to Computer & the Internet <--- Customer Readiness (CuR)	0.49	0.49
q21f Awareness of IB, its benefits and advantages <--- Customer Readiness (CuR)	0.77	0.80
q21g Prior banking-technology Involvement <-- -Customer Readiness (CuR)	0.59	0.57
q23b General belief about the relevance of IB <--- Customer Adoption Attitude (CAT)	0.32	0.35
q23c General feeling about the IB adoption idea <--- Customer Adoption Attitude (CAT)	0.44	0.46
q24a General intention about IB adoption <--- Customer Adoption Intention (CAI)	0.33	0.33
q24b Intention to use IB in the next transaction <--- Customer Adoption Intention (CAI)	0.99	0.99

Table 8.25: Details of AMOS 16 text output of the standardised regression weights in the final invariant model for the two-group data sets. NB: All path coefficients (hypotheses 1 to 5) are significant at above 0.30).

Specifically, with approximately 0.60 coefficients for the Scotland and Nigeria datasets respectively, the regression of *customer readiness for Internet banking adoption* (CuR) on *customer attitude towards Internet banking adoption* (CAT) was both positive and significant at 0.001 level in both sample groups. The result supports the first hypothesis of the study (H1) across the two groups and therefore upholds that “*a potential customer’s readiness for Internet banking adoption has a positive impact on his/her attitude towards adopting it*”.

Similarly, the two-way regression (standardised covariance) between *customer readiness for IB adoption* (CuR) and the *perceived web-channel readiness for customer adoption of IB* (ChR) which yielded approximately 0.40 for both the Scotland and Nigeria data sets, was also positively significant at the 0.05 level. These figures support the veracity and reciprocity of the second and third hypotheses of the study across both groups and therefore uphold that “*a potential customer’s readiness for Internet banking adoption impacts positively on his/her perception of the web-channel’s readiness for him/her to it*” (H2), and also that “*perceived web-channel readiness for IB adoption equally has a positive impact on the customer’s readiness to adopt it*” (H3).

Furthermore, at approximately 0.6, the respective regression coefficients of *channel readiness for customer adoption of Internet banking* (ChR) on *customer attitude towards Internet banking adoption* (CAT) in the Scotland and Nigeria data sets were positive and significant at the 0.001 level. The results therefore uphold the fourth hypothesis of this study (H4) that “*perceived web-channel readiness has a positive impact on customer attitude towards Internet banking adoption*”.

Lastly, the regression of *customer attitude towards Internet banking adoption* (CAT) to *customer adoption intention towards Internet banking* (CAI) also produced positive regression weights of approximately 0.40 for the Scotland and Nigeria sample respectively, both of which were significant at 0.05 level. These regression coefficients support the fifth hypothesis of the study (H5) across both samples and therefore uphold that “*a potential customer’s attitude towards Internet banking adoption is positively related to his/her intention to adopt or not adopt it*”.

In a nutshell, since all the five hypotheses of the study were supported by the structural path coefficients in the final SEM analysis, it was concluded that the hypothesised causal relationships in the final model were upheld as far as the two national data sets used in the study were concerned. That is, that the *perceived readiness* of a bank’s web-channel for customers to adopt its Internet banking services (ChR) and the customer’s own *readiness* for Internet banking adoption (CuR) both directly affect each other and also directly affect the customer’s *attitude* towards the adoption of Internet banking (CAT), which in turn directly affects his or her *intention* to adopt or not adopt Internet banking (CAI).

Moreover, apart from the fact that all the regression weights in the final analysis supported all the hypothesised causal relationships in the study, the above conclusion was lent more credence by the fact that the total variances explained by the four constructs in the final model were all significant (see table 8.26 below). Total Variance Explained (TVE) indicates by how much (in %) the departure from the *mean* responses is explained by each of the constructs extracted in factor analysis. It shows the percentage of variance in the original variables explained by each extracted component/construct (Colman and Pulford, 2006:p148). All the four

8.7. Segmentation of the non-user respondents into different non-IB-adopter categories:

In this section, these respondents were assessed for the four constructs in the model of the present study (*customer readiness, perceived channel readiness, customer adoption attitude and customer adoption intention*) recorded TVEs of approximately 60% or above) across both sample groups. This is an indication of the considerable effectiveness of the model scales in describing the phenomenon that *customer readiness* and *perceived channel readiness* for IB adoption are responsible for customers' attitudes and intentions towards IB adoption in both countries.

**Total Variances Explained (TVE) by the four constructs in the final SEM model:**

Constructs in the final model	Scotland	Nigeria
Customer Readiness for Internet banking adoption (CuR construct)	58%	61%
Perceived Channel Readiness for IB adoption (ChR construct)	69%	71%
Customer Adoption Attitude to Internet banking (CAT construct)	60%	60%
Customer Adoption Intention towards Internet banking (CAI construct)	65%	71%

Table 8.26: Total variances explained by the four constructs in the final SEM model for the two data sets.

Based on the foregoing, the final research model was adjudged to have performed satisfactorily across the two groups “in explaining the data and representing the relationships between the variables” (Cheng et al., 2006:p1566). The results also provided a full support for the extension of Davis’ (1989; 1995) Technology Acceptance Model (TAM) in the present study by confirming that *perceived ease of use* and *perceived usefulness*, together with *perceived convenience*, are indeed the *perceived channel readiness* factors that influence customers’ *attitudes* to Internet technology acceptance in the banking context.



### 8.7. Segmentation of the non-user respondents into different non-IB-adopter categories:

In this section, those respondents who answered “No” to the question regarding whether they use Internet banking (q14) were further classified into four categories of non-adopters of IB based on their levels of non-adoption, which was determined by their responses to another question about their general *intention* to adopt Internet banking any time soon (q24a). A *cross-tab analysis* was performed in SPSS between q14 (IB users and non-users) and q24a (general *intention* to adopt IB any time soon). Four categories of time-based *intention-likelihoods* emerged from the cross-tabulation, thereby enabling a classification of the non-user respondents into these four categories, based on how soon or not soon they intended to adopt Internet banking. Table 8.27 below shows the results of the cross tabulation analysis, with the various levels of *intention-likelihood* expressed by the non-user respondents across the two sample groups.

#### Response frequencies of the non-user respondents’ *intention* to adopt Internet banking any time soon:

None-users’ <i>intention</i> to adopt IB any time soon:		Count	%
Scotland	Very Likely	30	24
	Likely	63	52
	Neither Likely Nor Unlikely	21	17
	Unlikely	7	6
	Very Unlikely	1	1
	<b>Total</b>	<b>122</b>	<b>100</b>
Nigeria	Very Likely	24	18
	Likely	90	68
	Neither Likely Nor Unlikely	15	11
	Unlikely	4	3
	Very Unlikely	0	0
	<b>Total</b>	<b>133</b>	<b>100</b>

Table 8.27: Frequencies of the likelihood of non-users’ *intention* to adopt IB any time soon.

Using the frequencies of the non-users and the various levels of *intention-likelihood* they expressed, the four non-adopter categories were labelled as: *Imminent Adoption Intenders*, *Future Adoption Intenders*, *Fence Sitters*, and *Non-Intenders*, as shown in figures 8.17 and 8.18 below. This categorisation was justified by the time-differential between the various levels of *intention-likelihood* implied in the respondents' answers to question 24a. The first category of non-user respondents who indicated that they were "very likely" to adopt IB anytime soon was classified as the *Imminent Adoption Intenders* because they were the closest in time to performing the adoption behaviour among all the non-users. Of the 122 non-users in the Scotland sample, 30 were in this category. 24 out of the 133 non-users in the Nigeria sample were also in this first category.

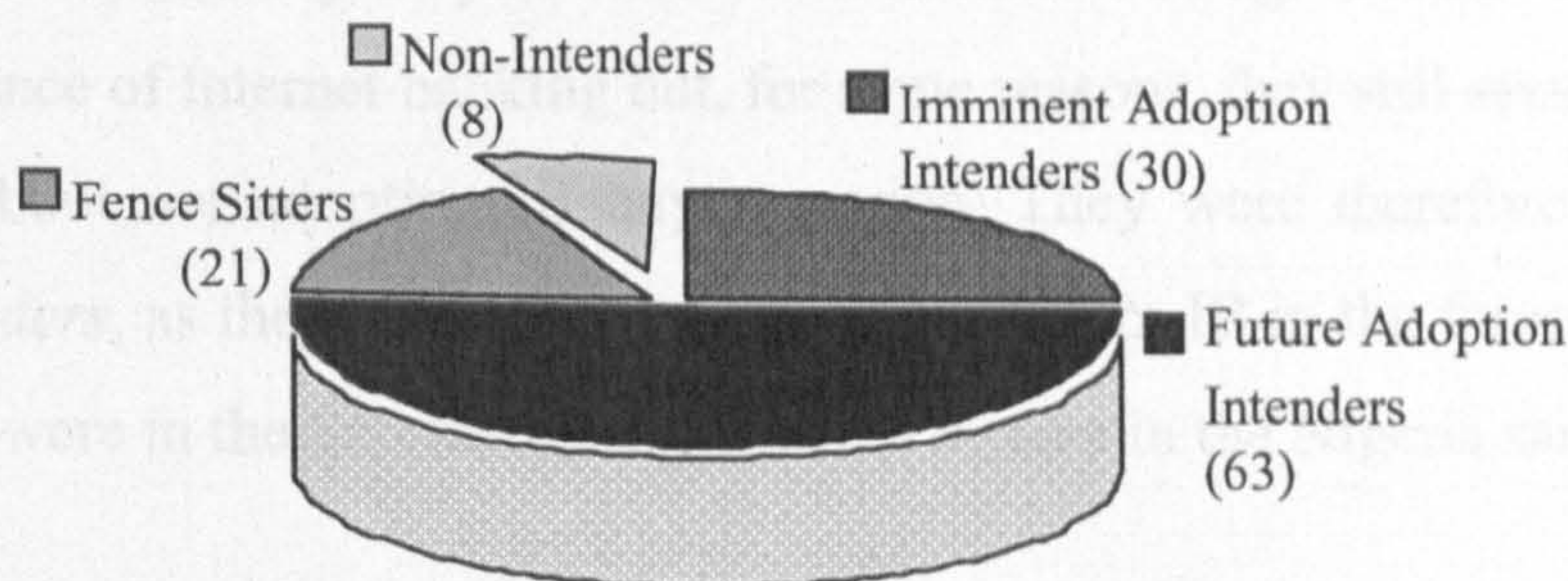


Fig. 8.17: Non-IB-user categories in the **Scotland** sample based on their *intentions* towards IB adoption.

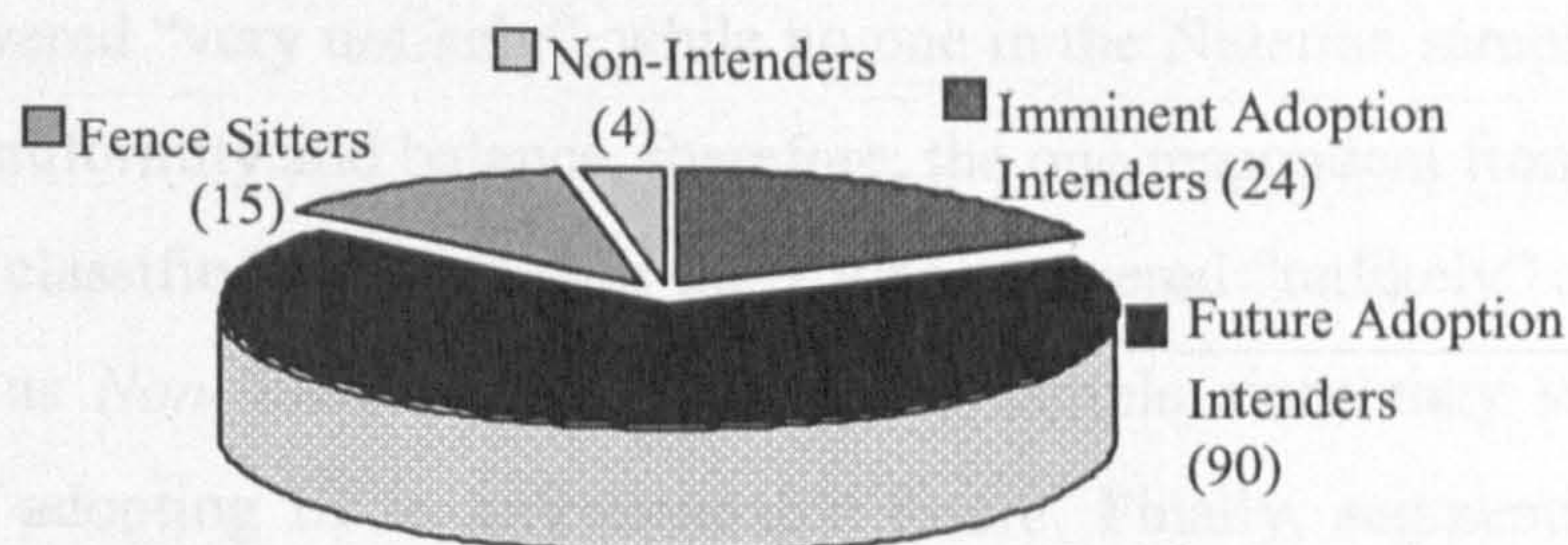


Fig. 8.18: Non-IB-user categories in the **Nigeria** sample based on their *intentions* towards IB adoption.

The second category consisted of those who answered that they were “likely” to adopt IB any time soon. By implication of their answer, they were likely to adopt IB sooner than others but not as soon as the first category. Hence, they were classified as the *Future Adoption Intenders*. Majority of the non-user respondents in the study fell into this group. 63 from the Scotland sample and 90 from the Nigeria sample fell into this second group. The third group comprised the indecisive non-users. By implication of their response (“Neither Likely nor Unlikely”), they could not make up their minds as to whether they would adopt IB any time soon or not. Consequently, they were dubbed the *Fence Sitters*. 21 of them were in the Scotland sample, while 15 were in the Nigeria sample.

The fourth category consisted of those respondents who said that it was “unlikely” that they would adopt IB any time soon. From their answers to other questions in the survey they seemed to understand and agree with the importance and relevance of Internet banking but, for some reasons, they still seemed to remain resolute about not adopting IB anytime soon. They were therefore classified as *Non-Intenders*, as they indicated no intention to adopt IB in the foreseeable future. 7 of them were in the Scotland sample, while 4 were in the Nigeria sample.

The fifth choice of intention-likelihood was “very unlikely”. This response was for those whose *intention-likelihood* for IB adoption was most remote and most unlikely compared to the rest. However, only one respondent in the Scotland sample answered “very unlikely”, while no one in the Nigerian sample did. For the purpose of uniformity and balance, therefore, the one respondent from the Scotland sample was classified together with the 7 who answered “unlikely” and all 8 were categorised as *Non-Intenders* in the Scotland sample since they simply had no intention of adopting IB in any estimable future. Finally, segmenting the above non-adopter categories was essential in order to determine if their *attitudes* and

*intentions* towards IB adoption correlated with their perceptions of the importance of the customer and channel *readiness* variables for Internet banking adoption. (See section 9.5 on page 328).

### **8.8. Summary:**

In the foregoing chapter, a summarised report of the data collection exercise was first presented, followed by a synopsis of the response rates and descriptive analysis of the respondents' characteristics in both national locations of the study. Subsequently, data from the field surveys in the two locations were presented and analysed. Various multivariate statistical techniques were employed in the data analysis, including exploratory factor analysis (EFA) using SPSS 16; confirmatory factor analysis (CFA) of the measurement and structural paths in the hypothesised study model between the Scotland and Nigeria sample groups using AMOS 16; and analyses of the *covariance structure* and *latent mean structure* of the final SEM model across the two groups also using AMOS 16.

After several re-specifications, constraints, and testings, the final version of the SEM model was validated as having a good fit to the research data and adequately representing the hypothesised causal relationships among the observed and latent variables in the study model. Lastly, the research hypotheses were evaluated with standardised coefficients that resulted from the regression of the structural paths in the final model between the two sample groups. All the regression coefficients were positive and significant at 0.001 and 0.05 levels in both groups, thereby upholding all the five hypotheses of the study. The final invariant SEM model, being an extension of the Technology Acceptance Model (TAM), was therefore fully validated.

## **CHAPTER 9:**

### **AGGREGATE DISCUSSION ON THE INTERPRETATIONS AND IMPLICATIONS OF THE RESEARCH RESULTS:**

#### **9.1 Introduction:**

The preceding chapter presented the computations and interpretations of the various multivariate analyses undertaken with the primary data collected in this study. The analyses were used in validating the research model and in testing the causal relationships hypothesised in the study. In the current chapter, the interpretations of the analysis results are compared and the implications of the overall research findings on financial services marketing in Scotland and Nigeria are also examined and compared, with particular focus on how they might improve retail customer adoption of Internet banking in both countries.

#### **9.2 Cross-group comparison of the hypotheses test results from *covariance structure* and *latent mean structure* analyses:**

As a re-confirmation of the validity of the hypotheses test results, a summary of the standardised regression weights from the two-group SEM *covariance structure* analysis (figures 8.9 and 8.10 on pages 282 and 283) and the two-group SEM *latent mean structure* analysis (figures 8.15 and 8.16 on page 309) was compiled in table 9.1 below for comparison across the two sample groups. As is evident in the table, all five hypotheses were supported in both methods. The directionality of all the hypotheses was also supported, given that none of the causal path regressions produced a negative coefficient. Hence, all the hypothesised relationships in the study were validated as direct, positive, and significant in both the Scotland and Nigeria sample groups.

**Comparison of the hypotheses test results from *Covariance Structure Analysis* and *Latent Mean Structure Analysis* across the two sample groups:**

Hypotheses	Covariance structure regression coefficients		Latent mean structure regression coefficients	
	Scotland	Nigeria	Scotland	Nigeria
<b>H1:</b> A potential customer's readiness for Internet banking (IB) adoption has a positive impact on his/her attitude towards adopting it. (CuR $\leftrightarrow$ CAT)	0.68	0.51	0.60	0.58
<b>H2:</b> A potential customer's readiness for Internet banking adoption impacts positively on his/her perception of the web-channel's readiness (CuR $\leftrightarrow$ ChR)	0.35	0.43	0.38	0.40
<b>H3:</b> As the flip side of H2, perceived web-channel readiness (i.e., the potential customer's perception of the web-channel's readiness) for IB adoption also has a positive impact on the customer's readiness to adopt IB. (ChR $\leftrightarrow$ CuR)	0.35	0.43	0.38	0.40
<b>H4:</b> Perceived web-channel readiness has a positive impact on the potential customer's attitude towards Internet banking adoption. (ChR $\leftrightarrow$ CAT)	0.49	0.63	0.56	0.58
<b>H5:</b> A potential customer's attitude towards Internet banking adoption is positively related to his/her intention to adopt or not adopt it. (CAT $\leftrightarrow$ CAI)	0.41	0.26	0.35	0.37

Table 9.1: Comparison of the hypotheses test results (regression coefficients) from the *covariance structure analysis* and *latent mean structure analysis* between the Scotland and Nigeria groups.

However, the test results in *covariance structure analysis* for hypothesis 5 indicated that the hypothesis was far less supported in the Nigerian sample (0.26) than the Scotland sample (0.41). This suggests that the respondents' perception of the effect of *customer attitude* on the *intention* to adopt IB was weaker in the Nigeria sample than the Scotland sample. In contrast, the *latent mean structure* test results showed that the level of effect was fairly similar across the two sample groups. However, the more important consideration is that all the hypotheses,

including H5, were positively supported in both analytical methods across both sample groups, as evidenced by their significant and positive coefficients which were either approximately 0.3 or above.

In addition, the comparison presented in the table above also shows that, across both analytical methods, the impact of the cause and effect relationship represented by each hypothesis was perceived and evaluated somewhat similarly between the two sample groups. The only radical difference was the relative weakness of hypothesis 5 in the *covariance structure* analysis for the Nigeria sample which did not manifest in the *latent mean structure* analysis. In summary, however, it was concluded that all five hypotheses of the present study were strongly supported by all the regression path coefficients from the two analytical methods across the two sample groups.

### **9.3 Cross-group comparison of the ability of the *readiness* constructs to predict customer *attitude* and *intention* towards Internet banking adoption:**

Using the standardised estimates of the *latent mean structure analysis*, the study examined at this point the ability of the two exogenous (predictor) constructs (*customer readiness* and *perceived channel readiness*) to collectively explain and predict the endogenous (dependent) constructs (*customer adoption attitude* and *customer adoption intention*). In line with Hair et al. (2006:p796), a computation of the *squared multiple correlations* (SMC) of the two dependent constructs (*customer attitude* and *customer intention*) in the latent mean structure analysis yielded the ability of the two *exogenous* constructs (*customer readiness* and *perceived channel readiness*) to directly predict *customer attitude* and then indirectly predict *customer adoption intention* through the *attitude* construct.

SMC estimates indicating the predictability of the *customer attitude* and *customer intention* constructs:

The 2 endogenous constructs and all indicator variables in the final model	SMC values	
	Scotland	Nigeria
Customer Attitude to IB adoption (CAT)	0.936	0.937
Customer Adoption Intention (CAI)	0.165	0.134
q22b - Perceived Ease of Use (ChR 1)	0.367	0.445
q22d - Perceived Usefulness (ChR2)	0.710	0.676
q22e - Perceived Convenience (ChR3)	0.615	0.668
q21e - Access to Computer & the Internet (CuR1)	0.237	0.296
q21f - Awareness of IB, its benefits and advantages (CuR2)	0.557	0.636
q21g - Prior banking-technology Involvement (CuR3)	0.382	0.435
q23b - General belief about the relevance of IB (CAT1)	0.109	0.139
q23c - General feeling about the IB adoption idea (CAT2)	0.208	0.242
q24a - General intention to adopt IB soon (CAI1)	0.106	0.180
q24b - Intention to use IB in the next transaction (CAI2)	0.982	0.978

Table 9.2: Results of the squared multiple correlation (SMC) estimates from *latent mean structure analysis*, indicating the ability of the *readiness* constructs to predict *customer attitude* and *intention* towards IB adoption.

Table 9.2 above shows the results of the SMC computation for the two dependent constructs in the study. In general, a similar pattern of predictability seems evident between the Scotland and Nigeria sample groups for the *customer attitude* construct, but not the *customer intention* construct. Varied ability of the latent constructs to predict the variances associated with their indicator variables is also evident in the table above. The predictability of *customer attitude* and *customer intention* towards IB adoption by various factors is supported in the literature by studies conducted in the USA (Kolodinsky et al., 2004), Finland (Karjaluoto et al., 2002:p266), South Korea (Suh and Han, 2002:p.251), China (Laforet and Li, 2005:p375) and Taiwan (Wang et al., 2005:p.512).



While 94% of the variance associated with *customer attitude* to Internet banking adoption (CAT) is explained by its two predictor-constructs (*customer readiness* and *perceived channel readiness*), not more than 17% of the variance associated with *customer intention* (CAI) is explained by *customer attitude* (CAT) in either sample. The SMC results therefore confirmed that while the two *readiness* constructs displayed very large ability to directly predict the *attitude* of potential customers towards IB adoption, they were unable to indirectly predict customers' *adoption intention* (via their attitudes) to a substantial extent as anticipated since *attitude* alone could only account for 17% and 13% of the variances associated with *intention* in the Scotland and Nigeria sample groups respectively.

Looking at the two endogenous (dependent) constructs internally, *customer adoption attitude* (CAT construct) explains 11% and 21% of the variances of its two indicator variables respectively in the Scotland sample, while also explaining 14% and 24% of the variances of its indicator variables in the Nigeria sample. On the other hand, the *customer intention* construct (CAI) accounts for 11% and 98% of the variances associated with its two indicator variables in the Scotland sample as well as 18% and 98% of the variables in the Nigeria group. For the two exogenous constructs, the *perceived channel readiness* construct (ChR) explains 37%, 71% and 62% of the variances of its three indicator variables in the Scotland group and also 45%, 68% and 67% of the variances of its three indicators in the Nigeria sample. In addition, the *customer readiness* construct (CuR) also accounts for 24%, 56% and 38% of its three indicator variables in the Scotland group and 30%, 64% and 44% of the same variables in the Nigeria group.

By way of comparative implications, while the level of predictability of *customer attitude* by the *customer readiness* and *perceived channel readiness* constructs was the same in the two sample groups, the predictability of *customer*

*intention by customer attitude* was better in the Scotland group than the Nigeria group. In contrast, the general ability of the four latent constructs to explain the variances of the indicator variables that measure them was much better in the Nigerian group than the Scotland group.

However, the indirect prediction of CAI by the two *readiness* constructs via CAT (i.e., the sole prediction of the variance of CAI by CAT) did not yield the level of significance expected, even though the effect was positive. The implication is therefore that a direct causal path should have been plotted in the research model from either or both of the two *exogenous* constructs (CuR and ChR) to the *customer intention* construct (CAI) so that they might also predict *intention* directly rather than through *attitude* (see Suh and Han, 2002:p.259; Luarn and Lin, 2005:p.879).

Consequently, the above result seems to query the use of *attitude* as a single predictor of *intention* in the present research model. *Attitude* was adopted as a direct predictor of *intention* in line with Suh and Han (2002:p250) and Cheng et al. (2006:p1560), both of which were based on the TAM framework, but unlike the above studies the present study did not hypothesise a direct causal link between the two *readiness* constructs and the *intention* construct. Although the TAM model does not suggest that other constructs also predict *intention* apart from an individual's perception of *ease of use* and *usefulness* (both of which are the sole antecedents of *attitude* in the model), other models such as the TRA and TPB seem to suggest that *attitude* alone cannot fully predict *intention*.

For instance, even when Ajzen (2005:p30) opined that *attitude* and *intention* were the two main antecedents of *behaviour*, two different predictor-constructs (*attitude* and *subjective norm*) were included in the TRA model as

jointly predicting an individual's *intention* towards behaviour. The TPB presents three distinct constructs (*attitude*, *subjective norm*, and *perceived behavioural control*) as jointly predicting *intention* (Ajzen and Fishbein, 1980; 2005). Borrowing the words of King and Gribbins (2002) therefore, the weak "explanation power" of *attitude* as a single predictor of *intention* in the present study might have accounted for the low SMC values for *customer adoption intention* (CAI). Subsequent conducts of this research will further examine and redress this conceptual shortfall.

#### **9.4 Cross-group comparison of users' and non-users' perceptions of the importance of the customer and channel readiness dimensions for IB adoption:**

In further support of the effects of the two exogenous constructs in the study (*customer readiness* and *perceived channel readiness*) on customer adoption of Internet banking, *t-test* was performed in SPSS 16 in order to compare the *mean scores* of all the *readiness* dimensions for potential differences in how user and non-user respondents in both countries perceived their importance. The *mean scores* of their importance-perceptions are presented in table 9.3 below, while details of the *F-* and *t-* test results of their respective *mean differences* are presented in appendix 18. The *mean score* scale was 1 to 5 reversed, such that the higher the score, the lower the perception of importance and the lower the score, the higher the perception of importance.

Results from the *mean* comparison test indicated that, overall, there were no great differences between the two sample groups in the *means* of users' and non-users' perceptions of the importance of the various *readiness* dimensions. The *means* of the *customer readiness* dimensions were fairly similar between users and

non-users in both sample groups. Likewise, the means of the *perceived channel readiness* dimensions were fairly similar for both users and non-users across both sample groups. However, the only significant difference was the *mean difference* between users' and non-users' perceptions of the importance of the *awareness* dimension in the Scotland group (see footnotes under table 9.3 below). IB users among the Scotland respondents perceived *involvement* as the most important *customer readiness* dimension for IB adoption, while non-users regarded *awareness* as the most important.

**Mean score results of IB users' and non-users' perceptions of the importance of the customer and channel readiness dimensions for IB adoption:**

Readiness Dimensions	Scotland		Nigeria	
	Users n = 371	Non-users n = 122	Users n = 184	Non-users n = 133
	Mean	Mean	Mean	Mean
<b>A. Customer Readiness:</b>				
■ Access #	2.38	2.25	2.00	1.88
■ Awareness #, *, a	2.24 <sup>a</sup>	1.98	1.72	1.54
■ Involvement #	2.05	2.08	1.90	1.77
<b>B. Channel Readiness:</b>				
■ Ease of use #	1.40	1.39	1.36	1.39
■ Usefulness #	1.47	1.46	1.36	1.44
■ Convenience #	1.46	1.46	1.33	1.38

Table 9.3: Mean comparison results of users' and non-users' perceptions of the importance of customer and channel readiness for IB adoption.

**FOOTNOTE:**

- # The mean scores are reversed (on a scale of 1 – 5, with 1 being the highest and 5 being the lowest), such that the higher the mean score, the lower the importance perception and vice versa.
- \* The mean difference is significant at the 0.05 level based on F-test.
- a The mean difference between users' and non-users' perception of the importance of *awareness* for IB adoption is significant at the 0.05 level in the Scotland group (sig. = 0.007; t = 2.906 if equal variances are assumed and 3.026 if not assumed; 2-tailed sig. = 0.003) NB: See appendix 18 for F- and t- test result details.

In contrast, both user and non-user respondents in the Nigeria sample perceived *awareness* as the most important *customer readiness* dimension, thereby confirming that *awareness* is the most crucial antecedent of customer readiness for Internet banking adoption. Pikkarainen et al. (2004:p231) also found that creating *awareness* through *adequate information* was key for wooing banking customers to adopt Internet banking in Finland. Non-users in the Scotland sample group as well as users and non-users in the Nigeria sample also perceived *involvement* as the next most important *customer readiness* dimension for IB adoption. This also confirms that *involvement* is the second most crucial antecedent of customer readiness for IB adoption. The importance of *customer involvement*, especially in terms of the intensity and length of prior banking technology usage, is also highlighted in the literature (Lassar et al., 2005:p.185).

With regards to *perceived channel readiness*, the importance of each of the three dimensions (*ease of use*, *usefulness*, and *convenience*) was perceived similarly by both user and non-user respondents in the Scotland sample. *Ease of use* was regarded as the most important *perceived channel readiness* dimension by the Scotland group, while *usefulness* and *convenience* were equally ranked second by both categories. In contrast, both users and non-users in the Nigeria group perceived *convenience* as the most important *perceived channel readiness* dimension. IB users in the Nigeria group ranked *ease of use* and *usefulness* exactly equally in second position, while the non-users ranked *ease of use* slightly ahead of *usefulness*. The importance of *ease of use* and *usefulness* as channel attributes that influence IB usage adoption was also well supported in a study of IB acceptance in Estonia conducted by Eriksson et al. (2005:p.211). Additionally, the importance of *convenience orientation* in electronic banking channel usage was supported in Thornton and White's (2001:p.179) study of banking channel preferences by Australian customers.

For F- and t- test results (see details in appendix 18), the decision rule is that the lower the *sig. value* less than 0.05, the more significant the difference between the *means* of the user and non-user groups is. Conversely, the higher the *sig. value* more than 0.05, the less significant the *mean* difference between the two groups is (Pallant, 2007:p235). As indicated in the footnote under table 9.3, the *sig. value* for the *awareness* dimension of *customer readiness* in the Scotland group (0.007) fell below the 0.05 cut-off point and therefore indicated that a significant mean difference existed between the importance perceptions of users and non-users in the group for this variable. However, there was no significant variation in the *means* of users' and non-users' perceptions of all the other *readiness* dimensions in the group at 95% confidence level, and so equality of variance between users and non-users was assumed.

By extension, the above outcome also meant that only the perception of *awareness* in the Scotland group differentiated users' and non-users' perceptions between the Scotland and Nigeria groups. There was no significant *mean variation* between the users' and non-users' importance-perceptions for any of the *readiness* variables in the Nigerian group and so equality of variance was also assumed between the two groups in the Nigeria sample at 95% confidence level. The overall inference therefore is that users and non-users of Internet banking in Scotland and Nigeria perceive the importance of *customer readiness* for IB adoption slightly differently, but perceive that of *channel readiness* in a more similar way.

In summary, the importance of all the *customer* and *channel readiness* dimensions was perceived quite highly across both user and non-user categories in both sample groups. Both users and non-users in the two countries perceived

*channel readiness* as a more important affecter of *customer attitude* to IB adoption than *customer readiness*, given that none of the *perceived channel readiness* dimensions recorded a *mean* above 1.47 across both samples.

### **9.5 Cross-group comparison of the four non-IB-adopter categories identified in the study on their perceptions of the customer and channel readiness dimensions:**

Section 9.4 looked at how Internet banking users and non-users in both sample groups perceived the importance of *customer readiness* and *perceived channel readiness* dimensions. In this section, the perception of the importance of the same *readiness* dimensions by the *four non-adopter categories* classified in the study was also examined. The *mean scores* of the non-adopter categories were computed using one-way ANOVA. The objective in this case was to see if their importance perceptions had influenced their *attitudes* and *intentions* towards IB adoption in any way and also to compare the *means* and *F-values* between the two countries.

Table 9.4 below shows the *mean scores* of the four non-user categories for their importance perception of each *readiness* dimension across the two sample groups, while details of the *F-statistics* results of the *mean variances* between the four categories are presented in appendix 19. As with the first *mean score* results in table 9.3, the scale of the *mean scores* in table 9.4 was also 1 to 5 reversed, such that the higher the score, the lower the importance-perception and the lower the score, the higher the importance-perception.

**One-way ANOVA: Mean comparison of the perceptions of the four non-IB-user categories on the importance of *customer* and *channel readiness* for IB adoption:**

	Scotland			
	Imminent Adoption Intenders n = 30	Future Adoption Intenders n = 63	Fence Sitters n = 21	Non-intenders n = 8
Readiness Dimensions	Mean	Mean	Mean	Mean
<b>A. Customer Readiness:</b>				
■ Access #	2.37	2.19	2.32	2.62
■ Awareness #, *, a	2.21	1.91	2.08	2.62 <sup>a</sup>
■ Involvement #, *, a	2.02	2.12	2.08	2.85 <sup>a</sup>
<b>B. Channel Readiness:</b>				
■ Ease of use #	1.41	1.33	1.36	1.38
■ Usefulness #	1.48	1.43	1.40	1.54
■ Convenience #	1.46	1.40	1.56	1.54
	Nigeria			
	Imminent Adoption Intenders n = 24	Future Adoption Intenders n = 90	Fence Sitters n = 15	Non-intenders n = 4
Readiness Dimensions	Mean	Mean	Mean	Mean
<b>A. Customer Readiness:</b>				
■ Access #	1.95	1.99	1.61	2.60
■ Awareness #	1.68	1.60	1.44	1.60
■ Involvement #	1.87	1.76	1.83	2.40
<b>B. Channel Readiness:</b>				
■ Ease of use #	1.34	1.43	1.33	1.80
■ Usefulness #	1.37	1.45	1.33	1.80
■ Convenience #	1.34	1.33	1.61	1.40

Table 9.4: One-way ANOVA: Mean comparison results of the importance perceptions of customer and channel readiness by the four non-adopter categories.

**FOOTNOTE:**

- # The mean scores are reversed (on a scale of 1 – 5, with 1 being the highest and 5 being the lowest), such that the higher the mean score, the lower the importance perception and vice versa.
- \* The mean difference is significant at the 0.05 level based on F-test.
- a The mean differences between the 4 non-user categories in the Scotland group are significant at the 0.05 level for their importance-perceptions of the *awareness* and *prior involvement* dimensions of *customer readiness* for IB adoption (For *awareness*, between groups Sig. = 0.010 and F = 2.990. For *involvement*, between groups Sig. = 0.007 and F = 3.537) NB: See appendix 19 for F-statistics result details.



As with the results in table 9.3 also, there were no huge differences across the two sample groups regarding the *mean scores* of the four non-user categories for each group of *readiness* dimensions. In general, the three *perceived channel readiness* dimensions received higher importance-perceptions (lower *mean scores*) than the *customer readiness* dimensions in both sample groups. This outcome generally seems to suggest that the non-user respondents in both groups felt that it was more important for banks to ensure the readiness of their web-channels for IB adoption than the concern about the individual customer's readiness to adopt IB.

All members of the four non-user categories in the Scotland group perceived *channel readiness* as very important for IB adoption, given that all their *mean scores* for *perceived channel readiness* were below 1.6 on the scale. However, expectedly, the *Non-intenders* recorded the highest sets of *mean scores* (i.e., lowest importance-perceptions) for all the *readiness* dimensions across the two groups. They had the lowest importance-perception for *customer readiness* in the Scotland group. Almost the same pattern was repeated for the *perceived channel readiness* dimensions in the same group except for *ease of use*, for which *Non-intenders* had a slightly lower *mean* (i.e., higher importance-perception) than *Imminent Adoption Intenders*.

Compared with those in the Scotland group, non-adopters in the Nigeria sample exhibited a slightly higher importance-perception of *customer readiness* across all four categories than their Scotland counterparts. The implication of this finding is that while non-IB-users in both sample groups generally regarded *customer readiness* for IB adoption as important (all the *means* being below 2.90), non-users in the Nigerian sample rated *customer readiness* for IB adoption higher than those in the Scotland group.

For *perceived channel readiness*, non-users in both sample groups exhibited almost an equal level of importance-perception. While the means for *Imminent Adoption Intenders* and *Fence Sitters* in the Nigeria sample were slightly lower (i.e., higher importance-perception) for all three *perceived channel readiness* dimensions than those of their Scotland counterparts, the perception means for *Non-intenders* in the Nigerian sample were generally higher (i.e., lower importance-perception) than those of *Non-intenders* in Scotland. A fairly equal level of importance-perception was recorded by *Future Adoption Intenders* in both groups for all three *channel readiness* dimensions. One could therefore conclude that non-IB-users in both countries perceived the importance of *channel readiness* for IB adoption at fairly the same level, which was considerably high in the present study. The implication of the above analysis is that even though the four non-user categories in the two countries had expressed varying levels of *adoption intention*, they all conceded that all the *customer readiness* and *perceived channel readiness* dimensions were very important for IB adoption.

As indicated in the footnote under table 9.8 regarding the *F-test* result (see details in appendix 19), the only significant differences in the *means* of the importance-perceptions of the four non-adopter categories were with regards to the *awareness* and *involvement* dimensions of *customer readiness* in the Scotland group. With *sig. values* for the two variables being lower than 0.05 in the Scotland group, it was found that a significant *mean variation* existed among the four non-user categories in the group regarding their perceptions of the importance of *awareness* and *involvement* for IB adoption. For this reason, equality of variances could not be assumed among the four categories in the Scotland group for the two variables. This variation in the importance-perception of the four non-user

categories in Scotland also implied a difference between Scotland and Nigeria on the perceptions of the two *customer readiness* dimensions by the four non-adopter categories.

However, there was no significant variation in the importance-perceptions of *channel readiness* by the non-adopters in the two groups. The *sig. values* for the *perceived channel readiness* dimensions in the Scotland group as well as those for all the *customer readiness* and *perceived channel readiness* dimensions in the Nigeria group were above the 0.05 cut-off point. There was therefore not a significant variation in the *mean* importance-perception scores for the four non-user categories in Scotland with regards to the *perceived channel readiness*, and also in Nigeria with regards to both *customer readiness* and *perceived channel readiness* at 95% confidence level. Equality of variances was therefore assumed for the perception of *channel readiness* by the four non-user categories in the Scotland sample and also for the perception of both *customer readiness* and *perceived channel readiness* in the Nigeria sample.

In summary, while the findings of the present study indicated high importance-perceptions for all the *customer readiness* and *perceived channel readiness* dimensions by all four non-IB-adopter categories in the two sample groups, slight variations were observed between the two groups on their rankings of the three *perceived channel readiness* dimensions as well as the dimension they considered the single most important. In both sample groups the three *customer readiness* dimensions were similarly ranked as *awareness* 1<sup>st</sup>, *involvement* 2<sup>nd</sup> and *access* 3<sup>rd</sup>, while the rankings differed between the two groups with regards to *perceived channel readiness*. While non-users in the Scotland group ranked *ease of use* as 1<sup>st</sup>, *convenience* as 2<sup>nd</sup> and *usefulness* as 3<sup>rd</sup>, those in the Nigeria group ranked *convenience* as 1<sup>st</sup>, *ease of use* as 2<sup>nd</sup>, and *usefulness* as 3<sup>rd</sup>.

Lastly, the above findings imply that while non-IB-adopters in Scotland would see *ease of use* as the most important channel consideration before making adoption decision, those in Nigeria would consider *convenience* as the most important channel reason for adoption. The above results also indicated that the non-adoption of Internet banking among these categories of respondents was not as a result of their lack (or low perception) of the importance of the *readiness* factors for IB adoption. In addition, the fact that they were non-IB-adopters did not becloud their perception of the importance of the *readiness* variables.

#### **9.6 Reflection on the effects of potential covariates:**

In the conceptual design of the present study, it was suggested that *communication policy* and *availability of requisite infrastructure* were the *environmental factors* likely to act as potential covariates that can also affect the variation in retail customers' attitudes and ability to adopt of Internet banking in the two study locations. By influencing the scope and cost of public communications and Internet connection, *Communication Policy* can affect the ability of potential online customers to acquire the telecommunication and Internet facilities necessary for engaging in electronic business transactions. *Communication policy* was therefore directly related to the issue of the *availability of requisite infrastructure*.

*Requisite Infrastructure* was defined to include essential facilities such as electricity, digital telephony, personal computers and Internet connection. It was noted that the availability or inadequacy of these facilities could have an impact on potential customers' ability and readiness to adopt Internet banking. For instance,

infrastructural factors such as ownership of *personal computers* and *Internet connection* was found to have greatly influenced Internet banking adoption in China (Laforet and Li, 2005:p369).

However, both *communications policy* and *availability of infrastructure* were subsumed into the indicator variable called *access to computer and the Internet* (see subsection 5.2.1.5 on page 97) due to the fact that the two environmental factors are interrelated and would commonly affect customers' *access* to the IB channel. Hence, it was assumed that the covariate effects of these environmental factors could be collectively captured by the same *access* variable, which has been recognised in the literature as a key necessity for enabling potential customers to use both computer and the Internet for Internet banking purposes (Hamilton and Hewer, 2000).

As a dimension of *customer readiness* in the present study, the *access* variable was validated as positively and significantly related to *customer attitude* to Internet banking adoption. It was therefore concluded that while the full effects of the covariates were not explored individually in the present research, their overall collective influence was accounted for in the study. However, it would still be of interest to investigate the effects of these *environmental factors* separately in future studies.

## 9.7 Summary:

In the foregoing chapter, interpretations of the overall results of the various data analyses in the study were examined and their implications on bank marketing in Scotland and Nigeria were discussed. The chapter started by examining how each of the *customer readiness* and *perceived channel readiness* dimensions contributed to explaining the two readiness concepts. This was followed by a look at how each of the *attitude* and *intention* indicator-dimensions also contributed to these two constructs.

Subsequently, the extent to which the hypothesised causal relationships in the study were supported by the results of the *covariance* and *latent mean structure* analyses was examined and compared. The chapter also examined the ability of the two *readiness* constructs to directly predict *customer attitude* and indirectly predict *customer intention* via *attitude*. The predictability of *customer attitude* by the *readiness* constructs was highly supported but the predictability of *customer intention* by *customer attitude* was not well supported.

Finally, the chapter concluded by exploring and comparing the research respondents' perceptions of the importance of the *readiness* dimensions for IB adoption in the two sample groups. The perceptions of user and non-user groups as well as those of the four non-user categories classified in the study were compared, with regards to the importance they attached to the *readiness* variables as influencers of Internet banking adoption in the two countries. Implications of these perceptions for bank marketing were also presented in the chapter.

## **CHAPTER 10:**

### **CONCLUSION AND RECOMENDATIONS:**

#### **10.1 Introduction:**

Quite a number of studies on Internet banking adoption have been conducted within individual national contexts, but no known cross-national comparative study has been conducted between developed and developing countries in the area of retail customer adoption of Internet banking. While various factors have been argued as determinants of IB adoption in various parts of the world, many of them have been counteracted in other parts. Consequently, even in the face of continued customer resistance to Internet banking adoption (Kuisma et al., 2007), there has still not been any consensus over a set of factors that might be regarded as possible *universal determinants* of retail customer adoption of Internet banking.

This is a conspicuous gap, judging by the fact that some authors had predicted a “near-universal adoption” of Internet banking before 2011 (Barwise, 1997; Li, 2001; Bradley and Stewart, 2003; Illet, 2005). This study therefore set out to contribute towards bridging this gap by cross-nationally investigating a model of several variables isolated from studies from various parts of the world and pulled together into a model of potential universal antecedents of retail customer adoption of Internet banking.

By investigating these variables between a developed country (Scotland) and a developing country (Nigeria), the study assumed that a successful cross-national validation of the model would enable a proposition of the variables as the

*universal determinants* of retail customer adoption of Internet banking. Findings from the study have been reported, analysed and discussed in the last two preceding chapters. Of the 8 *customer readiness* variables originally hypothesised in the model, 3 were validated including *access* (to computer and the Internet), *awareness* (of IB services, benefits and advantages) and *prior involvement* (in banking technology in general). Likewise, out of the 8 *perceived channel readiness* variables in the original model, 3 were validated, including *ease of use* (i.e., user-friendliness of the IB website), *usefulness* (i.e., relevance of IB services), and *convenience* (i.e., the 24/7-availability, time-saving and anywhere-anytime comfort of the IB channel).

This last chapter aims to discuss the practical implications of the main findings of the study for bank marketing as well as the theoretical and managerial contributions of the research. Section 10.2 will discuss the managerial implications of the *customer* and *perceived channel readiness* dimensions on the marketing of the Internet banking option. Section 10.3 will trace the implications of the two *readiness* constructs as antecedents of customer *attitude* and *intention* towards IB adoption. The *potential universality* of the validated variables will be proposed in section 10.4. Section 10.5 will examine the importance of the non-user categories, with regards to the implications of their perceptions of the *readiness* factors on IB marketing. Contributions and limitations of the study will then be highlighted in sections 10.6 and 10.7 respectively, while recommendations for further research will be outlined in section 10.8. Lastly, a summary of the entire study will conclude the chapter and the thesis in section 10.9.



## 10.2 Significance of the two *readiness* constructs for Internet Banking:

The importance of *customer readiness* and *perceived channel readiness* for Internet banking adoption has been validated in this study. The study has successfully proven that for banking customers to be ready, able and willing to adopt Internet banking, they must possess certain requisite characteristics which directly and positively influence their *attitudes* towards Internet banking adoption, including *access*, *awareness* and *prior involvement*. In the same vein, for banking customers to be ready, able and willing to adopt Internet banking, the IB web-channel itself must equally be ready for adoption by possessing certain requisite characteristics which directly and positively influence the customers' *attitudes* towards IB adoption, including *ease of use*, *usefulness*, and *convenience*. The first practical implication of the above outcome is that bank marketers must now focus their attention more on propagating these *customer readiness* and *perceived channel readiness* dimensions while promoting their IB service channel in order to persuade and encourage their potential customers to adopt the IB channel.

Contrary to popular belief, the present study also found that the three *channel readiness* dimensions were considered more important across both sample groups than issues relating to the *security* of the IB channel. This finding corroborates those of Munene et al. (2002) and ACNielsen (2005), both of which indicate that Australian Internet banking customers now attach more importance to the *convenience* of the IB channel than to their fears about the *security risks* associated with it. The findings of Lichtenstein and Williamson (2006:p61) about the current tendency among Internet banking customers towards a higher *level of risk acceptance* than previously reported also seems to support the above outcome.

Consequently, while not ignoring *security assurances* to their customers, bank marketers must now place priority emphasis on promoting the *convenience* of the IB channel in order to convince retail customers to adopt it.

### **10.3 Implications of the customer and channel readiness dimensions as *universal antecedents* of IB adoption:**

On the basis of the findings reported in the last two chapters, the study puts forward the thesis that for a retail banking customer to be ready for IB adoption, he/she must have *access* to a computer and the Internet, be *aware* of the existence, benefits, risks and advantages of the Internet banking channel, and have been *previously involved* with banking technologies such as ATM, credit/debit cards, and/or electronic funds transfer. The study argues that without these three characteristics, the potential customer will not be *ready* for IB adoption, but if these three elements are present, the customer will most likely have a positive *attitude* towards IB adoption, depending on the perceived *readiness* of the IB web-channel itself.

Directly linked to the above argument is also that for the IB web-channel itself to be *ready* for being adopted by customers, it must be *easy to use* in trial, navigation and manipulation; it must be *useful* for the customers' needs; and it must be perceived as *convenient*, giving customers the expediency of 24/7-availability, time-saving and anywhere-anytime accessibility. It is this study's position therefore that without these three characteristics, the IB channel will not be *ready* for adoption by retail customers, but if these elements are present, the *ready* retail customer will most likely develop a positive *attitude* towards IB adoption.

Synthesising the entire *readiness* construct, therefore, this study espouses that the *customer readiness* and *perceived channel readiness* dimensions constitute the whole gamut of determinants of *customer attitude* to IB adoption, which in turn determines the customer's *intention* to adopt or not adopt Internet banking. Given that *attitude* leads to *intention* (Suh and Han, 2002; Cheng et al., 2006) and that *intention* leads to actual *behaviour* (Ajzen and Fishbein, 1980; Fishbein, 1983; Davis, 1989; Ajzen, 2005); and given that all six *readiness* dimensions have been validated as direct antecedents of *attitude* to IB adoption between Scotland and Nigeria in the present study, the study therefore concludes that *customer access*, *customer awareness*, *customer prior involvement*, *channel ease of use*, *channel usefulness*, and *channel convenience* are the most vital intervening factors that can universally determine retail customers' adoption of Internet banking.

This is because they have been successfully validated across two totally dissimilar countries with totally different cultures and levels of economic and technological development, one being a developed country and the other being a developing country. Based on the above deduction, the study therefore concludes that in any given IB context anywhere in the world, an *equal evaluation* of the preparedness of both the retail banking customer and the IB channel is essential for Internet banking adoption to take place, irrespective of cultural, economic and technological disparities. This *equal evaluation* is visually represented by the final validated model of the study presented in figure 10.1 below, which is hereby labelled as the EQUAEVAL model of IB adoption and also proposed as *the model of universal antecedents of retail customer adoption of Internet banking*.

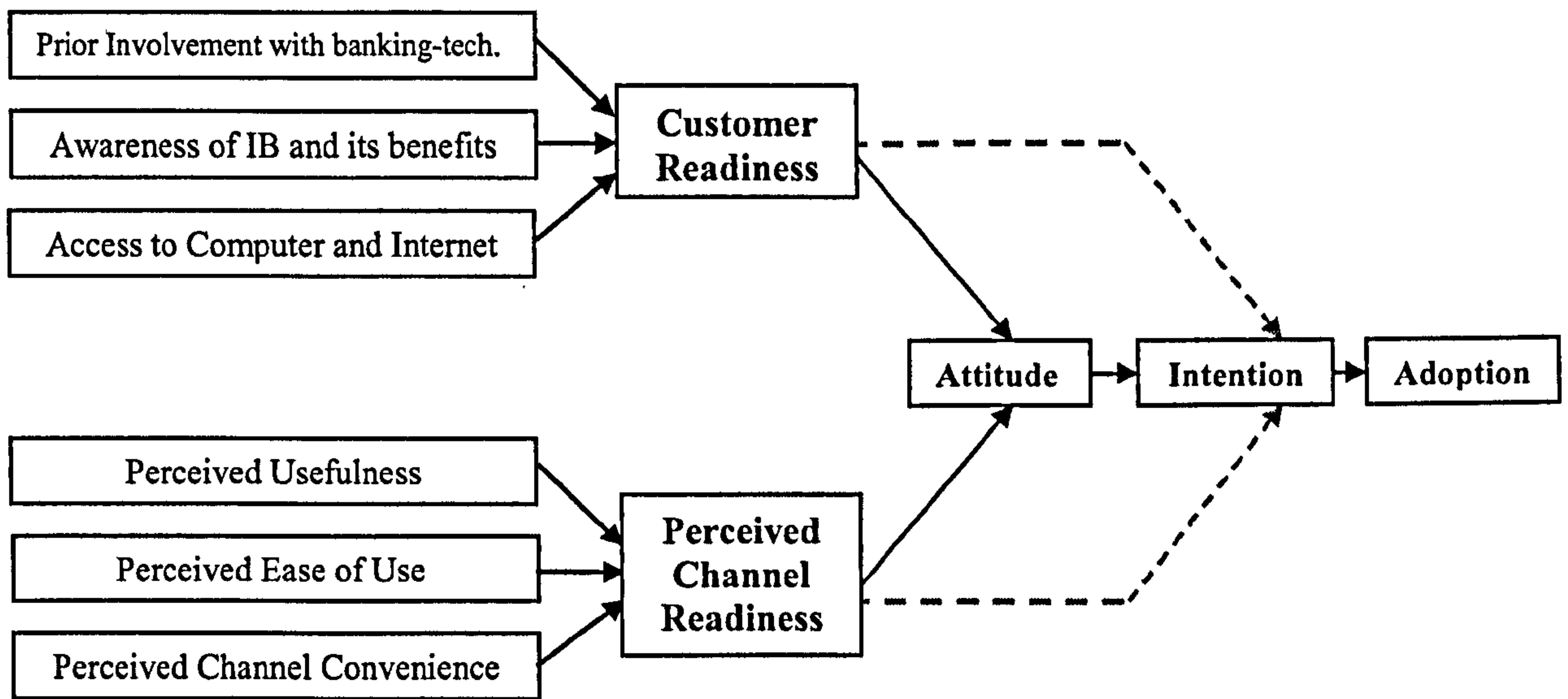


Fig. 10.1: The EQUAEVAL model validated in the present study as the model of universal antecedents of retail customer adoption of Internet banking. (The dotted links were not explored in the present study but are suggested for further investigation and possible improvement of the model)

#### 10.4 Marketing implications of the research findings:

In this section, the practical managerial implications of the main findings of the research are discussed. The following two subsections will analyse the marketing implications of the *customer readiness* and *perceived channel readiness* concepts validated in the present study.

##### 10.4.1 Marketing implications of the *Customer Readiness* factors:

As shown in the EQUAEVAL model above, three customer-related intervening variables were validated in the study as antecedents of *customer readiness* for the adoption of Internet banking, including, *awareness*, *access*, and *prior involvement*. The main practical implication of the validation of these factors

is that unless retail banking customers are properly made *aware* of the IB channel and its uses, advantages and benefits; unless they have had *prior involvement* with any banking-technology in general; and unless they have *access* to computer and the Internet, they will not be ready and able to adopt Internet banking and will therefore not likely develop the positive *attitude* necessary for its adoption. In addition, the second implication is that as far as counteracting retail customers' reluctance or resistance to Internet banking adoption is concerned, *awareness*, *prior involvement* and *access* are the three most important customer-related issues that bank marketers must deal with in order to help their customers to become more able and willing to adopt Internet banking services.

Improving *customer awareness* of IB (i.e., awareness of the opportunity, advantages, procedures, and benefits of e-banking services) through effective communication is the most important marketing task that banks must undertake in order to increase IB adoption rates and reduce resistance to its adoption. Kuisma et al. (2007:p82) corroborate this point by indicating that lack of adequate information and fear of misuse are some of the main causes of customer resistance to IB adoption, and that providing proper marketing information is key to solving the problem. In addition, since the collapse of Lehman Brothers in September 2008, the subsequent global financial crisis seems to have eroded customer confidence even further, with obvious negative effects on IB adoption rates in various countries.

Financial institutions must therefore gear their *awareness* creation efforts to include a communication of their overall financial strength as well as the consolidation efforts being made to overcome the global financial crisis, in order to reassure their customers about their solidity and to rekindle consumer confidence in the entire banking system. Due to the fact that the global financial crisis seems to

have affected Scotland more directly than Nigeria with the near-collapse and apparent take-over of Halifax Bank of Scotland by Lloyds TSB, and the rescue of Scotland's biggest bank (The Royal Bank of Scotland) with an injection of £20 billion by the UK Government (BBC News, 13<sup>th</sup> Oct., 2008), financial institutions in Scotland must initiate more vigorous *awareness* campaigns that will communicate to their current and potential customers all the consolidation efforts they are putting in place to ensure the short and long term safety of their customers' deposits, investments, and savings.

In the present circumstance, whether affected directly or indirectly by the global financial crisis, each financial institution everywhere in the world is likely to experience even greater customer reluctance to adopt Internet banking than before. Each financial firm's *awareness* campaign must therefore be geared towards reassuring current and potential customers, especially the online customers, that the firm will not collapse in future, and that the misfortune that befell customers such as those who had banked online with Northern Rock, Lehman Brothers or Icesave (the Internet banking division of the collapsed Icelandic bank, Landsbanki) will not be befall them. This *awareness* enhancement should therefore be an industry-wide concerted effort geared towards restoring *customer confidence* in the whole banking system, attaining stability once more in the global financial sector, and ultimately reversing the current customer resistance to IB adoption.

In Nigeria, the main focus of bank marketers should primarily be to create *awareness* of the existence of the Internet banking opportunity among current offline and potential customers. Both within and outside the country, not many people are aware that banks in Nigeria now offer several Internet banking services. Nigerian banks and other institutional stakeholders need to engage in massive communications campaigns to create nation-wide *awareness* of the relevance,

benefits and safety of using Internet banking services in the country. All the 21 banks that currently offer online banking services in Nigeria have already installed considerable security measures in order to safeguard their customers' online transactions, but a lot of people are still unaware of the availability of these services. A few sceptics still generally doubt the possibility, efficacy and security of Internet banking in the country. Concerted industry-wide *enlightenment* campaigns are therefore necessary in order to make banking customers more *aware* of the online banking opportunities and the security measures put in place to protect online transactions in the country.

In addition, financial firms in both Scotland and Nigeria also need to focus their attention on activities that would help their existing offline customers to make a smooth transition to Internet banking. The validation of *prior involvement in banking-technology in general* as the second most important *customer readiness* factor indicates that current offline banking customers would be more inclined to taking up Internet banking than those who have never been a banking customer or involved with any banking-technology such as ATM, credit/debit cards, smart cards or e-funds transfer before. For this reason, the current offline banking customers should constitute the primary targets of bank marketers in their efforts to increase IB uptake. Various incentives should be devised and offered to offline customers who transit to and retain Internet banking services as well as to novice customers who register for Internet banking from inception.

The third factor, *customer access to computer and the Internet*, is also a very important global issue to be dealt with. Without having *access* to a computer and the Internet, no customer will be able to use Internet banking. Even where people generally have access to a public Internet system, say in libraries, coffee shops, business centres or devoted cybercafés, most people are still very reluctant

to use Internet banking in these public places because of the fear of insecurity of their identity, given that the systems are often used publicly and the possibility of personal information theft is usually high.

To this end, financial institutions, especially in developing countries, should also initiate or join investment projects aimed at increasing the supply of personal computers, laptops and Internet connectivity at cheaper rates to families and individuals who have been their long-time offline customers. As part of the UK, Scotland has already achieved mass affordable retailing of PCs, laptops and Internet connection by private sector marketers. Retail broadband Internet connection in the UK costs as little as £7 (N1, 400) per month for between 2 and 4 Mbps. Even the super-speed 24 Mbps does not cost more than £17.50 (N3, 500) per month. While the average Internet connection speed in Scotland is 3.2 Mbps, the national UK average is 3.6 Mbps, which costs only about £10 (N2, 000) per month (BBC News, 15/12/08). This makes fast Internet connectivity affordable to almost every household in Scotland, no matter their income level.

In contrast, the cost of retail Internet connectivity in Nigeria is still far above the reach of the average household. In 2008 MTN Nigeria introduced its F@stLink E630 and E220 data cards for 2Mbps broadband connection and charges a sign-on fee of N40, 000 (£200) plus a monthly subscription fee of N10, 000 (£50). Obviously, this type of exploitative pricing system is definitely not for the average household or individual as it is far beyond what an average family in the country can afford on a monthly basis. Linkserve, Netcom and Hyperia are some of the other major VSat and wireless broadband ISPs in Nigeria, but their customers are principally corporate organisations, institutions and cyber cafés. Their charges are also in hundreds of thousands of naira, unnecessarily far beyond the reach of the average Nigerian family.



Consequently, no matter how much money Nigerian banks pump into advertising their online banking services, all their efforts to persuade more customers to adopt Internet banking will continue to be in vain if they do not collectively contribute towards driving down the retail prices of PCs, laptops and (most importantly) Internet connectivity in the country. Of the 10 million Nigerians who presently use the Internet (*Internetworldstats*, 2008) in general, not up to 10% of them have used the Internet for banking services. Consequently, the estimated number of IB users in the country still falls below 1% of the nation's population (see table 6.6 on page 155).

There are only about 500 broadband subscribers in the entire country (Nationmaster, 2008) and they are all big corporations. This means that there is hardly any retail distribution of broadband to individual subscribers in the country, due to its very high cost that serves no one any good. Banking firms in the Nigeria must join forces with the government, the NCC, and the Internet service providers (ISPs) to ensure that policies and programmes are put in place to phase out dial-up Internet connection and drive down the retail prices of broadband/Wi-Fi services so that not only businesses, but also households and individuals can purchase retail Internet connections at affordable prices. If this is achieved, tens of millions of Nigerians will have *access* to the Internet and therefore be able to adopt Internet banking, just as tens of millions of them now use mobile telephones in every nook and cranny of the country.

#### **10.4.2 Marketing implications of the *Channel Readiness* factors:**

Out of the three channel readiness factors validated in this study, *Ease of use* was perceived by the respondents in Scotland as the most importance factor necessary for ensuring the *perceived readiness* of the IB channel for retail customer

adoption. *Convenience* was ranked second in the same group. It was rather the other way round for the Nigerian respondents. They perceived *convenience* as the most important and *ease of use* as the second. *Usefulness* came third in both groups. However, the most important thing about the findings is that the same three variables were validated as the most significant determinants of retail customer *attitude* to IB adoption in both countries.

The marketing implications of the above findings are that unless financial institutions ensure that their IB web-channels are perceived as *easy to use*, *useful* to the needs of the customer, and a more *convenient* alternative to branch banking, potential customers will continue to be reluctant to adopt the IB channel. As far as advocating retail customer adoption of IB is concerned, therefore, perceptible *ease of use*, *usefulness* and *convenience* are the three most important channel-related issues that bank marketers must entrench in their IB web-channels and also project in their marketing communications in order to convince potential customers to adopt Internet banking.

In Nigeria, bank marketers must make the promotion of the *convenience* benefit the focal point of their *awareness* creation. This deduction was corroborated by the Central Bank of Nigeria (CBN) which noted that banking customers in Nigeria needed to be dissuaded from their “high use of currency notes and coins” and encouraged to adopt the “e-banking payment system” (CBN, 2007: p.44). However, this can only be achieved by convincing them to convert from the age-old tradition of street-branch banking to Internet-based retail banking, which gives them the *convenience* of transacting with their banks any time of the day and any day of the week from the comfort of their homes or workplaces. The apex bank aptly buttressed this point in its Banking Supervision Annual Report 2007. In it, some of the issues spelt out for the promotion of e-banking in Nigeria include:

“building public *awareness* and *confidence*; promoting greater *convenience*; as well as reviewing business and operating practices” (ibidem); *awareness* and *convenience* being two of the factors also validated in this study.

There is therefore a vital necessity to make customers *aware* of the IB service options at their disposal; to educate them on the *usefulness* of the IB channel to their banking needs; and to help them understand/appreciate its *convenience* benefits of *any-time-anywhere access* (24 hours a day, 7 days a week). Helping to ensure customer *access to Internet connectivity* is also essential. If the rapid on-going diffusion of Internet technology in Nigeria is properly managed, operated and regulated, the increase in retail customer adoption of Internet banking will be in tens of millions within the next five years, in the same way that general Internet penetration in Nigeria increased from about 200, 000 in 2001 to 10 million in June 2008 (Internetworldstats, 2008), and in much the same way as mobile telephone subscriptions in the country increased from less than 10, 000 in 2001 to 33 million by January 2007 (NCC, 2007).

In Scotland, since *ease of use* was deemed the most important IB channel factor, banks in the country must step up their efforts at improving the *user-friendliness* of their IB channel in terms of making it less cumbersome, less rigorous and less repelling. In a number of informal discussions in Scotland during this research, some people commented that they tried to register for Internet banking but were put off by the long and complicated procedure of completing the registration. A few others also indicated that they actually registered for IB but had not used it for a long time because they were put off by the cumbersome identification process they had to go through each time they tried logging into their IB accounts.

The point therefore is that financial institutions in Scotland need to lessen the rigor of the registration and logging procedures in order to attract more online customers. It is needful to ensure that the *ease of use* of Internet banking is maintained by all financial institutions in both countries as they advance steadily into the more interactive realms of e-banking services in line with the intermediate and advanced levels of Diniz's (1998) IB-diffusion model (see table 6.3, page 137). Ensuring the *user-friendliness* of the IB process should be central to the marketing activities of the financial firms in the region.

In addition, banks and building societies in Scotland must not relax in communicating the *convenience* benefits of their IB services. Even though the *convenience* benefits of time-saving, 24/7 availability and anywhere-anytime access of IB are more widely known in Scotland than Nigeria, findings from the present study indicate that they are ever so important as factors that influence customer adoption of Internet banking. Financial institutions in the country should therefore continue to harp on the *convenience* advantages that the online channel has over "brick and mortar" banking in order to attract and retain more online customers. Of no less importance is also the need to constantly demonstrate the *usefulness* of the IB channel to retail customers. Proving that the IB distribution option is *relevant* to customers' banking needs is a task that must be accomplished and constantly propagated by the financial institutions of both Scotland and Nigeria.

In summary, while both IB users and non-users in the Scotland and Nigeria sample groups attested to the significance of the six *readiness* factors validated in the study, financial marketers in both countries will find that the non-user categories identified in the study constitute the main segments of their potential

target audience. The four non-user categories expressed varying levels of time-bound *adoption intention* in the study; therefore, segmenting the IB target audience in terms of their *adoption intention* could also help bank marketers to design specially tailored marketing communications messages addressed specifically to each segment on the basis of their *adoption intention timeframe*. As a result, banks and other financial institutions that offer retail IB services need to segment their potential target customers through consumer research so as to address each segment more appropriately and to achieve better efficiency in their efforts to persuade more people to adopt Internet banking.

## **10.5 Contributions of the Study:**

There are two facets to the overall contribution of this study to knowledge. One is the theoretical contribution of the research to the study of consumer behaviour in financial services marketing. The other is the managerial contribution of the study to the practice of bank marketing, particularly to the marketing of Internet-based retail banking. The following two sub-sections provide further explanation of the contributions of the study in the two contexts.

### **10.5.1 Theoretical contribution of the research:**

Embedded in the area of online consumer behaviour, this study employed a combined adaptation and extension of Rogers' (1983; 1995) Theory of Innovation Diffusion (TID) and Davis' (1989; 1995) Technology Acceptance Model (TAM) to investigate the effects of *customer readiness* and *perceived channel readiness* on the *attitudes* of current and potential retail banking customers to Internet banking adoption. Together with six other variables, the two components of the original TAM (*perceived ease of use* and *perceived usefulness*) were classified as

dimensions of *perceived channel readiness*, while a different set of eight variables were classified as *customer readiness* dimensions. Three of the *perceived channel readiness* variables and three of the *customer readiness* variables were validated in the study as prime determinants of customer *attitude*, which in turn determines customer *intention* towards IB adoption. The underlying logic in proposing the two *readiness* concepts was that technology acceptance should not be dependent only on the characteristics of the technological process or channel, but also on the personal characteristics of the individual faced with the adoption decision.

While providing support that *perceived ease of use* and *perceived usefulness* do in fact influence customer *attitude* and *intention* to adopt Internet banking, the present study has also revealed that the two variables are not the only determinants of Internet technology acceptance in the online banking service context. Findings from the study have successfully demonstrated that rather than the two variables in TAM, three variables (*perceived ease of use*, *perceived usefulness* and *perceived convenience*) are the ingredients of *perceived channel readiness*, and that *perceived channel readiness* is only one of the two broad constructs that actually affect *customer attitude* to Internet banking adoption, the other being *customer readiness*.

The second construct (*customer readiness*) also consists of three variables, including *customer awareness*, *prior involvement* and *access*. This study therefore contributes theoretically to conceptual development of *customer attitude* to Internet technology adoption by successfully validating these two *readiness* factors as the direct determinants of *customer attitude* to Internet banking adoption, which in turn determines *customer intention* towards the adoption. Consequently, by validating the final model (EQUAEVAL) cross-nationally between two totally dissimilar

countries, the study successfully contributes an extension of the TAM model to the existing literature on consumer acceptance of technology-based services in general, and Internet-based financial services in particular.

In addition, most of the existing models on technological innovations implementation, including Davis' (1989; 1995) TAM and Rogers' (1983; 1995) Theory of Innovation Diffusion (TID), tend to examine only how the characteristics of the innovation channel affect an individual's perception and attitude towards adopting it. They therefore tend to focus only on the readiness of the technological process or channel for adoption, while ignoring the fact that the individual faced with the adoption decision also needs to be ready and able to use the technology before adopting it.

Lastly, by initiating and validating the *customer readiness* construct alongside *perceived channel readiness*, this study also contributes the missing arm of the two-fold antecedent of *attitude* in the theory of technology adoption behaviour. With the argument that an individual customer's *readiness* to use Internet banking is quite different from his or her perception of the IB channel's *readiness* for being adopted, the study has proven that *customer readiness* and *perceived channel readiness* are two different but mutually essential categories of factors that directly and jointly determine *customer attitude* to technology adoption, especially in the Internet banking context. Consequently, the study has also successfully extended the TID model in the validated EQUAEVAL model as another theoretical contribution to the technology diffusion literature.

### 10.5.2 Managerial contribution of the research:

According to, Singh (2004), the Internet banking evolution is far from being over. As banking institutions all over the world continue to embrace the IB technology, banking distribution channels will continue to change and multi-channelling will continue to become more widespread. The need for more consumer-related research focused on understanding consumers' fundamental reasons for their banking channel choices will also become even more pertinent (Black et al., 2002). The present study makes a practical managerial contribution to the marketing of the Internet banking channel by providing evidence of the empirical validation of six intervening variables that bank marketers need to deal with as they advocate retail customer adoption of their Internet banking services. Persuading retail customers to adopt the IB option has become a major task for the global financial industry as evidenced by abundant research findings which indicate that retail customers in many parts of the world have not responded to IB adoption as much as the financial institutions had expected since its inception.

Research has shown that in spite of the huge diffusion of Internet banking among the banking institutions in various parts of the world, its adoption by retail customers has remained very slow over the years (Mattila et al., 2003; Kolodinsky et al., 2004). Even up to the time of submitting this thesis, there had been a continued *reluctance* by retail customers to adopt Internet banking (Kuisma et al., 2007; Laukkanen et al., 2008) in spite of the huge initial euphoria that greeted its institutional diffusion in the years 1995 to 2002 which had prompted quite a number of scholars to predict a *near-universal adoption* of the new banking channel by 2011. From the studies of the above authors, it seems that the *reluctance* has transmuted into a *resistance* on account of customer confidence erosion in recent years. Worse still, the world-wide economic crisis precipitated by



the crash of the global financial industry in September 2008 has even caused more customer confidence erosion and greater reluctance to adopt Internet banking than it ever was.

Several international banks have had to be rescued from collapse by various national governments, including the RBS and Lloyds Group in the UK and Citigroup in the US. The UK and US governments now have single majority shareholdings in these respective banks. Other banks like Lehman Brothers in the US and Landsbanki in Iceland were not as lucky. They collapsed totally with disastrous economic consequences in several countries around the world. At the micro-level, numerous individuals lost their jobs in company closures and downsizing measures between September 2008 and March 2009, while many also lost their savings or investments in the banks that closed. A typical example is the experience of the former customers of Icesave (the Internet banking subsidiary of Landsbanki) who lost their funds when the bank shut down.

As a result of the global financial crisis, far more people are now more reluctant to use Internet banking than ever before, which makes the financial institutions a lot more anxious to find solution to the decreasing adoption of Internet banking. This study contributes in this respect as well by putting forward the argument that the *technology-centeredness* of the financial institutions alone will not reverse the current customer resistance to IB adoption. Global financial institutions must to retrace their marketing steps to the venerable *customer-centric* tradition of marketing in order to solve the problem.

They must shift their focus away from the current single-minded attention to the *technological features of the banking service distribution channels* perpetrated by deficient technology acceptance models such as TAM and TID, and

rather focus on an equal enhancement of both the channels' readiness and their customers' readiness for Internet banking adoption. This study therefore advocates that financial institutions should actually become involved in funding projects that will help their customers to become better able and willing to adopt technology-based financial services.

By proposing and validating the EQUAEVAL model (figure 10.1, page 341), this study has shown that an equal evaluation and management of the preparedness of both the IB channel and the customer has significant influence on customers' *attitude* and *intention* towards IB adoption. The study has therefore successfully demonstrated that not only are the *perceived channel* and *customer readiness* factors the major antecedents of Internet banking adoption, but also that dealing with them equally is the way forward for financial marketers in their search for a solution to the current large-scale customer reluctance to IB adoption. The "start with the people" argument by Weeldreyer (2002) seems to uphold the above assertion. The author argues that "in order to design successful customer experiences, you must start by understanding the people you are trying to serve. Who are they? What are their real needs and problems? What is truly important to them with respect to their money?"

Finally, as another managerial benefit, it is also expected that this study will serve as a reference resource for financial marketers in the preparation of strategic programmes to facilitate retail customer adoption and retention of their IB services. Bank marketers in Scotland and Nigeria need to do a lot more in the area of *awareness creation* in order to communicate the *relevance* and *benefits* of the Internet banking channel to potential customers. The very little promotional support of the IB channel in existence is found mostly on bank websites and few pamphlets, and this does not create enough *awareness* of the alternative service

channel among existing customers, much less the potential ones. Protracted, fully fledged advertising campaigns focusing on Internet banking *relevance*, *convenience* and *security* should be employed in educating, informing and persuading retail banking customers to take up the IB channel option.

## **10.6 Limitations of the Study:**

Research limitations are common with every piece of research. The present study is not an exception. There are three vital limitations in this study, relating to sampling method, number of national sample groups, and the possible effects of covariates that were not directly measured in the research. The following is the researcher's reflection on the three limitations:

Firstly, with respect to sampling method, it must be conceded that *convenience sampling* is not the best sampling method for a study of this level of importance. In an ideal situation, *convenience sampling* should not have been used, but it was employed in this case principally because of access and cost constraints. Had the study been sponsored by relevant stakeholders in the industry, access to lists of banking customers from various sponsoring financial institutions or associations in the two countries would have been gained, and so *systematic sampling*, *stratified random sampling*, or at least the *simple random sampling* method (Wilson, 2006) would have been employed in the study.

*Convenience sampling* with *snowballing strategy* was resorted to as a result of lack of access to any official database of banking customers in both countries, and also lack of funds to purchase institutionally held databases such as the official census or voters' registers in Scotland and Nigeria. The study was entirely self-sponsored by the student-researcher who simply could not afford the cost of these

databases. It is hoped that subsequent tests of the EQUAEVAL model in other national locations might attract some corporate sponsorships in future which would enable better sampling and recruitment methods to be applied.

Secondly, as acknowledged *ab initio*, two national sample groups are rather too few to warrant full accreditation of the validated factors in the study as the only *universal determinants* of retail customer adoption of Internet banking. Further validations of the EQUAEVAL model in several countries are necessary before the six variables in it could be deemed as the only *universal antecedents* of IB adoption. Again, it was not possible to engage more than two national study locations in this first study because of cost and time constraints. However, it will be interesting to recruit up to five or more different countries at the same time in subsequent cross-national tests of the model if funding can be secured in future.

Thirdly, the individual effects of the identified *environmental factors* on IB adoption were not fully explored in the present study. With regards to developing countries especially, issues such as *availability of infrastructure* (e.g., adequate electricity supply, PC ownership, scope of Internet access, telecommunications penetration and high-tech security software) as well as the impacts of *legal frameworks* and *regulatory policies* guiding Information Communication Technology (ICT) in each country constitute the important covariates that are likely to also affect the *readiness* of both customers and the IB channel for Internet banking adoption.

These issues were not individually measured in the study but were subsumed in the concept of *access to computer and the internet* as earlier explained. Since the *access* variable was successfully validated as an ingredient of *customer readiness* for IB adoption, it was taken for granted that the effects of

these *environmental factors* had been dealt with in the study. This argument is likely to be correct to a very large extent, but it certainly would have been more insightful to measure the impacts of these infrastructural and policy factors separately in order to observe if any of them would have stood out as an independent intervening variable affecting the IB adoption. It will therefore be informative to further explore these *environmental factors* separately in subsequent conducts of this study in other cross-national contexts.

### **10.7 Recommendations for future research:**

In general, this research is a pioneering effort at conducting cross-national comparative studies in the area of retail customer *attitude* to Internet banking usage. It is hoped that in future more comparative studies will be stimulated to identify and cross-nationally investigate other factors that might be responsible for retail customers' reluctance towards the adoption of Internet banking in other parts of the world. The prime objective should be to broaden scholarly understanding of related issues in the area from across the numerous and divergent economies and cultures of the world.

It is therefore suggested that any future study designed to re-test the proposed EQUAEVAL model (page 341) in other countries should employ more scientific sampling methods such as *systematic sampling*, *stratified random sampling*, or *simple random sampling* methods so as to recruit more authentic sample groups in the study. This would of course be possible if relevant financial institutions or regulatory organisations could be convinced to sponsor the research

and therefore provide access to official customer databases in various countries. Subsequent cross-national investigations of variables identified in the present study, and any others from elsewhere, could also be designed to involve several different countries at a time if funds permit. This will also help to broaden the scope of cross-national comparison of the intervening factors in the context of a wider variety of economies and cultures.

However, before further advocacy of any future replications of this study in other national study locations, other ways of analysing and using the same data sets collected in this study are suggested herewith. Subsequent research objectives that could make use of various aspects of the rich data from this study include: determining the influence of *national culture*, the influence of environmental factors such as level of technology readiness, the influence of micro-level issues such as individuals' trust and perceived image of their banking firms, and the influence of the previous level/intensity of relationships between offline customers and their banking firms as moderators of Internet banking adoption decisions by potential customers. These were not the objectives of the present study and so were not covered in the study, but they are further research objectives that could be accomplished in subsequent pieces of research using various portions of the same data collected in the course of this study.

However, one of such subsequent studies could be a natural sequel to the present research. It might involve pulling together all the original 25 indicator variables identified in this study as dimensions of the *customer* and *channel readiness* constructs (page 62), remodelling them as independent predictor variables, testing them for multicollinearity in order to eliminate those with high intercorrelations, and then using *logistic regression* to analyse their ability to predict *Internet banking adoption/non-adoption decision* as a dichotomous,

categorical dependent variable. The objective of such a study would be different from that of the present one, but determining the *predictive ability* of each of the indicator variables included in the scales that measured the two exogenous constructs in this study (*customer readiness* and *perceived channel readiness*) would be an interesting sequel to the present research. It would indicate the extent to which each of the independent indicator variables could predict IB adoption decision.

Other potential objectives for future research could focus on determining whether the response modes selected by various respondents in completing the questionnaires for study actually had any relationship with their *technology readiness* and *self efficacy*, and whether that choice also influenced their perceptions and adoption decisions about Internet banking in any way. Again, this was not the objective of the present study, but it will be interesting to re-group the respondents in accordance with their modes of response in order to see what relationship (if any) the mode by which they completed the survey has with their being adopters or non-adopters, and what it also has to do with their perceptions of those factors identified as having influenced IB adoption in various parts of the world.

Another future research opportunity could also lie in re-conceptualising the study model into a simpler linear design in which the *perceived channel readiness* construct becomes a moderator of the impact of *customer readiness* on customers' *attitudes and intentions* towards Internet banking adoption. Again, the central objective for that research will be different from that of the present study in that while the present study is focused on determining the channel-related and customer-related factors that could be classified as *universal affectors* of retail customer adoption of Internet banking anywhere in the world, the objective of a

subsequent study with such a linear relationship between *customer readiness*, *perceived channel readiness*, *customer attitude* and *customer intention* will be to determine the intervening effect of *perceived channel readiness* on the relationship between *customer readiness* and *customer attitude/intention* towards IB adoption.

Furthermore, another vital but different perspective for a future research related to the present study is a *meta-analysis* of all the drivers of Internet banking adoption since its inception. A qualitative study in the form of secondary data content analysis of 54 studies in the area of online banking between 1998 and 2006 was published by Guosong Shao in 2007; but apart from that, there is no existing *quantitative meta-analysis* of the research so far published in the area of Internet banking since its inception in 1995. This researcher is already working to fill this gap in a separate *meta-analytical* study of all the factors identified from existing quantitative research in the area, using data collected in the course of the present study. Appendices 1A, 1B, and 1C are also fundamental parts of the subsequent study aimed at meta-analysing the effects of all the factors identified and pulled from quantitative research so far published in the area since the inception of Internet banking.

Beyond the above potential pieces of research that could be undertaken with the data from the present study, future replications of the study in other national or cross-national contexts could then involve re-conceptualising the study model to incorporate separate direct causal links between *customer readiness* (CuR) and *customer adoption intention* (CAI), and between *perceived channel readiness* (ChR) and *customer adoption intention* (CAI), as suggested with the dotted lines in the EQUAEVAL model (page 341). The objective of re-conceptualising the study model will be to see whether a better predictability of IB *adoption intention* (CAI) could be achieved directly by the two *readiness* constructs rather than the 17% and



13% indirect predictability attained in the Scotland and Nigeria sample groups respectively in the present study (figure 9.2, page 321). Any subsequent test of the EQUAEVAL model should therefore try to investigate the effects of a direct causal path linking one or both of the exogenous constructs (CuR and ChR) to the endogenous construct (CAI) as suggested by the dotted lines in the EQUAEVAL model.

Lastly, conceptual scale designs in research are often an ongoing incremental process and therefore every research model is only a proposal for further investigation or extension. Consequently, aside from including any other relevant variable(s) in the EQUAEVAL model in future research, the impacts of covariates such as *availability of infrastructure* and *legal/regulatory ICT policy issues* that guide IB diffusion in various countries could also be explored and conceptualised as separate variables in order to determine their direct effects on the *preparedness* of both the *banking customers* and the *banking web-channel* for IB adoption.

In conclusion, all the above suggestions have been made on the strong belief that they would not only lend more credence to the authenticity of the proposed EQUAEVAL model and its investigation methodology, but also lead to the ultimate validation of a final set of IB adoption determinants which will help bank marketers to eliminate or reduce to the barest minimum the current spate of customer reluctance to adopt Internet banking, and whose *universal* applicability will be generally acceptable everywhere in the world, irrespective of cultural economic and technological differences.

## 10.8 Summary:

In this last chapter, the significance of the various factors validated in the study as determinants of *customer attitude* to IB adoption was discussed in relation to their implications for bank marketing in general, and marketing communications for IB promotion in particular. The chapter first examined the relevance of the six *customer readiness* and *perceived channel readiness* variables in relation to the technology acceptance model (TAM) developed by Davis (1989) and argued their importance as determinants of customer attitude to IB adoption. Next, the chapter traced the practical managerial implications of the six *readiness* dimensions by showing how they equally translate into the essential marketing ingredients necessary for financial marketers to persuade potential customers to adopt Internet banking. This was followed by an affirmation of their *universality* as factors capable of determining retail customer adoption of Internet banking anywhere in the world.

Subsequently, the contributions of the research to both theory and managerial practice were presented. The successful combination and extension of the TAM and TID theories into a model of more than just two variables was expatiated. In addition, the accomplishment of the study as a pioneering cross-national comparative research on IB adoption behaviours between multiple countries of dissimilar economic, cultural and technological characteristics was highlighted. Its practical contribution as a potential reference resource for bank marketers in developing key communication points for persuading potential customers to adopt Internet banking was also reported.

The chapter then discussed the limitations of the research, including issues relating to the sampling procedure employed, the number of national sample groups and the possible effects of covariates that were not directly measured in the present study. On the issues of research limitations and constraints the chapter concluded by proffering suggestions for subsequent research that could utilise various aspects of the data from this same study as well as improvements that could be made in future replications of the study in other national or cross-national contexts.

Securing sponsorships for subsequent research might increase the chances of access to official databases and facilitate the use of more scientific sampling methods than was applied in the study. Highlighted also was the possibility of including the covariates identified in the study, thereby increasing the number of variables tested in subsequent research. Finally, the need to increase the number of national sample-groups in future cross-national replications of the study was also suggested as this might eventually lead to the development of a final set of factors that are generally accepted as *the universal determinants* of retail customer adoption of Internet banking everywhere in the world.

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APPENDIX 1A: CLASSIFICATION OF EXISTING STUDIES ON CUSTOMER ADOPTION OF INTERNET BANKING SINCE ITS INCEPTION: 1997 TO 2008

SN	AUTHOR/YEAR	PUBLISHING JOURNAL	RESEARCH FOCUS/OBJECTIVE	STUDY LOCATION	METHODOLOGY	SAMPLE SIZE	ANALYSIS METHODS
1	Barczak et al (1997)	Journal of Business Research	Customer motivations for value & usage of banking technologies	USA	Interview+ Focus group+Mail Survey	13 + 32 + 331	CFA (SEM); Cluster Analysis; ANOVA
2	Ramaswami et al (1998)	Journal of Internet Banking & Commerce	Ability, Motivation & Opportunity as determinants of IB usage	USA	Mail Survey (Paper Questionnaire)	413	Descriptive Analysis (Frequencies and percentages).
3	Sathye (1999)	International Journal of Bank Marketing	Factors affecting Internet banking adoption in the early years	AUSTRALIA	Mail Survey (Paper Questionnaire)	589	Frequencies, percentages, bar charts; Inferential statistics (Chi-square test).
4	Daniel (1999)	International Journal of Bank Marketing	Tracing the level of electronic banking provision as at 1999	UK/R. IRELAND	Survey distributed by mail & email	25	Descriptive Analysis (Frequencies and percentages).
5	Ramsay & Smith (1999)	Managerial Auditing Journal	Customer preferences & reasons for choice of banking channel	AUSTRALIA	S/A Survey (Paper Questionnaire)	294	Descriptive Analysis (Frequencies and percentages).
6	Liao et al (1999)	Intern. Journal of Information Management	Customers' behaviours and intensions toward the adoption of IB	HONG KONG	S/A Survey (Paper Questionnaire)	118	Frequencies, percentages, bar charts; CFA (SEM); Linear Regression.
7	Joseph et al (1999)	International Journal of Bank Marketing	Impact of IT on perceived service quality in retail banking	AUSTRALIA	Focus Groups + Intercept Survey	300	EFA (SEM); ANOVA
8	Kim and Prabhakar (2000)	Proceedings: 21st Int Conf on Info Systems	Effects of trust and perceived risk on customer adoption of IB	USA	Off and online Pilot Survey	61	NA
9	Kolodinsky et al (2000)	Consumer Interests Annual	Effects of consumer attitudes on adoption of electronic banking	USA	Phone Interview (1999)	1000	Descriptive & bivariate analysis; Multivariate logit regression.
10	Tan and Teo (2000)	Journal of the Association of Info Systems	Motivators and Inhibitors of customer adoption of IB	SINGAPORE	Online Surveys	454	Cronbach's Alpha; Multiple Linear Regression; Descriptive Analyses (Mean and SD).
11	Beckett et al (2000)	International Journal of Bank Marketing	Attitudes to technology-based financial products & providers	UK	Focus Groups	21	Qualitative analysis, classifying financial services based on consumer needs
12	Guru et al (2000)	Journal of Internet Banking & Commerce	Electronic banking evolution and customer response in Malaysia	MALAYSIA	S/A Survey (Paper Questionnaire)	30	Descriptive Analysis (Frequencies and percentages).
13	Thornton and White (2001)	Journal of Services Marketing	Factors influencing customer attitudes to banking channels	AUSTRALIA	Focus Groups + Mail Survey	801	Descriptive Analysis and ANOVA using the SPSS
14	Jun and Cai (2001)	International Journal of Bank Marketing	Channel factors influencing IB service quality perception	USA	Critical incidents from online BB	704	Content analysis of the critical incidents (in frequencies and percentages)
15	Suganthi et al. (2001)	Journal of Internet Banking & Commerce	Factors affecting Internet banking adoption in Malaysia	MALAYSIA	Online Surveys	300	Exploratory Factor Analysis (SEM).
16	Polatoglu and Ekin (2001)	International Journal of Bank Marketing	Factors influencing customer acceptance of & satisfaction with IB	TURKEY	Email Survey (Questionnaire)	114	Descriptive Analysis (Frequencies); two-factor analyses; and cluster analysis.
17	Aladwani (2001)	Int. Journal of Information Management	Drivers, challenges, and expectations of IB stakeholders	KUWAIT	Interviews + S/A Survey	80	Descriptive Analysis (Rankings in order of importance)
18	Nath et al. (2001)	e-Service Journal	Benefits of adopting IB for bankers and customers	USA	Mail Survey (Paper Questionnaire)	85	Descriptive Statistics - Frequencies and percentages.
19	Bradley and Stewart (2002)	International Journal of Bank Marketing	Factors that drive or inhibit Internet banking adoption	EUROPE/USA	Delphi Panels (2 rounds)	50/31	Wilcoxon Signed Rank Test; Spearman's Rank Order Correlation Test.
20	Karjaluoto et al (2002)	International Journal of Bank Marketing	Factors influencing customer attitudes toward Internet banking	FINLAND	Mail Survey (Paper Questionnaire)	1167	EFA (using LISREL 8.0); Pearson & Spearman's correlation coefficients
21	Black et al (2002)	International Journal of Bank Marketing	Factors influencing consumer channel choice in retail banking	UK	Focus Group interviews (6 x 12)	72	Qualitative Content Analysis; Inferential Statistics (t-test)
22	Chung and Paynter (2002a)	IEEE Proceedings of the 35th annual HICSS	Motivators and Inhibitors of customer adoption of I-Banking	NEW ZEALAND	S/A Survey (Paper Questionnaire)	184	Descriptive Analysis; Chi square & Spearman's rank correlation coefficient
23	Hain et al (2002)	COLLECTR 2002	Factors in influencing customer adoption of Internet banking	AUSTRALIA	S/A Survey (Paper Questionnaire)	88	Descriptive Analysis (percentages, graphs, and discussion).
24	Munene et al (2002)	ANZMAC 2002 Conference Proceedings	Effects of perceived risk on customer adoption and usage of IB	AUSTRALIA	FtF Interviews + Mail Survey	453	Principal Components Analysis
25	King and Gribbins (2002)	IEEE Proceedings of the 35th annual HICSS	Factors facilitating or inhibiting IB technology adoption	AUSTRALIA	In-depth Interviews	76	Descriptive Analysis (Percentages)
26	Suh and Han (2002)	Elect Commerce Research & Applications	Trust as a major affecter of customer acceptance of IB	USA	S/A Survey (Paper Questionnaire)	845	CFA using LISREL; Cronbach's Alpha; Chi-square test; Correlation matrix.
27	Howcroft et al (2002)	International Journal of Bank Marketing	Factors influencing consumer attitudes to electronic banking	SOUTH KOREA	Mail Survey (Paper Questionnaire)	286	Descriptive Analysis (Frequencies and percentages).
28	Zhu et al. (2002)	Int. Journal of Service Industry Management	Impact of IT on customer evaluation of retail banking channels	UK	Mail Survey (Paper Questionnaire)	185	CFA (SEM) using LISREL
29	Liao and Cheung (2002)	Information and Management	Factors affecting consumers' attitudes and willingness to adopt IB	USA	Mail Survey (Paper Questionnaire)	323	Cronbach's alpha reliability analysis, Correlation Coefficients, Regression Analysis
30	Seiglimpaglia and Ely (2002)	Proceedings: 35th Hawaii Int Conf on Sys Sci	Service relationships as a factor in customer adoption of IB	SINGAPORE	S/A Survey (Paper Questionnaire)	701	Descriptive Statistics; Analysis of Variance (ANOVA); Binary Probit Models
31	Gurau (2002)	International Journal of Bank Marketing	Strategies for successful development of IB in Romania	ROMANIA	SS Interviews	14	Descriptive Analysis (Discussion)
32	Wungwanitchakorn (2002)	ABAC Journal	Roles of customer & channel characteristics in IB acceptance	THAILAND	S/A Survey (Paper Questionnaire)	407	Descriptive Analysis (Frequencies and percentages); Logistic Regression Analysis.
33	Mattila et al (2003)	Journal of Internet Banking & Commerce	Factors affecting Internet banking adoption in Finland	FINLAND	S/A Survey (Paper Questionnaire)	1167	Exploratory Factor Analysis (SEM); Pearson & Spearman's rho (correlation coefficients).
34	Gerrard and Cunningham (2003)	International Journal of Bank Marketing	Factors affecting customer adoption rates of Internet banking	SINGAPORE	(Interview + Intercept Survey	(16) + 240	Exploratory Factor Analysis (SEM); Cronbach's Alpha
35	Wang et al (2003)	Int Journal of Service Industry Management	Factors affecting customer acceptance and usage of IB	TAIWAN	Telephone Interviews	123	CFA (SEM) using LISREL; Composite reliability test; t-value test and variances.
36	Patricio et al (2003)	Managing Service Quality	IB channel performance evaluation as a major usage determinant	PORTUGAL	Focus Groups + In-depth Interviews	36	Qualitative data analysis using NUD*IST software for coding and factor categorisation
37	Mukherjee and Nath (2003)	International Journal of Bank Marketing	The role of Trust in customer-bank relationships in IB	INDIA	S/A Survey (Paper Questionnaire)	510	Mean, standard deviation, & reliability estimates; SEM (CFA with LISREL)
38	Rexha et al (2003)	Journal of Services Marketing	Impact of existing relationship on adoption of e-banking	SINGAPORE	Interview + Mail Survey	157	SEM (Path analysis with AMOS)
39	Lang and Colgate (2003)	International Journal of Bank Marketing	The role of Info Tech in Online Bank-Customer Relationships	NEW ZEALAND	Mail Survey (Paper Questionnaire)	1,346	MANOVA; Cronbach's Alpha; Post-hoc tests (p-value tests).
40	Kerem (2003)	TTU Estonia	Factors influencing successful Electronic Banking adoption	ESTONIA	(FtF/Email Interviews) + Survey	(5 + 4) + 954	Descriptive Analysis (bar and pie charts and percentages).
41	Sarel and Marmorstein (2003)	Journal of Financial Services Marketing	Factors responsible for slow IB adoption rates in the US pre-2003	USA	In-depth Focus Groups	114	Qualitative data content analysis by discussion.
42	Joseph and Stone (2003)	Int J. of Retail & Distribution Management	Customer perception of Technology in banking service delivery	USA	Focus Groups + S/A Survey	175	Factor Analysis ; Analysis of means & performance ratings; t-test; ANOVA
43	Sohail and Shanmugham (2003)	Information Sciences	Factors influencing Electronic Banking adoption	MALAYSIA	Online Survey	300	Exploratory Factor Analysis (SEM).
44	Rotchanakittunnuai et al (2003)	International Journal of Bank Marketing	Motivators & Inhibitors of corporate customers adoption of IB	THAILAND	In-depth Interviews (F to F)	15	Qualitative Content Analysis
45	Sui-cheung and Ming-te (2004)	Journal of Global Information Management	Factors influencing customer adoption of Internet banking	HONG KONG	S/A Survey (Paper Questionnaire)	499	CFA (SEM); Cronbach's Alpha; p-test; and Bentler Bonnet Coefficient.
46	Kolodinsky et al (2004)	International Journal of Bank Marketing	Factors influencing Electronic Banking technologies adoption	USA	Phone Interviews (1999 & 2003)	1000 + 1002	Multivariate Analysis (using Ordered Probit regression coefficients).
47	Waite and Harrison (2004)	Qualitative Market Research	Customer perceptions versus expectations from IB websites	UK (SCOTLAND)	Focus groups + Survey	12 + 253	Mean, median, mode, SD); Inferential statistics (t-test, test of significance).
48	Durkin (2004)	International Journal of Bank Marketing	Influence of decision styles on cluster classification of IB adopters	SWE/USA/UK (NI)	S/A Survey (Paper Questionnaire)	480	Cronbach's alpha; KMO test; Bartlett's test ; Variance analysis, Cluster analysis (SPSS)
49	Pikkarainen et al (2004)	Internet Research	Factors that affect IB adoption among customers in Finland	FINLAND	S/A Survey (Paper Questionnaire)	268	CFA (SEM); Regression Analysis; Correlation Coefficient Analysis
50	Rotchanakittunnuai & Speece(04)	Journal of Electronic Commerce Research	Factors influencing customer adoption of Internet banking	THAILAND	Fax/email Survey (Questionnaire)	195	Principal Component Factor Analysis (EFA); Logistic Regression.
51	White and Neeli (2004)	International Journal of Bank Marketing	Effects of service attributes/security on customer adoption of IB	UK	Indepth Interview	56	Trade-off Analysis (Conjoint analysis) and Cluster Analysis.
52	Akinci et al (2004)	International Journal of Bank Marketing	Educated consumer attitudes to IB adoption in developing county	TURKEY	Email Survey (Questionnaire)	140	Frequencies, percentages, mean, SD); Inferential Statistics (t-test); CFA
53	Singh (2004)	Aslib Proceedings: New Info Perspectives	Factors motivating or inhibiting online banking adoption	SOUTH AFRICA	Online Survey	369	Descriptive Analysis (pie & bar charts and percentages)
54	Shih and Fang (2004)	Internet Research	Using the TPB & TRA to examine factors affecting IB adoption	TAIWAN	S/A Survey (Paper Questionnaire)	425	Cronbach's alpha test; Path Coefficients & Coefficient of Determination: LISREL
55	Al-Sabbagh and Molla (2004)	Journal of Internet Banking & Commerce	Drivers and inhibitors of customer adoption of Internet banking	OMAN	S/A Survey (Paper Questionnaire)	225	Descriptive Analysis (frequencies, percentages, weighted mean scores)
56	Flavian et al. (2005)	Internet Research	Corporate image & consumer trust in traditional versus IB usage	SPAIN	Intercept/Volunteer Survey	633	SEM (EFA and CFA); Hypothesis testing.
57	Lassar et al (2005)	International Journal of Bank Marketing	Consumer innovativeness, self-efficacy & atics vs IB adoption	USA	Online survey	349	Logistics Regression; Lehmman-Chernoff goodness-of-fit test.
58	Eriksson et al (2005)	International Journal of Bank Marketing	Factors influencing customer acceptance of Internet banking	ESTONIA	Mail Survey (Paper Questionnaire)	1831	Factor Analysis using LISREL; Principal Component Analysis with SPSS
59	Rotchanakittunnuai & Speece(05)	ICEC '05 China Conference Paper	Effects of IB switching costs on customer-bank relationships	THAILAND	Fax/email Survey (Questionnaire)	250	CFA; Correlation coefficient; Simple Linear Regression Analysis
60	Gerrard and Cunningham (2005)	Int Journ of Financial Services Management	Singaporean customers' perception of e-banking service quality	SINGAPORE	Intercept/Email Survey	145	Content Analysis

Author(s)	Journal	Year	Country	Methodology	Sample Size	Key Findings/Conclusions
61 Lee et al. (2005)	International Journal of Bank Marketing	2005	USA	Factors influencing customer adoption and non-adoption of IB	1349	Multinomial Logit Analysis (MNL); Logistic Regression
62 Brown and Molla (2005)	Journal of Internet Banking & Commerce	2005	SOUTH AFRICA	Adoption attitudes of Internet vs. mobile banking customers	142 vs. 158	Content Analysis; Comparative Analysis; Inferential Statistics (t-test)
63 Joseph et al. (2005)	International Journal of Bank Marketing	2005	UK	Factors affecting customer evaluation of IB service performance	198	Exploratory Factor Analysis (SEM)
64 Shergill and Li (2005)	Journal of E-Business	2005	NEW ZEALAND	Effects of trust, loyalty and demographics on customer use of IB	203	Descriptive Analysis; Kruskal-Wallis nonparametric test (substitute for ANOVA)
65 Siu and Muo (2005)	BRC (HKB University) Working Paper	2005	HONG KONG	Determinants of customer perception of IB service quality	6 + 10 + 195	Descriptive Analysis; Factor Analysis; t-test; ANOVA; Multiple Regression.
66 Wan et al. (2005)	International Journal of Bank Marketing	2005	HONG KONG	Factors affecting customer adoption of IB channels in Hong Kong	150+164=314	ANOVA, CFA, Chi-square test; hypothesis test.
67 Laforet and Li (2005)	International Journal of Bank Marketing	2005	CHINA	Personal characteristics of Online and Mobile banking customers	128	Descriptive Analysis; Pearson's Correlation Coefficient; t-test.
68 Bauer et al. (2005)	International Journal of Bank Marketing	2005	GERMANY	Measuring customer perception of e-banking channel quality	280	Exploratory and Confirmatory Factor Analyses (SEM) using LISREL.
69 Diniz et al. (2005)	The Elect Jour of Info Systems Evaluat	2005	BRAZIL	Evaluation of functionality, reliability & usability of IB in Brazil	3 bank websites	Web content and quality analysis
70 Chang et al. (2006)	Telomatics and Informatics	2006	TAIWAN	Security factors affecting Internet banking diffusion in Taiwan	70	Factor analysis, Cronbach's alpha, ANOVA, and F-value analysis
71 Kassim (2005)	Journal of Internet Banking & Commerce	2005	QATAR	Discrepancies between customer expectations & perceptions in IB	62	ANOVA; Gap score analysis with SERVQUAL; t-test.
72 Heinonen (2006)	Journal of Financial Services Marketing	2006	FINLAND	Measuring customer perception of e-banking self-service value	77	Conjoint Analysis of 12 attributes of the 4 value dimensions
73 Lichtenstein and Williamson (06)	Journal of Electronic Commerce Research	2006	AUSTRALIA	Factors influencing customer decision to adopt or not adopt IB	32	Grounded theory and qualitative content analysis
74 Ibrahim et al. (2006)	International Journal of Bank Marketing	2006	UK	Factors influencing customer perceptions of IB service quality	135	Mean scores of variables; Exploratory Factor Analysis; Cronbach's Alpha
75 Floh and Treibmaier (2006)	Journal of Electronic Commerce Research	2006	AUSTRIA	Factors enabling attraction and retention of IB customers	2075	CFA; Standard Regression; Multigroup & Latent Mean Analysis.
76 Fock and Koh (2006)	Int. Journal of Business and Information	2006	SINGAPORE	Effects of Trust and Commitment on customer adoption of IB	500	Cronbach's Alpha; Multiple Regression Analysis
77 Awamleh and Fernandes (2006)	Journal of Internet Banking & Commerce	2006	UAE	Factors influencing customer adoption of Internet banking	238	Confirmatory Factor Analysis (SEM); Multiple Linear Regression.
78 Ramayah et al. (2006)	Journal of Internet Banking & Commerce	2006	MALAYSIA	Factors influencing customer adoption of Internet banking	180	Frequencies and percentages; Linear Discriminant Analysis (LDA)
79 Williamson et al. (2006)	Int. Jour of Tech and human Interaction	2006	AUSTRALIA	Factors influencing Australian customers adoption of IB	32	Grounded theory and qualitative content analysis
80 Cheng et al. (2006)	Decision Support Systems	2006	HONG KONG	TAM and Web security factors affecting customer IB adoption	203	SEM (EFA and CFA); Hypothesis testing.
81 Laukkanen (2006)	International Journal of Electronic Finance	2006	FINLAND	Customer perceptions of electronic financial services quality	20	Hierarchical value mapping (HVM)
82 Durkin (2007a)	Marketing Intelligence & Planning	2007	UK	Internet impact on customer-bank relationships	480	Multiple Linear Regression.
83 Durkin (2007b)	Int. Rev. of Retail Distribution & Consu Res	2007	UK/USA/SWE/TRE	Registration factors that motivate or constrain IB adoption	480	Linear Regression (Linear least square analysis)
84 Durkin et al. (2007b)	Journal of Strategic Marketing	2007	UK	Customer preferences & satisfaction with e-banking channel	2118	Tests of significance and variance; Logistic Regression (using SPSS).
85 Shao (2007)	Journal of Internet Banking & Commerce	2007	USA	Trends in research on Internet banking adoption - '98 to '06	54 papers	Descriptive Analysis (Frequencies and percentages).
86 Hernandez and Mazzon (2007)	International Journal of Bank Marketing	2007	BRAZIL	Users/non-users perception of Internet banking & its adoption	600	EFA; Multiple Linear Regression; Multinomial Logistic Regression.
87 Berger and Gensler (2007)	International Journal of Bank Marketing	2007	GERMANY	Differences between online and offline banking customers	19	Descriptive Analysis (Frequencies and percentages)
88 Eriksson and Nilsson (2007)	Journal of Internet Banking & Commerce	2007	SWEDEN	Influence of 3rd-party assistance on Internet banking adoption	348	Multiple Linear Regression.
89 Nor and Pearson (2007)	Journal of Internet Banking & Commerce	2007	MALAYSIA	Influence of Trust and Innovation Diffusion on IB acceptance	1164	Confirmatory Factor Analysis (SEM)
90 Amin (2007)	Journal of Internet Banking & Commerce	2007	MALAYSIA	Internet banking acceptance among undergraduates	250	Confirmatory Factor Analysis (SEM); Multiple Linear Regression.
91 Yiu et al. (2007)	Int. Journal of Information Management	2007	HONG KONG	Factors influencing customer adoption of Internet banking	150	Percentages; Inferential Statistics (t-test); Correlation Coefficient
92 Laukkanen (2007a)	Int. Journal of Retail & Distribution Mgt.	2007	FINLAND	Customers' channel preferences for electronic banking services	2169 + 81	Conjoint Analysis; using Cluster Analysis and Analysis of variance (ANOVA)
93 Laukkanen (2007b)	IEEE Proceedings of the 40th annual HICSS	2007	FINLAND	Customers' channel preferences in requesting account balances	122 + 230	Conjoint Analysis - using the Full Profile Method with Analysis of variance
94 Srivatsa and Srinivasan (2007)	Int. Conf. on Marketing & Society paper	2007	INDIA	Effects of customers' psychographic attributes on IB adoption	537	Exploratory Factor Analysis (SEM) using the principal component analysis (PCA);
95 Kuisma et al. (2007)	Int. Journal of Information Management	2007	FINLAND	Factors responsible for customer resistance to IB adoption	30	Laddering in Means-end technique; Hierarchical value mapping (HVM)
96 Chiou et al. (2007)	Working Paper - NCU Taiwan	2007	TAIWAN	Effects of offline banking on customer adoption of online banking	537	Exploratory Factor Analysis (SEM) using the principal component analysis (PCA);
97 Guerrero et al. (2007)	Journal of Business Research	2007	15 EU COUNTRIES	Customer perceptions and usage of Internet banking channel in EU	16,059	Latent class regression analysis; Hypothesis analysis
98 Maenpaa et al. (2008)	Journ of Retailing & Consumer Services	2008	FINLAND	Role of accumulated experience in customer perception of IB	300	Principal Components Analysis/Exploratory Factor Analysis (SEM); ANOVA
99 Al-Hajri and Tatall (2008)	The Elect Jour for Virtual Orgs & Netwks	2008	OMAN/AUSTRALIA	Comparing the adoption of Internet banking in Oman & Australia	27	Qualitative and descriptive analyses with percentages.
100 Raman et al. (2008)	Journal of Internet Banking & Commerce	2008	MALAYSIA	Customer perception of e-banking service quality in malaysia	150	Frequencies; Chi-square analysis and ANOVA
101 Migdadi (2008)	Journal of Internet Banking & Commerce	2008	JORDAN/UK	Adoption of e-banking services in Jordanian & UK banks	16 + 17 = 33	t-test with SPSS; Kolmogorov-Smirnov test.
102 Poon (2008)	Journal of Bus & Industrial Marketing	2008	MALAYSIA	Comparison of IB service quality between Malaysia	324	Cronbach's Alpha, ANOVA, Mean Comparison, F-test and t-test of mean differences.
103 Jahangir and Begum (2008)	Journal of Management Research	2008	BANGLADESH	Factors that affect customer attitude to IB adoption in Bangladesh	227	Confirmatory Factor Analysis and SEM using AMOS 5.0 software.
104 Laukkanen et al. (2008)	International Journal of Bank Marketing	2008	FINLAND	Consumers' resistance to Internet banking	390	EPA, Cronbach's Alpha, KMO, ANOVA, Mean Comparison and F-statistics.
105 Polasik & Wisniewski (2008)	International Journal of Bank Marketing	2008	POLAND	Empirical analysis of Internet banking in Poland	3519	Mean Comparison, Binomial Logistic Regression, z-statistic & McFadden R-squared
106 Aldas-Manzano et al. (2009)	International Journal of Bank Marketing	2009	SPAIN	The role of innovativeness and perceived risk on IB usage	511	CFA, Cronbach's Alpha and Hypothesis testing with standardised path coefficients.





APPENDIX 1B: FACTORS THAT HAVE INFLUENCED CUSTOMER ADOPTION OF INTERNET BANKING AROUND THE WORLD SINCE ITS INCEPTION (1997 - 2008)

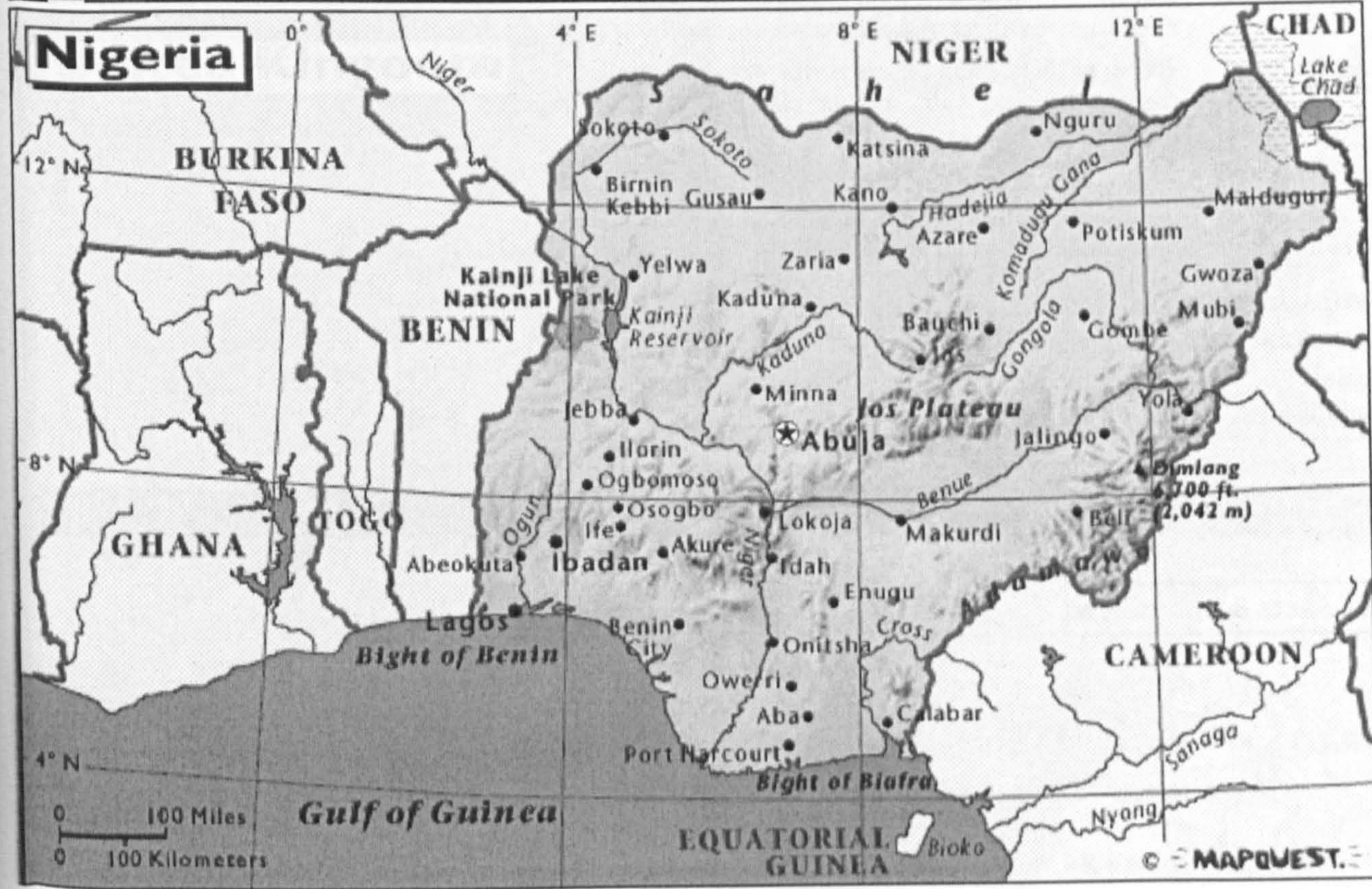
AUTHOR/YEAR	LOCATION	Age	Gender	Income	Education	Marital Status	Occupation	Res. Area	Customer-related factors				Channel-related factors				Security	Cost	
									Prior Knowledge	Prior Experience	Self Efficacy	Awareness	Access to PC	Prior Involvement	Risk Perception	Variety seeking			Control desire
1 Barczak et al (1997)	USA																	X	
2 Ramaswami et al (1998)	USA			X	X				X	X						X			X
3 Sathye (1999)	AUSTRALIA	X		X	X		X		X	X						X			X
4 Daniel (1999)	UK/R. IRELAND			X	X				X	X						X			X
5 Ramsay & Smith (1999)	AUSTRALIA	X		X	X				X	X						X			X
6 Liao et al (1999)	HONG KONG			X	X				X	X						X			X
7 Joseph et al (1999)	AUSTRALIA			X	X				X	X						X			X
8 Kim and Prabhakar (2000)	USA			X	X				X	X						X			X
9 Kolodinsky et al (2000)	USA	X		X	X	X		X	X	X						X			X
10 Tan and Teo (2000)	SINGAPORE			X	X		X		X	X						X			X
11 Beckett et al. (2000)	UK	X		X	X				X	X						X			X
12 Guru et al (2000)	MALAYSIA			X	X				X	X						X			X
13 Thornton and White (2001)	AUSTRALIA			X	X				X	X						X			X
14 Jun and Cai (2001)	USA			X	X				X	X						X			X
15 Suganthi et al. (2001)	MALAYSIA	X		X	X				X	X						X			X
16 Polatoglu and Ekin (2001)	TURKEY			X	X				X	X						X			X
17 Aladwani (2001)	KUWAIT			X	X				X	X						X			X
18 Nath et al. (2001)	USA			X	X				X	X						X			X
19 Bradley and Stewart (2002)	EUROPE/USA			X	X				X	X						X			X
20 Karjalanto et al (2002a)	FINLAND	X		X	X	X		X	X	X						X			X
21 Karjalanto et al (2002b)	FINLAND			X	X		X		X	X						X			X
22 Black et al (2002)	UK			X	X				X	X						X			X
23 Chung and Paynter (2002a)	NEW ZEALAND			X	X				X	X						X			X
24 Hain et al (2002)	AUSTRALIA	X		X	X				X	X						X			X
25 Munene et al (2002)	AUSTRALIA			X	X				X	X						X			X
26 Suh and Han (2002)	SOUTH KOREA			X	X				X	X						X			X
27 Howcroft et al (2002)	UK	X		X	X				X	X						X			X
28 Zhu et al. (2002)	USA	X		X	X				X	X						X			X
29 Liao and Cheung (2002)	SINGAPORE			X	X				X	X						X			X
30 Seigimpagila and Ely (2002)	USA	X		X	X				X	X						X			X
31 Gurau (2002)	ROMANIA			X	X				X	X						X			X
32 Wungwanitchakorn (2002)	THAILAND			X	X				X	X						X			X
33 Mattila et al (2003)	FINLAND			X	X				X	X						X			X
34 Gerrard and Cunningham (2003)	SINGAPORE			X	X				X	X						X			X
35 Wang et al (2003)	TAIWAN			X	X				X	X						X			X
36 Patricia et al (2003)	PORTUGAL	X		X	X				X	X						X			X
37 Mukherjee and Nath (2003)	INDIA			X	X				X	X						X			X
38 Rexha et al (2003)	SINGAPORE			X	X				X	X						X			X
39 Lang and Colgate (2003)	NEW ZEALAND			X	X				X	X						X			X
40 Kerem (2003)	ESTONIA			X	X				X	X						X			X
41 Sarel and Marmorstein (2003)	USA			X	X				X	X						X			X
42 Joseph and Stone (2003)	USA			X	X				X	X						X			X
43 Sohal and Shanmugham (2003)	MALAYSIA			X	X				X	X						X			X
44 Rotchanakitumnuai et al (2003)	THAILAND			X	X				X	X						X			X
45 Sui-cheung and Ming-te (2004)	HONG KONG			X	X				X	X						X			X
46 Kolodinsky et al (2004)	USA			X	X				X	X						X			X
47 Waite and Harrison (2004)	UK (SCOTLAND)			X	X				X	X						X			X
48 Durkin (2004)	SWE/USA/UK (N.I.)			X	X				X	X						X			X
49 Pitkarainen et al (2004)	FINLAND			X	X				X	X						X			X
50 Rotchanakitumnuai & Speece(04)	THAILAND			X	X				X	X						X			X
51 White and Neel (2004)	UK			X	X				X	X						X			X
52 Akincl et al (2004)	TURKEY			X	X				X	X						X			X
53 Singh (2004)	SOUTH AFRICA			X	X				X	X						X			X
54 Shih and Fang (2004)	TAIWAN			X	X				X	X						X			X
55 Al-Sabbagh and Molla (2004)	OMAN			X	X				X	X						X			X
56 Flavian et al. (2005)	SPAIN			X	X				X	X						X			X
57 Lassar et al (2005)	USA			X	X				X	X						X			X
58 Eriksson et al (2005)	ESTONIA			X	X				X	X						X			X
59 Rotchanakitumnuai & Speece(05)	THAILAND			X	X				X	X						X			X
60 Gerrard and Cunningham (2005)	SINGAPORE			X	X				X	X						X			X
61 Lee et al (2005)	USA			X	X				X	X						X			X
62 Brown and Molla (2005)	SOUTH AFRICA			X	X				X	X						X			X
63 Joseph et al (2005)	UK			X	X				X	X						X			X
64 Shergill and Li (2005)	NEW ZEALAND			X	X				X	X						X			X
65 Siu and Muo (2005)	HONG KONG			X	X				X	X						X			X
66 Wan et al (2005)	HONG KONG			X	X				X	X						X			X
67 Laforet and Li (2005)	CHINA			X	X				X	X						X			X
68 Bauer et al (2005)	GERMANY			X	X				X	X						X			X
69 Diniz et al (2005)	BRAZIL			X	X				X	X						X			X
70 Chang et al. (2006)	TAIWAN			X	X				X	X						X			X
71 Kassim (2005)	QATAR			X	X				X	X						X			X
72 Heinonen (2006)	FINLAND			X	X				X	X						X			X
73 Lichtenstein and Williamson (06)	AUSTRALIA			X	X				X	X						X			X

**APPENDIX 1C: FREQUENCY SUMMARY OF THE FACTORS THAT HAVE INFLUENCED CUSTOMER ADOPTION OF INTERNET BANKING AROUND THE WORLD - IDENTIFIED FROM 106 JOURNAL ARTICLES PUBLISHED DURING THE PERIOD 1997 - 2008:**

S/N	FACTORS	1997 - 2000		2001 - 2004		2005 - 2008		TOTAL	
		FREQUENCY	%	FREQUENCY	%	FREQUENCY	%	FREQUENCY	%
<b>A) CUSTOMER-RELATED FACTORS:</b>									
1	Age	4	33	9	21	6	12	19	18
2	Gender	1	8	4	9	7	14	12	11
3	Level of Income	4	33	12	28	11	22	27	26
4	Level of Education	4	33	9	21	9	18	22	21
5	Marital Status	1	8	3	7	0	0	4	4
6	Occupation/Employment status	1	8	2	5	3	6	6	6
7	Residential Area	1	8	1	2	1	2	3	3
8	Prior Knowledge of computer & Internet	3	25	24	56	22	43	49	46
9	Prior Experience of computer & Internet	3	25	24	56	22	43	49	46
10	Self Efficacy vs. Technophobia (confidence)	2	17	10	23	7	14	19	18
11	Awareness of Internet Banking option/benefits	2	17	16	37	14	27	32	30
12	Access to PC & Internet	7	58	27	63	23	45	57	54
13	Prior Involvement with banking technology in general	4	33	18	42	23	45	45	42
14	Risk Perception & willingness to accept risks	2	17	16	37	17	33	35	33
15	Variety seeking behaviour/willingness to change	2	17	7	16	6	12	15	14
16	Control desire over service delivery	4	33	4	9	5	10	13	12
		N = 12		N = 43		N = 51		N = 106	
<b>B) WEB CHANNEL-RELATED FACTORS:</b>									
17	Perceived Convenience	8	67	31	72	39	76	78	74
18	Perceived Usefulness (Relevance)	4	33	29	67	35	68	68	64
19	Perceived Ease of Use	6	50	30	70	36	71	72	68
20	Adequate information & guidance online	3	25	19	44	24	47	46	43
21	Effective marketing communications of IB uses & benefits	2	17	18	42	17	33	37	35
22	Processing/navigation speed & accuracy of IB the website	3	25	32	74	34	67	69	65
23	Security & privacy assurance online (antecedent to trust)	8	67	37	86	45	82	90	85
24	Channel cost	5	42	24	56	15	29	44	42
		N = 12		N = 43		N = 51		N = 106	

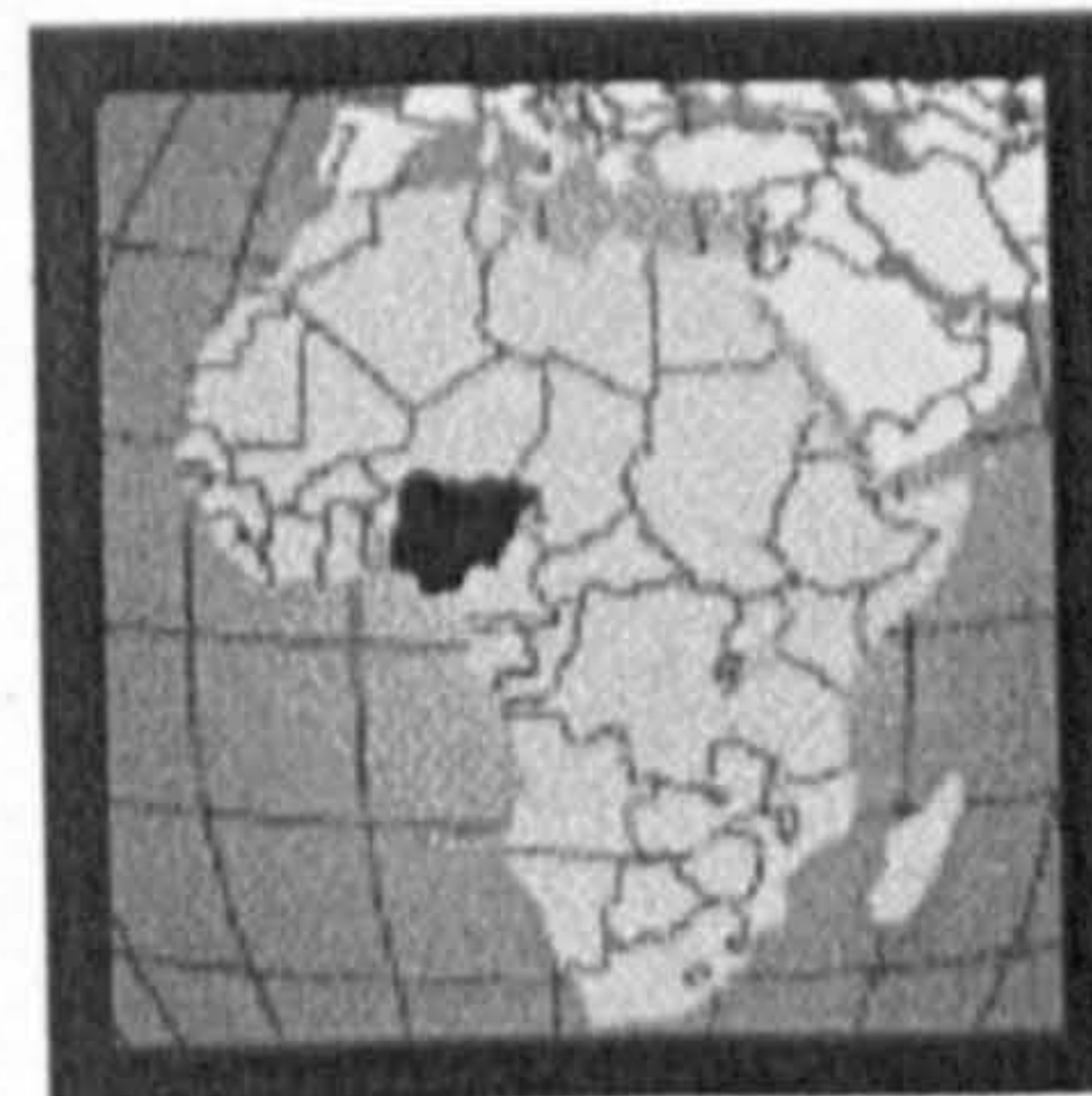
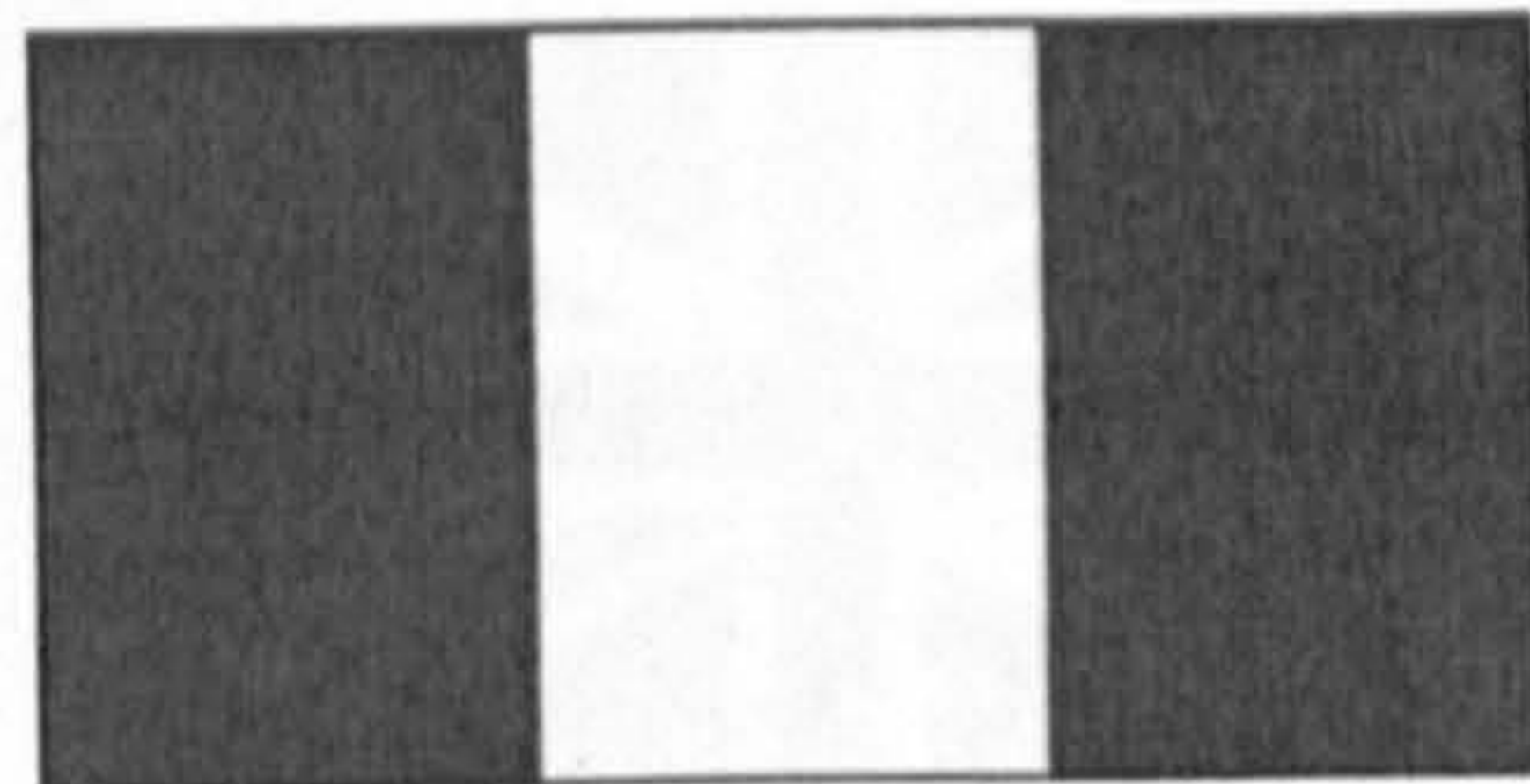
**DECISION:** All factors that occurred over 20 times out of 106 over the years (i.e, above 20% total frequency) were selected for further investigation in the present study. The selected factors are those shaded in the last column.

**TEXT BOUND INTO  
THE SPINE**



Africa | World

Country (long form)	Federal Republic of Nigeria
Capital	Abuja
Total Area	356,668.82 sq mi 923,768.00 sq km (slightly more than twice the size of California)
Population	126,635,626 (July 2001 est.) note: estimates for this country explicitly take into account the effects of excess mortality due to AIDS; this can result in lower life expectancy, higher infant mortality and death rates, lower population and growth rates, and changes in the distribution of population by age and sex than would otherwise be expected
Estimated Population in 2050	303,586,770
Languages	English (official), Hausa, Yoruba, Igbo (Ibo), Fulani
Literacy	57.1% total, 67.3% male, 47.3% female (1995 est.)
Religions	Muslim 50%, Christian 40%, indigenous beliefs 10%
Life Expectancy	51.07 male, 51.07 female (2001 est.)
Government Type	republic transitioning from military to civilian rule
Currency	1 naira (N) = 100 kobo
GDP (per	\$950 (2000 est.)



capita)

**Industry** crude oil, coal, tin, columbite, palm oil, peanuts, cotton, rubber, wood, hides and skins, textiles, cement and other construction materials, food products, footwear, chemicals, fertilizer, printing, ceramics, steel

**Agriculture** cocoa, peanuts, palm oil, corn, rice, sorghum, millet, cassava (tapioca), yams, rubber; cattle, sheep, goats, pigs; timber; fish

**Arable Land** 33%

**Natural Resources** natural gas, petroleum, tin, columbite, iron ore, coal, limestone, lead, zinc, arable land

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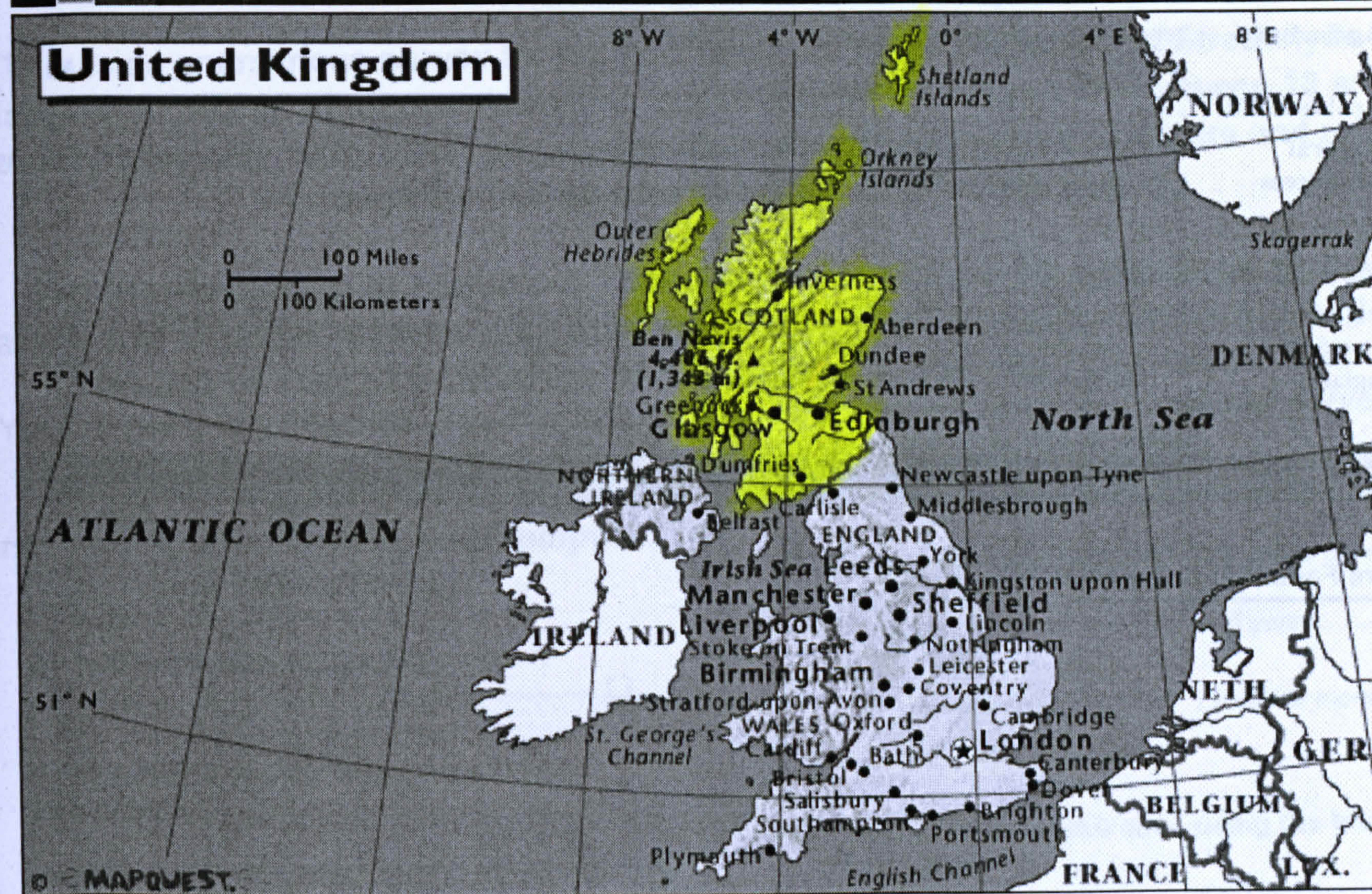
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HOLT, RINEHART AND WINSTON



Europe | World

**Country (long form)** United Kingdom of Great Britain and Northern Ireland

**Capital** London

**Total Area** 94,525.53 sq mi  
244,820.00 sq km  
(slightly smaller than Oregon)

**Population** 59,647,790 (July 2001 est.)

**Estimated Population in 2050** 58,210,627

**Languages** English, Welsh (about 26% of the population of Wales), Scottish form of Gaelic (about 60,000 in Scotland)

**Literacy** 99% total, N/A% male, N/A%, (1978 est.)

**Religions** Anglican 27 million, Roman Catholic 9 million, Muslim 1 million, Presbyterian 800,000, Methodist 760,000, Sikh 400,000, Hindu 350,000, Jewish 300,000 (1991 est.)

**Life Expectancy** 75.13 male, 80.66 female (2001 est.)

**Government Type** constitutional monarchy

**Currency** 1 British pound = 100 pence

**GDP (per capita)** \$22,800 (2000 est.)

**Industry** machine tools, electric power equipment, automation equipment, railroad equipment, shipbuilding, aircraft,



motor vehicles and parts, electronics and communications equipment, metals, chemicals, coal, petroleum, paper and paper products, food processing, textiles, clothing, and other consumer goods

**Agriculture** cereals, oilseed, potatoes, vegetables; cattle, sheep, poultry; fish

**Arable Land** 25%

**Natural Resources** coal, petroleum, natural gas, tin, limestone, iron ore, salt, clay, chalk, gypsum, lead, silica, arable land

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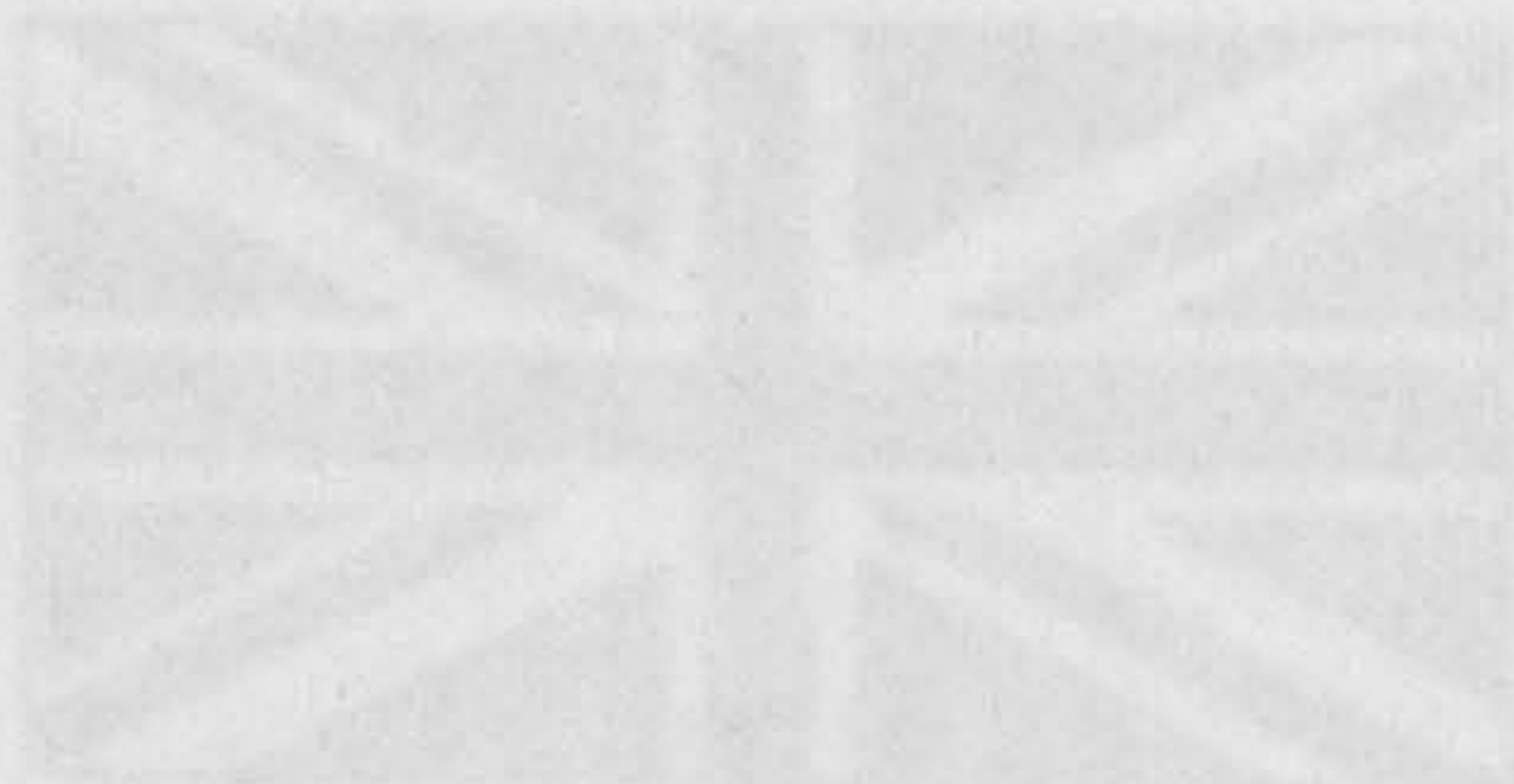
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# Internet banking adoption behaviours:

This is an anonymous survey for my PhD research at the University of Strathclyde in Glasgow, Scotland. Kindly complete this questionnaire only if you are between 18 and 64 years. It takes only 10 to 15 minutes to complete. Please fill the questionnaire and return it through the person who has given or sent it to you.

No identification is required. This survey contains no questions about anybody's name, address, or date of birth. All information provided will be treated in strict confidence and used for academic purposes only. You may skip any question uncomfortable to you. Your kind return of the completed survey is regarded as your consent to participate in the survey. Thank you.

First, a few questions about your computer and Internet usage:

Q1 Do you know how to use a computer?  
Yes.....  No .....

Q2 If NO, why do you not know how to use a computer?  
\_\_\_\_\_

Q3 Do you presently use the internet?  
Yes.....  No .....

Q4 If NO, why do you not use the internet?  
\_\_\_\_\_

Q5 On average how often do you use a computer presently?

- |   |  |
|---|--|
| Continuously through every day <input type="checkbox"/> | Less than 1 hour every day ..... <input type="checkbox"/>    |
| 4 to 8 hours every day..... <input type="checkbox"/>    | A few hours once or twice a week... <input type="checkbox"/> |
| 1 to 3 hours every day..... <input type="checkbox"/>    | A few hours once or twice a month. <input type="checkbox"/>  |

Q6 On average how often do you use the Internet presently?

- |   |   |
|---|---|
| Continuously through every day <input type="checkbox"/> | Less than 1 hour every day ..... <input type="checkbox"/>       |
| 4 to 8 hours every day..... <input type="checkbox"/>    | A few hours once or twice a week... <input type="checkbox"/>    |
| 1 to 3 hours every day..... <input type="checkbox"/>    | A few hours once or twice a month..... <input type="checkbox"/> |

Q7 How long have you been using the computer in general?

- |  |  |
|--|--|
| Less than 6 months..... <input type="checkbox"/> | 4 - 6 years..... <input type="checkbox"/>    |
| 6 - 11 months ..... <input type="checkbox"/>     | 7 years or more ... <input type="checkbox"/> |
| 1 - 3 years ..... <input type="checkbox"/>       |  |

Q8 How long have you been using the Internet in general?

- |  |  |
|--|--|
| Less than 6 months..... <input type="checkbox"/> | 4 - 6 years..... <input type="checkbox"/>    |
| 6 - 11 months ..... <input type="checkbox"/>     | 7 years or more ... <input type="checkbox"/> |
| 1 - 3 years ..... <input type="checkbox"/>       |  |

Q9 How comfortable do you feel using computers in general?

- |  |
|--|
| Very comfortable..... <input type="checkbox"/>                       |
| Somewhat comfortable..... <input type="checkbox"/>                   |
| Neither comfortable nor uncomfortable ..... <input type="checkbox"/> |
| Somewhat uncomfortable..... <input type="checkbox"/>                 |
| Very uncomfortable..... <input type="checkbox"/>                     |

Q10 How comfortable do you feel using the Internet in general?

- |  |
|--|
| Very comfortable..... <input type="checkbox"/>                       |
| Somewhat comfortable..... <input type="checkbox"/>                   |
| Neither comfortable nor uncomfortable ..... <input type="checkbox"/> |
| Somewhat uncomfortable..... <input type="checkbox"/>                 |
| Very uncomfortable..... <input type="checkbox"/>                     |



**Q11** How satisfied are you with your current skills of computer and Internet usage?  
 Very satisfied - I can do everything  
 I want to do.....   
 Somewhat satisfied - I can do most things I want to do.....   
 Neither satisfied nor unsatisfied.....   
 Somewhat unsatisfied - I can't do many things I would like to do.....   
 Very unsatisfied - I can't do most of the things I would like to do.....

I would like to know your overall attitude to the Internet banking channel, starting from question 12:

**Q12** Which of the following provides your present banking needs? (Tick only one)

- |   |                          |                                   |                          |
|---|--------------------------|-----------------------------------|--------------------------|
| A bank .....                                  | <input type="checkbox"/> | A development finance institution | <input type="checkbox"/> |
| A building society/mortgage institution ..... | <input type="checkbox"/> | All the above .....               | <input type="checkbox"/> |
| A non-bank finance company                    | <input type="checkbox"/> | None .....                        | <input type="checkbox"/> |

**Q13** How long have you been using your present banking needs provider?  
 Less than 6 months.....       4 - 6 years.....   
 6 - 11 months .....       7 years or more...   
 1 - 3 years .....

**Q14** Do you presently use the Internet banking channel? (for transactions or emails or other secured communications with your banking provider)  
 Yes .....       No .....

**Q15** If you answered 'NO' to Q14, please tick why you do not use Internet banking? (tick all that apply)

- I am sure my bank does not offer Internet banking.....
- I am not aware if my bank offers Internet banking.....
- I feel that using Internet banking is too risky for me.....
- I do not think it is useful for my banking needs.....
- I do not have enough information and knowledge about Internet banking.....
- The Internet banking registration process is too complicated for me.....
- I do not think I earn enough to bank online so it is no use to me.....
- We hardly have electricity, so it is no use.....
- I have no computer and no Internet access.....
- I have a computer but no Internet access.....
- I use a cybercafe and it is not secure for Internet banking.....
- It is too costly as my bank charges extra service fee for Internet banking.....

**Q16** If you answered 'YES' to Q14, how often do you use Internet banking?

- Several times a day.....
- About once or twice a day.....
- Several times a week.....
- About once or twice a week.....
- Several times a month.....
- About once or twice a month.....
- Only once or twice before, and none since then.....

**Q17** How long have you been using Internet banking in general?

- Less than 6 months.....       4 - 6 years.....
- 6 - 11 months.....       7 years or more.....
- 1 - 3 years.....

**Q18** When last did you use the Internet banking service?

- Today.....       One to three weeks ago.....
- Yesterday.....       A month ago.....
- A few days ago.....       Two or more months ago.....

**What services have you used Internet banking for? (Tick all that apply)**

- Checking my bank balance and statements.....
- Sending and receiving secured messages to and from my bank .....
- Opening new accounts.....
- Requesting for cheque/deposit booklets.....
- Filling complaint/ suggestion forms .....
- Paying my bills .....
- Requesting for loans/overdrafts.....
- Confirming cheques that I issued .....
- Stopping cheques that I don't want paid.....
- Confirming/changing username & password when necessary.....
- Transferring funds between accounts in the same bank .....
- Transferring funds between accounts in different banks .....
- Requesting for credit/debit/smart/value cards.....
- Notifying my bank when I lose my card.....
- Notifying my bank when my account details fall into wrong hands .....

**How satisfied are you with your current usage of Internet banking services?**

- Very satisfied .....
- Somewhat satisfied .....
- Neither satisfied nor unsatisfied .....
- Somewhat unsatisfied.....
- Very unsatisfied.....

Please, indicate your level of agreement or disagreement with the following statements (Tick one for each completing statement below):

**For a bank customer to adopt and use Internet banking, he or she must have ...**

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neither Agree Nor Disagree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
... known how to use a computer and the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... had previous experience of using computers and the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... had some formal education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... a regular source of income	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... regular access to a computer and the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... been aware of the benefits and advantages of Internet banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... been generally involved in banking transactions as a customer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... had the willingness to accept that the Internet is generally associated with some risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**For a bank's website to be ready for customer adoption and usage of Internet banking, it must ...**

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neither Agree Nor Disagree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
... have adequate and clear information about Internet banking procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... make Internet banking easy to register for, to try, and to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... communicate the benefits and advantages of Internet banking effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... make Internet banking useful for the customers' banking needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... make Internet banking more convenient and time-saving for customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... be fast and simple to navigate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... display a statement of adequate security guarantee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... involve no extra or hidden charges for Internet banking services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q23 What is your attitude generally toward Internet banking? (Tick only one)

- Very positive - I believe it is absolutely useful..
- Positive - I believe it is somewhat useful .....
- Neither positive nor negative - I don't know.....
- Negative - I believe it is somewhat useless .....
- Very negative - I believe it is absolutely useless.....

Q24 If you are not already using Internet banking, do you intend to start using it any time soon? (Tick only one)

- I am already using it .....
- Yes, very soon .....
- Yes, but not very soon .....
- No, but maybe in some distant future.....
- I don't know; I have not thought of it .....
- No, never at all.....

Finally, I'd like to ask you some personal questions necessary for this research without identifying you:

Q25 What is your Gender?

- Male.....
- Female .....

Q26 Which city or town do you live in presently?

\_\_\_\_\_

Q27 To what age range do you belong?

- 18-24.....
- 25-34.....
- 35-44.....
- 45-54.....
- 55-64.....

Q28 What is your present relationship status?

- Single.....
- Married.....
- In Civil Partnership.....
- Widow/ Widower.....
- Divorced/ Separated.....

Q29 What is your highest level of education (Tick only one)

- No formal education .....
- Primary school .....
- Secondary school .....
- Post secondary.....
- College Diploma/ Professional Certificate .....
- Bachelor's Degree .....
- Master's Degree.....
- Doctorate Degree .....

Q30 Please what is your present job status?

- Student/part-time worker .....
- Salaried employee .....
- Self-employed.....
- Home duties .....
- Managerial/directorial level employee .....
- Professional/Expert.....
- Retired.....
- Unemployed.....

Q31 What is your present occupation/position?

\_\_\_\_\_

Q32 To enable me determine if there is a link between income level and internet banking adoption, please which one below best describes your present income level:

- Very low income level .....
- Low income level .....
- Medium income level.....
- High income level .....
- Very high income level.....

THANK YOU SO MUCH FOR YOUR KIND HELP.

# Help!

University of  
**Strathclyde**  
Business  
School



**ARE YOU AGED BETWEEN 18 AND 64?**

If so, please help me to complete my PhD research project by filling out my **anonymous survey** at:

**<http://s-tagg.market.strath.ac.uk/q/po/new001.htm>**

It only takes 10 to 15 minutes to complete.

**The anonymous information collected will be used in strict confidence and for academic purposes only.**

Thank you so much.

Okey Peter Onyia

(PhD Researcher/Graduate Teaching Assistant)

Department of Marketing

University of Strathclyde

Glasgow G4 0RQ

United Kingdom

Telephone: 07951382177

Email: [okey.onyia@strath.ac.uk](mailto:okey.onyia@strath.ac.uk)

Official profile: <http://www.strath.ac.uk/marketing/phd/onyiaokeymr/>

**[NB: This survey is also available as a paper survey distributed by post and email]**

12th December, 2007

The Chief Executive (Scotland)  
**Lloyds TSB Scotland PLC**  
Henry Duncan House  
120 George Street  
Edinburgh EH2 4LH  
Scotland  
UK

Dear Sir,

INTRODUCTION OF MR OKEY PETER ONYIA - PhD STUDENT RESEARCHER

As a courtesy, we write to introduce to you Mr. Okey Peter Onyia, a PhD research student in the department of Marketing of this university.

For his PhD thesis, the student has been authorised to conduct an anonymous survey (online and offline) on retail customers' Internet banking adoption behaviours.

The research, which is organised and supervised by this department, is not focused on any one particular bank as the respondents will be recruited by direct solicitation of individuals between 18 and 64 years of age during a 4-month period (December '07 – March '08).

However, should you decide to offer the student any assistance in recruiting respondents for the study, it would be highly appreciated.

Lastly, the department wishes to confirm that the anonymous data collected in this research will be used in strict confidence and for academic purposes only. The survey site is <http://s-tagq.market.strath.ac.uk/q/po/new001.htm>  
You may contact any of the undersigned should you need any further clarification on the study.

Thank you.

Yours faithfully,

Professor Alan Wilson  
Head of Department of Marketing

Dr. Steven Tagg (Supervisor)  
Director of PhD Programme

## **RE: My PhD Field Survey - Request for an introduction letter from the HoD**

Stan Paliwoda

**Sent:** 28 November 2007 13:24

**To:** Okey Onyia

**Cc:** Stephen Tagg; Morag McDonald; Jan Whiteford

---

Your ethics application was approved this afternoon. In terms of age range, try to keep it within 64. You ask interviewees if they are in fact over 65 but you should not even be interviewing anyone over 65 without special permission of the University!

Quite aside from the issue of ethics and in a spirit of pure collegiality, we noted two points in your questionnaire. The first is that you should just use the terms 'widow' and 'widower'. 'Widowed' is OK but 'widowed' does seem strange!

The other point was on the cut-off points for income. Those using Internet banking are supposedly more affluent and so we queried the income cut off point of £60,000, suggesting that it may be extended so that you have 60,000-100,000 and a top bracket >£100,000.

Best wishes

Stan Paliwoda

---

**From:** Okey Onyia

**Sent:** 28 November 2007 12:45

**To:** Stan Paliwoda

**Cc:** Stephen Tagg

**Subject:** FW: My PhD Field Survey - Request for an introduction letter from the HoD

Dear Prof Paliwoda,

The emails (in blue) below are from Morag. To enable Prof Allan Wilson to sign my introduction letter, I have been asked by Morag to find out from you if you are ok with my submission/work so far, and to confirm that there are no undue ethical issues involved in my survey. Kindly revert on this, sir.

Thank you.

Okey Peter Onyia

PhD Researcher/Tutor

Department of Marketing

University of Strathclyde

Glasgow

G4 0RQ

[okey.onyia@strath.ac.uk](mailto:okey.onyia@strath.ac.uk)

Mobiles: 07951382177; 07772825439

Office Land line: 0141 548 3194

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**From:** Morag McDonald

**Sent:** 28 November 2007 12:27

**To:** Okey Onyia

**Subject:** RE: My PhD Field Survey - Request for an introduction letter from the HoD

Hi Peter

Did you receive any feedback from Stan or is he happy with your submission?

Morag

---

**From:** Okey Onyia

**Sent:** 28 November 2007 12:16

**To:** Morag McDonald

**Subject:** RE: My PhD Field Survey - Request for an introduction letter from the HoD

Hi Morag,

I have completed and submitted my application forms for the departmental ethics committee to Professor Paliwoda, who has emailed me to acknowledge that. I have not personally talked with him, but he has all my research documents and knows about my work so far. He is my second supervisor and has sat in all my thesis committee assessments so far.

Thanks,

Peter

---

**From:** Morag McDonald

**Sent:** 28 November 2007 10:39

**To:** Okey Onyia

**Subject:** RE: RE: My PhD Field Survey - Request for an introduction letter from the HoD

Hi Peter

Alan has now looked over your letter and is happy to sign, however, before he does he has asked if you have discussed your research with Stan Paliwoda in his role as Ethics Committee member, if not can you please do so.

Morag

---

**From:** Okey Onyia

**Sent:** 23 November 2007 17:53

**To:** Morag McDonald

**Cc:** Stephen Tagg

**Subject:** RE: My PhD Field Survey - Request for an introduction letter from the HoD

Dear Morag,

As I am about to commence my data collection for my PhD research, I do need a formal letter of introduction from the head of department confirming that I am a bona-fide research student of the department authorised to conduct my survey.

My research is a cross-national survey in Scotland and Nigeria on retail customers' attitudes to Internet banking adoption. Having agreed my questionnaire with my supervisor, I am currently

conducting my pilot study within the faculty, hoping to start the main work in December. I have also sent my completed application form to the departmental ethics committee this afternoon.

I have herewith attached a **draft of the introduction letter** that I would like Professor Wilson to endorse for me, which I am also to forward to the departmental ethics committee. Also attached are **an abstract of my research** and a copy of my survey questionnaire for Professor Wilson's perusal. I should be glad to come over and explain further if need be.

Thank you.

Kind regards

Okey Peter Onyia  
PhD Researcher/Tutor  
Department of Marketing  
University of Strathclyde  
Glasgow  
G4 0RQ  
[okey.onyia@strath.ac.uk](mailto:okey.onyia@strath.ac.uk)  
Mobiles: 07951382177; 07772825439  
Office Land line: 0141 548 3194



## APPENDIX 8:

### EXPERT OPINIONS AND SUGGESTIONS FROM THE PILOT STUDY - AS DISCUSSED AT A SUPERVISION MEETING

Date of meeting:...07=12=07...

#### 1. Pilot study responses:

- |                 |                      |
|-----------------|----------------------|
| - Total         | - 20 units (100% RR) |
| - From Scotland | - 12                 |
| - From Nigeria  | - 8                  |

#### 2. Comments from the departmental thesis committee:

- The survey questionnaire was approved for the study.
- Restrict the age range of the respondents to between 18 and 64, instead of 65.
- Use “widow/widower” instead of “widowed/widowed”
- Instead of upper income cut-off point of £60,000, add more ranges between £60,000 and £100,000, so that the upper cut-off point becomes £100,000.

#### 4. General observation from the responses received:

- The 20 questionnaires received were mostly completed. None was abandoned half-way, but a few questions were left unanswered.
- 3 respondents (15%) left out the question about the **name of their banks**, while 17 (85%) indicated it.
- 2 respondents (10%) left out the question about **their present occupation/profession**, while 18 (90%) filled in theirs.
- 8 respondents (40%) left out the question about **their income**, while 12 (60%) provided it.

#### 5. Comments from four of the pilot study respondents:

- From Mr. John Dunn (Lecturer, Finance and Accounting Department):
  - Need to firmly assure respondents about the anonymity of the survey. “One thing that might help would be a screen at the beginning that makes it absolutely clear that the survey will not ask for respondents’ names, addresses, or dates of birth”.
  - Encourage them to fill in only as much as they feel comfortable with and leave out any questions that give them concern.
  - “Only one question worried me – the one about the name of my bank”.
  - Your basic problem would be the widespread awareness about the problem of identity fraud and spams designed to grab bank details on daily basis.
  - The study looks an important one.

- From Dr. Paul Hewer (Lecturer, Marketing Department):
  - Why no numbers? (SNAP does not number the web version but numbers were be indicated on the email and paper-handout versions).
  - Not sure that number of times of computer and Internet usage will be useful; needs to be more specific (say, hours per day).
  - Questions about respondent's bank and whether or not they bank online appears too private (i.e., recent loss of child benefits details).
  - Not sure why non-users should be filling the questionnaire
  - Questions on general attitude to Internet banking are good and should come earlier.
  
- From Oliver Borchert (Doctoral Researcher, Marketing Department):
  - To establish volume of use of computer and Internet, asking "how much time (minutes/hours per day)" might be more accurate than asking how many times a day.
  - Exchanging "emails" with one's bank is usually referred to "messages or secure messages". Consider adding that to the list of services instead of referring to it as "emails"
  - Some people will feel uncomfortable about providing their income and you may risk their abandoning the survey by closing their browser instead of submitting the survey. Consider another way to obtain the same information about their income levels.
  
- From an anonymous Nigerian middle manager of a departmental store:
  - "I had no problem with answering any question in the pilot survey. Here, people regard income bracket as a usual and common feature of most surveys, but having studied in the UK at Bath University, I know that people in the UK may not find it comfortable. You may consider changing the question to something like this:  
**"To what income level would you say you belong?"**
    - \* **Low income earner**
    - \* **Medium income earner**
    - \* **High income earner"**

## Appendix 9

### *GNP/Capita 2001 (US\$) and Hofstede Country Scores for 64 Countries*

<i>COUNTRY</i>	<i>Abbreviation</i>	<i>GNP/cap</i>	<i>PDI</i>	<i>IDV</i>	<i>MAS</i>	<i>UAI</i>	<i>LTO</i>
Argentina	ARG	6,960	49	46	56	86	
Australia	AUL	19,770	36	90	61	51	31
Austria	AUT	23,940	11	55	79	70	31
Bangladesh	BAN	0,370	80	20	55	60	40
Belgium	BEL	23,340	65	75	54	94	38
Brazil	BRA	3,060	69	38	49	76	65
Bulgaria	BUL	1,560	70	30	40	85	
Canada	CAN	21,340	39	80	52	48	23
Chile	CHL	4,350	63	23	28	86	
China	CHN	0,890	80	20	66	30	118
Colombia	COL	1,910	67	13	64	80	
Costa Rica	COS	3,950	35	15	21	86	
Croatia	CRO	4,650	73	33	40	80	
Czech Republic	CZE	5,270	57	58	57	74	13
Denmark	DEN	31,090	18	74	16	23	46
Ecuador	ECA	1,240	78	8	63	67	
Estonia	EST	3,880	40	60	30	60	
Finland	FIN	23,940	33	63	26	59	41
France	FRA	22,690	68	71	43	86	39
Germany	GER	23,700	35	67	66	65	31
Great Britain	GBR	24,230	35	89	66	35	25
Greece	GRE	11,780	60	35	57	112	
Guatemala	GUA	1,670	95	6	37	101	
Hong Kong, China	HOK	25,920	68	25	57	29	96

COUNTRY	Abbreviation	GNP/cap	PDI	IDV	MAS	UAI	LTO
Hungary	HUN	4,800	46	80	88	82	50
India	IND	0,460	77	48	56	40	61
Indonesia	IDO	0,680	78	14	46	48	
Iran	IRA	1,750	58	41	43	59	
Ireland	IRE	23,060	28	70	68	35	43
Israel	ISR	16,710	13	54	47	81	
Italy	ITA	19,470	50	76	70	75	34
Jamaica	JAM	2,720	45	39	68	13	
Japan	JPN	35,990	54	46	95	92	80
Korea, Rep.	KOR	9,400	60	18	39	85	75
Malaysia	MAL	3,640	104	26	50	36	
Malta	MLT	9,120	56	59	47	96	
Mexico	MEX	5,540	81	30	69	82	
Morocco	MOR	1,180	70	46	53	68	
Netherlands	NET	24,040	38	80	14	53	44
New Zealand	NZL	12,380	22	79	58	49	30
Norway	NOR	35,530	31	69	8	50	44
Pakistan	PAK	0,420	55	14	50	70	0
Panama	PAN	3,290	95	11	44	86	
Peru	PER	2,000	64	16	42	87	
Philippines	PHI	1,050	94	32	64	44	19
Poland	POL	4,240	68	60	64	93	32
Portugal	POR	10,670	63	27	31	104	30
Romania	ROM	1,710	90	30	42	90	
Russia	RUS	1,750	93	39	36	95	
Salvador	SAL	2,050	66	19	40	94	
Singapore	SIN	24,740	74	20	48	8	48
Slovak Republic	SLK	3,700	104	52	110	51	
Slovenia	SLV	9,780	71	27	19	88	
South Africa	SAF	2,900	49	65	63	49	
Spain	SPA	14,860	57	51	42	86	19
Sweden	SWE	25,400	31	71	5	29	33
Switzerland	SWI	36,970	34	68	70	58	40
Taiwan	TAI	n.a.	58	17	45	69	87
Thailand	THA	1,970	64	20	34	64	56
Turkey	TUR	2,540	66	37	45	85	
United States	USA	34,870	40	91	62	46	29
Uruguay	URU	5,670	61	36	38	100	
Venezuela	VEN	4,760	81	12	73	76	
Vietnam	VTN	0,410	70	20	40	30	80

SOURCE: Hofstede, Geert. *Culture's consequences* (2nd ed.). Thousand Oaks, CA: Sage, 2001.

**APPENDIX 10: Inter-item correlation matrix of all 16 indicator variables in the original model (Scotland):**

Correlation	q21a	q21b	q21c	q21d	q21e	q21f	q21g	q21h	q22a	q22b	q22c	q22d	q22e	q22f	q22g	q22h
q21a	1.000	.564	.251	.189	.200	.232	.235	.251	.270	.225	.237	.267	.163	.170	.226	.162
q21b	.564	1.000	.325	.212	.197	.237	.238	.184	.188	.179	.227	.193	.158	.169	.211	.123
q21c	.251	.325	1.000	.519	.297	.257	.303	.109	.067	.027	.081	.057	.028	.019	.013	-.055
q21d	.189	.212	.519	1.000	.385	.261	.381	.174	.081	.045	.103	.044	.026	.029	.034	-.077
q21e	.200	.197	.297	.385	1.000	.323	.356	.162	.143	.131	.170	.163	.124	.115	.036	.068
q21f	.232	.237	.257	.261	.323	1.000	.387	.335	.271	.230	.379	.209	.203	.172	.247	.119
q21g	.235	.238	.303	.381	.356	.387	1.000	.210	.242	.210	.208	.139	.097	.076	.093	.075
q21h	.251	.184	.109	.174	.162	.335	.210	1.000	.244	.123	.259	.145	.059	.082	.203	.157
q22a	.270	.188	.067	.081	.143	.271	.242	.244	1.000	.532	.513	.470	.334	.351	.372	.343
q22b	.225	.179	.027	.045	.131	.230	.210	.244	.532	1.000	.515	.476	.444	.384	.320	.330
q22c	.237	.227	.081	.103	.170	.379	.208	.259	.513	.515	1.000	.538	.498	.401	.415	.285
q22d	.267	.193	.057	.044	.026	.057	.139	.145	.470	.476	.538	1.000	.669	.561	.374	.345
q22e	.163	.158	.028	.026	.124	.203	.097	.059	.334	.444	.498	.669	1.000	.649	.352	.273
q22f	.170	.211	.013	.034	.115	.247	.203	.082	.372	.320	.415	.352	.649	1.000	.475	.403
q22g	.226	.123	-.055	-.077	.068	.119	.075	.203	.343	.330	.285	.345	.273	.403	1.000	.508
q22h	.162	.162	-.055	-.077	.068	.119	.075	.157	.343	.330	.285	.345	.273	.403	.508	1.000

**APPENDIX 11: Inter-item correlation matrix of all 16 indicator variables in the original model (Nigeria):**

Correlation	q21a	q21b	q21c	q21d	q21e	q21f	q21g	q21h	q22a	q22b	q22c	q22d	q22e	q22f	q22g	q22h
q21a	1.000	.590	.188	.296	.374	.230	.293	.145	.171	.201	.122	.207	.143	.145	.072	.032
q21b	.590	1.000	.199	.220	.373	.214	.258	.129	.152	.098	.108	.158	.129	.105	-.017	-.009
q21c	.188	.199	1.000	.388	.275	.177	.334	.178	.077	.036	.069	.083	.122	.020	.060	-.050
q21d	.296	.220	.388	1.000	.430	.334	.356	.269	.063	.187	.184	.207	.166	.038	.043	.073
q21e	.374	.373	.275	.430	1.000	.398	.377	.310	.148	.152	.225	.166	.094	.086	.077	.050
q21f	.230	.214	.177	.334	.398	1.000	.497	.420	.255	.225	.334	.291	.217	.199	.195	.141
q21g	.293	.258	.334	.356	.377	.497	1.000	.281	.192	.246	.260	.271	.216	.173	.118	.074
q21h	.145	.129	.178	.269	.310	.420	.281	1.000	.279	.270	.359	.211	.222	.295	.214	.170
q22a	.171	.152	.077	.063	.148	.255	.192	.279	1.000	.499	.484	.438	.424	.502	.396	.327
q22b	.201	.098	.036	.187	.152	.225	.246	.270	.499	1.000	.489	.511	.518	.527	.382	.402
q22c	.122	.108	.069	.184	.225	.334	.260	.359	.484	.489	1.000	.556	.456	.472	.445	.333
q22d	.207	.158	.083	.207	.166	.291	.271	.222	.489	.556	.556	1.000	.664	.475	.427	.360
q22e	.143	.129	.122	.166	.094	.217	.216	1.000	.475	.456	.664	.664	1.000	.594	.419	.317
q22f	.145	.105	.020	.038	.086	.199	.173	.295	.502	.472	.472	.475	.594	1.000	.519	.353
q22g	.072	-.017	.060	.043	.077	.195	.118	.214	.396	.382	.445	.427	.419	.519	1.000	.553
q22h	.032	-.009	-.050	.073	.050	.141	.074	.170	.327	.402	.333	.360	.317	.353	.553	1.000

**APPENDIX 12 (A): Pattern Matrix: 3-factor EFA solution for Scotland:**

	Initial components extracted from the original model:		
	1	2	3
q21a			.774: Prior Computer & Internet Usage Knowledge.
q21b			.736: Prior Computer & Internet Usage Experience.
q21c		.667: Level of Formal Education	
q21d		.778: Regular Source of Income	
q21e		.679: Access to Computer & Internet	
q21f		.463: Awareness of IB & its benefits	
q21g		.623: Prior Involvement with banking technology in general.	
q21h			.523: Willingness to Accept Risks
q22a	.590: Adequate Reg. Info & Guidance		
q22b	.688: Perceived Ease of Use		
q22c	.694: Perceived Effective Comm.		
q22d	.820: Perceived Usefulness		
q22e	.857: Perceived Convenience		
q22f	.793: Perceived web processing & navigation Speed		
q22g	.522: Privacy/Security guarantee online		.359: Privacy/Security guarantee online
q22h	.486: Channel cost		.308: Channel cost

**APPENDIX 12 (B): Pattern Matrix: 3-factor EFA solution for Nigeria:**

	Initial components extracted from the original model:		
	1	2	3
q21a			.821: Prior Computer & Internet Usage Knowledge.
q21b			.847: Prior Computer & Internet Usage Experience.
q21c		.595: Level of Formal Education	
q21d		.698: Regular Source of Income	
q21e		.612: Access to Computer & Internet	
q21f		.706: Awareness of IB & its benefits	
q21g		.669: Prior Involvement with banking technology in general.	
q21h		.610: Willingness to Accept Risks	
q22a	.690: Adequate Reg. Info & Guidance		
q22b	.731: Perceived Ease of Use		
q22c	.664: Perceived Effective Comm.		
q22d	.736: Perceived Usefulness		
q22e	.756: Perceived Convenience		
q22f	.801: Perceived web processing & navigation Speed		
q22g	.721: Privacy/Security guarantee online		
q22h	.639: Channel cost		



**APPENDIX 13 (A): Total Variance Explained in the 2-factor solution with the original model (Scotland):**

Component	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.808	30.048	30.048	4.808	30.048	30.048	4.421
2	2.405	15.031	45.079	2.405	15.031	45.079	3.338
3	1.170	7.311	52.389				
4	1.102	6.885	59.274				
5	.903	5.646	64.920				
6	.796	4.972	69.892				
7	.724	4.523	74.415				
8	.666	4.161	78.576				
9	.592	3.702	82.278				
10	.499	3.118	85.396				
11	.467	2.921	88.317				
12	.444	2.776	91.093				
13	.427	2.669	93.762				
14	.385	2.407	96.169				
15	.341	2.133	98.302				
16	.272	1.698	100.000				

**APPENDIX 13 (B): Total Variance Explained in the 2-factor solution with the original model (Nigeria):**

Component	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Total	% of Variance	Total	Total
1	5.080	31.748	5.080	31.748	5.080	4.632
2	2.469	15.430	2.469	15.430	2.469	3.507
3	1.195	7.469				
4	.936	5.850				
5	.859	5.367				
6	.745	4.659				
7	.696	4.353				
8	.605	3.784				
9	.587	3.668				
10	.519	3.244				
11	.476	2.973				
12	.460	2.873				
13	.401	2.505				
14	.386	2.411				
15	.315	1.972				
16	.271	1.694				
		100.000				
		98.306				
		96.335				
		93.924				
		91.419				
		88.546				
		85.573				
		82.329				
		78.660				
		74.876				
		70.524				
		65.865				
		60.498				
		54.647				
		47.178				
		31.748				

**APPENDIX 14:**

**(A) AMOS text output: *Correlation matrix* for all variables in the final model (Scotland):**

	q23c	q21g	q21f	q23b	q24a	q24b	q21e	q22e	q22d	q22b
q23c	1.000									
q21g	.162	1.000								
q21f	.212	.470	1.000							
q23b	.204	.167	.318	1.000						
q24a	.292	.135	-.009	.017	1.000					
q24b	.289	.234	.254	.198	.302	1.000				
q21e	.091	.293	.323	.160	-.007	.194	1.000			
q22e	.314	.164	.203	.054	.030	.156	.124	1.000		
q22d	.297	.182	.209	.135	-.024	.193	.163	.669	1.000	
q22b	.272	.181	.230	.121	-.045	.163	.131	.444	.476	1.000

(B) AMOS text output: *Correlation matrix* for all variables in the final model (Nigeria):

	q23c	q21g	q21f	q23b	q24a	q24b	q21e	q22e	q22d	q22b
q23c	1.000									
q21g	.121	1.000								
q21f	.167	.492	1.000							
q23b	.190	.279	.400	1.000						
q24a	.119	.003	-.073	-.016	1.000					
q24b	.066	.176	.140	.081	.420	1.000				
q21e	.079	.370	.398	.330	.006	.226	1.000			
q22e	.419	.204	.217	.224	.064	.179	.094	1.000		
q22d	.429	.266	.291	.216	.068	.159	.166	.664	1.000	
q22b	.382	.235	.225	.276	.086	.112	.152	.518	.511	1.000

**APPENDIX 15:**

**(A) AMOS text output: Covariance matrix for all variables in the final model (Scotland):**

	q23c	q21g	q21f	q23b	q24a	q24b	q21e	q22e	q22d	q22b
q23c	.371									
q21g	.083	.711								
q21f	.111	.341	.739							
q23b	.106	.120	.232	.723						
q24a	.126	.081	-.005	.010	.503					
q24b	.132	.147	.163	.126	.160	.561				
q21e	.055	.246	.277	.136	-.005	.145	.993			
q22e	.110	.079	.100	.027	.012	.067	.071	.330		
q22d	.100	.085	.099	.063	-.009	.080	.090	.212	.306	
q22b	.090	.083	.108	.056	-.017	.067	.071	.139	.143	.296

(B) AMOS text output: Covariance matrix for all variables in the final model (Nigeria):

	q23c	q21g	q21f	q23b	q24a	q24b	q21e	q22e	q22d	q22b
q23c	.321									
q21g	.058	.707								
q21f	.073	.319	.595							
q23b	.084	.182	.239	.600						
q24a	.045	.002	-.038	-.008	.456					
q24b	.025	.099	.072	.042	.190	.448				
q21e	.043	.298	.294	.245	.004	.145	.919			
q22e	.130	.094	.091	.095	.024	.065	.049	.298		
q22d	.137	.126	.126	.094	.026	.060	.089	.203	.315	
q22b	.126	.115	.101	.125	.034	.044	.085	.165	.168	.341

**APPENDIX 16:**

**AMOS text output: Parameter summary in *covariance structure analysis* for the final SEM model (Scotland and Nigeria):**

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	18	0	2	0	0	20
Labelled	0	0	0	0	0	0
Unlabelled	7	1	12	0	10	30
Total	25	1	14	0	10	50

**APPENDIX 17:**

**AMOS text output: Parameter summary in *latent mean structure analysis* for the final SEM model (Scotland and Nigeria):**

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	18	0	2	0	0	20
Labelled	7	1	0	2	10	20
Unlabelled	0	0	12	0	0	12
Total	25	1	14	2	10	52

**APPENDIX 18:**

**(A) AMOS text output: Normality assessment for the final SEM model (Scotland):**

Variable	min	max	skew	c.r.	kurtosis	c.r.
q23c	1.000	4.000	1.833	16.618	3.559	16.131
q21g	1.000	5.000	.847	7.677	1.001	4.535
q21f	1.000	5.000	.607	5.503	.232	1.053
q23b	1.000	5.000	1.134	10.280	1.639	7.428
q24a	1.000	5.000	2.407	21.821	5.522	25.029
q24b	1.000	5.000	.915	8.297	1.464	6.636
q21e	1.000	5.000	.616	5.588	-.313	-1.419
q22e	1.000	4.000	.918	8.322	.550	2.495
q22d	1.000	4.000	.780	7.074	.397	1.802
q22b	1.000	4.000	1.016	9.210	.435	1.970
Multivariate					43.200	30.958



**(B) AMOS text output: Normality assessment for the final SEM model (Nigeria):**

Variable	min	max	skew	c.r.	kurtosis	c.r.
q23c	1.000	4.000	1.607	11.681	2.659	9.662
q21g	1.000	5.000	.973	7.070	.724	2.630
q21f	1.000	5.000	1.368	9.942	2.376	8.635
q23b	1.000	5.000	.951	6.912	.817	2.968
q24a	1.000	4.000	1.500	10.905	2.031	7.382
q24b	1.000	4.000	.978	7.108	1.276	4.637
q21e	1.000	5.000	.961	6.983	.251	.913
q22e	1.000	4.000	1.357	9.863	1.533	5.571
q22d	1.000	4.000	1.158	8.416	.941	3.419
q22b	1.000	4.000	1.600	11.629	2.909	10.573
Multivariate					54.993	31.601

## APPENDIX 19:

F-statistics and T-test results of the mean comparison between Scotland and Nigeria on users' and non-users' perceptions of the importance of customer and channel readiness for IB adoption:

Readiness Dimensions	SCOTLAND				NIGERIA			
	F	Sig.	t	F	Sig.	t		
<b>A. Customer Readiness:</b>								
• Access	0.271	0.603	1.289 1.274	0.047	0.829	1.101 1.111		
• Awareness	7.417	0.007	2.906 3.026	2.391	0.123	2.011 2.083		
• Involvement	0.059	0.809	-0.379 -0.387	0.021	0.884	1.356 1.380		
<b>B. Channel Readiness:</b>								
• Ease of use	0.185	0.667	0.288 0.291	1.348	0.246	-0.484 -0.472		
• Usefulness	0.359	0.550	0.173 0.177	3.364	0.068	-1.243 -1.222		
• Convenience	0.060	0.807	0.077 0.076	2.812	0.095	-0.834 -0.817		

F-value and t-test results of the equality of variances and means between Scotland and Nigeria on users' and non-users' perceptions of the importance of customer and channel readiness for IB adoption. NB: The mean difference between users' and non-users' perception of the importance of awareness of the IB opportunity for IB adoption is significant at the 0.05 level in the Scotland group (Sig. = 0.007;  $t = 2.906$  if equal variances are assumed and 3.026 if not assumed; 2-tailed sig. = 0.003).

## APPENDIX 20:

One-way ANOVA: F-statistics results of the importance-perceptions comparison between the four non-adopter categories on customer and channel readiness for IB adoption across the Scotland and Nigeria samples:

Readiness Dimensions	SCOTLAND		NIGERIA	
	F	Sig.	F	Sig.
<b>A. Customer Readiness:</b>				
■ Access	0.701	0.592	1.573	0.196
■ Awareness	2.990	0.019	0.686	0.561
■ Involvement	3.557	0.007	1.074	0.360
<b>B. Channel Readiness:</b>				
■ Ease of use	0.515	0.725	1.526	0.208
■ Usefulness	0.408	0.803	1.307	0.272
■ Convenience	0.633	0.639	1.460	0.225

One-way ANOVA: F-statistics results of the importance-perceptions comparison among the four non-adopter categories on customer and channel readiness across Scotland and Nigeria. NB: The mean differences between the 4 non-user categories in the Scotland group are significant at the 0.05 level for their importance-perceptions of the *awareness* and *prior involvement* dimensions of *customer readiness* for IB adoption (For *awareness*, between groups Sig. = 0.010 and F = 2.990. For *involvement*, between groups Sig. = 0.007 and F = 3.537).