University of Sunderland

AN INVESTIGATION OF THE FACTORS THAT INFLUENCE E-BANKING ADOPTION BY OLDER USERS

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ABSTRACT

Many banks have introduced e-banking to offer customers round the clock opportunity to their financial needs and reduce cost. Despite its benefit, customers who use e-banking are relatively small and of great concern, are that older people 60years+ appear less willing to adopt e-banking. This research investigated the salient factors that influence older peoples' use of e-banking, with factors generated solely from users and non-users, given that their perception is paramount.

Two qualitative approaches were adopted. Repertory grids interviews (N=26) that explored personal constructs that mediate older peoples' use of e-banking. Results revealed attitudinal issues and misconceptions towards the security of e-banking, though it promoted a more highly structured understanding of their experiences. The method was seen to be challenging regarding concept and practicality. Then, with focus on the entirety of experiences, study two (N=20) explored attitude/preconception towards the security of e-banking, using semi-structured interviews with technology probe of typical e-banking website. Non-users were influenced by memorability and tendencies of being defrauded, while users were overwhelmed by e-banking advantages compared to security and privacy fear.

However, the significant hindrances to e-banking use, as contributed by this research were memory concern, while choosing the appropriate authentication details, like difficulty associated with PIN and password complexity. Misconceptions towards the security of e-banking, also navigation of the e-banking system were revealed to be elaborate, followed by dissatisfaction with the rigorous processes involved in the knowledge and token-based authentication as well as interaction of factors and strategies older users employ. This advance in knowledge was without pre-established adoption models constructs as a guide.

This research revealed that the erroneous supposition about e-banking adoption by older people, based on predicted constructs, does not represent their concerns as they see it. Any attempt by practitioners to develop e-banking system aimed at alleviating older peoples' worries, without understanding their perception about attitude, strategy and social understandings, has a potential of failing in its ultimate goals, and will instead contribute to chances of older people falling victim of fraud. Hence, researchers and e-banking managers should engage in gaining practical insights, incorporating technological probes, which is a useful exploratory tool that refreshes their minds.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 CHAPTER ONE: INTRODUCTION

1.1 What E-banking is in this Research Context

E-banking is a means that allows customers to execute a wide range of banking transactions electronically via the bank's Website Tan and Teo (2000), using both mobile device and desktop access, without customers leaving their home or organisations, which could be either privately or publicly owned Fonseca (2014). It is a distribution channel for providing services such as opening a deposit account, transferring funds among different accounts and electronic bill payment (Ahmed et al., 2006).

1.1.1 Why E-Banking is Appropriate to Older Users

This work is worthy of investigation because the older people should do e-banking as it could help them in their extended financial plans. Followed by the importance of the technology in carrying out their everyday financial needs, which includes the convenience, flexibility as well as other relative advantages it has over the offline banking. Further details of this could be found in section 2.2.1 and 2.2.2 ahead.

1.2 The Situation of E-Banking and Older People

Electronic-banking (e-banking) has been introduced by banks to reduce cost and improve customer service (Martins et al., 2014; Santouridis and Kyritsi, 2014). With e-banking, bank customers are availed the opportunity of accessing their finance around the clock from any location. Also they can carryout several types of activities like tracking of balances in their accounts, using a digital communication network from the comfort of their homes or organisations.

According to (Apak et al., 2012), banking is essential, but banks are not. This implies that with technological advancement e-banking seems to be a necessity and not just an alternative way of carrying out a banking transaction. The potential importance of e-banking, therefore, makes it an important area of research in the context of older bank customers, in order to grasp its nature and examine older people’s reaction towards it. This research made an effort to explore this as well as its related questions in Sunderland, United Kingdom (UK).

It was the objective of this research study to advance the current understanding of the prospective areas for improvement towards e-banking adoption among older bank customers. Through an exploration of the salient factors that mediate their use with factors generated

solely by them, followed by how the factors interact with each other and the strategies that older people adopt to support their use of e-banking. From users' and non-users' perspective, a discussion of the rationale for both groups will be the topic next.

For this work, users (internet/e-banking users) and non-users (internet/non-internet/non-users of e-banking) were incorporated, to emphasise the difference among the groups with regards to their attitudes and overall perception of the phenomenon of e-banking acceptance. Such an advance was in line with (Lee et al., 2005) who remarked on the requirement to explore customers' e-banking acceptance over a broad scope of demographics, instead of focusing solely on the segment believed most likely to adopt it. In affirmation, (Hernandez and Mazzon, 2007) revealed that the variables that affect the intention to begin using e-banking varied from the variables that affect the decision to continue its usage, due to significant variation among prospective and existing users. (Ozdemir et al., 2008) revealed significant difference among users and non-users of e-banking in the expression of their perception, experience and customer characteristics. The research showed that e-banking users perceived e-banking usage as less risky, easier to use and more helpful in contrast to non-users of e-banking (Ozdemir et al., 2008).

Furthermore, investigating present users alone would lead this work to identify factors that had been affected by time and the experience acquired through the use of the service. Also, it would ignore a significant portion of the people represented by non-users. On the other hand, by investigating non-users only, might not reveal the factors that influence the use of e-banking technology by older people in Sunderland.

This introductory chapter lays out the perspective and logical motivation for the research work by describing the present status of older people, with the situation encompassing the current concern towards developing e-banking that will support older people, in an extended financial plan. The aim and questions of the research are presented, followed by the research original contribution to knowledge, the research approach adopted and finally the structure of the thesis. The following section discusses the nature of the problem that necessitated this work.

1.3 The Background of the Problem

Taking into account a situation in which small research has been carried out about e-banking and older people, this research tackled the question of what salient factors affect the use of e-

banking by older people in Sunderland and whether some specific attitudes/misconceptions may assist or inhibit such acceptance.

Researchers have reported that older people (60years+) appear less willing to adopt e-banking (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017; Davinson and Sillence, 2014; Laukkanen et al., 2008; Mattila et al., 2003). This concern is stimulated by the continuous increase in the ageing population (Laukkanen et al., 2007; Moschis, 2012, 2003), due to increasing life expectancy, that has continued to grow worldwide (Moschis, 2012). There has been an acknowledgement about the economic importance of older people. (Laukkanen et al., 2007) have classed older people to have attractive financial status and the lifetime wealth of individuals has been revealed to be at its zenith at retirement (Laukkanen et al., 2007). Now the researcher is wondering why this vital segment of the population is segmented, given that examined literature revealed that marketers in the financial sector are not proactive (Moschis, 2003), while considering strategies that might help and serve to fulfil the supporting role, which will help the older people in an extended financial plan.

Also, a significant worry is the degree to which users' perception of e-banking has been investigated, regarding the use of adoption theories and research techniques which may not have been suitable for older people (Choudrie et al., 2017). The primary area of concern for e-banking adoption research is whether the resultant data represent what customers deem essential. Significant literature (Ainin et al., 2005; Martins et al., 2014; Poon, 2008; Tan and Teo, 2000; Tat et al., 2008; Yousafzai and Yani-de-soriano, 2012) have resorted to the use of technology adoption models. Coupled with questionnaires distributed online, to ascertain what affects or discourages customers' adoption of e-banking. (Nistor et al., 2014) in their criticism of technology acceptance model (TAM), suggest that the value of this work is questionable because there is no link established between intention and subsequent use. Many of the samples were skewed towards people already using the internet without consideration of non-users (Arenas-Gaitan et al., 2015; Hanafizadeh et al., 2014a; Lee et al., 2011; Martins et al., 2014; Nistor et al., 2014; Pan and Jordan-Marsh, 2010), thereby, capturing only those that have access to the technology.

Given the concern that prospective older users may not use e-banking, even when is at their disposal (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017). Numerous questions arise; why do older people who have internet knowledge visit the local bank branches instead of e-banking? Is it an issue that lies on older people or the electronic websites of the banks?

What do older people deem significant to mediate their use of e-banking? What are older peoples' overall perceptions of e-banking? The present concern in these entire areas ushers in the need for an investigation, to establish the salient factors that mediate the use of e-banking by older people, as they see it not as someone else sees it.

Previous literature has acknowledged the relevance of these issues (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017). Therefore it becomes evident that if e-banking managers have an in-depth understanding of older peoples reactions to e-banking, then they will be more proactive in the design of e-banking applications that will support older people to plan for an extended financial plan. Therefore, it becomes pertinent for marketers to understand what older people deem significant to mediate their use of e-banking, to improve their level of adoption of the system. Hence, (Arenas-Gaitan et al., 2015) revealed that the performance expectancy contributes to the level of prediction towards the reaction of older banking customers towards the adoption of the technology. However, despite the relevance of this insight, the research failed to highlight on the antecedents of habit as a significant determinant of e-banking adoption by the older people and also coupled with the use of predicted constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT2) model. In this vein, (Choudrie et al., 2017) concludes, through a systematic review of 23 research on understanding and conceptualising the adoption of mobile banking by older adults that a qualitative study could be able to provide an insightful perception of the reason against non-adoption of the system.

The discussion above, however, implies that e-banking adoption by older people requires exploration from several perspectives. Following these concerns, this research was planned to unveil what older peoples deemed essential to mediate their use of e-banking, to include their reactions, the strategies they adopt to support their use or views in the case of non-users. Followed by how the factors they deem significant react with each other, for instance, ascertaining if social support could compromise security in Sunderland.

The rationale for Sunderland as a location was following an understanding that older people in this location seem to see the internet as relatively new. In addition, the believe that its usage is within a confined space, appear to confer on older people a vaguely sensitive perception of the information security, coupled with a rise in awareness of individual liability in controlling activity in other not to fall victim of fraud. In this vein, they seem to have developed their personal, precise, set of scepticism about internet transaction. Older people

need information on how e-banking will help them to plan for an extended financial plan, for them to become adopters. Consequently, this research was conducted in Sunderland to gain detailed insight of the phenomenon of e-banking acceptance among the older people. Following next is a discussion of the current state of e-banking adoption research.

1.4 Current Situation of Research on the use of E-Banking

Researchers have investigated factors that are influencing the adoption of e-banking technology by customers in general (Anuar et al., 2012; Hanafizadeh et al., 2014b; Mansumitrchai and Chiu, 2012; Martins et al., 2014; Nasri and Charfeddine, 2012; Susanto et al., 2013). Specifically, Mansumitrchai and Chiu (2012), reviewed participants in the United Arab Emirates (UAE) to identify the impact of attitude on consumers towards e-banking use, in this vein, human interaction and trust emerged as the result for non-users. (Martins et al., 2014) used the Unified Theory of Acceptance and Use of Technology (UTAUT) model to identify e-banking determinants in Portugal, but utilised highly educated students' only, as such the uneducated non-users views were not incorporated.

The researcher observed that much research has been reliant on technology adoption models that were developed several years ago like the TAM (Arenas-Gaitan et al., 2015; Bagozzi, 2007; Benbasat and Barki, 2007; Nistor et al., 2010; Yiu et al., 2007). However, there is no evidence about whether what is salient to the older people has been captured, because when people ask questions about users experience using questionnaires, they do it at such a high level of detail that they miss out on the entirety of the participant’s experiences. According to (Keynan et al., 2014) the use of questionnaires to understand reactions, that is associated with suggestions on several options of answers, deprives the participants the opportunity to air their views in the way they see it, not as someone else does, which seems to be an exciting issue that needs addressing.

Consequently, the following question arises: How effective, appropriate and valid are the approaches used for e-banking adoptions investigations, in revealing the kind of support that will assist the older people in an extended financial plan? Or, is it merely for a shallow introduction without impact? It might be that there are aspects of the system that is deterring the customers, which requires identification.

Given all these concerns, the planning of this research was to grasps detailed insight into older people's reactions of e-banking. Presented below is a highlight consideration of the different approaches used by previous e-banking adoption research.

1.5 Approaches used for E-Banking Adoption Research

E-banking researchers have used TAM and its extension (UTAUT) models to ascertain the determinant of e-banking, and according to (Davis et al., 1989), data collection with TAM-based constructs tends to disclose useful information. However two main concerns are facing the use of such approaches, first is its heuristic value (Chuttur, 2009; Lee et al., 2003), as people are restricted on specific areas to express their views. Secondly, it depends on the data elicitation process, which may put off or interfere with the participants' original perception thereby altering the performance.

Major area of concern for IT adoption research is the use of pre-established/assumed constructs (Bagozzi, 2007) and the usefulness of resultant data. At present, while e-banking research may be extensive, there have been considerable variations in the ways research has resorted to identifying users' attitudes/perceptions (Arenas-Gaitan et al., 2015; Asmi, 2012; Martins et al., 2014). So far, the contribution of using TAM and its extensions in the context of e-banking remains inconclusive, and research on TAM has been criticised as problematic and in a state of crises (Benbasat and Barki, 2007; Nistor et al., 2014). According to Bagozzi (2007), the study on acceptance and rejection of technology is getting to a stage of confusion and understanding of the subject is increasingly divided with little logical consolidation. From this perspective, the researcher observed that the iterations of TAM have led to conflicting results and (Cheng et al., 2006; Yousafzai, 2005) affirmed that TAM and its extension as an approach vary greatly. Also, Bagozzi (2007) suggested that the information system are likely to be at risk of being engulfed and fed with misinformation, based on the growing presumptive evidence, used as rationale while improving the technology.

A recent study demonstrates the prospective significance of this problem. (Choudrie et al., 2017) acknowledged through a broad of review papers (23) in the banking domain, the inadequacy of knowledge in this domain. It suggested that studies should proffer a realistic slant to show its real-life usage, by providing insight into the factors leading to the adoption of mobile banking by older people using a qualitative study (Choudrie et al., 2017).

Studies on e-banking adoption by older people have overlooked what older people deem significant. Given that explorations on understanding its low usage have been conducted based on adoption models pre-established constructs, of what is somehow assumed to be likely reliable people's opinion of e-banking technology, rather than their perception as they see it.

According to (Van Kan et al., 2010) the factor that hinders our understanding of the usefulness of adoption model is the prevalence of a narrow focus on problems. Given that a small investigation has been provided through a questionnaire in some instance. To represent likely consequences of IT adoption as users perceive it. For example, Benbasat and Barki (2007) revealed that it is not clear which component of the new technology users are viewing as useful or which one is not when TAM based construct PU is applied, thereby leading to the less realistic outcome.

Indeed, researchers are aware that older people's concerns are not sought and incorporated into the development of e-banking platforms (Arenas-Gaitan et al., 2015; Asmi, 2012). Despite these issues, they elect to elicit what users perception might be in a way that is likely to portray a shallow view of the customers through using questionnaires. For instance, an individual can identify and acknowledge that Perceived usefulness (PU) is an encouraging prerequisite for choosing to take action or decision, but have no yearning to act and even overtly decide not to take action (Bagozzi, 2007).

E-banking adoption needs viewing from older people's point of view: by generating factors solely from them because there is an immediate need to investigate the various means that will likely help older people to embrace the technological advancement. For delivery of useful information to e-banking practitioners, it is essential to go beyond the pre-established constructs of TAM and employ an approach, which will elicit significant data and add to our understanding of the problem set yielded.

Based on the examined literature, there seems to be lack of full range of what older people’s perceptions are, about e-banking adoption (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017). The above research was explicitly conducted based on UTAUT2 and Decomposed Theory of Planned Behaviour (DTPB). According to Benbasat and Barki (2007) theoretical models have resulted in a patchy collection of knowledge and conflicting results between different studies. To form a systematic body of knowledge about the perception of older people towards e-banking, the analysis of those factors that the older people deem to be important in mediating their use of e-banking is necessary.

This thesis argues that to advance our knowledge in what mediate older peoples' use of e-banking. It is essential that we first understand what they deem salient using a research approach, that will aid the assessment of those salient factors (Arenas-Gaitan et al., 2015; Asmi, 2012), through the emerged data. This advance in knowledge will not be achievable

with the use of theoretical model via a questionnaire with assumed constructs, nor with research excluding either users or non-users.

Therefore the work presented here used an exploratory approach which included the use of repertory grid interview technique (repgrids) and a semi-structured interview with technology probe (SSIWTP) of typical e-banking website to elicit participants' responses, based on factors generated from the participants instead of relying on pre-established constructs.

1.6 Research Aims

This research aimed to contribute to a better understanding of older people's perception of e-banking in Sunderland and to identify the salient factors that mediate their use of this service, including the strategies they adapt themselves to support their use of e-banking. Also there is no clear understanding of older users' awareness of financial security in relation to e-banking as they see it. More specifically, it will investigate what older users' attitude / preconceptions are concerning security issues in relation to e-banking and to explore the factors that mediate their use of e-banking. These include: social factors, usability factors and IT competence. Research has examined the acceptance of e-banking by older people, until now; there is no available study as regards e-banking adoption by older people, where factors have been generated solely from them without incorporating predicted constructs from adoption models. To fill this gap, this research will explicitly:

- Explore the users and non-users perspective
- Explore older peoples' attitudes and pre-conceptions
- Understand how the identified salient factors interact with each other
- Identify the impact of the methods adopted/Identify where modification could be made to enhance the effectiveness of the technology and whether resultant data suffer as a consequence.

1.7 Research Question

This research will address the following research questions:

Research question one (RQ1): What are the factors that affect the use of e-banking technology by older people?

Research question two (RQ2): What specific factors affect older people's attitude and preconception towards e-banking?

2a. Do social factors, usability factors and IT competence mediate older people's perception of security?

2b.What strategies do older people adapt themselves to support their use of e-banking?

The summary of the research questions used in the empirical studies carried out, are shown below:

Table 1-1 Two empirical studies and research questions

Studies	Research questions
Study 1: Personal construct that mediate older peoples' use of e-banking	RQ1
Study 2: Older peoples' attitude /pre-conception towards security of e-banking	RQ1, RQ2 (2a, 2b)

1.8 Contribution to Knowledge

This work is an advancement of knowledge of what older people in Sunderland deem salient to mediate their use of e-banking system with factors generated solely from them and their relevance from users and non-users perspective. They include memory concern, a dimension of usability while choosing the appropriate authentication details, like difficulty associated with PIN and password complexity. Navigation of the e-banking system was revealed to be elaborate. Dissatisfaction with the rigorous processes involved in the knowledge and token-based authentication, given that a non-user suggested that the use of biometrics could be more straightforward. How the identified factors interact with each other. The specific strategy that older people themselves adapt to support their use/views of e-banking, as revealed by the findings and held misconceptions towards the security of e-banking.

Also, it expands on the generalised procedures of previous work by using a fine-grained data collection and analytical process, rather than focusing only on the ability of TAM based constructs as predictors.

Given that it is the first attempt in this domain. It assists to set the foundation for subsequent work and helps to improve decision making about e-banking product and services development. Apparently, the new knowledge is a practical insight into the use of e-banking by older people, with specific factors about people's experiences/views as they see it, to mediate their use and interaction with the system. Following that previous research about older people and e-banking/internet use is scarce (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017).

The value of the qualitative approaches used (Repgrids and SSIWTP) offered a balanced view, unlike previous studies which have used a more limited set of measures. For instance, this research improves our understanding of the extent to which a contribution of an explicit interview instruction, e.g. Paper-based typical e-banking website probes used to ground data can affect the gathering of relevant data and the extent to which it assists in discovering the problem therein as well as understanding processes.

1.9 Approach

The research presented here used an exploratory approach since the objective is to extract salient factors that will increase knowledge. With the aim of achieving active conduct of the work, a qualitative method has been adopted to carry out a series of interviews (repertory grid and SSIWTP). The repertory grid technique is based on the personal construct theory developed by Kelly, (1995). Its development was in the context of his work as a clinical psychologist, and it is commonly used to understand how individuals interpret a particular topic or experience rather than using a default theoretical framework. In this case, a conceptual framework might not capture how the participants view the world around them, as it relates to e-banking adoption based on previous research. An additional approach used was the SSIWTP of a typical e-banking website. A probe is an instrument used to find the unknown (Hutchinson et al., 2003), and have a potential of revealing the technological needs and desires of the participants and provide a real scenario to motivate them. The SSIWTP was thought to have more potential to focus more on grounding the older people on the wholeness of experience rather than a mere casual explanation of the concept, hence the need for technology probes. Specifically, with the use of both highly structured interview (repgrids) study and SSIWTP study, the researcher ensured that there was the opportunity for older people to express their experience in their way. The qualitative research data were analysed through the use of interview transcripts and categorisation of participants' responses as well as identifying the relationship among the reactions.

1.10 Structure of the Thesis

This remaining thesis consists of the subsequent five chapters:

Chapter Two sets the groundwork that resulted in the rationale for the decision adopted in this research; this chapter focused on the review of the literature on the current status of older people and e-banking adoption. Identified some gaps based on the consideration of the different approaches research have used in the various studies examined. Evaluated one of the

most generally used model- technology acceptance model (TAM), in studies relating to information system (IS), which has been approaches used in the data collection process by prior technology acceptance studies and finally the scope of the thesis was detailed.

Chapter Three details the standpoint of this work with regards to the study logical paradigms and relates the methodological approach used to gather and evaluate data for investigating the research issue laid down for this work. They include the factors influencing the decision for the exploratory design employed, and the data analysis approaches used for the participants' responses as well as how specific issues/data that emerged from the probes were extracted and understood, followed by a justification of the two approaches used.

Chapter Four was a study on personal constructs that mediate older peoples' use of e-banking study. This chapter examined the result from the first empirical study concerned with the identification of what personal constructs older people deem to be salient to mediate their use of e-banking, by examining the much-debated e-banking adoption issues from older people's perspective. It reports the result of how older people see the different means of banking, about their effects on participants' experiences for users and views for non-users. The chapter concludes by showing the usefulness and constraints of the repertory grid approach used in study one and their impacts on elicited constructs, which were taken forward in the subsequent work.

Chapter Five detailed the second study; it specifically focused on older peoples' attitude/ preconception towards the security of e-banking and their interaction with usability, IT competence and social factors. The reports discussed and examined the results of older users' and non-users' perceptions about how they perceive the various factors that mediate their use of e-banking. It also discusses the strategies that older people adapt to support their use of e-banking as well as the impact of the various authentication methods through the use of SSIWTP of typical e-banking website.

Chapter Six discusses and concludes this research. Firstly, is the discussions of the main findings and the original research question is revisited, followed by the research implication in light of the literature. Also, presented is a critical evaluation of the two approaches (repgrids and SSIWTP) regarding practicalities of use, problems, suitability, and quality of data for both researcher and the participants. This was followed by a conclusion and recommendation about the methodologies used with these target participants and the problem therein for researchers that might want to use them. Finally, the research contributions, as

well as the limitation, were presented, followed by recommendations both for practitioners and future work in e-banking adoption research by older people.

Chapter Seven is a succinct summary of the research contributions which have been itemised and for a better understanding, illustrated in figure 7.1. The next chapter is a discussion of the reviewed literature.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

Lack of practical insight of customers perception has been discovered as the key to the non-adoption of e-banking by older people (Choudrie et al., 2017). This chapter focused on literature about older people and e-banking adoption and identified some gaps based on the consideration of the different approaches used by previous researchers, to enhance our knowledge of the problem therein. The structure of this review is as follows: a review of older people about the present and envisage demographic transformation (as they are observed to have a significant impact towards the development of new technology such as e-banking), what e-banking entails as well as the exploration of various theories applied in e-banking studies. Furthermore, this research considered the approaches used in the data collection process, to point out a possible avenue for improvement, which underpins this research. The chapter concluded with a summary and scope of the thesis.

2.2 Information Technology for Older People

Older people are defined as individuals within the age segment of 55years+ (Moschis et al., 2004). However, examined literature has revealed there is no consensus on the right definition of "older people" (Laukkanen et al., 2007). Some earlier studies, Moschis (1992) classified older people to be 50years+, while (Arenas-Gaitan et al., 2015; Milner and Rosenstreich, 2013; Moschis et al., 2004) classified them as individuals within 55years+. Contrastingly, (Asmi, 2012; Moschis et al., 2004) rank them to be people 60years+, which is different from the view of (Mattila et al., 2003) where older people are individuals 65years+. In this vein, (Wagner et al., 2014) revealed that the study of age is not a homogenous process but somewhat complicated, they based their argument on the fact that people at the same chronological age may defer in some ways. Given this controversy, there is no agreeable method for thoroughly categorising older people, and research have sometimes resorted to chronological age as the functional age, meaning (i.e. calendar age that is associated and measured with time) as against other forms of age classification like the subjective age or organisational age.

To bolster this classification, (Gurtner et al., 2014) affirmed through their empirical research, that demographic challenge is an issue that requires addressing for progress in web interface designs. From a different perspective about (Gurtner et al., 2014) affirmation on the demographic challenge, Oumlil and Williams (2000) revealed that one of the tremendous

demographic developments had been the recent rise in the population of the older people (65years+).

In this research, given that definition of older people varies according to the purposes of the study under investigation, older people for this research are individuals' 60years+. This age range is in line with the scale used to compile and analyse older adult population, to ascertain world population prospect. This outcome revealed that older people 60years+ are anticipated to be three times, mounting from 737 million in 2009 to 2 billion by 2050 United Nations (2008). Also, to the increasing population of the older people, research reports that they have significant purchasing power (Laukkanen et al., 2007), which makes the older people 60years+, necessarily beneficial to the financial institutions like the banking sector. This forgoing discussion makes the market for the older people a significant aspect for the researcher to explore, hence the need to discuss their relevance in the next section.

2.2.1 Importance of the Older People on Information Technology

The total population of the older adults in the United States of America was said to have risen geometrically in recent times Oumlil and Williams (2000). (Moschis et al., 2004), on a survey carried out by '*Gallup Organisation'* reported that people 55 years+ of age, purchases about 30% of their daily foods from the comfort of their home. Consequently, this makes the market for the older people a significant aspect of research to explore. For instance, people 65years+ were said to have remitted about £45 billion in taxes in the United Kingdom (UK) and are projected to pay annually an estimated figure of £82 billion to the economy of the UK by 2030 Pride (2013). In this vein, there is urgent need to understand what 60years+ of the population deem salient to mediate their use of e-banking, given that the market for the older people has become a significant aspect for researchers to explore. This was based on the increasing number of people in the greying market, giving rise to the question looming within the academic community, which is 'do e-banking providers have to address the older people differently to the youngsters and if yes why and how?'The next section will discuss the status of e-banking and older people.

2.2.2 E-Banking and the Older People

E-banking is a means that allows customers to execute a wide variety of banking transactions electronically via the bank's Website Tan and Teo (2000), without customers leaving their home or organisations using computers either privately or publicly owned Fonseca (2014). It

is a distribution channel for providing services such as opening a deposit account, transferring funds among different accounts and electronic bill payment (Ahmed et al., 2006).
Managing the older bank consumers is one of the trending topics in banking (Choudrie et al., 2017). New technologies are of great importance with regards to helping older people enhance their independence about accessing their financial needs Asmi, (2012), due to its perceived usefulness, perceived ease of use and behavioural control. Studying the older people provides us with the salient information about them. (Laukkanen et al., 2007), revealed in an investigation on innovation resistance among mature consumers in the mobile banking context in Finland, that lifetime wealth of individuals are at its zenith at retirement. Also, older people were seeing intended value as a predominant factor for not using mobile banking, though 24.3% respondents were 55years+. However, they suggested on the need to convince the older people about the importance and intended value the use of technology will add to them. However, marketers in the financial sector are not proactive, in putting into practice strategies that might likely help and serve to fulfil the supporting role, which will, in turn, help the older people in an extended financial plan. Given that Milner and Rosenstreich (2013), has revealed that the financial service marketers will benefit from an improved understanding of this age segment. Therefore it becomes imperative to discuss the benefit of e-banking to older people.

2.2.3 Benefits of E-Banking to Older People

The benefits of e-banking are vast to the older banking customers. The medium is a means that enhances instant messaging and online chat between customers and the banks (Chen et al., 2002; Xie, 2007). It was seen to facilitate the quality of life of older banking customers, increase social support, reduce depression level and improve the cognitive skills (Chen et al., 2002; Xie, 2007). While, (Martins et al., 2014) revealed that e-banking has a potential of reducing costs and boosting customer services. In affirmation, (Santouridis and Kyritsi, 2014) revealed that with e-banking, bank customers could carry out banking transactions round the clock, with easy access to bank services, reduced time, direct access from anywhere in the world and elimination of anxiety caused by carrying cash.
Despite its benefit, older people appear less willing to adopt e-banking (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017). For useful service to the older people, banks urgently need to understand their needs and the opportunities. In this vein, examined literature, while recognising the poor adoption of e-banking, relied mainly on technology adoption theories like the TAM, where a questionnaire was used (Martins et al., 2014; Nasri

and Charfeddine, 2012; Santouridis and Kyritsi, 2014; Yoon and Barker Steege, 2012). However, the value of this work has been revealed to be questionable because no link is established between intention and subsequent use (Nistor et al., 2014). Thus, (Ainin et al., 2005) claim that, most previous studies have used TAM to carry out their various explorations.

The next section critically reviews the technology adoption theories and research techniques used by examined literature to examine the factors that affect e-banking adoption by banking customers as well as its criticisms.

2.3 Critical Review of Technology Adoption Model

Literatures has used technology adoption model (Ravi et al., 2007; Tan and Teo, 2000; Yousafzai, 2005) to identify the factors that influence the use of e-banking by customers in general. Notable among these is TAM Davis (1986), following non-availability of an established model in the domain of Information Technology (IT), as it relates to e-banking Bagozzi (2007). Studies on acceptance of technology increased with the emergence of TAM, as such TAM has been classed as one of the most generally used models, in studies relating to information system (IS) (Gurtner et al., 2014). This section discusses and analyses the model.

2.3.1 Technology Acceptance Model

TAM's development was by Davis (1986) and foresees adoption and intention to use to be influenced by two factors – perceived usefulness (PU) and the perceived ease of use (PEOU). Davis (1986) defines PEOU as "the degree to which a person believes that using a particular system would be free from effort". With PU defined as "the degree to which a person believes that using a particular system would enhance his or her job performance". So the PU was said to be influenced by the PEOU, while the intention to use influences real user behaviour. The model explains causal relationships between various factors in a system – PU, PEOU, behavioural intention (BI), and actual system use.

Though PEOU partly determined PU, PEOU cannot make up for the lack of PU based on TAM, which was said to be as a result of other factors Davis (1986). While seeking to identify these likely factors, other researchers have significantly expanded TAM to study critical issues that affect adoption of technology and innovations Davis and Venkatesh (2004). For example, (Venkatesh et al., 2003) developed the UTAUT model based on TAM to study the factors affecting adoption of new technology. However, they suggest that TAM could be altered to support a more human centred design used in technology development

projects, to determine the usefulness of solutions proposed to specific problems (Davis and Venkatesh, 2004).

During a critical commentary on the use of TAM, Benbasat and Barki (2007) acknowledged its positive impact towards the adoption of new technologies. However, since its adaption, a lot of criticisms have evolved from different researchers. The next section will present a critical evaluation of these limitation based on how studies have discredited TAM.

2.3.2 Criticism of TAM

Many studies have demonstrated the validity of the TAM across a wide range of Information System (IS) (Davis, 1986; Davis et al., 1989; Red et al., 1996), but Dishaw and Strong (1999) revealed that TAM lacks task focus. One of the primary constructs of the TAM, PU, implicitly includes the task concept, but the TAM does not contain any explicit constructs for the users' task environments Suh and Han (2002). Although TAM is one of the most utilised models for studying technology acceptance over the last 35years, research on TAM has shown that it has some limitations. Following that, the prediction of individuals' behaviour is based on self-reported usage measurement scale (Bagozzi, 2007; Benbasat and Barki, 2007), also Benbasat and Barki (2007) pointed out that TAM is difficult to expand. Furthermore, based on different versions of TAM, researchers have expressed difficulty in identifying which iteration is accepted. Hence, Benbasat and Barki (2007) conclude that TAM 'appears to have provided a secure cocoon from which few have dared to venture outward...'.

Chuttur (2009) carried out a historical evolution of TAM from 1985 to 2007, with focus on its extensions and validation for use. Since the adoption of TAM, there have been more than 700 citations in the academic community. Based on these, it concludes that many researchers share a different opinion about the validity of TAM based constructs. Despite the confirmation of its robustness, Chuttur (2009) revealed that there are lots of criticism of TAM, as it lacks sufficient rigour and importance. This affirmation resulted in TAM's classification as a non-acceptable well-established theory of technology acceptance, for the Information System Community (Chuttur, 2009).

According to Bagozzi (2007) there is need to research on the impact of attitude towards the adoption of e-banking technology because, in a setting such as Sunderland in the UK, people are likely to be more concerned about other salient factors, which the use of TAM via questionnaire may not capture. In line with the emerging factors in Bagozzi (2007), Chuttur (2009) commented on the weak theoretical relationship arising from the use of the different

constructs emanating from TAM. Thus, Bagozzi (2007) questioned the weight of the intention-actual use link verification. Hence their conclusion, that intention is not a real objective (Chuttur, 2009).

Furthermore, while determining the impact of PU and PEOU on technology acceptance, from the end user point of view, (Pikkarainen et al., 2004) researched with 427 participants using constructs generated from TAM among participants 18years+ through questionnaire approach. Though PEOU, PU, perceived enjoyment, availability of information, security and privacy and the quality of internet connection emerged, (Pikkarainen et al., 2004) affirmed that TAM studies were not clear and consistent as well as lacking significant factors capable of influencing the adoption of e-banking technology. Hence, it becomes imperative to examine those factors using a different approach.

In a similar vein, Davis and Venkatesh (2004) revealed that behavioural intention and PU used to measure a software beforehand on experience, correlated with a measure after three months of the same experience using the TAM based constructs. Though, the TAM was seen as an acceptance model, as it helps to present the causal link relationship between a system features and its usage. However, the research observed that the original conceptualisation of TAM included attitude as a construct, but the final and latest model of TAM excludes perspective as a mediator between perceived usefulness and the perceived ease of use. Therefore the validity of TAM becomes questionable and unrealistic Davis and Venkatesh (2004), as it only provides the causal relationship that links a system characteristics to its actual acceptance.

Subsequently, Davis and Venkatesh (2004) felt the need to re-examined the earlier experiments on TAM based constructs to test its validity. Behavioural intention (BI) and the PU measured, with a software product showed same correlation and not a significant difference from the equal measures in the case of the future. Hence, the prediction that the TAM model has the potential of overlooking other factors (Davis and Venkatesh, 2004).

In investigating the impact on the use of TAM in virtual academic communities with questionnaires by (Nistor et al., 2010), evidence showed that over simplicity and meaning of acceptance using TAM and UTAUT makes some research assume, the likely factors affecting intention to use technology rather than the perception of users. According to (Nistor et al., 2014) few studies that included the use behaviour mainly relied on the self-report. Interestingly, (Nistor et al., 2014) concluded that the UTAUT model, an extension of the

TAM, could only be partially verified and it infers that the intention-behaviour correlation seems to be a weak link. Despite this emerging theoretical unfolding Bagozzi (2007) suggested that researchers should in the future, understand the factors affecting technology use behaviour and re-examine the weight of the acceptance model.

According to (Riffai et al., 2012), on exploration of the use of online banking, its adoption and challenges using Theory of Reasoned Behaviour and TAM to identify the motivators of online business in Oman, following the emerged result which included trust, usability and perceived quality. TAM was however seen to be too weak due to its behavioural intention. According to (Riffai et al., 2012) TAM undermines issues like the social norms, and the influence as well as control of factors of behaviour. Hence, the conclusion that although TAM is right regarding simplicity to use, it has the capability of making a research lose the richness in study outcome, as it relates to what older people deem salient.

Finally, researchers have argued the limited ability of the two TAM constructs to predict users' technology adoption behaviours in an involuntary use setting. For example, Dabholkar and Bagozzi (2002) highlight the difference between using the TAM in work settings where specifically it was designed and using it to study consumer behaviour in marketing. They argue that, while in work settings the subjects use the system as part of their job. But consumers in the marketing setting have more choices, which led to the questioning of the model's fundamental constructs (PU and PEOU) adequacy, in more complex circumstances where many users' characteristics, social, and economic variables may be involved in determining consumers' behaviour, as it relates to older people. Accordingly, much research recommend including these variables and other technical characteristics when studying technology acceptance behaviour (Lu et al., 2005; Montazemi and Saremi, 2013; Yousafzai et al., 2007). Meanwhile, the need to integrate TAM into a broader adoption model that could include variables related to both human and social change processes was suggested by (Legris et al., 2003).

Given the above evaluation, the researcher observed that TAM based constructs, such as PU and PEOU which were said to positively influence the decision to adopt a specific technology become questionable. The question whether the results are applicable for diverse application such as e-banking, as well as groups such as older people, remains unanswered (Gurtner et al., 2014) due to skewing of the samples towards people already using the internet.

In line with the present research objectives, it is clear that the related capabilities of the TAM in clarifying issues and consistency, lack the potential to capture the salient factors that older people deemed significant to mediate their use of e-banking, thereby making it an unsuitable model to use in this research. For example, older peoples' concern might be about the risks rather than being driven by the benefits. In this respect, focusing on the perception of security and strategies that customers adopt themselves is critical. Again this, cannot be concluded except an investigative approach is employed to elicit in total what these issues are jointly.

For clarity of the research problem statement, the following section evaluates individual research studies drawing out the factors used, as well as the research gap emanating from previous studies, which underpinned the choice of approach used in this research. But before proceeding to literatures specific to the research domain, the researcher explored literature on older users and general financial interactions, which is the focus of the next section.

2.4 Older users and general financial interactions

The evolution of marketing to the older people 55years+ is grouped into three segments. These were prior to 1980 [*Total neglect*], the 1980's [*Trial and error marketing*] and early 1990's till date [*Increasing commitment and caution*] (Moschis, 2003).

In recent times, evidence have shown from examined literatures that though, research has been carried out on the behavioural activities of matured consumers otherwise known as the older people, in terms of their involvement in the use of financial services. Research has often been plagued with one set-back or the other and in most cases carried out with techniques that undermine the personal opinions of the older people. According to (Milner and Rosenstreich, 2013), this age segment possesses the largest amount of wealth in developed Countries and western Countries at large. This assertion was made based on the estimated current 60% contribution to Australian net value. It was further affirmed by the research, that in the United States of America (USA), the older people controls more than 50% of the Country's wealth and income. Hence, their decision tends to yield positive impact on a global financial perspective.

Although (Milner and Rosenstreich, 2013) attempted to investigate the behaviour of matured consumers in relation to financial services in order to enhance marketing strategies, but the study undermined the financial characteristics/attributes of the consumers which thus needed further research. In their empirical study which was carried out with a questionnaire survey using a stratified random sampling to select respondents numbering 776 with 77.6% response

rate after an initial distribution of 10,000 questionnaires, with participants age ranging between 40 to 69 years coupled with different educational backgrounds. The questionnaire was used to cover a wide range of issues such as situational, demographic and psychographic with the data analysed by means of analysis of variance (ANOVA). The emerging result depicts that the respondents tend to seek the advice of their relatives and the financial service providers before making any financial transactions.

From another dimension, (Kennett et al., 1995) sent out 2000 questionnaires to conference attendees and newsletters subscribers from which 495 were completed and returned for onward analysis, with the use of Chi Square approach. The issue investigated through the survey was to establish if financial service providers are considering the older people through the provision of financial strategies in terms of the biophysical psychosocial needs. The result unfolds that despite the importance of mature consumers in financial services, their interests have not been positively represented by marketers during the implementation of the various online systems. On this dimension, the researchers opined that there is the need to further investigate on, why financial consumers' interests are not put into consideration by marketers in the design process.

Through article reviews, (Moschis, 2003) attempted to present the current state in the assessment of issues when marketing to the older segment of the population. Summary of the paper reviewed in the empirical study shows that there is the need for constant feedback such as suggestion box were customers can put up their complains or a toll free numbers to call in times of distress. However, it was noted that there is need to research on how changes in demographic and aging of the population can systematically affects the consumer market of the financial service providers. If this should be taken into consideration, it will therefore become important to extract factors from the older people directly rather than the way it is being portrayed by another person, which is a thought being considered in this current research work. But this can only be achieved by further exploration on what the older segment in the society deem significant. Although (Moschis et al., 2004) did this through a questionnaire survey with 2080 participants aged 55 and 64 years old, but the research was left with some limitations. A closer look at the research carried by (Moschis et al., 2004) shows that the study was basically carried out in United States of America (USA) solely with questionnaire approach. The numbers of participants used was drawn from the different states in America and was in proportion of the size of the state. In addition, the emerged data was also collected from 453 participants under the age of 55 years. However, the survey was

supported by the Centre for Mature Consumers Studies at Georgia State University. Cluster analysis was used which led to the emergence of four distinct gerontographic segments that described the mature consumer segment. In course of the research, participants were asked to indicate whether the reasons indicated for patronising grocery stores was important to them. It was found out that the reasons given by the older adults differ from the younger ones. The emerging result ranges from location, convenience, comfort and socialisation.

The researchers noted that since the population of the elderly in USA is growing in a geometric progression, that there is the need for future research to engage in extracting the factors that affects the elderly consumers due to their physical and health issues. More also, it was affirmed that there is need for such proposed study to focus on how best they access what they require at the convenience of their home.

Hence, it becomes unequivocally necessary to ascertain what older users concerns are using an approach that will reveal what they deem significant. Given that irrespective of the focus/domain there is need to explore how older users themselves see issues that matters to them. Though, the discussion above was not specific to e-banking in particular but on older users and general financial interactions. In order to streamline this work the researcher will explore e-banking domain and users in general as well as older users in particular, this is the focus of the next section.

2.5 Research on E-Banking Adoption

Examination of research carried out in e-banking domain enables the researcher to identify the revealed factors affecting e-banking customers and consideration of approaches adopted. This next section will be from the perspective of the bank customers in general.

2.5.1 E-Banking Studies using TAM: Customers in General

An investigation into the factors influencing the adoption of internet banking among 403 Iranian Bank clients, relied on TAM through a questionnaire approach (Hanafizadeh et al., 2014a). Perceived usefulness, perceived ease of use, need for interaction, observed risk, cost and compatibility with lifestyle, followed by perceived credibility and trust were the significant determinants of e-banking adoption. The questionnaire distributed yielded 361 valid cases in the analysis coupled with the fact all the participants used for the survey must be an e-banking user. However, the majority of the participants were university students. Structural equation modelling was used to analyse the data collected. Compatibility of innovation with the lifestyle and needs of the clients of Iranian banks is the main reasons for

its adoption as well as the trust of using the technology. An investigation based on behavioural intention rather than an exploration of users' perspective towards using the system as well as the use of TAM criticised above were the setbacks identified.

E-banking in Finland by (Pikkarainen et al., 2004) revealed that all TAM variables except the quality of internet connection had an impact on the acceptance of e-banking. Using Factor Analysis with Principal Axis Factoring revealed that PU and information on e-banking were strong significant determinants; PEOU, perceived enjoyment; security and privacy were found to have relatively weak relationships with e-banking acceptance behaviour. However, the entire 427 participants used were e-banking users' 18years+, which has, in turn, suppressed the voice of the non-users that may have been significant.

According to (Tan et al., 2010) on investigation of the factors affecting the adoption of e-banking in Malaysia, using TAM base constructs with 231 e-banking users ranging between 18 and 25 years, which was analysed with Factor Analysis and Scale Reliability. The result showed that social influence, PU, trust, and PEOU were significant determinants of customers' intentions to adopt e-banking services. From another perspective, perceived financial cost and perceived security risk were not notably influencing plans to use e-banking. However, there seems not to have demonstrated an explicit representation of the voice of the non-users.

To identify the factors that influenced the adoption of internet banking in Greece Santouridis and Kyritsi (2014) used a questionnaire that was based on TAM variables with 371 participants that were all e-banking users. Findings from the analysis with Principal Component Analysis revealed that customer perception of usefulness and ease of use of internet banking dramatically affects the intention to use the banking channel. In line with the research of Bagozzi (2007) where TAM model was criticised extensively to be an approach that might not give a valid result and an accurate representation of the people especially where some segment of the customers were excluded in the survey.

From another dimension, the investigation by (Wang et al., 2003) with 123 e-banking users 20 to 40 years old using TAM and self-efficacy as an extended variable revealed that perceived credibility, privacy, self-efficacy, PEOU, PU have a positive effect on the adoption of e-banking technology. This result was from the Confirmatory Analysis of the data obtained during a telephone interview. Despite the age structure of the participants, the underlying fact is that the approach used to deduce the variables lacks validity and rigour.

Although Yousafzai and Yani-de-soriano (2012) carried out empirical research to determine the factors that underpin the adoption of e-banking technology by customers, in general, using 435 e-banking users 18years+. TAM based constructs were used in the data collection using questionnaire survey. The outcome of the cluster analysis was that PU, PEOU, optimism, innovations, discomfort and insecurity influences the adoption of e-banking by the customers in general. The use of TAM to generate constructs might not yield a valid result due to its inherent weaknesses as pointed out by (Bagozzi, 2007).

Furthermore, (AbuShanab et al., 2010) explored on e-banking technology determinants among general banking customers in Jordan using UTAUT based constructs. A total of 869 participants were used in the survey comprising of both users (346) and non-users (523) all 18years+. Using a questionnaire survey and, the outcome of the Multiple Regression analysis reveals the influence of performance expectancy, effort expectancy and social influence as determinants to the adoption of e-banking technology. Though the UTAUT is an extension of the TAM, its validity is weak by the intention behavioural link, hence the need to use other approaches to confirm the reliability of the research finding.

Also, Kesharwani and Singh Bisht (2012) investigated the impact of perceived trust and risk as determinants of e-banking adoption in India. 619 respondents aged between 20 and 33years were used, and TAM based constructs via questionnaire was the investigative approach adopted. Results revealed that perceived risky website interactivity and trust have a negative impact on the adoption of e-banking technology. Thereby, this research undermined focusing on the causality relationship between confidence and perceived risk, coupled with the sample segregation, in which case the non-users were not incorporated, thereby depriving them from the benefit of the study.

In an attempt to find out the relative impact of Trust on the adoption of e-banking technology, Suh and Han, (2002) conducted a research with 845 e-banking users that are 18years+, using a web questionnaire with TAM based constructs, the data was analysed with Structural Equation Modelling. Trust, PU and PEOU was observed to have had a positive impact towards the adoption of the technology. However, emphasis seems to be on the over-reliance of TAM that focuses much on behavioural intentions.

More also, Alsajjan and Dennis (2010) revealed through their research from the 618 questionnaires distributed to participants in Saudi Arabia and the UK, that the PU and trust have an impact on e-banking adoption. Participants were 18years+ with the data analysed

through Structural Equation Modelling. However, generating factors from TAM based constructs has been a great concern in the academic community in recent years.

Subsequently, (Zhou et al., 2010) in China used a questionnaire based approach to cross-examine 265 University students. The analysis that compared the difference between the UTAUT and Task-Technology Fit (TTF) models using Structural Equation Modelling with LISREL 8.72 revealed that PU, PEOU, interactivity and benefits have an impact on e-banking adoption among customers in general. Hence, it concludes that the UTAUT has the capability of affecting the users' perception of internet banking by potential customers. Given that only students participated in the survey, the research suggested the need to test with other groups of people.

Yoon and Barker Steege (2012) used the survey-based questionnaire in a US public University with 125 Student 18years+ and revealed that openness, website usability as well as perceived security, influences e-banking adoption among banking customers. Data analysis was with Traditional covariance-based structural equation modelling. The research undermined the impact of age, gender and self-efficacy on technology adoption as well as the use of student only in the data collection.

Determinants of e-banking adoption for bank customers by (Martins et al., 2014) was conducted in Portugal using the UTAUT model with parameters modified from the literature review in (Venkatesh et al., 2003). A questionnaire-based approach developed in English and later translated to Portuguese was used for the data collection. Participants were 726 Student from a university with an average age of 30 years. The analysis was on 249 responses with a 7 point type Likert scale. Results revealed that perceived risk, the performance of the banking application as well as the ease of using the technology for banking transactions were the motivators. Although these finding add to the existing body of knowledge in the academic community, however, respondents were mainly young people who were highly educated, whose behaviour may differ from the average population and as such generalisation of the research outcome becomes questionable. Hence, a recommendation for cross-validation of the research outcome among different age group to improve the body of knowledge.

According to (Lee et al., 2011) factors such as offline trust and loyalty were observed to be motivating e-banking adoption factors. This outcome was on a study in Taiwan among users; aged 18 years+ using TAM based constructs through a questionnaire survey conducted with

250 respondents and analysed using Factor and Regression Analyses. However, based on the inclusion criteria, the emphasis was on only users with internet access.

Following an investigation with 1286 (non–users) participants to ascertain users behavioural intention, A. S. Al-Ajam and Nor (2013) used TAM based constructs which were administered through questionnaire. The Structural Equation Modelling was used for analysis and revealed that the PEOU, trust, attitude, behavioural intention and relative advantage has a negative impact towards the adoption of the e-banking technology, with the results not based on users' perception. In this line a suggestion was made for future research aiming at a viable outcome, to examine the actual intention/users perception for essential guidelines that will inform the banking institutions. Also revealed based on correlation and Multiple Regression was that trust, perceived usefulness and government policy has a role to play towards protection of customers. To rely on this research outcome, a repeated study in other parts of the world for validation and to include the senior segment will be a way forward.

According to (Susanto et al., 2013) following a survey in Jakarta University in Indonesia with 174 participants (13 users and 161 non-users), shows that the bank customers consider the reputation of the bank, to engage in online financial activities. Results from the Confirmatory Factor Analysis carried out also revealed that bank reputation promotes the behavioural intention of bank customers positively.

Using structured telephone questionnaire that was guided by TAM based constructs among banking customers in Hong Kong, (Yiu et al., 2007). Result based on Pearson Correlation analysis shows that perceived security, PU and PEOU were dominant factors based on only 2 e-banking users and 148 non-users that are 18years+. Hence the need for more robustness of the research to include users, in order to conceptualise the need for the older people to either continue using e-banking or for non-older users to be encouraged to use the technology.

2.5.2 E-Banking Studies using TAM & Additional Models: Customers in General

From another perspective, some studies were observed to have used TAM inclusive of other models. Prominent of this was an investigation on e-banking adoption by customers in general Mansumitrchai and Chiu (2012), using Theory of Innovation Diffusion as a guide, with focus group interviews and questionnaires techniques inclusive of users and non-users of e-banking. The result from the Factor Analysis revealed that fundamental issues considered by banking customers are the compatibility, difficulty, security, trust, third-party concern, status and human contact factors; this emerged from 330 banking customers that were 18years+. Though this result tallied with the findings of (Hanafizadeh et al., 2014a) reviewed

above, in which case issues relating to the trust of using the system and the technology were reported.

Distinctively, (Abu-Assi et al., 2014) carried out explorative research that cut across a broader demographic of banking customers aged between 25 and 44 years (350 users and 20 non-users) using TAM, Diffusion of Innovation theory and Technology Readiness Index. Results from the Factor analyses and One Way ANOVA revealed that compatibility, PEOU and security negatively affect the adoption of e-banking technology. However, the research focused on marketing strategies and campaigns rather than internet banking features, advantages and benefits as well as also ignoring the voice of the old segment.

According to (Nor et al., 2010) in an investigation on the adoption of e-banking technology using the Diffusion of Innovation theory through a questionnaire, with 1164 University students as participants in Malaysia which were ranging between 20 and 50years of age; Though, user group was not specified, the result from the Structural Equation Modelling revealed that the relative advantage, attitude, ease of use and trialability were the primary motivators among the banking customers. But the initial setback in the study was the use of students only, since they are already potential customers.

Other studies on e-banking adoption revealed that trust of using the technology, its compatibility to their devices and the ease of using the system have a negative impact towards its adoption (Tat et al., 2008), the research was guided by TAM based constructs and Theory of Planned Behaviour, coupled with the fact that data was collected from 210 users in Malaysia through a questionnaire approach and analysed using Pearson correlation to determine the bivariate relationship. However, a questionnaire was used thereby availing participants only opportunity to choose from the multiple choice answers, which was available only in the English language. However considering the location of the study Malaysia, respondents who do not understand English had difficulties answering the questionnaire hence it was advised that in such instance, the survey could have been translated into other languages like the Malay and Chinese for the useful answering of the questions (Tat et al., 2008)

In an investigation on e-banking adoption with 100 Muslim banking customers (53 users and 47 non-users) aged between 20 and 55 years (Anuar et al., 2012). Following the use of Diffusion of Innovation model, with convenience sampling interview analysed with Statistical Relationship using SPSS. Results revealed that the complexity of e-banking websites is an inhibitor towards its adoption by banking consumers. Complexity was shown

to have a negative impact towards the approval of the technology, with outcome based on TAM constructs. Coupled with the use of only Muslims banking customers whose believe might affect the validity of the result.

Also, Lee (2009) also investigated with 253 participants (95 users and 158 non-users) using a questionnaire survey to explore the determinants of e-banking adoption using the factor analysis and Regression Technique. Following the use of CHI square approach, results revealed that convenience, risk, security, prior internet knowledge, occupation, perceived usefulness and attitude of banking customers affect their choice to use internet banking for business activities. Given the process adopted the researcher felt that there is need to examine other variables to strengthen the relationship of the theoretical models used. Also, Lee (2009) investigated the causal relationships between the perceived benefits and usefulness in a future investigation, about the factors affecting the adoption of online banking. The research undermined the need to carry out future research on the older segment to test the validity of the result.

Although many researchers have explored on the determinants of e-banking adoption by users in general, Hernandez and Mazzon (2007) viewed e-banking determinants from a different perspective. The work examined three categories of participants using an integrated theoretical model with 600 respondents that comprise of internet banking users, internet but not internet bank users as well as neither internet nor internet bank users. Result revealed that there were differences between internet users and non-users from the Innovation Diffusion and TAM used as a guide. However, result showed that those who use the internet but do not use internet banking share the same perceptions regarding behaviour with non-internet users for banking purpose. Analysis through multiple regression approaches revealed that relative advantage, compatibility with lifestyle; image, subjective norm, self-efficacy, security, privacy, demonstrability and trialability were determinants of e-banking. However, the use of theoretical models based variables (TAM and Innovation Diffusion) to determine the findings unveils the need to carry out further research.

According (Lai et al., 2010) in an investigation on internet banking determinants in Hong Kong with TAM and the Diffusion of Innovation Theory through the use of questionnaire survey among 247 University Students (25 to 45 years of age). Results from the data analysis with the use of Confirmatory data using LISREL revealed that PU, PEOU, Compatibility and Relative advantage were the predominant factors. However, the demographic sample which

included college students could result in self-selection bias thereby making the research outcome to be questionable.

From another perspective, (Qureshi et al., 2008) researched e-banking adoption with 235 banking customers 18years+ using the customer acceptance model and TAM with data analysed using Regression Correlation. Results revealed that PEOU, PU, Perceived enjoyment, amount of information the customer has, security and privacy as well as the quality of internet connection were main determinants. However, these are propositions that need to be validated as the research was carried out with customers that have an online account; as such there is the tendency that non-users segment was left out, with only young people included in the investigation.

In an attempt to find out the inhibiting factors towards e-banking adoption, Srivastava (2007) used a survey approach among 500 participants comprising of 215 users and 285 non-users that are 18years+ through questionnaire approach guided by Consumer Acceptance Model. Result revealed that skills moderated by trust, gender, education, culture, religion and security affect e-banking adoption. However, the emphasis was on customers who have access to the internet, and the senior segment excluded. In a similar vein, important research by Poon (2008) on e-banking adoption using a questionnaire survey, guided by existing theoretical model and analysed with One Way Analysis of Variance. Convenience of usage, accessibility, features availability, bank management and image, security, privacy, design, content, speed, and fees affected the adoption of e-banking. But non-users were excluded from the demographic sample used in the data collection process.
To conceptualise the need for the older people to either continue using e-banking or for non-older users to be encouraged. Discussed below is specific literature about older people/part of elderly in their sample segment about determinants of e-banking, to help our understanding of the identified factors and consideration of approaches that researchers have used so far to ascertain determinants of e-banking, from the perspective of older banking customers specifically.

2.5.3 E-Banking Studies using TAM: Focusing on Older People

(Arenas-Gaitan et al., 2015) investigated older people and internet banking using UTAUT2, with participants (55years+) from Southern Spain. The analysis with Structural modelling using WARP 3.0, revealed that habit, performance expectancy, price value and effort expectancy were the significant e-banking adoption inhibitors by the elderly. However,

gender was proposed as a moderator but not as an influence on the result outlined above. The UTAUT2 model used portrayed that the intention to use e-banking and the facilitating conditions makes usage possible. They further bolstered that the behavioural intention explains the performance expectancy, effort expectancy, social influence as well as the facilitating conditions; this was based on questionnaire survey involving 474 valid responses with an average age of 63.6 years. However, the researcher failed to highlight the antecedents of habit as a significant determinant of e-banking adoption by the older users as well as behavioural intention coupled with the use of UTAUT2 and questionnaire.

In a similar vein (Laukkanen et al., 2008) used the TAM model with 302 non-users of e-banking through a postal questionnaire survey, to explore e-banking adoption in Finland, with non-adopters of e-banking only. The result from the Multivariate analysis approach and Partial Least Square, revealed e-banking determinants by the senior segment, were predominantly psychological barriers, usage, value and self-efficacy. However, it was not complimented or verified by other approaches as well as the undermining of in-depth research of the impact of perceived risk towards e-banking use by the older people and also limited to the use of TAM.

Following a systematic literature review by (Choudrie et al., 2017) of 23 journals selected from ACM digital library, Journal of Global Information Management, Computers in Human Behaviour and many more, to investigate older peoples intention towards e-banking. The outcome of the review sheds light on the adoption of mobile banking by marginal group (older people) in the society. According to (Choudrie et al., 2017) different technology acceptance models such as TAM were used. A conceptualisation of the various models shows that initial trust, performance expectancy, effort expectancy, social influence, technical quality, functionality and compatibility are the fundamental factors affecting the adoption of mobile technology by the older banking customers coupled with issues relating to fraud and risk prevention. However, the research only offered a conceptual framework rather than real life approach into the factors affecting the adoption of e-banking technology. In this vein, there was a suggestion, on a qualitative study, which was thought to have a potential of providing insight into the consideration leading to the adoption of the e-banking system by older people.

2.5.4 E-Banking Studies using TAM and Additional Models: Focusing on Older People

With consideration of other theoretical models Asmi (2012) investigated the elderly aged between 55 and 65 years in the UK, using the Theory of Planned Behaviour (TPB). Data

were collected with questionnaire approach conducted with 100 participants (70 non-users and 30 users) of internet banking and analysed using descriptive statistics to determine, the challenges faced by the older people in the UK towards e-banking. Results revealed that the compatibility, resistance to change, perceived usefulness, perceived ease of use, facilitating conditions, peer influence, as well as self-efficacy of the older banking customers, were a primary concern of their unwillingness to use e-banking technology. Compatibility was most critical while resistance to change has less impact towards their attitude of using the e-banking technology. However, a suggestion was on the need to determine a scale of measuring the quality of the research in internet banking context, and further observation was on the fact that the theory used, relied so much on the behavioural intention of banking customers rather than users perception.

Still on the older age segment with an average age of 50.2 for male and 51.9 for female, Davinson and Sillence (2014) used the Health Belief Model to examine users' perception of being safe and while carrying out a financial transaction with technology. With users only from Northumbria University's Psychology and communication technology Lab database Newcastle, for the data collection process. Result revealed perceived susceptibility, perceived cost, perceived benefit, cues to action, and perceived control as well as security issues to be fundamental determinates of technology adoption. However, the researchers undermined the need to use non-users, given that their inclusion criteria were to include only internet users that have used the internet in the last six months, based on a longitudinal study.

For a better understanding of the literature review boundaries, the following table presents a summary of the areas covered.

Table 2-1 Details of the boundaries of the literatures reviewed

Research search terms used/ Range of synonyms, key words	date range used	Number of Relevant papers/ journals analysed
1. E-banking and customers in general Specific. a) E-banking determinants and approaches used b) Users perception of e-banking c) E-banking and interviews approach)	2000 – 2017	49
2. E-banking and older people Specifically a) Older users and e-banking b) Mature consumers and banking c) Older people and e-banking d) Older adults and internet banking e) Senior citizens and e-banking f) Elderly and e-banking g) Older surfers and e-banking	2000 -2017	5
3. Older users and financial transaction a) Mature consumers and financial services b) Users' perceptions of technology mediated financial transactions c) Marketing to older adults d) Mature consumers and online shopping	2000-2017	2
4. Older people and internet	2000 – 2017	2

2.6 Summary of Gaps in Literature and Importance of Current Study

The majority of the previous studies have used technology adoption theories, mainly with a questionnaire as a means of data collection. Evidence from this review affirms that the TAM and its extensions, (for example UTAUT1 and UTAUT2) lack sufficient rigour and importance that would make it a well acceptable established theory of technology acceptance for the Information System. Given that participants were restricted to specific areas while expressing their views (Chuttur, 2009; Lee et al., 2003). More also, evidence showed that exploration of task was not robust. Given that TAM model can make other factors to be overlooked Davis and Venkatesh (2004), for instance, the case in which an online questionnaire is used to elicit users' perception. The validity of methods used for e-banking adoption research by older bank customers, in general, has been the subject of much intense criticism. Due to its inability to capture, for instance, what the older people perceived to be salient in affecting their adoption of e-banking technology (Abu-Assi et al., 2014; Ndubisi and Sinti, 2006).

Researchers have resorted to questions about the effectiveness, appropriateness and validity of the various approaches used during the investigations. The development of information technology, the changes in consumer lifestyle and preferences, as well as liberalisation of the financial sector, has served to foster stiff competitions among financial institutions (Keynan

et al., 2014). Hence, the need for banks to appreciate all the possible benefits associated with the e-banking technology by enhancing its usage across all user groups' mainly older people.

Evidence from the research gaps shows that there are more appropriate and meaningful data elicitation techniques that have the potential of helping to understand better, the new type of relationship that the use of e-banking system/internet generates and how the older people can accept it. Summary of reviewed literature on e-banking adoption can be found in Appendix 1

To address the current research gap resulting from the investigation on factors that influence the use of e-banking, through the pre-established lens of technology acceptance model using questionnaire approach, which in turn, has no potential of capturing older people's salient factors. This research, therefore, explores what older people deem significant to mediate their use of e-banking, by generating factors solely from the participants. These factors, in turn, serve as a guideline for e-banking service providers/decision makers to use while improving e-banking product and services, and thereby help in supporting older people. The research methodology adopted is explained in the following chapter.

3 CHAPTER THREE: METHODOLOGY

3.1 Overview

Research methodological issue is vital to any research because it forms the basis for the nature of the question that research can answer and the kind of the evidence produced. Following the enhancement of our understanding of the salient factors that make older people appear less willing to adopt e-banking, the current study took a qualitative approach aimed at enhancing the direct exploration of the participants' views (generating factors from older people).

Foremost, some standard features of study theory are presented (paradigm, purpose, approach and design) to establish the position of the research and followed by a discussion of the two distinct phases of the study, with different forms of interview approach. For each stage, explanation of the rationale for the explorative design approach, characteristics, data collection and the strategies used in analysing the qualitative data are detailed. The specific operational detail for individual studies varies; as such they are therefore reported further in the relevant chapters four and five. The next section will discuss this research paradigm adopted.

3.2 Research Paradigm

According to Maxwell (2005), there is the need for a researcher to pinpoint from the onset of research, the paradigm that the research work is based. Given that methodology is based on a belief paradigm Ritchie and Lewis (2003), which are concerns of both ontology (beliefs concerned with nature of reality) and epistemology (how it can be understood). Ontology deals with the natural world that the researchers explore, while epistemology concentrates on the association between the natural world and the researcher. They both have inference for methodology, which is the research procedure adopted by the researcher to explore that natural world (Healy and Perry, 2006).

In this light, this work stands on an epistemological position, as it differentiates between obvious truth and individual perception of e-banking. The epistemology stand of this research is that it is feasible to grasp the knowledge of reality, bearing in mind that no researcher can acquire a complete understanding of an examined experience, because gaining knowledge in entirety is motivated and influenced by social significance. This research work is not merely interested in knowledge building but instead aims to contribute to a better advance

understanding of older people's perception of e-banking by identifying the salient factors that mediate their use of this service; including the strategies they adapt themselves to support their use of e-banking. This research explores to understand the difficulty with the use of e-banking from the participants perspective and what encourages the usage, which has an actual element while questioning the prevailing social structure of truth.

As discussed in section 1.3, the lack of relevance of research results, with a potential of providing practical insight to e-banking managers. To help tackle why the older people appear less willing to accept e-banking (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017; Laukkanen et al., 2007; Mattila et al., 2003), contribute to the gap. It is, therefore, crucial to examine the validity of a method, ensuring that the data collected conform to those identified on the eventual use of the system in the real world, by exploring the older people's perspective and not by assumption. The next section discusses research design issues.

3.3 Category of Research

According to (Saunders et al., 2012), the choice of the strategy, data collection methods, and time for conducting research are determined by the objective of the study and the research questions used by the researcher. According to Yin (2003), three forms of analysis exist: exploratory, descriptive, and explanatory.

Exploratory research creates understanding about unclear problems (Kumar et al., 2013; Saunders et al., 2012; Yin, 2003) while descriptive focuses in the knowledge of cause-effect relationships (Aaker et al., 1995; Blumberg et al., 2011). Quantitative data collection approaches are usually adopted to collect descriptive data, which are the subject of statistical analysis, with findings presented in the form of numbers, figures and diagrams Collis and Hussey (2009). The research is used to identify the different causal relationships that might exist among variables in a given situation as well as using existing theories to develop a hypothesis about the expected relationships among the variables (Blumberg et al., 2011; Sekaran, 2003).

In the current study, given that several previous studies in this context, report the absence of any clear, practical insight (Abu-Assi et al., 2014; Al-Qeisi and Al-Abdallah, 2013), into the crucial factors and barriers specifically about e-banking adoption by older people. The researcher decided to use an explorative approach since she sought to understand the under-searched topic of the elderly customers' perspectives' on e-banking in Sunderland, using different forms of interview approach. Given that, studying one phenomenon from diverse

perspective is vital to e-banking as it will provide an in-depth result of the issue under investigation, as one technique tend to complement the other (Smith et al., 2009). The two interview techniques proposed for use are the repgrids and a semi-structured interview with technology probe (SSIWTP) of typical e-banking websites. Following next will be a discussion of these approaches.

3.4 Qualitative Approach

Qualitative research deals with the investigation, explanation and elucidation of personal and social understanding of people (Smith et al., 2009). There are different forms of qualitative research, in some instance, the collection of data from the participants involves either verbal reports or using interview (Smith et al., 2009).

Given the primary aim of this study, interviews were used to facilitate greater understanding of the reactions of older people towards e-banking. Interviews secure an individual's perspective on what is happening in the research context Patton (2002). Interviews as a method of collecting primary research data, can be classified into three types depending upon their level of formality and structure (Easterby-Smith et al., 2012; Saunders et al., 2012). The first is the structured interview; this is an essential means of collecting quantifiable data via a set of standardised questions to participants with the use of questionnaires in some instance. The second, semi-structured interview is a more flexible approach that involves the researcher, asking a list of questions about a particular theme. And allows the researcher to change their sequence and their wording and include new issues and omit some of the concerns the researcher intended to address, depending on how the conversation develops, coupled with probing. The third, unstructured interview, is a situation where the researcher aims to explore aspects of a given research problem in more depth, there may not be any pre-planned sequence or a specific type of questions, because most of the issues emerge from the conversation setting (Saunders et al., 2012). In the subsequent section, the distinctive features of the interviews are discussed, followed by describing these approaches, and the reasons for using these instruments. All of these will be the subject of the next section.

In this research, highly structured interviews (repgrids) and a semi-structured interview with technology probe (SSIWTP) were adopted, based on its inherent potential of revealing complete experience (Bryman and Bell, 2011; Saunders et al., 2012; Sekaran, 2003). Based on these assertions, and consistent with the current research objectives, repgrids and SSIWTP aid a richer narrative of older peoples' motives and beliefs. The insights gained provide an in-depth understanding of the issue under investigation from the older people's perspective.

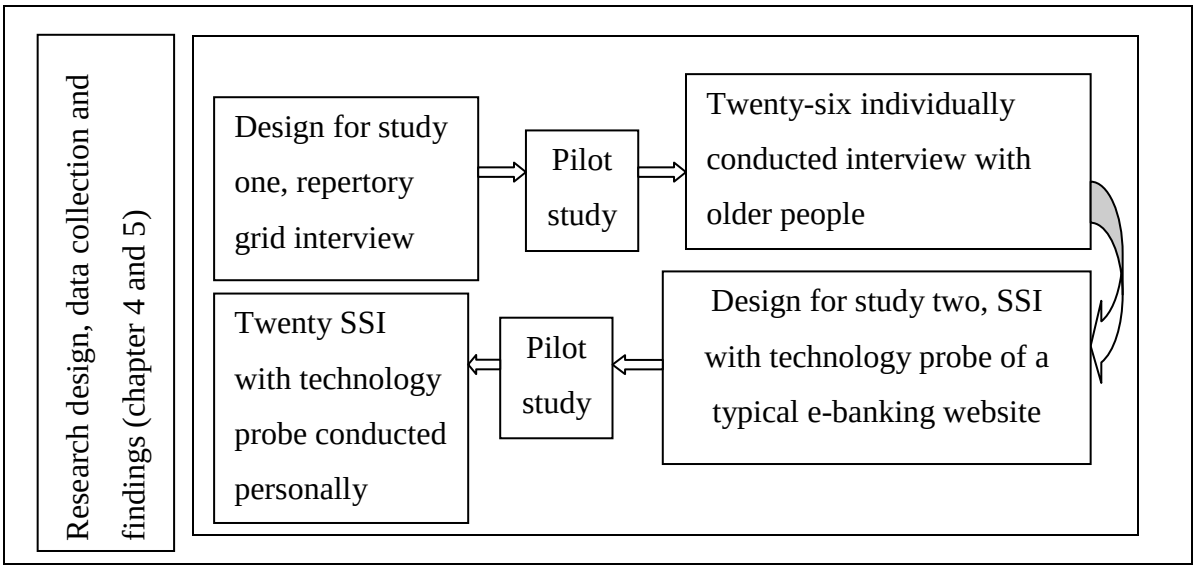
3.5 Research Design

Any research procedure includes defining problem area, questions, designs, data collection, analysis, interpretation of result and comparing results in discussion Sekaran (2003), though, there is no general agreement on a suitable way to express an idea and execute a study Gill and Johnson (2002). In this vein, Collis and Hussey, (2009) revealed that chosen research methodology is a reflection of several important questions that need asking to meet objectives. For example, what type of data to collect? Where to find it? What is the right time to obtain it? What are the appropriate methods to manage it? Followed by what techniques to use in the analysis?

This study requires insight; indeed, when eliciting customers' attitudes, in-depth interviews can be used to acquire a better understanding. Consequently, the present research adopted a qualitative approach using a repgrids technique, which has the advantage of extracting essential experience of the older people. An additional approach, semi-structured interview with technology probe of typical e-banking websites, was added to aid understanding, extract and interprets the older people's attitudes, perception/misconception towards e-banking and also to improve the understanding of the older people. However, this complements the aim of the study which requires making sense of participants experience, how they make sense of their differences, in-depth contextual information about the attitude, experiences, misconception, motives, feelings, and values as well as the various strategies older customers' adapt to support their use of e-banking.

Consequently, examined literature in the e-banking domain suggested the need for a qualitative study using interview, as this approach was thought to have the potential of providing insights into the factors influencing e-banking adoption by the older people (Choudrie et al., 2017), and also give credible utility and validity of the findings. The repgrids and SSIWTP studies were designed in this study so that the results of one data collection method represent the starting point for the next process. This strategy is justified in that while; the repgrids interviews revealed there were issues relating to attitude towards e-banking and misconceptions about security issues, the SSIWTP of typical e-banking websites offer in-depth contextual information about the view, experiences, misunderstanding, motives, feelings and values as well as the various strategies older people themselves adopt. Figure 3-1 highlights the research design process, and the following section will discuss the precise methods selected for study one and two, their application and how they interwove.

Figure 3-1 Research Design



3.6 Methodology for Study One: Repertory Grid Technique

3.6.1 Philosophical View and Purpose of Repgrids

The repertory grid (repgrids) technique, based on the personal construct theory developed by Kelly, (1995), have its development in the context of his work as a clinical psychologist and commonly used to understand how individuals interpret a particular topic or experience. Rather than using a default theoretical framework, which might not capture how the participants view the world around them as it relates to e-banking adoption previous research. Hence Kelly's philosophical viewpoint shows that a person perceives the world based on whatever meaning that person applies to it (Kelly, 1995).

(Edwards et al., 2009) discussed repgrids use as a phenomenological technique for qualitative studies. Investigative procedures and methods for the advancement of knowledge differ in level of confirmation to standard according to (Keynan et al., 2014), and they further argue that one paramount case is the systematised questionnaire which is sometimes distributed online to offer multiple choice answers (Keynan et al., 2014). Given this, repertory grid becomes immensely essential, as is a well-structured interview data collection process that simplifies analysis afterwards, with the constructs reflecting the participants' views and understandings. It allows the researchers to identify what the participants mean without interfering in the way participants express their personal constructs (Keynan et al., 2014) and in turn leads to results that are more explorative, unlike a questionnaire approach. There has been a successful use of repgrids in other contexts, below is a discussion of its highlight.

3.6.2 The Repertory Grid in Human-Computer Interaction (HCI)

Repgrids has been used in HCI design studies and more broadly in Information systems (Briggs et al., 2015; Edwards et al., 2010; Karapanos et al., 2009; Turner et al., 2013). Using the repgrids process was said to aim at eliciting attributes that are personally meaningful for each of the participants. As (Edwards et al., 2010) revealed repgrids emerge as a supportive way for understanding an individual view of a product. For example, (Mcwhinnie et al., 2009) studied how six participants described their construct on the impact of interactive technology on the creative process. Also, Skippon (2014) used repgrids to explore how vehicle performance is construed by consumer drivers using 48 participants in the UK: their construct reviewed the view of vehicle performance from two different dimensions, this implies that the use of the grids has the potential of indicating similarities and differences in such a way that an individual can construe their experience. Given the primary aim of this research, the repgrids technique was deemed appropriate for the initial study, to help reveal older peoples' reaction of e-banking. Following is a discussion of the repertory grid building blocks.

3.6.3 Components of Repertory Grids

Repertory grids consist of four main building blocks. These are topic (the parts of the person's experience under investigation). Elements (Elements implies to an event, object or the person that represents the issue under investigation), constructs (the participants view of the elements) and ratings (position of the element in the construct as perceived by participants) (Gxh et al., 2013). In this research, the topic is the focal point and examines a precise area of discussion (e.g. views on banking types and their different merits in relation to e-banking).

3.6.4 Repertory Grids Usage

This section discusses the purpose of the grid, supply of element, generating constructs, rating scale.

3.6.4.1 Purpose of the Grid

The purpose of the grid in this aspect of the study is to explore how older people construe the different means of banking, and how it impacts their decision to adopt e-banking, which consequently influences the choice of elements supplied as discussed in section 3.6.3 above.

3.6.4.2 Supplying Elements

Elements represent the area in which the construing is to be investigated and are in the columns of the repertory grid. There are two broad ways of supplying the elements: in one manner the researcher selects a series of elements that are representative of the chosen topic, participants then focus only on producing the constructs. Furthermore, the second way is to request the participants to supply the elements themselves Pike (2012), but the emphasis should be made for the elements to be meaningful to the topic under investigation as advised by Pike (2012). When using the latter approach, the researcher should guide the participants using structured questions (Edwards et al., 2009). In support of (Edwards et al., 2009) view was (Keynan et al., 2014) argues that the supply of elements for research is a choice to be determined by the researcher.

In this research, the elements used are Face-to-face banking, Automated Teller Machine (ATM), Desktop Banking, Mobile banking and Telephone banking. The rationale for the five elements, derived from the different means of banking, was based on the suggestion that when supplying an element the researcher should ensure that the element is within the range of convenience, in other words, a representative of the pool for the investigation Pike (2012). The initial point of call by the researcher was to use the functionalities of e-banking website as elements. However, this consideration was rejected, after series of pilot studies conducted to ascertain their suitability, which helped to make the final chosen elements suitable to achieve the intended research purpose

The researcher identified five elements, and these include Face-to-face banking, Automated Teller Machine (ATM), Desktop banking, Mobile banking and Telephone banking. The rationale for the five elements derived from the different types of banking was decided on following the advice by Pike (2012), that when supplying an element, the researcher should ensure that the element is within the range of convenience, in other words, a representative of the pool for the investigation.. The researcher proceeded to the construct elicitation process after identifying what the elements were, and the discussion is next.

3.6.4.3 Generating Constructs

Constructs are the individuals' perception of the elements. There are different ways of eliciting constructs as discussed by (Grill et al., 2011). Given the need for the bipolarity of constructs, it is imperative for the researcher to choose between the different methods of eliciting them. Constructs can be extracted through either a dyadic process (by the presentation of two elements to the participants by the interviewer, who then asks the

participants whether they are similar or different in some ways) (Young et al., 2005). Or through a triadic process (when three elements are presented to the participants, with a request for them to identify how two of them are alike [emergent pole], and yet differ [implicit pole] from the third element (Edwards et al., 2009). This study applied the frequently used method of triadic elicitation process. For this, three elements are presented to the interviewee requesting the latter to identify how two of them are alike [new pole] and yet differ [implicit pole] from the third element (Edwards et al., 2009). When using triads, to enhance a meaningful outcome aimed at achieving the desired goal, the researcher has to consider both poles of the constructs as feasible options

This study applied the frequently used triadic elicitation process. To elicit constructs with the triadic method Fransella and Bannister (1977) advice on the following steps:

a. The researcher gives the names of the elements
b. From the mentioned elements, the researcher picks three of them and present it to the participants
c. The researcher asked the participants to indicate or specify some crucial ways in which two of them are similar or alike
d. Then ask the participants to mention how the two are different from the third one.
e. The researcher then records their responses
f. How the third differs from the similar two, will after that form the contrasting pole
g. The researcher then interchanges the elements from the pool and repeats the elicitation process until the list becomes exhausted.

However, there are identified issues for consideration, for efficient elicitation of constructs, according to Fransella and Bannister (1977), it is very crucial for the researcher to understand in great depth the differences between the different and opposite poles. When choosing constructs, the participants are often compelled to identify a reflection regarding the issue under investigation.

Much research such as (Keynan et al., 2014) beliefs that the ‘contrasts' gives more substantial information in an investigative research methodology, in this vein, it has been observed that an argument exists in favour of the use of contrasts rather than opposite when using the repertory grid technique in research. According to (Kwak et al., 2014), the opposite is in the form of a closed question. For instance,' generous' and ‘not generous' this form of a question is beneficial depending on the format and circumstances of its usage. There are needs to probe the participants' responses if not well understood through a process known as laddering for extensive construct elicitation.

Laddering is a term used in repertory grid process to learn what the constructs mean to the participants. In other words, it helps the researcher to probe into the rationale of the choice of constructs by the participants, through asking the participant to explain and clarify responses, especially where different poles are required rather than opposite poles, and the participants are finding it challenging to define (Edwards et al., 2009). Since the success of the laddering process is determined by the skill possessed by the researcher, it is therefore crucial for the researcher to probe into the rationale for the choice made by the participants to enhance clarity. Further evidence reveals that it is a good practice to use William Latin Square (Keynan et al., 2014; Skippon, 2014), a process where the researcher is allowed to present an element twice and in different sequence during the triadic elicitation process. Specific details of the research settings are in section 4.4.2 below. The elicited constructs were rated as discussed below.

3.6.4.4 Rating of the Constructs

The position of the constructs to the elements are ascertained through the rating scale used by the participants, to help remove any ambiguity (Edwards et al., 2009). In the last stage of gathering the grid components, the rating of the construct is carried out. These are when the constructs are re-used for evaluation (Edwards et al., 2009). The participants are given their completed grid, which contains their bipolar constructs displayed in the rows and the elements shown in the columns (Gxh et al., 2013).

Though Kelly, (1995) used a 2-point Likert scale in his initial grid, modern grid usage of range varies between 2 to 16 point. It was pointed out that in order not to encounter a problem in the analyses, it is better to use a Likert scale between 5 and 7 Gxh et al. (2013). Further advice suggests that while using a range of say 1-7. That is a good practice to rate elements against the constructs in such a way that ‘1' is at the convergent pole (left) and ‘7' is placed on the divergent pole (right) (Gxh et al., 2013).

However, (Edwards et al., 2009) suggest that the rating scale length, as well as the decision to either, use an odd or even number be determined by the researcher. But they affirmed that a scale with an odd number is the norm (standard), given that it can provide the reference point for the two poles. Based on these findings, the researcher resorted to using a scale of 1-5 in the empirical investigation. The scores of 1 to 5 illustrate a rating scale in which a score of 1 represents complete agreement with the description on the left-hand column to the element, and a count of five constitutes the entire agreement with the report on the right-hand column

to the element, with varying points two, three and four in-between, enabling the completion grids by reflecting on all the constructs against all elements.

The above discussion are more understood using an illustration; Table 3-1 below presents a pattern grid created from the pilot study conducted with a member of the supervisory team.

Table 3-1 Sample repertory grid on the construing of different means of transport

WHAT MOTIVATES YOU WHEN CHOOSING YOUR MODE OF TRANSPORT					
	ELEMENTS				
CONSTRUCTS ↓	METRO	BUS	TAXI	PRIVATE CAR	CONSTRUCTS ↓
Pay as you go	1	1	1	5	Long-term investment
Short distances	1	1	2	3	Long distances
Convenient to travel to city centres	1	1	1	3	Inconveniencing getting a parking space
Better for individual	2	2	2	4	Better for group
Reading is much easier	1	1	5	5	But cannot read
Traffic problem	5	2	2	2	Technological faults
More pollution on transit	5	2	2	2	Cleaner energy
Availability of more stops	5	1	5	5	Fewer stops (faster transportation)
Determine your start and destination	5	5	1	1	Depends on the drivers' route
Limited space for commuters	5	5	1	1	Greater capacity for passengers
Luggage space	1	1	4	4	Space for buggies, wheelchair
Parents have confidence where children are	5	5	2	1	Freedom to children
Someone else has the responsibility	1	1	1	5	You have the choice of where to drive

Discussions of the diverse forms of repgrids are next.

3.6.5 Types of Repgrids

In modern times, many researchers have digressed from Kelly's foundation supposition, which implied that the world's perception of a person is on whatever meaning that person applies to it Kelly, (1995). According to Fransella and Bannister (1977) and supported by (Edwards et al., 2010) there are three distinct types of repertory grid. These include full repertory grid (when participants identify both elements and constructs). Partial repertory grid (when the participants are asked to build up constructs about a supplied set of elements that are representative of the researcher's topic), and the fixed repertory grid, (when participants are being asked to use a set of supplied constructs and a set of elements that they are familiar with). Based on the examined literature, the researcher adopted the partial repertory grid approach, which allows the opportunity to carry the participants along with the research procedure and enhances a suitable rating process. Participants have then, the opportunity to generate the constructs while the researcher supplies the elements, thereby making the interview process more engaging. The next section discusses the participants included in the repertory grid study.

3.6.6 Design and Procedures for First Study

3.6.6.1 Participants and Recruitment

This repgrids study was with bank customers, who are aged 60years+, with a sample size of 26. The number was in line with the advice proffered by examined literature about qualitative interviews. According to Onwuegbuzie and Leech (2007), the number of samples in qualitative approach should not be too small, preventing the researcher from gaining new insights, and also not too large so as not to restrict the researcher from conducting an in-depth analysis.

The Age UK Sunderland's regional manager and pastors of local churches were contacted via email with the research information sheet attached (Appendix 2A); to ascertain if informed choice can be made in relation to their service users taking part in the study. An acknowledgement email was received by the researcher from Age UK confirming acceptance to participate, while the church pastors confirmed verbally on the researchers visit to the various churches. This was followed by a visit to meet the participants; the initial point of call was the Age UK's day club centre. The majority of the older people that the researcher met were 90years+. Hence, the researcher was introduced to the manager of the computer drop in session, at Age UK Sunderland; where the participants that were within the inclusion criteria

of the research were recruited. In addition participants were recruited from local churches: to include both users and non-users of e-banking. An interview booking slip was used to schedule interview dates and venue, which was at Age UK Sunderland computer suite and church premises respectively. The venue was the choice of the participant, as they were offered option of where they will like to be interviewed. This was in line with examined literature, which revealed that it was necessary for participants to feel relaxed and also that interviews should be conducted in a location without diversion of attention (Jankowicz, 2005)

3.6.6.2 Inclusion and Exclusion Criteria for Studies

Potential participants were requested to complete a demographic screening proforma to certify that they met the inclusion criteria of the research, see Appendices 2B and 4C. The need to incorporate sample that will impart the research was required, to fulfil this, only older users (internet/e-banking users) and non-users (internet/non-internet/non-users of e-banking) were incorporated; this was earlier justified in page 2 section 1.2. In addition, all participants were recognized as within an age range of 60 years+, rational of which was detailed in section 2.2 page 13. This included participants from Age UK irrespective of cultural and religious background as well as local churches in Sunderland. Although falling within this age segment is subjectively meaningful to the person concerned with regards to airing their views in the subject matter investigated, but participants who will impart the study and be available for the study were required to inform the research.

Given that older users that the researcher met at the initial point of call, which was the Age UK's day club centre, were 90 years+ and they could not make informed choice in relation to taking part in the study, due to instruction they have from their children. Followed by their capability to make sense with regards to use of technology for accessing information online or doing technology mediated financial transactions due to age and as such they were excluded.

Predominantly, participants who were identified as though non-users of e-banking, but use technology for financial transactions like on eBay and Amazon, check their emails and do other activities online e.g. weekly orders online, paying for their insurance online and order repairs of their stuff at home were included (non-users), coupled with those that are well abreast with the use of internet (Users). All of which met the research criteria.

3.6.6.3 Sampling Issues and Sample Size

The limited number of participants was acceptable because of the exploratory nature of the study. The number was in line with advice deduced from examined literature about a qualitative interview. According to Onwuegbuzie and Leech (2007), the number of samples in qualitative interviews should not be too small in order not to prevent the researcher from gaining new insights, and also not too large so as not to prevent the researcher from conducting an in-depth analysis. For instance there was need for the researcher to be immersed with the data during analysis and this could only be achieved with not too large number of participant. Furthermore due to challenges recruiting interviewees for this research a single profile could not be achieved, the final sample included participants from churches and Age UK.

In this vein, participants of the research were recruited through a convenience sampling methodology (Etikan, 2016). Two form of sampling method can be used when recruiting participants; this includes random and non-random sampling. Convenience sampling comprise of non- random. This strategy was adopted given the sensitive nature of the investigation (Perception of older users with regards to banking online) and due to the challenges associated with recruiting the required number of participants from a single profile, hence the resolution to take on participants from local churches which is easily assessable for the researcher.

Though convenience sampling is said to be associated with bias, but there is no reason why it would have threatened the validity of this research work. Given that internal validity was promoted as the role played by the interviewer during the interviews were smaller; as such the minimal role reduces the chance of steering the participant through questioning, thereby decreasing chances of interviewer bias. This was observed to have enhanced the utility of rich data as well as assisting in identifying critical issues as they see it, rather than as someone else understands. In addition convenience sampling is frequently used to recruit participants in research investigations, for the reason that it is easy to do (Corbin, J. & Strauss, 2008; Etikan, 2016)

3.6.6.4 Data Collection for Study One

Repertory grid interview was individually, and the duration was approximately 50 minutes. Each section started with the participant being asked to answer demographic screening questions (Appendix 2B), to certify that the participants were within the inclusion criteria of

the study. Then participants were asked to sign the consent form (Appendix 2C), after that the researcher did a quick run-down of the study information sheet comprising: participants' rights to withdraw from the interview when they want to, an reassurance that the already collected details will be destroyed instantly following their change of mind. Also, there was confirmation of anonymity; in the light that data will be secured and stored with only the researcher and the supervisory team being privy to the data, coupled with the use of participants number as against names this necessitated the use of participant's number for identification. The next section will discuss the analysis process employed.

3.6.7 Repertory Grid Data Analysis

The thematic content analysis was used to measure and evaluate the occurrence, meanings and relationships of the words and concepts, which enables the drawing of conclusions about the definition given by the participants within the text Schreier (2012). The difficulty in this is identifying themes, Kvale and Brinkmann (1999) note that experience is the key in this case, as comparisons between participants constructs can inform the interpretation of the data. However, thematic content analysis has some practical and theoretical disadvantages. Thematic analysis is time-consuming Mayring (2000), but the researcher adopted this analysis technique due to its inherent richness and with the aim of getting immersed in the data.

The analysis of elicited data is in two distinct phases. First was the content analysis of the overall data following the step by step advice of Mayring (2000). Followed by the transcription of the written data in addition to the recorded version into an excel document, as interview responses were on a grid sheet initially. In the second phase the visual analysis of the data was done by inspecting the grids Jankowicz (2004), during this process the researcher focused on the extremes (1 and 5), as they were seen to identify the factors that the participants perceive to be more distinctive to the element, further details are discussed in chapter 4.

3.6.8 Review of Repertory Grid Approach

The use of a method that considers the individual construct system was contemplated to be a valuable way of adding additional knowledge to the topic under investigation. Given that what older users deemed salient to mediate their use of e-banking is under researched by examined literature, despite their economic importance as identified in section 1.1 above of this thesis. The repgrids interview, though it promotes a more highly structured understanding of what the user's experiences are about their reaction. But it has been observed by the

researcher that in some context this age segment (older people 60 years+), feel the need to be more careful on how they talk about their experiences especially when a technique seems to be challenging regarding concept and practicality. According to Thomas (2010), there is no single accurate direction to acquiring knowledge, in other words, it argues that the judgement of research technique suitability should differ according to how the user group involved in the research perceive it Walsham (2006). Repgrids, which has a highly structured nature, limited the participants of what they could say about their perception of e-banking, due to the fixed interview schedule and the requirement to ask questions following the same format and sequence about each participants Yardley (2008). Furthermore, repgrids was observed to be a less direct method that will aid the exploration of how older people construe their experiences, in the light that they seem to be finding it difficult to understand the concepts (e.g. differentiating between contrasting and opposite poles).

The study outcome revealed attitudinal issues and misconceptions about the security of e-banking system, for example, responses included: "account could be subject to fraud", which in turn does not capture the wholesomeness of their experiences. *Nevertheless, it was not achievable to decide on this possible restraint, in the absence of carrying out the procedure, consequently, the repgrids technique has been observed in this context, and domain and its potential relevance are therefore highlighted further in discussion chapter 6.*

Based on the evidence, in exploring to understand the experiences of individuals in social reality, a multidimensional approach could be taken Mason (2006), in that, experiences are not easily comprehended with a distinct measure. The research argues that to make sense out of individuals' views, that researchers need to be more innovative about the tool that is adapted (Mason, 2006).

Consequently, based on older people's perception of attitude and misconception about e-banking security revealed in the first study, semi-structured interview with technology probes of typical e-banking website was thought to be more appropriate qualitative technique, which has potential to focus more on the wholeness of experience rather than a mere casual explanation of a concept, e.g. Defraud account - safe. This use of the SSIWTP was proposed to help accomplish the remaining research purpose outlined in the introductory chapter one. Finally, it will explore how these identified factors interact with each other. The next discussion will be on the details of SS1WTP.

3.7 Study Two Methodology: Semi-Structured Interview with Technology Probes (SSIWTP)

The purpose of study two was to seek further what other people's attitudes/misconceptions are about their decision to adopt e-banking in Sunderland. Given the difficulty of comprehending experiences with a distinct measure, coupled with the research aim that requires complete exploration of knowledge, the current issue was thought to be achievable with the use of technology probes of typical e-banking websites to make an essential contribution to our understanding of e-banking adoption among older people. SSIWTP technique proposed allows the researcher to efficiently make use of technology probes to secure more insight about e-banking adoption by the older people in Sunderland. According to (Hutchinson et al., 2003), a probe is an instrument used to find the unknown. They argue in their research with a Swedish family in Scandinavia that sufficient use of probes can help to reveal the technological needs and desires of the participants and provide a real scenario to motivate the participant as well as its ability to introduce participants to new technology and eventually make them consider its future use.

3.7.1 Design and Procedures for Second Study

The SSIWTP concentrated on older people's views, attitude and experiences while interacting with e-banking for users and perceived opinions for non-users. Also explored was the misconception about the security of the e-banking system and to identify the strategies that older users themselves adapt to support their use of e-banking.

An interview procedure was designed to guide the process. The discussion of the questions used and the choice of technology probes were presented simultaneously, as each question were attached with paper-based technology probes of typical e-banking websites. The idea was to acquire more explanation of participants' responses based on what they have typically used as well as their views in the case of non-users. Full details can be found in Appendix 2D and 2E respectively.

The technology probes were printed out still videos, from UK based banks websites. They included: NatWest, Nationwide, the Trustee Savings bank (TSB), Lloyds, Halifax and Royal Bank of Scotland (RBS). Following an introductory question, the probes and questions sequence included:

3.7.1.1 Registration Page

First, there was an exploration of pages displaying the request for personal details (i.e. names, date of birth and lots more) were explored; questions includes, experiences with this kind of registration set-up/when inputting personal information. Followed by details of customers' bank account identification (i.e. debit card details), questions included, how participants would describe the registration with a debit card. Also about choosing security details (i.e. PIN and passwords and in some cases user ID) questions included, the kind of format participants have ever used. For further insight on PIN and passwords different bank criteria for an acceptable password during registration was explored (i.e. Combination of characters and numbers (123Sunderland), Use of symbols (/, @, _,), Case sensitive (EGHHDBV), Combination of the three examples above (124@Someone). Also, there was an exploration of the choice of memorable data (i.e. date, place and name) questions included what samples they have typically used and if they have encountered difficulties. Alongside, there was an examination of the display showing the setting of security inquiries and questions included strategies participants have in place with regards to usage or views. And the last stage of registration involved the display of activation codes, which indicates successful registration, questions included their perception of activation code alert and to identify concerns about how alerts construed of security and convenience. The next step was to gain access to registered customers accounts through login.

3.7.1.2 Login Page

Because there are different ways which customers can log in, and the affirmation that it requires them to remember different types of information. Participants responded to samples displaying request to input already created details during registration process listed above, to gain access to their account. These include PIN, Passwords, User ID and banks generated customers' numbers were appropriate. The questions covered what participants have typically used/encountered and views for non-users as well as strategies they employ while using the PIN, Passwords and User ID. Further exploration, was on pages displaying the use of Pin sentry (card reader), and the token and questions included: experiences about usage/views of the card reader with an emphasis on the specific difficulty they might have likely encountered. The essence of this aspect was to identify what puts the older people off about the use of this form of authentication for e-banking. This was followed by a page displaying e-banking account activities to explore older people's experiences while carrying out a specific task or views in the case of non-users.

Furthermore, there was a section for general attitude towards e-banking with questions about the decision to adopt or not adopt e-banking explored. Followed by perceptions about the skills required to use e-banking and the likely places they will like to use e-banking. Also investigated was participants' views/experience about privacy about e-banking; however how the identified factors from study one mentioned above interact with each other was also examined. Finally, participants were asked to give feedback and further assured of anonymity. Below is a sample probe used about memorable data, this was chosen just at random for clarity.

Figure 3-2 Sample Technology Probe Used to explore experiences with Memorable data

3.7.2 Research Setting

Participants and recruitment procedure were the same, for the repgrids interview as such related areas will not be repeated. The only difference was in the number of participants, for the SSIWTP, in which case 20 older people (10 each for users and non-users) were interviewed.

Validity and reliability, according to Guba and Lincoln (1994), is the extent to which the data collection method correctly measures what it was intended to measure, and reliability was said to be concerned with the consistency of the measurement instrument over time. There was adherence to the following procedure, in the bid to ensure valid and reliable qualitative data: there were clear and standardised procedures during each interview, for instance while

recording the proceedings, when the data was transcribed as well as during the interpretation of the data, thus enhancing the reliability of the process. Finally, the supervisory team reviewed the interview schedule. For example, about structure, and the needs for the questions to help answer the research questions (like exploring the strategies older people adapt to support their use of e-banking). Also, the researcher strictly adhered to the constant emphasis, about reminding the participants that their details will not be required, as such they should never reveal it.

About ethical considerations, the researcher acted based on the advice obtained from the examined literature (Kumar et al., 2013; Saunders et al., 2012), on the need to take notice of ethical issues as this gives rise to sustained trust among the researcher and the participant. Given that it has the potential of enhancing performance while conducting the interview and improves in totality the trustworthiness of the research outcome. In this light, University ethical approval was granted on 21 April 2017, (Ref. 000588) with a guarantee of anonymity from data collection to storage.

There were pilot studies with five participants (four volunteers from a local church, one Bachelor's degree level student from the Nursing department). The outcome could be found further in this thesis in section 5.4.4 of this thesis.

3.7.3 SSI Data Analysis with Technology Probes (Study Two)

The SSIWTP data were analysed using the thematic analysis approach which was in line with examined literature (Saunders et al., 2008). The specific analysis processes are discussed further in section 5.5 of this thesis.

About the reliability of the analysis process of the emergent themes, test-retest reliability was carried out. According to (Van Kan et al., 2010), this involves a process when a researcher conducts the same examination to the same sample on two separate occasions. Emphasis was on the length of time allowed between each examination Trochim (2006), due to the belief that, the more the time permitted, the less the correlation, which will improve reliability. Following evidence from the literature that three weeks is a typical average used in other research (Edwards et al., 2009). The time penned between the first and second examination was three weeks.

3.8 Justification of Major Techniques Used

In order to investigate extensively on the factors affecting e-banking adoption by the older people, the two major techniques used were the repgrids (RGT) and semi-structured interview with technology probe (SSIWTP).

The RGT was observed to enables the researcher focus on individual assessment of the world and the production of a very rich data set. More also, the repertory grid technique was very flexible and enhances a high degree of precision and accuracy of result that is obtained. Followed by a quantifiable standardised set when effectively used (Dillon and McKnight, 1990)

Precisely RGT revealed a broader range of concerns about attitudes/misconception about e-banking security. Given that repgrids analysis showed that attitudes towards e-banking adoption are an imprecise and a vague concept from the participants
Although RGT seems to be promising to use in terms of sustainability assessments but there is the need to evaluate its use in terms of the user group under investigation. Given that respondents during RGT interview seems to be suspicious towards the open questions and as a result feel constraint to think up constructs with an open mind (Van de Kerkhof, 2004). Though there is an opportunity for laddering, but RGT does not give much room to the probing of participants' responses. Following that it has a default way that the questions can be presented and it is possible that participants do not know how to deal with the outcomes especially when these elicit inconsistencies and changes in their own way of thinking as detailed in page 47, section 3.6.8.

The identified concerns necessitated the need to understand their entire experience further, using an approach that will improve our understanding of older people's attitudes, which is the SSIWTP. The SSIWTP was to address the short comings observed by the researcher as a result of the nature of the RGT, factors emanating from the knowledge of the participant to the technique and the expertise of the researcher. However, the researcher noted more strengths of the SSIWTP over any other forms of data collection techniques such as observation, experiments based on its suitability for use in the present context.

On a summative note the SSIWTP gave a clearer insight on how the emerged factors interact with each other. For instance, how seeking help as a result of lack of IT competence can make the older people susceptible to fraud/compromise security. The joint use of RGT and SSIWTP has been established to be a thriving blend of methodologies (Mason, 2006). With

RGT, like SSIWTP the focal point is on understanding a person's social world, while the SSIWTP helped to reveal the technological needs and desires of the participants and provide a real scenario to motivate them (Hutchinson et al., 2003), thereby revealing entirety of experience. However, both techniques allowed the participants to share their own way of sense making as they see it not as someone else does.

3.9 Justification of the Thematic Analysis adopted

Thematic analysis is used to measure and evaluate the occurrence, meanings and relationships of the words and concepts, which enables conclusions to be drawn about the meaning given by the interviewee within the text (Schreier, 2012). The difficulty in this is identifying themes, but the primary reason for selecting thematic analysis as the qualitative analysis method for this investigation, was based on its inherent specific richness and individuality of the construct content that is considered. The analysis carried out was rigorous and have been clearly described in the course of critiquing the research in section 6.3 ahead.

1. Why thematic content analysis for both study?
    - Insight was derived while assigning codes to the responses
    - An in-depth thematic analysis offered a lot in terms of being immersed with the data.
2. What other methods could have been used?
    - Initially the researcher mocked up a site in order to use experiment, so thinking about an experiment where they will have to practice these steps to see what the hindrances are, would have thrown more light on what their specific attitudes are. However, due to issues relating to confidentiality, there is no way a participant might be willing to login to their personal account for fear of revealing their details. Hence experiment was dismissed
        - Approaches like observations, focus groups dismissed because:
    - Sensitive nature of e-banking
    - Researchers interest, which was to see how they individually see it not as someone else sees it. So these other approaches have tendency of getting into another individuals thinking/perception of it
    - Focus group has the intention to influence other people decision.

The strengths of the technique were seen as understanding the attitudes, perceptions, strategies and social factors which shape older peoples' behaviour towards e-banking. In the context of older people, such knowledge can only be obtained through being immersed in the emerged data. Despite the fact, that many statistical approaches and techniques exist to analyse data, the choice of which to use is conditioned primarily by the research questions and the nature of the collected data (Saunders et al., 2012), hence the thematic approach.

3.10 Summary

The detailed discussion of the two interviews (repgrids and SSI with technology probes) methodological approaches has been presented in this chapter. The repgrids revealed insights about older people's perception of e-banking. Also attitudinal issues and misconceptions towards security of e-banking were revealed. The result informed the plan of the SSIWTP, to gather the in-depth understanding of the older people's perspective as well as a clearer understanding of the misconception. This was achieved with the SSIWTP of typical e-banking website, which helped to delve into their experiences based on what they have practically encountered for users and views from non-users. All choices made with respect to the methodological approach employed and instruments have at this moment been justified. Furthermore, the ethical approach to the study has been carefully detailed. The next two chapters present the two empirical studies in order of outcome.

4 CHAPTER FOUR: PERSONAL CONSTRUCTS THAT MEDIATE OLDER PEOPLES' E-BANKING USE: A REPGRIDS STUDY

4.1 Introduction

This study investigated what personal constructs older people deem to be salient to mediate their use of e-banking, with twenty-six older bank customers (users and non-users), using repgrids interview approach. The chapter presents the motivation for carrying out the research and the methods used for this empirical study. Followed by the presentation of the analysis of findings from the repgrids interview data, which were collected to understand the experiences of older people with e-banking; giving an understanding of what makes them appear less willing to adopt e-banking. This outcome is a general idea of the present position of e-banking adoption by older people in Sunderland, as apparent by users and non-users, which are important in proffering answers to the study's research questions through the discussion of the results. The chapter concludes with a reflection on the repgrids evaluation issues and presents recommendations for possible improvements to subsequent studies.

4.2 Motivation

Thus far, examined literature that has investigated the factors that influence older user's behavioural intentions towards the use of e-banking has mainly used adoption models based on questionnaires often distributed via the internet in several instances, as discussed in section 2.5, thereby capturing only those who have access to the technology. Also, questions are usually asked at a very high level, using multiple choice answer options.
Consequently, there is no empirical evidence whether these studies capture, what the older people identify as being personally important to them as highlighted in section 2.6.
This research took a different approach, using the repgrids interview technique to capture the perception of older people in Sunderland. To ascertain what the critical issues are, as they see them, not as someone else sees it.

4.3 Aims

This study examined what personal constructs people 60years+ (users and non-users), deem to be important when choosing among the different means of banking (i.e. Desktop, Mobile, Personal contact, Telephone and Self-service) as a way of accessing their finances. To ascertain the salient factors that mediates their use of e-banking.

4.4 Methodology Choice

The choice of repertory grid was because it have been used to help understand how individuals interpret a particular experience Kelly, (1995). The researcher's inbuilt notion does not influence the individuals investigated, in other words, the researcher does not interfere in the way participants express their constructs. Based on the use of theoretical frameworks, the repgrids have a significant capability of unveiling older people's reactions to e-banking with the use of their expression. The repgrids data collection process has the additional benefit of simplifying the analysis afterwards because during the interview process the participants' responses are recorded and rated at the same time. The specific research design is the discussion of the section below.

4.4.1 Research Setting

4.4.1.1 Participants

Twenty-six older people 60 years+ based in Sunderland UK participated. These were 13 e-banking users, and 13 non-users, fourteen were men and twelve women. The recruited participants were from both Age UK and local churches in Sunderland UK. All the participants understood the English language and interviews were on an individual basis. For participant's profile see Appendix 3A.

4.4.1.2 Materials

To carry out the repertory grid interview, the researcher used a piece of card with elements written on it and a created grid for writing down the elements before proceeding to carry out the triadic process. Also, the researcher used a voice recorder to preserve the data. Furthermore, the participants' consent form was used to record participant's acknowledgement concerning the terms and conditions of the interview process.

In this study, the means of banking were the elements; these include Desktop banking, Mobile banking, Face to face banking (FFB), Telephone banking and Self Service banking based on the rationale discussed above undersupplying of elements.

4.4.1.3 Pilot Study: Developing Proficiency in the use of Repgrids Interview

1. The objective of the exercise

Based on the exploration on how to use repertory grid methodology and to demonstrate a practical understanding of the process, the researcher conducted three set of interviews, which were carried out with the participants on topics of various interests. The fundamental

objective of the training pilot study is to demonstrate the feasibility of the mapped out protocol designed by the researcher for use during the actual interview and aimed at improving the methodological approach of the study under investigation.

2. The insight of the pilot study and problems encountered
    a. Practising with non-target participant

The first phase was an investigation on publication types and their contrasting merits in digital service everyday use, with three PhD students. The second phase was on how individuals construe hobbies with two members of staff at the University of Sunderland. Moreover, thirdly an investigation of how participants construe four essential modes of transport. During this process, the participants were meant to write out their constructs on the Rep Grid Sheet, followed by feedback after each session to ascertain if they felt pressured. Given that the researcher observed that they had to struggle to come up with constructs.

Following the feedback, participants felt pressured, as they reported to have struggled with similarity and opposite ideas in order to have both ends of the construct completed. Some of the participants were finding it difficult to elicit bipolar constructs as they claimed the procedure was strange to them, and also they did not understand some of the questions on how to elicit the construct, this the researcher attributed to the elements.

Furthermore, the explanation of the examples was not helping as it was not applicable to everybody, Based on this the researcher resorted to refining the way of explaining the process, by merely describing someone else's hobby, while they listened, and this did not only pass the message but also saved time. The researcher had to get the participants to choose from all the elements and form triads.

    b. Practising with target participants

Based on the preceding, the researcher had to practice with the target participants, two volunteers from local churches, using the topic under investigation. With the following elements about banking functionalities: Make a payment, Make transfer, Authentication, Communication enquiry, Apply for a loan, Applying to close a bank account, Receiving message alert and Familiarising with branding. In the course of practising with the participants, the researcher witnessed some strengths and weaknesses. Their responses were more of real ideas instead of fundamental issues about a task that people use e-banking to do. For instance, never applying for a loan was observed, not considering branding, for

communication enquiry some said they do not like their conversation recorded and that it takes much time to speak with an adviser, as such they prefer one on one enquiry in the bank. One of the significant observations was that these elements were mainly centred on activities of e-banking users, thereby hindering the research objective of incorporating both groups.

3. Review of issues encountered

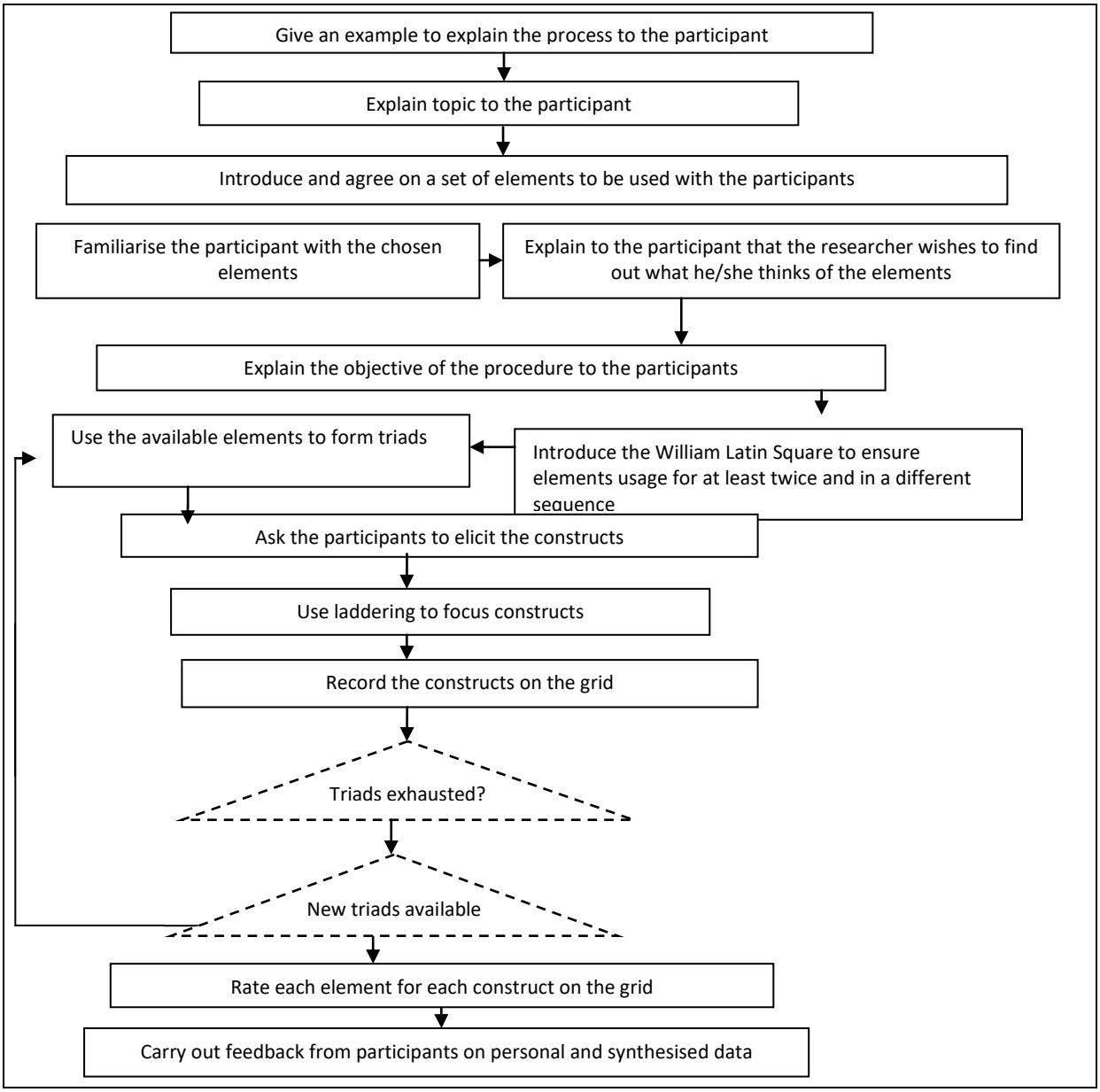
In this vein, the researcher investigated the utility of providing additional context to the elements and checking with interviewees, to identify the most frequent tasks they engage, for elements consideration. Concurrently there was the need for further research on the use of repertory grid technique; during this process, the researcher had one on one session with an experienced repgrids researcher, which in turn bridged the entire gap. The elements were refined to include; Face to face banking (FFB), Telephone Banking, Desktop Banking, Self Service Banking (ATM) and Mobile Banking. The question used was: how do older people construe the different means of banking and their impact on e-banking? The researcher used the initial designed demographic screening questions, as there were no further changes. Given the benefits, the repertory grid appeared more appropriate for the data gathering technique in this study. These changes were highly productive and helpful.

In summary, interviewee found the process challenging but informative. The structured nature of the interview placed considerably more pressure on the participants during the session. However, the constructs identified from the elements provided, and their subsequent analysis, produced confirmatory data with regards to the suitability of the method. The protocol used will be discussed next and for clarity also a flowchart of the step by step data collection process is illustrated ahead, see figure 4-1.

4.4.1.4 Repgrids interview protocol

Presented below is the repertory grid process flowchart, for a better understanding of the interview procedure discussed next.

Figure 4-1 Repgrids Interview process Flowchart



The repgrids interview processes used has been detailed in section 3.6.5.2 of this thesis. However, at the onset of the interview there was a brief explanation on how the technique works with examples demonstrated for clarity; this is more understood using an illustration. Table 4-1, below presents a sample of a completed grid used for explanation.

Table 4-1 Sample of a completed grid used for explanation

An Investigation on How Individuals Construe Hobbies							
	ELEMENTS						
CONSTRUCTS	Playing Games	Dog Walking	Playing the Piano	Drawing	Gardening	Shopping	CONSTRUCTS
Individual base	5	3	1	1	2	4	Interact with more people
Relaxing	4	2	2	1	4	4	Exciting
Focused	2	4	1	2	4	4	Room for error
Outdoor	2	2	1	4	4	3	Confined
Exercise	1	5	1	1	5	3	Easy to carry out
Companion	1	1	4	4	5	3	Stressful
Nurturing	1	1	5	5	4	3	Gratification

Also, the researcher informed the participants that the topic of interest would proffer solution to those personal construct older people deems to be salient to their continued and potential use of e-banking. Explicitly, informing them that the outcome of this study will assist design. Also, it provides guidelines on how to support them in an extended financial program and for research dissemination. The Interview question used to clarify the objective of the study was: *How do you construe the different means of banking and their impact on e-banking?*
The researcher presented the elements, which the participants chose from, while a copy of the printed elements containing their meanings was handed to the participant for use during the interview process. Participants stated how two of the elements are similar and how the third one differs from them. These were the similarity pole and contrast pole. The researcher numbered the elements chosen by the participants to record the elicited constructs. Examples concerning similarity for desktop and mobile as well as contrast for face to face banking are: ‘Set of restrictions’ (similarity) vs. ‘No restrictions'.

Furthermore (contrast) or ‘Machine might be more reliable’ (similarity)’ vs. ‘more human errors’ (contrast) thereby is showing a way that the similar elements differ from the third. This process continued until a viable pool of constructs (triad exhausted) was produced. During this process, the researcher ensured that the elements in a triad were used at least twice and in no particular sequence. In other words, the researcher swapped round the pairing elements, until the set of elements was exhausted (and this process is known as William Latin Square). Constructs recorded was on the grid, and the number of constructs elicited for each triad depending on the individual's responses varied.

With the rows of the grids completed, the researcher then probed the choice of the constructs by asking the participant to explain further the rationale for decisions made to aid clarification, known as laddering. For example for ‘Machine might be more reliable’ (similarity) vs. ‘More human errors’ (contrast) a further probing revealed a more concise construct pair of 'There could be mechanical errors' vs. 'Using human mind as well as machine’. This problem was used to determine contrasting poles rather than opposite poles and also used when participants found it difficult to differentiate between opposite and contrast. Illustration of the process above can be found in table 4.2 below: In this table Desktop banking (DB), Mobile Banking (MB), Face to face Banking (FFB), Telephone Banking (TB) and self-service Banking (SSB) represented the five forms of element used in this study and the elements which were paired to provide the difference.

Table 4-2 Construct elicitation process

Constructs	DB	MB	FFB	TB	SSB	Constructs
Solitary	DB	MB	FFB			Bit of company and chat about the weather
Rules to learn, e.g. password	MB	DB	FFB			Easy as not additional things to remember
Have personal assistance	FFB	DB	MB			You are on your own

After adding the constructs, the participants rated those elements against their related construct. The researcher used a scale of 1-5, with ‘1'matched to the convergent pole (left) and ‘5' matched to the divergent pole (right), which enabled the researcher to determine the polarity that the elicited constructs belong. The participants carefully wrote down the ratings on the grid. Table 4.3 below is a sample grid, showing the rating scheme applied.

Table 4-3 Examples of a simple grid

Constructs	DB	MB	FFB	TB	SSB	Constructs
Solitary	1	1	5	5	3	Bit of company and chat about the weather
Rules to learn, e.g. password	1	2	5	3	4	Easy as not additional things to remember
You are on your own	1	1	5	4	4	You have personal assistance

Finally, there was a collation of feedback from the participants on the whole interview process. The 26 participants produced 317 constructs. These were then analysed to produce a qualitative account of the participants' understanding by identifying the significance of the constructs (Fransella and Bannister, 1977), using thematic content analysis.

4.4.2 Analysis of Participants' Repertory Grid Data

This section considers a detailed step by step analysis of the 26 grid interview dataset, which enabled the consideration of the similarities between interview grids with different participants, and also to efficiently allocate themes to constructs, below is the procedure used to assess construct reliability. The analysis process was on the advice offered on inductive content analysis (Kvale and Brinkmann, 1999; Mayring, 2000; Schilling, 2006).

4.4.2.1 Thematic Content Analysis

The researcher entirely transcribed the interview written data (which was complemented by the recorded version) into an excel document, given that initially the responses were written on a grid sheet. The researcher read the data line by line making a note of first impressions. The transcript of users and non-users were differentiated. After continuous reading of the transcripts, the researcher identified several similar constructs, which aided the data reduction process before the categorisation. For instance, 'I can not withdraw money'; 'I can not get cash' 'I can not get money'. After which, the transcripts were read further ensuring that the researcher captured what the participants meant, to identify expression of ideas within the construct with related meaning. At this stage, the researcher searched for patterns and themes, and similar items were grouped after that to define the experiences, by attaching one or more keywords to the constructs (e.g. "Solitary" vs. "Have personal assistance" was coded as 'Social support').

Completion of the construct categorisation process was in discrete stages. First of all, there was the need to associate the elicited constructs to categories. This process led to the emergence of Subcategories and top-level categories, which were used to facilitate analysis of the data. These subcategories were then defined and formulated step by step as outlined from the material Mayring (2000). According to Schreier (2012), it is unusual to create sub-categories that are purely concept driven or data-driven in a qualitative content analysis. As such concepts from research, shared knowledge and logic, followed by constructs that emerged from the interview for instance "Brand" (Saunders et al., 2008).

For clarity Table 4.4 below presents a sample of the full repertory grid data. The column labelled `Construct Number' indicates the number of each constructs elicited. While the column labelled `Emergent Pole' indicates the construct label supplied by the participant in the triad elicitation procedure; Also the column labelled ‘Element Reference' refers to the two elements that the participant chose, during the triad elicitation procedure and later determined how the construct emergent pole was labelled. Furthermore, the integers under the element reference and implicit pole are the values between 1 and 5; this was as indicated by the participants for each of the elements during rating process for each construct. Also, the column labelled `Implicit Pole' refers to the construct label provided by the participant during the triad construct elicitation procedure, for the opposing ends of the construct. Finally, the column labelled `Element Reference' refers to the third of the three elements associated with the implicit pole, following the triad construct elicitation procedure. For a more precise understanding, the constructs highlighted are considered to be in the same group.

Table 4-4 Sample repertory grid data

Line reference	Participant No	Construct No	Element Ref.	Emergent Pole	Desktop banking (1)	Mobile banking (2)	Personal contact banking(3)	Telephone banking(4)	Self Service banking (5)	Implicit Pole	Element Ref.
28	3	1	1,2	You are on your own	2	1	5	2	1	You have personal assistance	3
29	3	2	1,2	You are reliant on computer	1	1	4	1	1	There is personal intervention, e.g. human being acting in place of machine	3
30	3	3	1,2	Available at a wide period	1	1	5	3	3	Fixed hours of business, e.g. 9-5 and not open on Sundays	3
31	3	4	1,2	Readily available to me	1	1	5	1	3	You have to catch the bus	3
32	3	5	1,2	There could be errors (mechanical errors)	1	1	5	2	1	This is using the human mind as well as machine	3
33	3	6	1,2	Very modern like 30 odd years	1	1	5	2	1	This has been for centuries	3
34	3	7	1,2	Solitary	1	1	5	2	1	Bit of company and chat about the weather	3
35	3	8	1,3	Faceless and impersonal as not social	1	1	5	3	1	Loyalty, easy to trust a person and brand e.g. type of bank	3
36	3	9	2,3	Machine might be more reliable	1	1	5	3	1	More human errors than mechanical errors	3
37	3	10	3,5	They are location based	4	4	1	5	1	This is done at home	1
38	3	11	3,5	Clearly represent another party e.g. company	4	5	1	1	1	An illusion of control over my money	1
39	3	12	3,5	They need good reputation	4	5	1	5	3	Less apparent reliant on the other party	1
40	3	13	3,5	More effort required to use	5	1	1	1	4	Convenient as is time saving e.g. 11 at night	2
41	3	14	3,5	Method and timing of information provision is less immediate	5	5	3	5	3	Immediate access to information	2
42	3	15	1,2	A bit more private (sense of privacy)	1	3	5	3	1	Another public place as different company is involved e.g. third party	5
43	3	16	1,2	Manageable boundary to challenges to reputation with regards to sense of security challenge limit	3	5	1	5	5	Additional security challenge	5
44	3	17	1,2	Similar technology with regards to access to internet and connectivity	1	1	5	2	1	Catch the bus physically go the bank	3
45	3	18	1,2	They are complicated	2	1	5	1	2	You just walk through the door with your information	3
46	3	19	1,2	Need another set of password, personal security hurdle to remember	2	1	5	1	3	Just go to the bank with signature and card	3
47	3	20	2,4	They feel remote to human being	1	1	5	2	1	Human beings are there and is social	3
48	3	21	1,2	Rules to learn e.g. password	2	1	5	1	2	Easy as not additional things to remember	3
49	3	22	1,2	Don't trust them as I don't know how to do it	3	1	5	1	2	I know is trustworthy	4
50	3	23	1,2	New things to learn as is difficult	3	1	5	1	3	Familiarity more important than convenience	3
51	3	24	1,2	Insurmountable as regards learning	1	1	5	3	2	Convenient	3

Following the above process, it was ultimately necessary to make a coherent order of the data and to come up with objective and academic reasoning concerning the interpretation of the data (merging the themes, which resulted in top-level themes).

- ❖ Reliability of the Thematic content analysis

According to Mayring (2000), it is a good practice for the researcher to initially code 10 - 50% of the data, and then have a coding reliability check by another coder. The process was essential so that once refined, and the researcher could continue to code the rest of the data and then proceed to the final coding inter-rate reliability check.

The researcher analysed six transcripts from each of the user groups (46% of the data) and produced preliminary subcategories and top categories by bringing several codes together with their various definitions. Given that this is an iterative process that might require several cycles before obtaining satisfactory reliability Jankowicz (2004). The researcher worked together with Dr McDonald in examining illustrative examples, which led to discussion and resolving of disagreements concerning the top-level category and the subcategories to agree on the final category names and their definitions.

On the completion of this exercise, the researcher continued to code the rest of the data. Following this process, there was crosschecking of a sample of the sub-categories by Dr McDonald, and this resulted in advice to further break down the sub-categories, which produced an additional five themes, with an overall of 17 identified during the cross-checking process. This process led to the allocation of the accepted final top-level and sub-themes. These sub-themes, definitions, construct examples and source of the constructs allocated to them, is found in Appendix 3B. Table 4-4 below presents the final six significant themes, definitions, construct examples and sources, this includes: Usability factors, Social factors, IT Competency, Brand, Information security and Cost.

Table 4-4 Definitions, examples and sources of the derived themes with examples

Themes	Definition	Examples	Source
IT Competence	Means the understanding and application of the skills, training, education and experience to perform a given task, which is the responsibility of the top management.	“New things to learn”, Familiarity” (P3) user.	ISO9000
Usability factors	Refers to the degree at which users can perform a set of task, correctly perform the function, the time required to perform a set of task, the speed in performing a task procedure, the degree of error tolerant as well as how users feel about using the system to perform a set of task	"Cannot be accessed easily", (P25) user.	(Tom et al., 2002)
Information security	Relates to the ability to protect data from unauthorised access.	"Secured as it requires password”, “signature can be compromised” (P11) user.	ISO 27000
Social Support	Social factors are norms, roles and values at the societal level, which can influence the individual consumer.	"Have personal touch"(P23) user. "I get worked up and panic", "can be calmed down"(P12) non-user	(Phau et al., 2009)
Cost	This term implies to the financial involvement in getting the necessary devices required to use an Information system	"Require internet for usage", "do not require internet" (P1) non-user.	ISO9000
Brand	Implies to the name, terms and logos given to a product or service from a specific source	"Need good reputation", (P3) users,	ISO 1066

4.4.3 Visual Analysis of Data Specific to Desktop and Mobile Banking

The central idea of this second phase of the analysis was to identify distinctively those constructs associated with the two significant forms of e-banking: Desktop and Mobile, this was to identify and precisely capture how the participants further viewed two means of e-banking and their overall perception of each. During the process of visual data analysis, there was a re-examination of the repertory grid data with a focus on the extremes (1s and 5s). These data showed the factors that the interviewees considered distinctive to the element under consideration. In this vein, while analysing the grid scores, individual participant’s rating was examined to understand the factors which the participants' believe to be distinctive to the elements. Achieving this was by evaluating the constructs which the participant scored with the extremes; these were either the 1 or 5, this enhanced the analysis process without the

implications of misinterpreting data, the identification here of the data distribution, enabled the confirmation, or rejection of constructs inclusion.

For ease of differentiation each cell with a rating of '1' was coloured red, to represent construct on the left hand, while rating '5' were coloured yellow to represent constructs on the right hand. The researcher did further extraction to include only constructs that tallied with the extremes. For instance, where a participant has given a rating of '1', the researcher then only retained the construct on the left pole, an example is given in figure 4.2 below, and this later formed the basis for the findings and interpretation.

Figure 4-2 Sample of visual analysis

Repertory Grid sheet						
Question: How do older people construe the different means of banking and their impact on e-banking?						
			RATING 1	ELEMENTS		RATING 5
			↓			↓
			CONSTRUCTS			**CONSTRUCTS**
OVER ALL TOTAL	TOTAL PT	PT NO		**Desktop banking**	**Mobile banking**	
1	1	2	Require application	5	1	Does not require application
2	2	3	Mechanical error can occur	1	1	Uses human mind with machine
3	3	3	Modern	4	4	Century
4	4	3	Complicated	2	1	Provide your information
5	5	8	Cannot solve problem requiring signature	2	1	Can solve problem
6	6	9	Require technology use	5	5	The technology is used on one's behalf
7	7	11	Size of machine helps	1	3	Can not see everything
8	8	23	It can take time to sort out problem	1	1	Can sort out complicated problem
9	9	26	Greater range of enquiry is limited	1	3	Complicated problems are sorted
10	10	26	Involve mechanical operation as menu are arranged and displayed	1	1	Well organised with trained staff
11	11	26	User friendly as the steps required for transaction have been refined	1	1	Nature of interraction is different as human is involved

The researcher carried out the analysis manually for constructs associated with each element (DB) and (MB) and checked the data several times. The detailed summary of themes, sub-themes and their related number of constructs for elements (DB) and (MB) are in Appendix 3C.

Furthermore, the result was grouped using the responses from the demographic screening interview proforma to distinguish users from non-users and interpretation was on the number of participants.

4.5 Findings from the Repertory Grid Data

Six central themes emerged from the analysis; these themes constituted the core of the investigation and included both users and non-users of e-banking. Table 4.5 below represents the final six categories and the total number of participants providing constructs linked to Desktop and Mobile banking, from the visual analysis carried out above.

Table 4-5 Top Themes associated with Desktop and Mobile Banking

	No of Participants Providing Constructs Related To DB and MB	
Themes	Users	Non-users
Usability factors	13	13
Information security	10	10
Social support	9	11
IT Competence	5	7
Cost	2	2
Brand	1	0

These categories formed the section headings presented below and represent the actual research findings of the two major elements associated with e-banking (desktop and mobile banking), as the other elements were used to elicit the participants' views in relations to banking in general and how those tend to impact e-banking.

4.5.1 Usability Factors

Eight subcategories emerged to usability concepts; these include complicatedness, reliability, memorability, perceived usefulness, convenience, effectiveness, flexibility and perceived effort. Overall participants were concerned about being able to complete a task efficiently, the time required and performance speed while using e-banking.

4.5.1.1 E-Banking Users

Evidence from eight participants indicated motivational issues relating to the usability of the system. They affirmed that the system is free of mechanical error. However, they are aware that e-banking does not allow potential users to sign their signature electronically. Examples of participants constructs are below; with highlights that e-banking is a trend in line with increasing growth in technological advancement.

'Clever as technology has moved on' (P8).

More specifically, several benefits that participants were aware of and seemed to be satisfied with emerged. These were the belief that e-banking was:

'User-friendly as menus are displayed' (P26).

Memory concerns were raised mainly about PIN and password usage. Participants considered situations where they have to remember many new things to gain access to their accounts, which often results in having to put in lots of effort:

'Not additional thing to remember' (P3).

While others participants were unsure or thought that there are limited ranges of enquiry, participants who are already used to e-banking revealed that they are confident in the use of the system. Participants believed that e-banking has a problem of carrying a card about to meet up with their financial needs.

4.5.1.2 E-Banking Non-users

Thirteen non-users revealed that participants saw some barriers relating to usability, as a determinant to changing their perception of not adopting e-banking. These included: *'Too automated as technicalities are required (P7)'*. Also, they believe that they cannot send out queries for instance in a situation when they observe discrepancies concerning their banking activities.

In a similar vein, participants indicated that it was a distanced way of banking, as they want to be able to access bank information as quickly and efficient as possible.

Also, participants raised concerns about memory as there were said to be lots of information to remember, based on their comments that they do forget a lot, which seems to be the same view as e-banking users. An explanation of this could be either as a result of the complexity of passwords as some e-banking websites now advise the use of passwords with special characters like %$@ and so on, this, the researcher tends to explore further. However, a link with this comments could be related to the participants not being able to see and hear in some circumstances as they believe that the practical use of such technology is likely to be handicapped by their ageing, cognitive characteristics as illustrated below;

'Hearing and seeing difficulties' (P12)

4.5.2 Information Security

Participants commented on how prevalent they believed false attacks could be, which in turn, may affect how vulnerable they believe they are.

4.5.2.1 E-Banking Users

Ten participants revealed that the primary security concern they could be susceptible to included security issues associated with information technology. Comments regarding

knowledge of information security were noted from the participants, as they were aware that they could become a victim of fraud via e-banking for instance;

'Defraud account' (P2)

Likewise, the perception of information security is also affected by the amount of trust the user has in that particular technology. Given that, security challenges were seen as a concern, specifically concerning the integrity of the third party involved (i.e. the bank staff that have access to the e-banking website from the back end), as such, they do not trust the technology. In this vein, revealing of personal details seemed to be the bone of contention:

'Not trusted' (P3) 'Security challenge' (P3)

Users seem more confident with the use of unique identification (ID) to secure accounts by passing through the authentication process, given that e-banking is within the confines of their home. Though concerns seem to be on the banks' conditions regarding authentication

'Require unique ID to secure account' (P19). '*Rules to learn, e.g. password' (P3)*

'*Insurmountable as regards learning' (P3)*

Others participants saw the benefit of not carrying cash, thereby reducing the chances of either losing money or being attacked. Their confidence appeared to be built on:

'Security measures in place are trusted' (P19).

4.5.2.2 E-Banking Non-users

Ten participants commented about security concern, precisely one of them reported that money could be taken out using someone else's details, thereby making them lose money. However, others were unsure or thought that details could be, divulged any time one access account and as such result in losing money due to compromise.

'There is a chance of taking money out of account as too risky (P5).', 'my details can be stolen as I do not trust it' (P10)

However, information security views seem to be affected by the number of confidence participants have as comments revealed that they seem not to know whom they are dealing with in the case of e-banking. These beliefs have led to the concern that there might be interference when help is required this in turn, could aid account hacking as reported. An explanation for this could be an encroachment envisaged by third parties, which could be from either a family member assisting or the machine seen as an intermediary. However, participants believed that details could be safe with a suitable authentication process, hence the need to explore this concern further.

'Criminals can take money out using their device like hackers (P10)'. 'Require disclosure of personal details' (P1).

4.5.3 Social Factors

One of the salient factors that were reported to be fundamental to non-adoption of e-banking and continued usage by adopters was social factors, and this was from the belief that e-banking does not offer a human response.

4.5.3.1 E-banking Users

Nine e-banking users commented about social factors, concerning e-banking separating customers from the bank branches. Specifically, one participant commented that e-banking is lonely, in that it is believed not to allow personal contact. Additionally, participants went as far as commenting that it secludes humans from bank customers, this was because it was identified not to support one on one transaction.

'Solitary' (P3),' Remote to human being' (P3)

However, in another vein participants saw e-banking as personal, as there is the opportunity to access financial needs any time required, which will result in getting bank products easily and getting help faster as well as checking account balance.

'More personal as no interference' (P2)

Further comments appear to be that participants were mainly concerned about lack of natural compliments.

4.5.3.2 E-Banking Non-users

An overall view of the 11 e-banking non-users revealed that they feel isolated when they intend to adopt e-banking, given that it does not allow direct contact with the human, meaning that there may not be an advisor when an assistant is required.

'Require assistance' (P1), 'Cannot get an advisor' (P10).

4.5.4 IT Competence

Overarching ideas were reported to be influential to e-banking adoption from both users and non-users about IT competence.

4.5.4.1 E-banking Users

Participants commented on the idea of not being confident in using a computer as a salient factor because it requires learning skills for usage. These were from five participants. They commented on computer illiteracy frequently as it seems to be a yardstick for practical use of

e-banking, a report revealed that they are unconfident about e-banking usage, despite using e-banking.

'*Not confident as a wrong key could mistakenly come up' (P9), 'Have not been schooled in technical things' (P9)*

The comments above tend to discourage conservative people from accessing their financial needs through e-banking.

4.5.4.2 E-Banking Non-users

Seven non-users' revealed that they see themselves as not competent enough in the use of e-banking technology to accomplish their financial needs.

'Internet knowledge and skills required' (P1)

Furthermore, the report revealed mistakes resulting from lack of knowledge, which will after that lead to an error of intent; this might be due to a tendency that participants do not know how to use the e-banking application, thereby increasing the older peoples' chances of being vulnerable, thereby losing money.

'When I press a wrong key I can make myself vulnerable' (P13)

4.5.5 Cost

Some participants did not consider the cost of procuring the devices as a barrier to changing their decision from continuous adoption or non-adoption of e-banking as long as they get their expected outcome.

4.5.5.1 E-Banking Users

Only two participants commented on the cost of procuring the devices, revealing that cost was not a barrier. Also, they seem to be satisfied with its accessibility and appear not to mind the cost of an internet subscription. For example:

'Cost is minimal as there are phones and computers' (P19), 'Require internet subscription cost for access. (P4)

4.5.5.2 E-Banking Non-users

In the same vein, comments from the 2 participants to non-users indicated that they perceive e-banking as a cheap means of accessing ones' financial needs. Their views seem to coincide with users as it appears that, participants know the advantages despite not using it. Besides, comments revealed that participants are aware that it requires internet for usage.

'Cheap' (P17), 'Require internet' (P1)

4.5.6 Brand

One participant expressed concern about bank reputation; Brand was seen to be a suitable benchmark for the risk of becoming internet victim, especially for banks that have a low level of liquidity and solvency.

4.5.6.1 E-Banking Users

At a more specific level, one participant revealed that users are only ready to change their perception of e-banking when they are sure that it is reliable and that it is a well-known brand with a good reputation, for instance:

'Need good reputation' (P3)

4.5.6.2 E-Banking Non-users

For the non-users, there was no link to brand as an inhibitor or barrier to their non-adoption of e-banking.

4.6 Discussion

4.6.1 Usability Factors

The users are not aware of the distinction between Mobile and Desktop banking, regarding its features especially when it comes to an understanding what an application is. According to (Abu-Assi et al., 2014), perceived usefulness of the e-banking website is a significant determinant for its adoption.

The ease of using a system as suggested by TAM (Abu-Assi et al., 2014; A. Al-Ajam and Nor, 2013; Laukkanen et al., 2008; Santouridis and Kyritsi, 2014) is influential in the adoption of new technology. However, what seems to matter most to the non-users to adopting e-banking appears to be what they can achieve rather than ease of using the system; this might be because as users engage more in the use of e-banking, they tend to acquire more experience towards the use of the system and internet at large. Implying that getting used to the system will be less of an issue to them; this apparently does not mean that effort should be restrained in making e-banking stress free but instead suggests a higher need for customers' awareness of its value. The above result is consistent with (Gefen et al., 2000) where adoption of new technology was on its value.

A clear explanation about non-users is the lack of clear understanding of what e-banking entails and the misconception that associates e-banking with lots of stress concerning usage. As a way forward, there could be an improvement in marketing awareness on the usefulness of e-banking.

However, the concern from non-users about hearing and seeing difficulties seems to be line with (Wagner et al., 2014) on their argument that subjective and objective changes occur as one moves towards ageing.

4.6.2 Information Security

A security and privacy concern of e-banking appears to be a significant obstacle to start using the system. Participants reported that they feel personally vulnerable to fraud; more specifically users showed some awareness of the measures employed by criminals for instance participants seems to believe that cloning of security details are likely to occur when compromised. These call for high-level security awareness training to alert users or potential users the possible signs and ways of averting them. Also, the various means of authentication employed for safety seems not to be well understood. Given that it is reported to be ambiguous, and is in line with previous studies. Which found that security and privacy issues in e-banking were a significant issue for an increasing number of consumers (Hernandez and Mazzon, 2007; Mansumitrchai and Chiu, 2012; Nasri and Charfeddine, 2012; Qureshi et al., 2008).

The users believed that willingness to continue e-banking usage would increase if the security measure put in place by the banks meet up with the reputable standard, based on a report that e-banking relieves them of the anxiety of carrying cash. Moreover, addressing the concerns of customers making themselves vulnerable to fraud due to lack of familiarity or instead of making mistakes, by creating more awareness of the likely ways of not falling victims in the form of exercising secure behaviour as well as advice to be more thorough when accessing financial need through e-banking. However, this suggests that all these ideas call for greater awareness of what is expected and obtainable, as there seem to be many misconceptions about e-banking.

4.6.3 Social Factors

Social influence implies to a situation when other people are affecting an individual's opinion, feelings and actions. The report from non-users about e-banking not offering assistance when needed merely suggests that the availability of e-banking expertise round the clock could improve its adoption. The above explanation revealed that support when performing a specific set of activities would likely increase the chances of having a rethink to use the system as well as by putting adequate measures in place by the banks. The above is consistent with previous research (Asmi, 2012; Daneshgadeh and Özkan, 2014). Asmi (2012)

claims from the empirical data collected that peer and family influence have a positive impact on e-banking adoption by banking customers.

4.6.4 IT Competence

Concerning IT competence, some older e-banking users lack the required knowledge and skills to use e-banking, which impacted on their confidence as well as discourages potential users. The results are consistent with findings in empirical studies (Asmi, 2012; Hernandez and Mazzon, 2007), where self-efficacy was an essential factor in explaining the motivation of individual decision and actions. Also, the result seems to be in line with the influence of self-efficacy on participant's decision to adopt e-banking Gerrard and Cunningham (2003) which claimed that adopters of e-banking found the service to be less sophisticated, more compatible to them and more suited to those who are PC proficient.

Evidence from the participants revealed that there are primary indications that their perceptions towards the use of the technology might change with the creation of awareness via training on the use of a computer, which will help in acquainting users and potential users with the necessary and adequate knowledge as well as the experience of using the internet and will help to resolve the issue of lack of competence. Another explanation for this is that participants who do not only use computers and the internet but also e-banking itself might still perceive themselves as lacking sufficient skill to use e-banking efficiently. It is essential, therefore, that participants who use e-banking should have a positive experience and a successful outcome. Thereby increasing their sense of IT competence with the e-banking and, hence, the likelihood of using it again as well as encourage potential users. Given that navigation system are now quite elaborate and intricate to negotiate as reported, its improvement and easy access to help when necessary would be valuable in generating such positive experiences and feelings.

4.6.5 Cost

A cheap means of banking would have been a motivator to its adoption. However, concerning the older people, concerns seem to be on the competency in using e-banking, even when it is cost-free. Indeed, this is an innovation in the field of technology acceptance by the older people, that the cost of procuring the necessary materials needed for its successful operation and subsequent usage is not the financial implication but rather the perceived incompetence in the practical use of the new technology. This aspect of the findings has advanced our knowledge on the pre-conceived believe that cost is a determinant for the adoption of new technology.

These findings contrast previous research (Herghelegiu et al., 2015) on computer and internet literacy among older people, according to the study majority of non-users indicated that specific training and better financial conditions would stimulate future computer and internet use. A possible explanation might be sampling bias, given that their participants aged 65+years were in the country's capital city where exposure to new technology was more intense, compared to older people that have no access to the internet.

4.6.6 Brand

Participants believed that they are more comfortable using a desktop or mobile application whose providers' reputation was to an acceptable standard. This finding is in line with (Hernandez and Mazzon, 2007; Poon, 2008; Susanto et al., 2013), where issues relating to the qualities of a bank's brick and mortar banking system affect how people might want to adopt their online system. Although the researchers mentioned above-viewed brand from a different perspective, there seems to be a concordance to their beliefs. (Hernandez and Mazzon, 2007; Poon, 2007) see it as image, (Susanto et al., 2013) present it as the company's reputation, the next section will discuss the study limitations.

4.7 Limitation of Study

This study has limitations. There would have been a more streamlined analysis of older peoples' perception of e-banking if the participants and organisations used had similar profiles, given the non-availability of the required participants, from Age UK alone, as some participants declined to participate.

The approach used for data collection was new to the participants; as a result majority of them did not understand how the repertory grid triadic construct elicitation process works. In some instances, they were unable to differentiate between Mobile and Desktop banking, though the researcher handed the meaning of the elements in a printout to them to continuously refer to during the interview.

Furthermore, the interviewees struggled to understand the concepts of contrast poles. They often took it to mean the direct opposite of the words or phrases suggested at one end. However, the researcher must have somehow contributed to this as the emphasis was on a distinct standpoint in order not to interfere with their constructs. However, laddering was used to focus construct but would have been from a more broad perspective. Therefore, there are chances that the participants misinterpreted the elements. For instance, when the researcher asked the participants to elicit the positive/similarities, they understood that the requirement was for the negative/contrasting views of the means of banking and vice versa.

Furthermore, participants were in many instances describing the element (means of banking) instead of distinguishing them, concerning how they influence their decision to adopt e-banking. However, with a little patience and encouragement, the participants were able to comprehend and complete the interview sessions with the use of contrast poles. For instance, while some e-banking users believed that it is time-saving others reported about more time for usage. On the part of the non-users, some believed that the system is private while others affirmed that it is non-personal.

The limited number of participants was acceptable because of the exploratory nature of the study. The number was in line with advice deduced from examined literature about a qualitative interview. According to Onwuegbuzie and Leech (2007), the number of samples in qualitative interviews should not be too small in order not to prevent the researcher from gaining new insights, and also not too large so as not to prevent the researcher from conducting an in-depth analysis.

4.8 Recommendation

This study examined the personal constructs older users deem salient from the users and non-users perspective without having to introduce some TAM based factors such as PU, PEOU or behavioural intentions for participants to elaborate. These have informed the researcher about other factors, which include the need for a deeper insight into the attitudes concerning the misconception about information security and how the other factors interact with each other. Besides, the researcher will seek to understand the strategy older people themselves adopt while using e-banking or intending to use e-banking, to understand overall perception and also to acquire a detailed insight of the phenomenon of e-banking acceptance.

4.9 Summary

The application of repertory grid in the data elicitation process has proved useful in guiding the researchers understanding of the factors affecting older peoples' perceptions of e-banking and revealed a broader range of concerns about attitudes/misconception about security toward e-banking. The identified concerns necessitated the need to understand their entire experience further, using an approach that will improve our understanding of older people’s attitudes. The findings from the repertory grid analyses showed that attitudes towards e-banking adoption are an imprecise and a vague concept from the participants. The researcher observed that the technique had not helped the participants in revealing the in-depth insights required.

Majority of the concerns were misconceptions about e-banking, given that reports seem pessimistic because non-users are not construing from experience as they have no insight on how e-banking application is applied. Furthermore, there was no genuine enthusiasm for enhancement, for instance ‘Familiarity more important than convenience' and ‘they feel e-banking is remote to human being'. There seem not to be any detailed reconciliation between the ideas that e-banking adoption might in principle improve their lifestyle. Given that the actual practical implication of improvement seems to be centred on the misconception about security and attitude, hence the need to further delve into their experience to understand the precise state of the art of older people and e-banking

Also, in this study, there was no report on the strategies they employ to improve their ability to adopt or continue using e-banking as well as the actual authentication processes that put them off. For instance, for customers to use e-banking, they are required to register when successful they can further login to gain access and carry out banking activities before finally logging out. All these processes require various levels of authentication which will be explored further in the next study, to understand older people’s attitude/perception of e-banking to security, social, usability and IT competence factors. Followed by exploration on the strategies that older people employ while using or intending to use e-banking, the need for this arose as concerns raised seem to recount issues about falling victim of fraud via e-banking, which they believe will increase the chances of making them vulnerable. Though this report was on misconception and tendencies that account might be hacked as well as issues relating to secure behaviour towards cybersecurity. However, users showed awareness of the measures employed by criminals; for instance, participants seem to believe that cloning of security details are likely to occur when there is a slight compromise of details.

Also, the means of authentication employed for safety reason seems not to be well understood as was seen to be ambiguous. Hence the need for an investigation that will reveal a complete experience of the older people, which will aid guidelines on ways of averting them, as, is intended in the next study. The researcher intends to achieve this with a more profound insightful interview process (using semi-structured interviews), ground with the use of technology probes of typical e-banking websites. An elaborate discussion of these details is the topic of the next chapter.

5 CHAPTER FIVE: OLDER PEOPLES' ATTITUDE/PRECONCEPTION TOWARDS E-BANKING

5.1 Overview

This chapter presents the exploratory study concerned with gaining an understanding of older peoples' attitudes/preconception towards security of e-banking, from users and non-users perspectives. Users and non-users were necessary as a great majority of studies reported in Chapter Two, used single and undifferentiated samples. In this respect, this study offers a more subtle difference in perspective of the adoption phenomenon found in much previous research. This chapter will discuss the motivation of this study; highlight the study aims, description of the sample and sequentially present the interview process. This is followed by an assessment of participants' attitudes and preconceptions to e-banking. Furthermore, there will be an explanation of the interactions between security, usability, social and IT competence factors. The strategies older people employ to support their use of e-banking will be discussed. The chapter will in conclusion present the study implication, limitation and summary.

5.2 Motivation

Older people's attitude/preconceptions of security towards e-banking are issues that require exploration. This study sought to gain an in-depth understanding of participants experience and assumption towards the security of e-banking and how they interact with Usability, IT Competence and Social factors. The researcher achieved these using semi-structured interviews with technology probe of typical e-banking websites. Moreover, participants in the first study were concerned about being vulnerable, which is likely to result in falling victim of fraud via e-banking. Participants were wary about the places they can confidently use the internet. Given that some non-users were confident to do transactions via the internet for instance booking holidays, but were not happy to bank online for instance; *'Defraud account' and 'Tendency of hacking an account'*. This implied that they are likely nurturing a misconception that e-banking platform is too risky, instance includes: *"Taking money out of account as too risky"*. The statement was so emphatic although the non-user was not construing from experience, this tends to indicate a vast view of safety issues which is presumed to be related to e-banking based on participants believe about account being hacked.

Viewing the issue of online safety from technological viewpoint will deprive the users/potential users the opportunity of benefiting from the safety line. Given that any effort by e-banking managers to develop the system without older people's perception regarding attitude, strategy and social understandings towards e-banking, has a potential to fail, and likely make them fall victims of fraud. Given this, there is practically no way of addressing these misconceptions about security and belief except through a further investigation.

5.3 Aims

This study aims to explore older peoples' attitude/preconception towards security in e-banking and how they interact with social, usability and IT competence factors from users and non-user perspective. Specifically, this study examined what strategies older people adapt to support their use of e-banking, and this will help provide guidelines on how to address issues of technology-mediated fraud.

5.4 Methodology Choice

In this section, details of the exploratory design are described, including the consideration of the technology probes of typical e-banking websites used during the interview, and the materials used for gathering participants' responses.

5.4.1 Semi-Structured Interview with Technology probes (SSIWTP) usage in this Study

Given that experiences are not easily comprehended with a distinct measure, and the research aim requires complete exploration of knowledge. Given this, the leading guide that enhanced the SSI was technology probes of typical e-banking website. The SSIWTP allowed the researcher to efficiently grasp more insight about e-banking phenomenon by the older people in Sunderland, based on the concept that a probe is an instrument used to find the unknown. In other words, the practical use of probes helps to reveal the technological needs and desires of the participants and provide a real scenario to motivate the participant (Hutchinson et al., 2003), which is believed to make them consider its future use.

5.4.2 Participants

Participant's recruitment was from Age UK and some local Churches in Sunderland. Interviewed participants were twenty including e-banking users and non-users. Summary of the demographic details are shown in table 5-1 below:

Table 5-1 Description of Participants Demographics

Demographic Characteristics		Number
Gender	Male	11
	Female	9
Age	60−70 yrs.	12
	71−80 yrs.	4
	Over 80 yrs.	4
Internet Experience	No Experience	0
	1 ≤ 5 yrs.	8
	6 ≤ 15 yrs.	3
	16yr or more	9
Educational Level	Below High School	3
	At High School Level	5
	First Degree Level	9
	Second Degree Level	3
Work Status	Working	3
	Retired	17

The men's mean age was 69.2 years while for the women it was 73.1 years. They had varying levels of experience with the internet. 12 participants had first or postgraduate degrees. However, this was not an inclusion criterion used to recruit participants, but was necessary to establish, if the participant may have had the chance of being exposed to the use of the system online. Three participants were in part-time employment, while the retired participants were Seventeen, from various occupational categories.

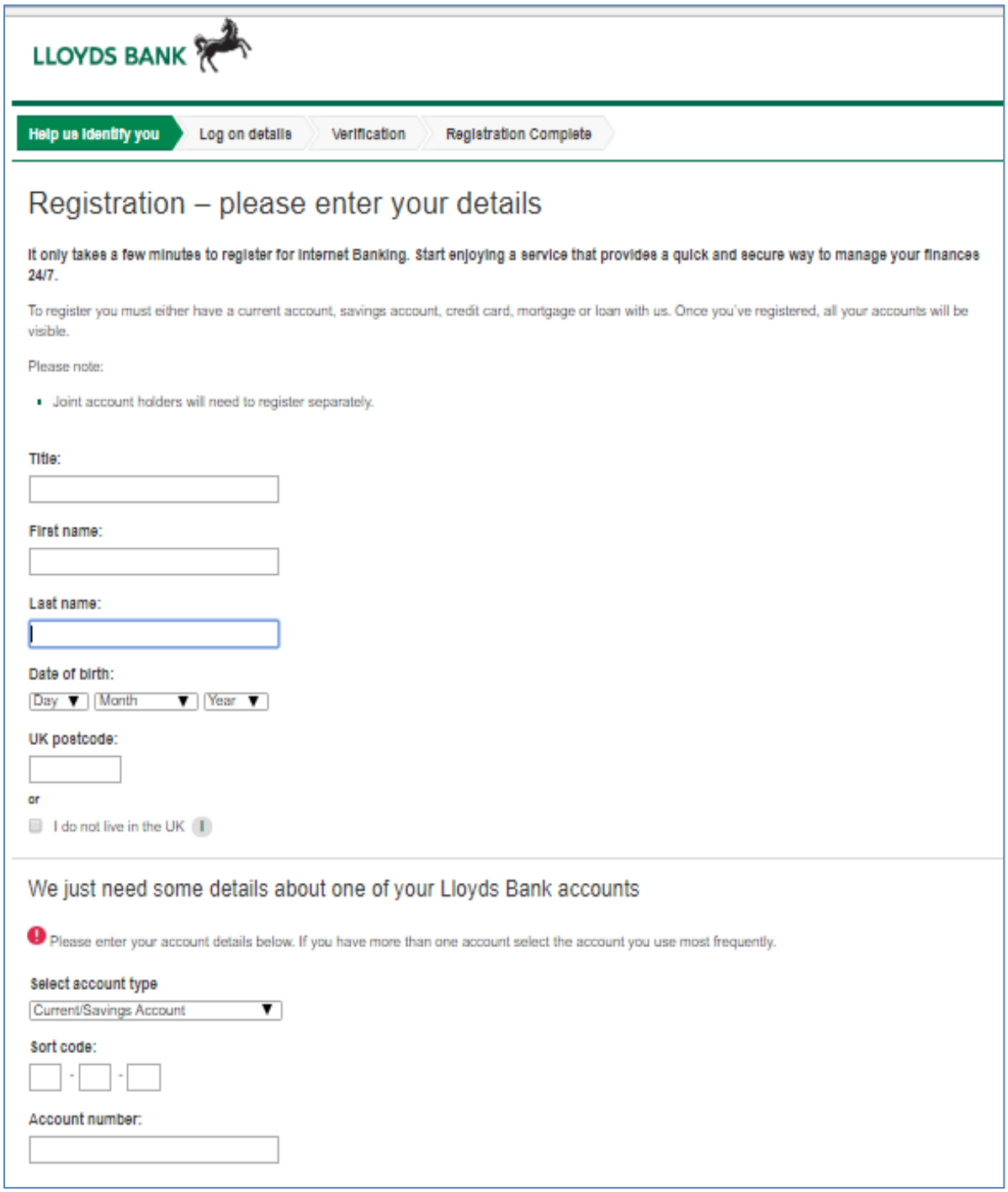
5.4.3 Study Design and Materials

The technology probes used in this study were extracted still videos, from UK based banks, which included the NatWest, Nationwide, the Trustee Savings bank (TSB), Lloyds, Halifax and Royal Bank of Scotland (RBS), which was printed out. Following a detailed discussion in of this SSIWTP design in section 3.7.1 of this thesis, this section will therefore focus on the step by step process of the interview.

Samples presented below were used to explore participants' views about the various types of authentication methods with proceeding questions for each, following an introductory question. Presented below are the probes and questions sequence, specifically Figure 5-1 and 5-2 were samples used to identify the kind of homepage that they have typically encountered. After which, their perceptions about the requirement to provide personal details, user ID and password as a knowledge base authentication for the two phases of registration, this is

followed by Figure 5-3 which was an example of token-based authentication presented during the interview, to grasp user's experiences and non-users views.

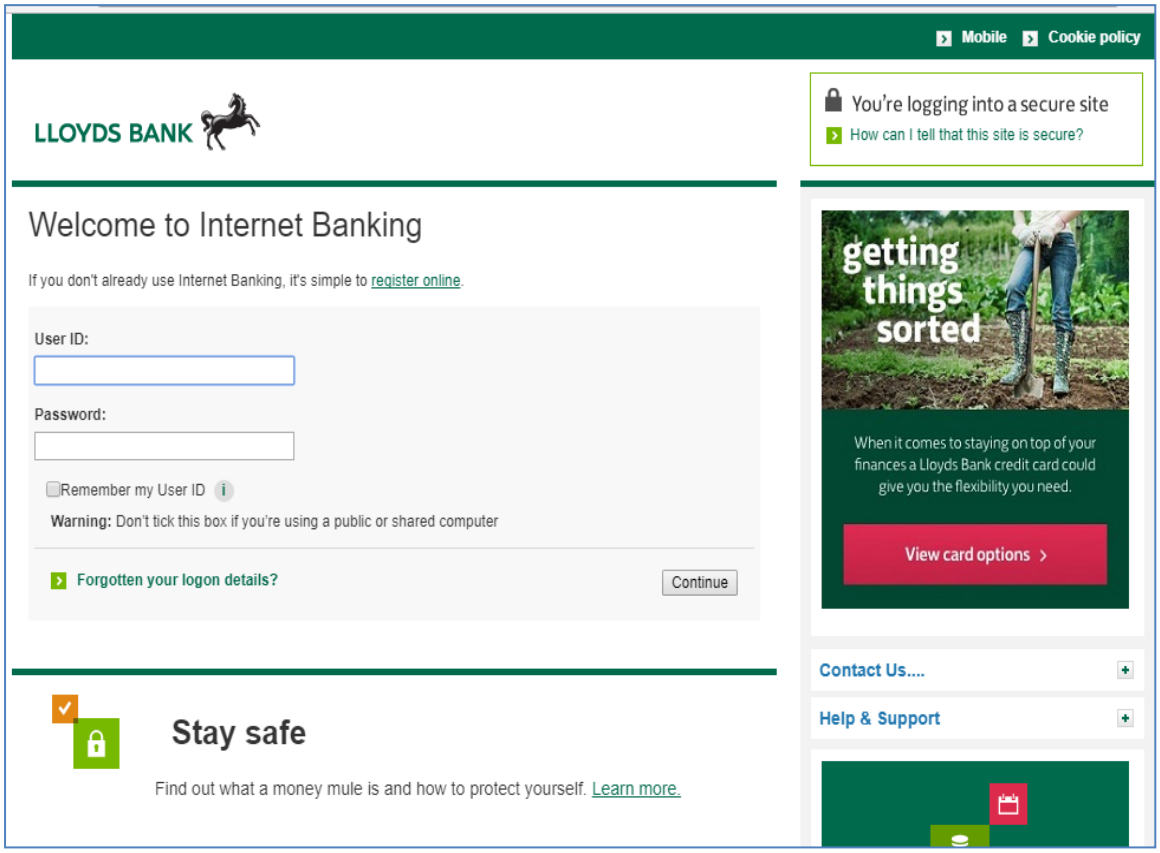
Figure 5-1 Technology probe of an e-banking homepage requiring personal details



- Have you experienced the kind of registration set-up shown above that requires your details?

- Could you tell me more about your experience when inputting your details for account set up?

Figure 5-2 Technology probe of an e-banking homepage requiring user ID and password



- Could you tell me about your personal experience with the use of PIN/password while shopping or doing any other form of online activities?

1. The researcher showed the participants the different example of criteria for acceptable password
    - Combination of characters and numbers (123Sunderland)
    - Use of symbols (/,@,_,)
    - Case sensitive (EGHHDBV)
    - Combination of the three examples above (124@Someone)

- Could you tell me if you have ever used any of the criteria above while creating a password?

Figure 5-3 Sample of Token based authentication devices presented during the interview

Token and pin sentry was used to understand their experiences as well as to identify the ones that discourage participants, and the terms explained to the participants. More also, they were informed that banks use these devices to strengthen the procedure of authentication, and the meanings and questions posed included:

- Have you ever used pin sentry or token while login?
- If yes, could you tell me more about your experiences with pin sentry and the use of token during login process?

Besides, sample e-banking pages requiring the use of 'memorable data, question, verification number and sample account summary page were also used see Appendices 3D and 3F for detailed SSIWTP protocol for e-banking users and non-users.

Additional design instruments used were the research information sheet and participant consent form (see Appendices 4A and 4B). The participant consent form was presented to the participants to read and sign before the interview. Also used were the demographic screening interview proforma sheet (see Appendix 4C) and a digital voice recorder to record participants' responses. But before commencing that main interview, the researcher tested the SSIWTP protocol.

5.4.4 Pilot Study

Objective: The pilot study was with five participants, these included: four who freely offered to help from churches based in Sunderland and a student from the faculty of applied Sciences at University of Sunderland (Nursing department).

Insight from the process: During the first phase with four volunteers from local churches, it was observed that some questions were ambiguous, misconstrued and there was some query perceived as unsuitable. Specifically, insights were not coming out from the piloted interview transcript, as generic structure seem not to be in place. Because they were missing up the processes of registration, with that of login, which is entirely different from the initial as they, are two distinct processes involved in e-banking. Also, there was the need to estimate the average time required for completion of the interviews, and this was information that was not only needed by the researcher for planning purpose, but also for that of the participants.

Thus, the researcher analysed and addressed the observed issues as stated below:

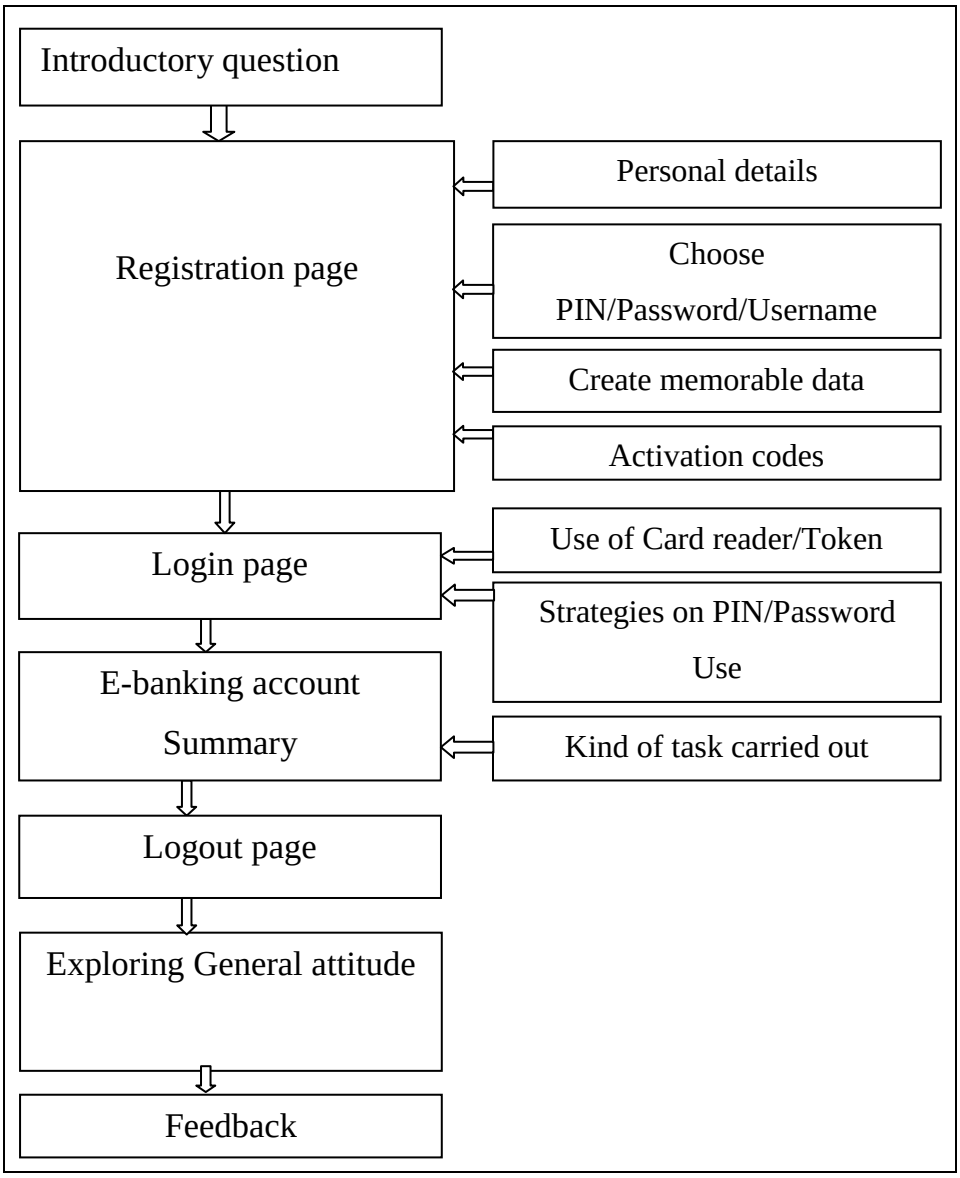
1. Strengths:
    - Effective use of probes
2. Weaknesses:
    - Interview questions seem not to be linked properly
    - Some questions appeared to be repetitive though framed differently.
    - The researcher did most of the talking
3. Opportunities
    - Removal of repetitive questions
    - Allowing the participant to do most of the talking
4. Threats
    - Employment of good time management strategies
    - Not to rush the interview
    - Giving participant enough time to express personal opinions

Moreover, the pilot interviews aided adequate performance in the primary study as the researcher thought carefully about how best to introduce the probe and encourage participants to engage in discussion, and take notes when needed.

5.4.5 Study Procedure

Next discussion will be the process of the step by step interview, and this is more understood using an illustration. Figure 5-4; below is a flowchart of the SSIWTP data collection process. Detailed SSIWTP protocol for users and non-users are in Appendices 2D and 2E, as explained above in section 5.1.4.2. Discussed below is the highlight of the step by step process of the data collection process.

Figure 5-4 Flowchart for the SSIWTP data collection process



Interviews were conducted in the computer session room of Age UK Sunderland and local Church auditorium respectively. Interview with participants' and the procedure shown was in a repeatable form with each of the participants. Each participant was made to know that they would not need to reveal personal/confidential details with regards to e-banking and that they

would not be asked to use e-banking or log on to any system during the interview. As such, they were only required to answer questions based on their views, attitudes and experiences towards the use of e-banking.

Then, the researcher collected the participants' general demographic information, followed by initial questions to make participants interested in talking about their experiences, which covered preferences on banking channels and beliefs about e-banking adoption. This was followed by the presentation of the different samples of technology probes of typical e-banking website to the participants as well as including authentication pages for the registration process. In the course of this process, the researcher showed the participants official e-banking registration pages. Questions covered were to explore what they have typically used and experienced with handling of personal details, use of debit card numbers, how PIN/Password/Username are chosen, creating memorable data/question and the exploration of an activation code.

Bank customers can proceed to the login process once the registration has been successful, and aforementioned was the next stage of that data collection, and the discussion follows next. Sample login pages were presented to find out what they typically use after the registration process. Questions covered; different login pages encountered, issues relating to strategies used when login details are forgotten, the participants were informed of various ways that a password could be retrieved irrespective of the purpose, either for shopping or general online activities, and exploration of their experiences. Next, was the presentation of the different images of factors used for authentication to the participants, this included token and pin sentry to grasp their opinions of what they have typically encountered/experienced, followed by questions on different forms of activities carried out such as transactional issues. Also, explored were questions on general attitude towards e-banking and logout stage, with a typical duration lasting approximately 1 hour. In conclusion, participants gave feedback on the whole interview process.

5.5 Data Analysis Process

The SSI data were analysed using the thematic content analysis, with themes informed by literature and the outcome of the first empirical study. The specific analysis process includes the following steps.

5.5.1 Transcription

The analysis began with a careful and repeated listening to recordings. Then a thorough/full transcribing of the entire 20 recorded interviews was done, followed by reading and re-reading of the transcripts for analysis. Transcribing the recorded interviews of the whole participants and repeated listening of the 20 recordings, was to get well engrossed in the original data collected. After which, the researcher read and re-read the participants' transcripts separately, thereby making the participants emerge as the spotlight of the analysis, without allowing own thought to delve in.

Preliminary note making about the participants' experience was carried out. In this case, the researcher documented the views, information and reflection that emerged while defining the participants' experience. For instance, merging of repeated constructs made for emphasis; this stage enhanced the data reduction, as there was the need to keep away from becoming besieged by the massive data resulting from the entire recorded interview.

In a bid to extract the emergent themes, the researcher exported the 20 transcripts into NVivo 11 Pro analysis software. The researcher classified the emerged data into themes that best described them. Given that the task of this phase was to produce a succinct account of what was necessary among the transcribed data (Smith et al., 2009), which was guided by the factors from initial study and used to set the coding scheme in NVivo. In this next stage, the search on how these identified themes interact across the data was carried out. In this case, the researcher drew connections about how the researcher feels the ideas suitably fit, as themes were precisely sorted regarding variation and matched based on participants' perspective. For instance, cases, where concern about navigation system was perceived to be quite elaborate and complicated to negotiate (Usability issue), the researcher then search to see how this might interact with security (Security issue), or rather in the course of seeking help (social factor). The outcome was exported into an excel document for further inspection, to enhance the reliability process.

5.5.2 Coding Process in Application

Six initial themes used were Cost, IT Competence, Satisfaction, Security issues, Social factors, and Usability. This later represented the central themes used in NVivo 11 for analysis, Given that it did not provide a complete answer to the first research question, these themes usage was not exclusive, as such the prevalence and importance of emerging themes were also considered, these included: Conservative, Interest, and Unemployment.

Individually the interview transcript was searched and carefully examined by the researcher to check for the initial themes and to extract any related sub-themes based on participants' responses. And concurrently, the researcher coded for frequency of reactions. Below is the step by step coding process.

Following Mayring, (2000) advice about coding first 10-50% of the data, there was an analysis of two transcripts each of user and non-user (20% of the data), this was to ensure assignment of responses to themes. On refining the coding scheme, the researcher made sure that the definitions of the themes were discrete and suitably fit the constructs already coded, this was necessary to avoid overlapping of ideas. After which case, the researcher continued to code the rest of the data; on completion, the researcher exported this first round of the coding process into an excel document and left it for three weeks.

5.5.3 Reliability

After the three weeks, the researcher re-coded the entire 20 transcripts once again without having to look at the initial coding. Following, was the export of the outcome of the second round into an excel document. The checking of both results of the of the test-retest reliability, which revealed a total, 25 of the 577 responses (about 4.3%). The reconciliation process formed the final nine response top categories that represent the actual research findings. Coding processes are in Appendix 4D; further details of the test-retest process are the discussion of the next section.

- ❖ Checking for Reliability

Initially, 26 response themes emerged, this was reduced to 21 themes to ensure that they were discrete for instance social influence and social interaction were grouped as social interaction as the responses seem to be more focused on interaction. The 21 themes were further linked together after the second round decision. During this process they were refined and grouped into few conceptual themes, to form top-level themes, shown in Table 5-2 below are the nine top-level themes, with labels CD for literature driven ideas and DD for study informed ideas:

Table 5-2 Final top-level themes with definitions and example of quotations

Themes	Definitions	Examples of quotes from participants	Percentages of participants references
Conservative (DD)	Means the maintenance of principles of group norms and traditions as well as the encouragement of out-group avoidance Shook et al., (2017)	"I am the old fashion stick in the mud" (P20)	1.1%
Cost (CD)	Is the monetary value used for the purchase of anything such as infrastructures De Menna et al., (2018)	"Well you have to invest in the equipment's because I haven't got the facilities" (P4)	0.5%
Interest (DD)	The feeling of wanting to give your attention to something or of wanting to be involved with and to discover more about something.	"I will be honest with you I disincline to use e-banking; I will never use it except I am forced to use it by the banks" (P8)	4%
IT Competence (CD)	Implies to the integration of professionalism in understanding and skills aimed at achieving acceptable behavioural changes (Hwang and Kuo, 2018)	"For most of the information, you need a certain level of skill to do that" (P15)	6.1%
Satisfaction (CD)	Satisfaction is the degree to which the system meets user expectation and s derived from reviewing user feedbacks for a given system.	"With regards to e-banking services out of 10 I will say seven they could do better" (P10)	1.8%
Security issues (CD)	Relates to the ability to protect data from unauthorised access. It comprises of authentication, authorisation, confidentiality and integrity	"I have always got concern if I hear about the cyber attack, and I say to myself if somebody can hack into the MP's record what chance do I stand." (P20)	39.2%
Social factors (CD)	Social factors are norms, roles and values at the societal level, which can influence the individual consumer.	"But when people get older they need a lot of company and need to go to the high street and either bump into old friends or make new friends" (P10).	5.4%
Unemployment (DD)	Refers to the situation where one is out of the labour force of a particular country (Feng et al., 2018)	"How much does cash machine cost? Probably about £50,000.00 that is it. They put about six over there and lay many people off their jobs" (P7).	0.5%
Usability factors (CD)	Refers to the degree at which users can perform a set of task, correctly perform the function, the time required to complete set of responsibility, the speed in performing a task procedure, the degree of error tolerant.	"They can be challenging and not very clear with their instructions, as there are lots of ambiguities." (P8)	41.4%

5.6 Findings

The presentation of the emerged themes is according to the frequency with which the participants mentioned them. In Table 5-3, the references indicate the total number of occurrences of the participants' responses, while the produced coverage was an accumulation from Nvivo11 which indicates the length of the sentences that was made by the participants to support an idea. For instance "It is easy" and "It is easy to manage your account, like pay bills, cancel standing orders, etc.", therefore, giving consolidation to an idea.

Table 5-3 Themes varying influence on attitudes/preconceptions

Themes	User type	Participants (Max 20)	References from interview	Participants references in Percentages	Participants references coverage in Percentages
Usability factors	Users	10	158	27.4%	80.3%
	Non-users	10	78	14.0%	43.2%
Security issues	Users	10	129	22.0%	72.1%
	Non-users	9	99	17.2%	46.7%
IT Competence	Users	8	20	3.5%	8.2%
	Non-users	7	15	2.6%	7.3%
Social factors	Users	7	8	1.4%	4.1%
	Non-users	10	25	4.0%	12.4%
Interest	Users	3	4	0.7%	1.0%
	Non-users	8	19	3.3%	10.2%
Satisfaction	Users	1	1	0.2%	0.2%
	Non-users	6	9	1.6%	4.1%
Conservative	Users	1	1	0.2%	0.1%
	Non-users	4	5	0.9%	2.1%
Cost	Users	1	1	0.2%	0.2%
	Non-users	1	2	0.3%	0.5%
Unemployment	Non-users	3	3	0.5%	1.7%

The following sub-sections present the actual research findings concerning each theme in detail:

5.6.1 Usability Factors

Seven sub-themes emerged regarding usability factors; Accessibility, Complicatedness, Convenience, Ease of use, Memorability, Reliability and Usefulness. These themes refer to the degree at which users can perform a set of task and correctly perform task procedure at the time and speed required. In addition to the degree of error tolerant as well as how users feel about using the system.

5.6.1.1 Accessibility

There seems to be a concern about the nature of accessibility with gaining access to the personal computers and a decent internet connection for e-banking adoption, but these responses were from one each of user and non-user. Concerning accessing the system without either being timed out or having to seek assistance for access through telephone, a user mentioned the difficulty in opening the pages, especially without using accessibility button. Further explanation revealed that they were aware that is an added measure put in place by banks to curtail unauthorised access in case the user happens to leave the system, thereby giving room for someone else to gain access.

Non-user of e-banking was finding the accessibility issue to be irritating and argued that this affected their decision to use e-banking (e.g. *"So it logs me out too quickly, and I am not able to record the details I want to record. What I do now is when I log on now I click on the accessibility button as someone who has got a problem." P16).*

5.6.1.2 Complicatedness

There were conflicting ideas concerning complicatedness as what both users (4) and non-users (5) of e-banking mentioned differed. It appears that e-banking users see the consequences of the system as complicated not to be severe, as they can manoeuvre. An explanation of this is because they do other transactions online; as such they are always on the system which apparently is not the case for non-user (e.g. *"What I can say is that there is too much information on the pages rather than making it simple" P7)*.

A non-user reported that the difficulty of having to go through a lot of processes to obtain information was unnecessary as they could use other means such as biometrics. This was considered a significant barrier to accepting e-banking.

However, the findings showed instances of users finding some e-banking services not to be self-explanatory. This is a key influence on the continuous use or adoption decision. While a non-user reported that there are too many things going on, on the screen as there seems to be

too much information (e.g. *"Confusing, because they put in all these words and I can't read well very confusing" P14).*

5.6.1.3 Convenience

A non-user saw e-banking as not convenience compared to a general notion from 10 users that was essential to them. This participant perceived that the requirement to use e-banking on the go was understood to be inconveniencing. But he has no insight into the processes or preferably does not have relevant information about its use, because he was not construing from experience. Implying that there is an inbuilt misconception about e-banking and convenience which needs further investigation. (e.g. *"You go to Scotland, and you are on holiday you cannot keep dragging your Laptop all over with you to go online to find out what is happening and the other, sometimes it necessary to have branches." P5).*

5.6.1.4 Ease of Use

Observed concerning about ease of use was linked to individual perceptions of complexity. Seven non-users had developed strong beliefs about the complexity of e-banking without using it. It was evident that visiting the local branches was preferable to non-users because they were afraid of using e-banking and making mistakes (e.g. *"I think the navigation system are now quite elaborate and difficult to negotiate, there are lots of ambiguities about some of the instructions you get online." P8).*

However, e-banking users (10) mentioned that their first impression of e-banking was a fusion of fear, confusion, followed by doubt that they might not be able to perform it smoothly. Given that difficulties were on registering and setting up an e-banking account. Also they affirmed that even when they progress in the account opening that stages of carrying out especially the first few transactions was hectic (e.g. *"It would be fair if by clicking on the little search box I can find all I need." (P3).* Not surprisingly, ease of use of e-banking was only seen, if one had considerable previous experience and familiarity with both computers and the internet.

5.6.1.5 Memorability

Memory concerns were raised mainly concerning PIN and password use; this was 6 out of 10 users and 9 out of 10 non-users. Participants considered the security guidelines surrounding PINs and passwords to be restrictive regarding memory. For instance " *I have about three to four passwords I use now, in the past I have had up to 5 passwords for different security levels and that is when it gets complicated because I cannot remember them" P1*.

A user reported that some of the password criteria could be awkward as there are chances of not remembering them, and indicated that even when availed the opportunity to use the password manager, that they are not willing to adopt it, as it can contradict issues for them considering the nature of service and their age. In other words, they might not remember what they have earlier asked the system to store, in case they decided to change their password. (e.g. *"I would not use cookies for my password system because that will create more problems if I have to change my password" P1).*

The aforementioned tends to be a concern as is coming from a user, as it complements the ideas from the non-users. Indicating the simplification of password criteria for easy access, for instance reducing standards for acceptable strength of password check, for customers to progress to the next stage (e.g.*" the issue is on remembering what you are doing with this company and that company. It becomes confusing" P5).*

5.6.1.6 Reliability

Users (6) had a concern on the poor connectivity at certain period linked to server downtime from the e-banking service providers, implying that there are times when a system can presumably fail, as such; they may not be able to rely on it entirely.

Also, a non-user reported that there might be the inability to perform a task when required due to bank logistics, like a default time it will take to get issues sorted. (e.g. *"It can be frustrating, especially when you have some things to do and it is taking days to reset passwords they might say I want my job now get it done" P11).*

5.6.1.7 Usefulness

E-banking services were reported useful; a majority of both users (10) and non-users (8) seem to be aware of the benefits it offers. A significant finding applied to both groups of users; for instance, how best to manage a complicated situation that cannot be solved using e-banking like having to go through mortgage advice/signing of the paperwork, as well as the presentation of cheques. (e.g. *"Most e-banking services are, but if you want to do something complicated then you need to go to the branch"P1).*

There seems to be a general perception by both users and non-users that e-banking does not provide all the services that they require. One non-user was completely satisfied with using the local branches (e.g. *"limited demand for this kind of service" P8).*

5.6.2 IT Competence

Computer illiteracy appeared a fundamental reason for non-adoption of e-banking by older people, as non-users (8) indicated that their knowledge of computers and the internet were insufficient. Long-lasting characteristics such as motives, traits, self-concept and skills evidence were observed to be motivational for some users.

However, there were instances were two users affirmed that they can use the system to an extent but cannot confidently use it, for example, a user said "*Well. I am not so confident using the Computers. I don't want to do something that I should not do and make a mess"(P9).* While other e-banking users (6) showed confidence in their ability to use the internet competently, the acquired confidence was from long use and positive experiences with the internet (e.g. *"I have been using the computer for over 40 years I find the information required easy to input" P1).*

According to a non-user the fear for new technology, difficulties in gaining access and lack of experience was a hindrance (e.g. *"I don't think I will work it out well, I don't think I am capable of using it without any irregularity" (P4),*

However, a non-user interestingly said he has all the skill required to use e-banking, but have chosen not to use e-banking, as he feels he can make himself vulnerable to fraud (a link between IT competence and security). e.g. '*I think I have the required skill to use the system' (P7).*

5.6.3 Social Factors

The extent to which participants perceive the norms, roles and values at the societal level, as capable of influencing their perception towards the adoption/ non-adoption of e-banking, can be broken down into three facets: Chat (online), Help (Physical) and Social Interaction.

5.6.3.1 Chat (Online)

Four users were concerned about having the opportunity to chat despite dealing with computers, and this suggests that the human touch is still essential. In this vein, banks could organise a drop-in session for both users and non-users, where more e-banking tips on how to efficiently and securely use e-banking will be discussed (e.g. *"If you are not in the bank, there is no one to ask. Examples are when you notice unusual activities in your statements" P19).*

5.6.3.2 Help (Physical)

This concern relating to physical support seems to be non-users feelings of being unsure of the channel and being afraid of making mistakes for non-users. A user was concerned that the internet might deliver difficult instructions and that he felt anxious (e.g. *"I think when it comes to a password I will feel safer talking to a human being" (P12).*

Although three users were content with the loss of contact with branch staff when using e-banking, seven of non-users expressed that they would miss the loss of personal relationships with branch personnel if they used e-banking.

5.6.3.3 Social Interaction

Non-users (5) commented that there were no means of interaction and making new friends, personal relationships with branch personnel if they access their financial services over the Internet. It was evident that the primary aim of using the local branches was to get them out and associate with other people. A non-user did not care about the time it took to visit local branches. Believing that, he has all the time needed at that stage of life. For instance, *'you have to spend much time going to the branch and see people there, but that does not worry me because when you retire, every day is Saturday as you have got all the time in the world P5'*. The researcher presumed an orientation that could be advanced and corrected as other things can add value to their life.

5.6.4 Interest

Non-users were not sufficiently motivated to discover what e-banking is all about. Responses from eight non-users indicated that they were not only uninterested in e-banking, but they also had a great feeling of inertia. Non-users (2) also reported that they did not feel the need to use e-banking as they are not sure if they can manage the process. Given that they usually visit the local branches (e.g. *"I will be honest with you I disincline to use e-banking; I will never use it except I am forced to use it by the banks" P8).*

Also, two users seem to be using e-banking just because they have no other choice, meaning it was not because of the value and benefit it will add to them, this is an exciting finding that would be worthy of further investigation.

5.6.5 Satisfaction

Non-users (6) did not feel the need to use e-banking as they are satisfied with their present means of banking. It seems these participants, did not appreciate newness but preferred current habits. Two non-users argued that they were comfortable with their routine usage of

banking transactions and do not want to learn new banking methods. Also, they expressed dissatisfaction and said it was something that cannot be avoided in years to come implying that they are being forced to adopt it (e.g. *"But I think is inevitable and anyhow at some point, I will have no choice" P8).*

5.6.6 Conservative

Non-users (4) and a user (1) were observed to be conservative; they considered the Internet as a medium that they don't want to learn. However, this concern does not have a significant impact as they seem to realise that e-banking is trending and that it will get to a point when there is no other option than to accept its adoption (e.g. *"Some people call e-banking normal, but the old fashion version is my way."(P4),* while the only user reported that: *"I am the old fashion stick in the mud" (P20).*

5.6.7 Cost

Only one user and one non-user expressed concern about the value of equipment and procedures required to access e-banking. Their interest was about the need to invest in the facilities needed for e-banking (e.g. '*if people have the facilities' (P 4).* The user holds that e-banking enables the bank to save money. Hence, the need to encourage people to use e-banking, economic considerations were seen, thus, more influential on the introduction of e-banking by banks: (e.g. "*they want to save money, so they want people to use online" P 16)*

5.6.8 Unemployment

Non-users (3) indicated concern with the issue of computers eliminating jobs, which they found to be quite emotional and painful. For example: *"How much does cash machine cost? Probably about £50,000.00 that is it. They put about six over there and lay many people off their jobs" (P7).* Apparently, this suggests that non-users believe that e-banking is taking jobs away which might be a judgement from an observation. They are therefore not seeing it from the perspective where staffs are required to do a follow-up, for instance, the creation of digital eagles' team by Barclays bank UK.

The next sections present the various issues and advantages of the authentication methods used by both users and non-users of e-banking.

5.6.9 Security Issues

This section presents two distinct results; the security issues concerning the categories assigned during the initial coding process, to establish interaction with factors discussed

above. While the second phase will present the authentication processes explored during the interview, in this case, authentication process where grouped into two to include knowledge based and Token-based authentication as top-themes and the specific technology probes used as the sub-themes, further details are found in the second phase.

5.6.9.1 First Phase:

Participants who were concerned about using or not using e-banking as a result of security issues fell into five sub-themes: these were Confidentiality, Privacy Issues, Safety, Security strategy and Trust. Most reports about these issues stemmed from misconceptions; Participants' explanation strayed outside the right definitions. However, accounts of these are in the following findings below:

1. Confidentiality

Perception of confidentiality was on the protection of personal and financial information, so that is not disclosed to or used by others, though this was from two users and seven non-users. It seems that they were not confident, in any processes performed on the internet as they believe that personal data is involved and its passage to the third party based on their belief, for instance:

"Well, I think when you tell a certain company your details that it shouldn't go further than that"(P10).

While e-banking user, on the other hand, seems to be sharing the same idea as they mentioned, that they feel as if a third party was involved. Though they considered the internet to be quite a risky way to make financial transactions, they did not see that as a very significant reason for not using e-banking, and it would not inhibit them from using it in the future.

2. Privacy Issues

Participants seemed to accept privacy issue as a common aspect of dealing with e-banking. Their experience of risk with other channels appears to influence them. Nevertheless, there was contrasting view with non-users (4) who believed their bank accounts might be vulnerable to misuse through the internet

Likewise, the perception of users was still more of a concern as they think that they are somehow divulging their details while interacting with their bank through e-banking (e.g. *"I would never divulge my information to anyone" (P16).*

3. Safety

Surprisingly, six users were concerned about the method of access as introduced by some banks to ensure a high level of customers' safety: for example having to enter an additional secret number to carry out particular transactions. Users seem to have built up a certain risk tolerance. Given that three participants (P1, 12 and 16), showed disregard for the threat of fraud as they seem to be aware of what to look out for when using the system. Besides, they as well as frequently commented that the padlock icon indicates they are using a secure site (e.g. *"I think all bank sites have got the https where the "s" is for security, so when you open these website pages you know that it is secured." P16).* Overall participants' descriptions of what they considered to be a 'secure site' was confusing and unclear, suggesting only a surface level understanding of this concept.

4. Security strategy

Ten users mentioned their reliance on banks having robust security measures, virus checkers and backup systems to allow recovery from any system failure. Users trusted their banks to back them up if something went wrong and expected them to put a good security measure in place. (e.g. *"A lot of high profile Company like banking asks you that so anybody who is writing a programme to defraud people will be like oh yea we need to find out what her mother's maiden name" P20).*

However eight of non-users' were resolute and expressed that they would not use the internet, particularly for financial transactions, except, they are sure of the security software in place. As I prefer to devise means of lodging in cash in the bank to engage in e-banking, in case they fall victim of fraud for instance, (*"I use to take a lot of money in the shopping bag to disguise as if I was shopping" P5).*

5. Trust

Regarding users' trust, they seemed to rely on banking transactions that were carried out through e-banking and have faith in them (e.g. *"I trust them within the western world in certain other countries I know the systems have gone wrong" P1).* Non-users (6) did not fully trust internet transactions. Reports were on perceived security concern, in case they used e-

banking as such they preferred to use the traditional channels (e.g. *"I don't use them. I don't trust them. I use the local branch. I don't trust them in putting my data." P7).* Finally, various comments about security showed that this issue was a concern, as some users (4) had some fears with regards to virus attack and fraudulent hacking.

5.6.9.2 Second Phase

Accessing the influence of the various security measures employed by banks in authentication processes during e-banking, the result from the initial general analysis was further extracted to include only responses relating to the authentication processes. The collated comments was reviewed by the researcher and classified according to two top-level categories and seven sub-categories. Table 5-4 below organises these responses from users and non-users opinion.

Table 5-4 Categories of e-banking authentication process in the frequency

	USERS	NON USERS
Categories	Frequency of statements	Frequency of statements
Knowledge-based authentication		
➢ Specific Issues with use of personal details	12	12
➢ Use of long debit card number	19	12
➢ Choosing PIN/Password/Username	15	17
➢ Impart of creating memorable data/question	12	10
➢ Specific Issues with samples of e-banking login pages	16	11
Token-based authentication		
➢ Use of activation codes	11	8
➢ Use of token and card reader	17	13

1. Issues Identified based on the Knowledge-based authentication

Participants answered questions about the specific difficulty they encountered/views concerning bank's knowledge-based authentication and resulted in 136 responses, with its descriptions below.

a) Responses about the use of personal details from users (8), revealed positive impressions about using the method and the level of its security. The process was termed to be a security strategy by banks to identify who customers say they are. It was seen to be the most secure and reliable, as no one else can correctly provide it for this purpose. Some

responses included: (*"you have to prove that you are who you say you are, in that case, the bank is safe, and they keep us safe (P12)","that is the only way to identify yourself and make sure it is you. So that nobody else can access your information (P17)")*

But a user expressed that the bank should use the details they already have in their database. Given that it is more advisable to reveal such details in the bank as account could be hacked online, e.g., *"The bank has all my details; I don't have to disclose them when I go online" (P9).*

Reports from non-users' (9), appeared contrary. For example, two of the statements indicated that the secure device was complicated and confusing based on their experience. Also, they feel insecure with the request for personal details, as their responses showed that they think e-banking have a lower level of security, e.g., *You got to be very careful where money is" (P5).*

b) Regarding the use of debit card numbers, there were some differences around the issue of perceived control of fraud. Users (10) indicated that they were more aware of what they should be doing to control their security behaviour online compared to the non-users (4). Regarding actual carrying out these behaviours, preventative controls were more familiar from the responses of users. Non-users felt that banks would be unlikely to control fraud successfully since they are requesting for details they already have on their record, (e.*g. I would not have like to do that in case the site was a bit doggy or if it was a scam P3).*

c) Besides, the need to choose PIN/Password/Username as reported by users' (10), indicated that while the PIN is significance, passwords are more diverse. The report revealed that it might be that owning multiple passwords, might reduce the perceived severity of someone fraudulently having access to the unique passwords that the customers may have. Furthermore, concerning users, ten felt that the tendency of being defrauded was low because they trust and are happy with the security that the banks have in place *(e.g. "The PIN is the most secured thing as nobody will ever know my PIN. So is a case of being secured" P12)*. While six non-users indicated the difficulty of creating and remembering a password ranging from entering the username, password and then typing the PIN received from their mobile. They further explained that there were too many steps and that the steps took too much time requiring them to put extra effort. (e.g. *"flipping nuisance putting miles in"P4 "Older people do not like pin numbers"P5*).

d) Concerning creating memorable data/question, reports from four users were on remembering what has been used as they noted that there were too many steps in the

creation of memorable data. Meanwhile, it was seen as a significant measure in place to protect bank customers as one user reported that the steps made him feel secure and that he liked being able to complete the verification process.

A non-user suggested that codes could be introduced instead of data to build customers confidence. But the other non-users (9) seem to be concerned about remembering already used details if they decide to become adopters. (e.g. *"it would have been better using a coded word and should have given you the confidence of the person that you want to talk about." P5, "Possibly that is one thing to holds me back I mean to remember" (P4).*

e) Questions concerning the sample e-banking login pages revealed that six users were worried about the speed and ability to log in; this was because e-banking interface was seen to be complicated, given that there was a lot of processes to log in, e.g.:

"The problem has always been whether I need to put a capital letter in or not and the major challenge is that you don't get too many chances to put them in before getting locked out. (P12).

For non-users concern about reliability was reported as well as problems that several participants have when trying to get the generated number during the process.

2. Issues Identified based on the Token-based authentication

Token-based authentication includes a secure device, Card reader, USB reader and PIN via mobile. Discussion of the 49 responses is in the following section.

a) Use of activation codes was reported to be useful security ideas from 8 users, as it was felt to have a positive effect on users' feelings, because the codes are either sent straight to a registered phone number or home address. A non-user seems to be in concordance with users as it was seen to be something unique to an account which, invariably means that non-users can gradually develop confidence in the use of e-banking as they begin to look at authentication means that are personalised to them to enable secure browsing. (e.g. *"is a good idea that is all I will say. In that you have something which is unique to your account" P8).*

b) Report from five users about the secure device and the card reader, varied from negative to positive, due to fears of making mistakes when they encountered it. The explanation was as a result of not having enough instructions, hesitation and not knowing what to do

if something went wrong, given that it seems confusing based on their experience. In effect, this expression was an obstacle causing them to delay in using the devices and opting for a simple transaction that will not require its use:

"I did not progress to the next step it was telling me there was an error and when it happened more than ones I banned the use of it. It was terrible" (P20). While on the positive side a user, though not using it, perceived it to be a good security measure, but commented that it has a lot of steps, due to different functions to perform.

"I think the further means of authentications is great and an extra security measure for the companies and my son used it and found is extra level security"(P12)

A non-user felt that the card reader meant too much to take in for older people, in that improving authentication techniques may assist prospective users, by using coded words which may be assigned to each customer for easy access.

5.7 Discussion

This section discusses the top-level themes and own findings and compares it with the results of the literature review below.

5.7.1 Usability Factors

The literature makes it clear that usability reflects ease of use, one of the primary goals of HCI, which in turn involves the study of the interactions between users and technology like e-banking (Battleson et al., 2001).

One interpretation of this study is that non-users do not have a clear picture of what e-banking is about and how much or less difficulty is associated with it, so that does not affect their decision to use e-banking. On the other hand, customers who have become e-banking users can perceive the ease of e-banking usage, every time they log in. This result is consistent with prior research. (Laukkanen et al., 2008) found psychological barriers play a role in resistance to adoption of e-banking among non-users, regardless of perceived easiness, so that ease of use did not determine acceptance of e-banking among non-adopters.

The usability aspect of PIN and password use is already well documented (Yan et al., 2004). This study revealed that making passwords and PINs to be complicated and difficult for anyone else to guess was a difficult task as well as the idea of changing it periodically/never to be used for more than one access point. This study is in line with (Dourish et al., 2004) as

users can also feel that increased security acts as a barrier to work activities and increasing the time it takes to complete tasks.

Although non-users were able to perceive some usefulness such as ease of performing the process at any time, perceptions of e-banking advantages were stronger among users, and more significant on their adoption decision. This result suggests that considerable benefit with not be evident, until e-banking is adopted, this is a barrier for non-users.

In terms of accessibility this study revealed a significant difference between a single user and two non-users, indicating that users were more likely to be able to access e-banking than non-users. The reasons as reported by non-users' were merely the lack of ownership of a personal computer, not having an internet subscription, as they only visit drop-in sessions organised by some organisations like the Age UK, which were not compatible with e-banking technical requirements.

Hence, users in Sunderland do not experience problems with the required technical resources for e-banking; again, this is expected given the demographics of the average sample: well-educated, as some participants reported to have IT background before retirement. These are capable of adjusting to e-banking more efficiently and more quickly than the report from current non-users. Research has revealed that customers who were in a better position to access computers and Internet at both home and work were more likely to use e-banking services in the UK (Durkin, 2007).

5.7.2 IT Competence

This study revealed the requirement of a certain level of skill for using the computer and e-banking, given that lack of confidence may create discomfort with this banking channel and as a result, stop the customers from using it in the future. The results are consistent with other empirical studies (Asmi, 2012; Gounaris and Koritos, 2008; Guriting et al., 2007; Jaruwachirathanakul and Fink, 2005). Non-users expressed low self-efficacy as a possible barrier to take-up of e-banking, which seemed to be a problem associated with computer illiteracy and dislike. This study also revealed that customers, who do not only use computers and the internet but also e-banking itself, may still perceive themselves as lacking sufficient skill to use e-banking efficiently.

5.7.3 Social Factors

According to (Howcroft et al., 2002) wealthier and older consumers placed particular emphasis on face-to-face contact. These are expected findings as this study revealed that

social interaction was found to have a significant positive effect on the decision to adopt e-banking concerning non-users, but not to users. This result has practical implications as banks may want to explore more awareness activities through the users of e-banking to promote the technology, for instance, implementing recommendation plans where users of e-banking receive rewards for introducing the technology to their family members or friends. This outcome is in line with Asmi (2012) where the research stressed on peer and family influence as a determinant to e-banking adoption by the older people.

5.7.4 Interest

This study has revealed deep-rooted pre-conceptions that older users have in seeking out new channels, as a non-user reported that he seems not to need e-banking. Older peoples' transactions were infrequent and straightforward, and they were satisfied with their existing channels. Such views might, as suggested by Kuisma et al., (2007; Srivatsa and Srinivasan, (2008), who found a similar situation, be attributable to inertia to change, as such these beliefs need to be confronted by banks marketing department. The implication was that these participants had the skills, but they were not interested, this is an exciting finding that would be worthy of further investigation.

5.7.5 Satisfaction

This study revealed that there seem to be some differences in the ways older people perceive satisfaction. As non-users seem not concerned in whatever else that makes them satisfied apart from dealing directly with the face to face bank staff, which by implication will require series of training to change their orientation. Finding was in line with (Jasim Alsamydai et al., 2012; Laukkanen et al., 2008), where it argues that customer satisfaction has a positive influence on the e-banking technology.

5.7.6 Conservative

Four non-users, who were conservative, seem to consider the internet as a porous medium that is very difficult to control, which may bring a lot of disorder, distraction and confusion to the home and family. Due to the belief that the Internet was meant to be an enjoyable means communication tool for e-mailing, chatting, and searching, but not for performing a financial transaction. This study seems to be in line with the findings of Bakare (2015), which reveals that some customers are still conservative towards e-banking as well the findings of Asmi (2012) showed that older banking customers were more resistance to change in the use of technology.

5.7.7 Unemployment

Three non-users report revealed a pre-conceived idea, which there is a tendency that computers will displace labour according to the findings from this study from non-users, based on their report, that banks are laying many staff off their jobs. Research has revealed that the rapid emergence of a growing number of technologies that can replace human work, presents both risks and opportunities (Marchant et al., 2014). Implying that, despite there are pre-conceptions that e-banking creates unemployment it could also be viewed from the perspective of its usefulness. In accomplishing this, banks could create a forum to educate the non-users of the likely benefit and how jobs are still in place as the IT sector of banks will seek to recruit more staff for efficiency.

5.7.8 Cost

The literature Sathye (1999) suggests that in the context of e-banking, there are two types of cost involved. First, the standard fees associated with internet activities and, second, the bank costs and charges (Sathye, 1999). One non-user was concerned with the cost of procuring facilities needed for e-banking like a computer and the cost of subscribing for internet connectivity. While one user said, the banks are just looking for avenues to save cost. Though this is from only two participants, there is an indication that equipment and procedures required to access e-banking were considered costly by user and non-user alike.

5.7.9 Security Issues Factors

Security has been identified as an essential attribute determining consumer attitudes towards e-banking by researchers (Hernandez and Mazzon, 2007; Mansumitrchai and Chiu, 2012; Nasri and Charfeddine, 2012; Qureshi et al., 2008; Sarel and Marmorstein, 2006). The twenty participants expressed some concern over security measures in place for internet users, which was attributed to rapid growth in poor internet security Hernandez and Mazzon (2007). The security and privacy fears seem to be affecting non-users decision more than users. This result does not mean that users have no doubt, but perceptions of what e-banking offers regarding advantages expected governed their choices rather than fears, for instance, relief of anxiety caused by carrying cash. However, older bank customers in Sunderland are still concerned about issues such as lack of protection of data by banks and legal regulation, including financial and private security.

Also, reported was tendencies that e-banking managers are likely to sell out customer's information to some companies (i.e. insurance companies), this is a critical pre-conception that needs investigating further.

Furthermore, in the second phase users viewed a card reader to be the most usable and secure method, notwithstanding its rigorous process regarding usage, since they were construing from experience. In contrast, the non-users' level of understanding of security processes seems low, based on their reaction to the security features presented in the study. They seem to believe that the banks could do better by relieving customers of all the inconveniences and deploy a more user-friendly method like the use of biometrics. They thought that this would prevent the carrying of lots of authentication devices. A further explanation of the result is that these steps alone fall short of protecting users against security threats like fraud without the use of a card. Understanding more about users' perceptions of the security risks surrounding e-banking use and their subsequent behaviour is a first step towards designing for improved secure behaviour.

5.8 Implications

This study has added to our understanding of e-banking adoption by older people. This use of the SSI with the aid of technology probes helped to answer the remaining research questions. These were as follows:

- Concerning security issues - What are the specific factors affecting older users' attitude and preconception toward the security of e-banking
- Concerning IT Competence - How does the perceived lack of IT competence by older people make them more vulnerable
- To Social factors - How does the role and support of family and friends affect older peoples' perception of e-banking
- Concerning usability factors - How do the processes of gaining access to your financial needs influence your decision to use e-banking
- About strategies - What strategies do older people adapt themselves to support their use of e-banking

Also information regarding how these identified factors interact with each other were revealed, for instance seeking help in the form of social support can lead to compromise of

details, which could eventually result in security issues. Examination of the differences between users and non-users was carried out; given that this study did not rely on the theories that emerged from literature, but rather went further to seek what the older people deem salient. The majority of studies reported in Chapter two used single, undifferentiated samples, in this light; this study offers a more subtle difference in perspective on the adoption phenomenon than what previous research revealed.

5.9 Limitations

One limitation was that participants perceived any issue, relating to financial transactions to be personal and not available for discussion, though the researcher continuously assured the participants during the interview that their details would not be required and as such, they should refrain from mentioning them. Aimed at obtaining a comprehensive understanding of older peoples' perspectives, future research might want to incorporate a certified bank staff, which could boost participant's assurance.

The older users that participated in the study were customers in Sunderland that visit Age UK computer sessions and Christians from local churches. Therefore, there is no assurance that they would be a representative of older people in the North East of England, which may present different salient factors.

5.10 Summary

The results obtained from the study indicated that banks' provision of e-banking was seen by the participants to be motivated primarily by bank interests in cost-saving and keeping abreast of competition instead of focusing on customers' safety. The participants acted in the light of several preconceptions about what they deemed salient, as reflected, for example, is a belief that it cost a fortune to purchase the self-service machines introduced, as well as their concern with security issues. Furthermore, security assessment based on the strategy employed while using the various authentication stages provided by banks, revealed that both users and non-users seem to perceive authentication using a card reader, to be a burden, as it was reported to involve a lot of processes, but others were not, or only partially so. In the next chapter, the findings from both studies conducted in this thesis concerning the research questions will be the topic of discussion.

6 CHAPTER SIX: DISCUSSION AND CONCLUSIONS

6.1 Overview

Technological advancement has impacted the selection of services, with banking inclusive. However, maximum utilisation of new technology such as e-banking requires an understanding of customers' perception with regards to attitude, strategy and social reactions. This research investigated the salient factors that influenced the use of e-banking by older people; these factors were generated solely from the participants. Furthermore, it has explored how the identified factors interact with each other.

This chapter summarised the key findings and recapitulated the answers to the research questions as outlined in chapter one. The research is critically evaluated in general with a focus on the methodological approaches adopted; discussion of the research original contribution to knowledge with the research limitation is highlighted and finally, followed by the advice for future e-banking research.

6.2 Summary of Overall Findings

Given the initial research question developed earlier in section 1.5, the review of the findings revealed some weaknesses of the pre-established adoption model used by researchers. The following section will highlight the observed distinction between users and non-users, before discussing the research outcome of study one and two, which answered the research questions.

6.2.1 Differences in Perceptions and Demographics of Users and Non-users

It is imperative based on the use of users and non-users of e-banking in this research that the researcher highlights the distinction between them concerning their perceptions, views, experiences and specific attitudes. In this vein, the participants used were not just non-users of technology, as they have other internet engagement. The entire 20 had internet experience, coupled with the fact that only participant 7, 10 and 13 (non-users) reported that they did not attain any educational level, but 12 out of the 20 participants had first or postgraduate degrees, which indicates that the non-users had other underlying factors for not using e-banking, details of this are highlighted below:

This work found an apparent distinction between users and non-users of e-banking regarding their attitudes, which was in line with Hernandez and Mazzon (2007) who found that by including both users and non-users, it is possible to avoid some shortcomings related to the

prediction of adoption based on users perceptions. In this research, these differences were that users had developed risk tolerance, in respect to safety, but evidence from the data collected shows that non-users have a great concern to the safety of the e-banking technology and therefore prefer the bricks and mortar means of banking. Also, usability factors were seen to have a significant influence on the research outcome on the part of users, but for non-users usability was seen to have a low impact on their decision to use e-banking. Regarding cost and unemployment as emerged from the findings; there were differences in the views of users and non-users. These emerging differences in the opinions of users and non-users of e-banking support the need for their combine opinion in the interview carried out for both studies.

6.2.2 Research Question One (RG1): What are the Factors that Affect the Use of E-Banking Technology by Older People?

Older users and non-users of e-banking reported that usability factors, security issues, IT competence, social factors, interest, satisfaction, conservative, cost, unemployment and brand influence their adoption of e-banking, as revealed in the first and second study presented in chapter four and five. This variety of factors were not explicitly disclosed in previous research, such as (Arenas-Gaitan et al., 2015; Choudrie et al., 2017; Santouridis and Kyritsi, 2014; Susanto et al., 2013; Zhou et al., 2010). Specifically, with older people, the perceived ease of use (PEOU) as suggested by TAM was revealed to be a determinant of e-banking adoption (Arenas-Gaitan et al., 2015; Choudrie et al., 2017; Laukkanen et al., 2008). Users only supported the above-generalised result. Given that despite construing from experience, they still perceive the system to be difficult, for instance, "*It would be fair if by clicking on the little search box I can find all I need So that when you type in a common word, it can come up with suggestions (P3)".* But this was not the case for non-users as they distinctively opposed this, because, reports revealed that what seems to matter most to non–users to start using e-banking, appears to be what they can achieve, rather than issues such as the ease of using the system. This achievement was on the distinctive sample and consideration of approach used to elicit factors from older people.

Also revealed, was the benefit that e-banking offer, and the security issues, coupled with the need for help and interaction (social factors) and the ability to use the computer and internet without irregularities (IT Competence), as dominant factors that are significantly important in mediating older people's (users and non-users) use of e-banking. A follow-up analysis of the factors revealed that some of the users have broader unique and demanding e-banking needs,

this they reported can sometimes be difficult to complete without having to seek help by visiting the local bank branches. Such cases include those that have high degree of involvement other than the usual checking of balance and making payment, loan application, mortgage enquiries/applications and clarifications on interest charges. Besides, this was not the case for those participants that have less limited need for e-banking services, implying that the level of taking part in financial activities tend to affect the decision to use e-banking compare to other banking means. Specifically, this research has advanced our knowledge by revealing that older people have the following issues:

1. Concern with remembering password, a dimension of usability
2. Ambiguities on instructions displayed on the e-banking platform.
3. Older people are discouraged by the painstaking processes required before access to account.
4. Concerns that there were tendencies of being defrauded

6.2.3 Research Question Two (RG2): What Specific Factors Affect Older People's Attitude and Preconception towards E-Banking.

Older people expressed that they were aware of the idea behind the introduction and implementation of e-banking by banks. But participants went further to explain that it was not an ideology that they grew up with, as such they have always accessed their financial needs using the offline means. Therefore, if they are needed to switch, then the banks have to narrow the usage down to their level of understanding, by explicitly designing the system in such a way that it's free of all uncertainties. Given that, some older people have revealed that they would rather wait days for their cheque to go through than struggling to cope with understanding financial transaction status or trying to figure out an unusual/usual activity that they might notice on their account via e-banking. This issue they believe might be too late to resolve by the time they got to the local bank branch and based on the report that there are lots of ambiguities about some of the instructions being displayed online as evident in chapter five (second study). These concerns were not from experience, given that it might be their views which they are entitled to have. But they have no insight on the use of e-banking, hence the need for e-banking service providers to organise sessions that will help clear and instil on older people what the actual position is about e-banking. Followed by how it can help them in the long run regarding extended financial planning.

This finding has extended our understanding, given that previous research reported that older people are resistant to change Asmi (2012). But the current status of the older people is that if this technology is improved to support their role, and the system made more user-friendly to resolve the perceived ambiguity. Based on a report that the navigation system is seen to be quite elaborate. Then non-users are likely willing to adopt e-banking as they have apparently reported that, a time will come when they will have no other option than to embrace it due to technological advancement.

6.2.3.1 Research Question Two (RG2a): Do Social Factors, Usability Factors and IT Competence Mediate Older People's Perception of Security?

Before dealing with this question, the researcher will highlight the concept of misconception of security as revealed in study one (chapter 4). In this research older people believed that they might fall a victim of fraud, as they see themselves to be vulnerable; based on the concern they have in venturing to use e-banking or continue to use the technology. To capture the completeness of older peoples experience concerning security and their relationship with other factors, participants reported in study two, that some measure put in place by the banks to alleviate customers' safety was not straightforward. For example the use of knowledge base and pin sentry authentication processes, which have either resulted in participants not being able to adequately negotiate the navigation system, which has in some instances resulted in seeking help. Participants believed that requesting help from children/friends may lead to compromising their details which could either be misused directly by them or lead them into falling into the wrong hands if they do not have original intention to defraud them, for instance involving grand children.

Also, the ease of using the system was considered an essential factor, as they believe that any mistake made while using technology is ones' fault. As such they are likely to bear the responsibility for any behaviour that will result in inappropriate use of the technology. For instance, while carrying out a transaction, a participant believed that they could press a wrong button, thereby putting information mistakenly where is not supposed to be. And there is a possibility that it might go somewhere else, e.g. crediting a wrong person or clicking on a link that might compromise security; this they believed is the customer's fault. Concerning interacting with social factors, participants believed that e-banking use would invariably lead to seeking support. Given that long users of e-banking felt that instead of fear of doing something wrong as a result of ease of using e-banking, they will instead wait for their

children to carry out the transaction and this seems to be interwoven somehow with IT competence.

This finding has extended our understanding, given that participants have reported that irrespective of the skills they have, that there are still chances of making a mistake, which have to do with developing confidence in what they are doing and a dimension of IT competence.

6.2.3.2 Research Question Two (RG2b): What Strategy do Older People Adopt Themselves to Support their Use of E-Banking?

Strategies that older people adapt to support their use of e-banking as reported in study one and two were on possible ways of alleviating security and memorability concerns. Given that all the detailed strategies were being employed to improve secure behaviour and at the same time support their perceived memory concern. As pointed out in Section 2.5, few studies to date have explored older people and e-banking concerning the perception of security. The strategy revealed by older people includes:

1. Use of Microsoft word file to write down personal details and store, e.g. password with an obscure name and different order that only they can understand, in a bid to protect some of their authentication details.
2. Resort to use password managers like the cookies as long as they see padlock sign revolving to indicate secured site. However, the use of cookies was seen to be problematic as some long-term users reported that they would not use cookies for their password system. Given that they believed it would create more problems when a password need to be changed, because if they forget using the password manager, that will cause more problems. They felt that if they make the password system too difficult for themselves, they will have problems later trying to remember. On the other hand, if it is too easy someone might be able to guess them, in this vein, they admit that is a balance to strike.
3. Revealing of personal details to close family members, and resorting to them for their help any time they need to use e-banking, due to the memorability concerns they have. This is because both users and non-users revealed that as they are declining in age, they tend to, for instance, enter the kitchen and sometimes cannot remember why they have gone there.

4. Some users reported having different forms of security strategies for secure use of e-banking, such as the use of encrypted signs as they understand how encryption works, as such they can monitor the system all the time to watch out for hackers of accounts.

This research revealed that both users and non-users acknowledged that there is need to strike a balance regarding security measures. Thereby they welcomed the use of password criteria as a condition by banks to help strengthen the online platform security and the conditions attached, for customers to meet up with adequate password strength. These have extended our knowledge, given that the strategies highlighted above, has been bolstered, to have the potential of supporting their use for users and likely views in case they decide to adopt it, for non-users.

The use of pre-established theories via questionnaires in past research has deprived the participant of the opportunity to relate their views, in the way they see it not as someone else does, and this research breached this gap. The overall findings have been summarised in the table 6.1 below.

Table 6-1 Summary of overall findings

Study	Technique used	Summary of research findings at a glance
One	Repertory grid	Held misconceptions towards the security of e-banking
		Memory concern - 'Memorability'
Two	Semi-structured interview with technology probe	Memory concern
		Misconceptions towards security of e-banking
		Navigation being elaborate
		Rigorous processes
		Interaction among factors
		Revealed strategies they employed
		Socio-economic background factors such as educational levels, financial status and work experience did not impact participants responses

However, differences in the opinions of users and non-users were that users had high risk tolerance while non users had low risk tolerance. Factors such as cost, conservative (though presented as resistance to change by examined literatures), Perceived usefulness, Perceived ease of use and Convenient, were inline with the outcome of the examined literatures. The following section will discuss the critical evaluation of this research.

6.3 Critical Evaluation of the Research

In an attempt to advance our knowledge of what factors mediate older people's use of e-banking, the investigation carried out in this thesis sought to identify what older people deem salient to arbitrate their use of e-banking, by generating factors solely from them. Specific focus was on ascertaining what their attitudes were, experiences and possible misconception they held in the case of non-users and users as the case may be, throughout the whole exploratory process. The exploration went further to identify how these believed factors interact with each other, how social support can provide help, but then can compromise security. Also, the research sorted the understanding of the strategies that older people themselves adapt to support their use of e-banking for users and views in the case of non-users.

For the evaluation of this research, the researcher employed Yardley (2008) framework for assessing qualitative study, regarding sensitivity to context, impact and importance, commitment and rigour as well as coherence and transparency.

6.3.1 Sensitivity to Context

Yardley (2008) reveals that researchers should explore relevant literature in the domain of investigation, as a way of taking the sensitivity to the social context of the research into consideration. This advice the researcher held fast to, at the onset of the investigation, based on the detailed review of the literature on the factors that influence e-banking adoptions by bank customers. Followed by a discussion of the adoption theories constructs used as a base as well as the data collection methods. This explanation from the reviewed studies drew particular attention to the absence of literature that has captured what older people deemed salient to mediate their use of e-banking, with factors not solely generated from them.

The researcher also demonstrated sensitivity by allowing participants to choose the venue of the interview, to promote individual comfort and security, in that it was significant to older people, that the felt at ease with regards expressing themselves freely.

In the analysis of the data, the researcher considered the relative importance of the views of the participants, and this led to the careful use of significant issues raised by participants, during the discussion of the findings. Besides, this was also revealed as illustrative examples as advised by Yardley (2008). The researcher thought of the various rational necessitating the expressed views; For instance, the researcher contemplated on the possible distress of adhering to a banks terms and condition. This case was about particular experiences that the

use of password criteria might have had on older people and may have enhanced the straightforward interpretation of the data within this age segment.

6.3.2 Impact and Importance

As pointed out earlier in chapter one, this study aims to find out the factors mediating the adoption of e-banking technology by the older people in Sunderland. Following acknowledged evidence that what older users deem salient have not been captured previously based on the approaches, various researchers have adopted (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017). This research was significant as it has provided older people in Sunderland with an opportunity to air their views as they see it not as someone else does, an area of research that have been underexplored. Given that there is need to support the older people, in order for them to plan for an extended financial plan (Laukkanen et al., 2007).

This research adopted clear and straightforward interview schedules as the format covered all the step by step processes required to register for an e-banking account and subsequent access on successful registration, through the transaction and log out stage, using a technology probe of typical e-banking websites.

6.3.3 Commitment and Rigour

While carrying out detailed data collection process, thorough data analysis, methodological capability and an exhaustive commitment to the topic, researchers can illustrate their commitment and rigour to the study process Yardley (2008). The literature review (chapter two) is illustrative of the researcher's commitment to the topic and vast engagement with literature in the e-banking domain (32 research was reviewed for customers in general and older people in total, excluding the additional review on theories and older people). The extensive reading was to ensure an excellent knowledge of appropriate ideas, methodological approaches used in the data collection process with their key predictors (factors) and their related theories adopted.

An illustration of the rigorous approach that was engaged in this work was by utilising an experienced repgrids researcher for three weeks, for a one on one session on the use of repertory grid technique and subsequent pilot study before going into the interview appropriately, to ascertain the appropriateness of the interview process.

A further way of rigorous approach was by working together with the supervisor in examining illustrative examples and additional cross-checking of a sample of the sub-categories to resolve disagreements (study one). Followed by test-retest reliability which had

a three weeks gap in-between, this was because three weeks is a typical average that research has used (Edwards et al., 2009). This measure was a means of presenting credibility checks of the process and making sure that researcher's method of analysis was reasonable and reliable, though there were specific issues regarding the particular approaches.

While attempting to illustrate commitment and rigours the researcher from the enormous amount of constructs (317) produced during analysis, manually analysed the data. Though it was time-consuming as it required a distinctive nine rigorous stages (transcription, reading the data, differentiated users and non-users, continuous reading, identified several similar constructs, further reading, searching for patterns and themes, grouping similar items, examining participants rating). However, the researcher felt that, the worth of the insightful outcome from the research outweighs the difficulty of the elaborate data analysis process adopted. Given that, this was necessary to focus on data-driven themes and links available, instead of relying on the pre-established lens of adoption theories. And besides, this work was aimed at getting immersed in the data.

This research sort to understand further expressions related to the outcome of the first study, to answer the RQ2, concerned with the specific attitudes of older people and how they interact. This objective was followed by other issues that emerged from the technology probes on knowledge and card reader authentication, to address misconceptions about security. Which was in line with Brocki and Wearden (2006), where the argument was on how researchers use different familiarisation phase of data collection differently, given that the way in which the emerged factors aid in the description of other parts of the responses are of utmost importance. Besides, cumulating of data, in this case was done using NVivo to assign themes to responses (577).

6.3.4 Coherence and Transparency

During the interviews conducted, the researcher allowed the participants to air their views based on their personal experiences and not as someone else sees it. Throughout the research carried out, the researcher provided useful and sufficient excerpts from the interview conducted in the discussion of the research findings as construed by the participants. This Yardley (2008) points out is necessary to promote originality of source of material. In addition to this, there was evidence of the substantive use of appendices included in the write up which gave transparency to the participants' analysed transcripts. The richness and

originality of information used for the analysis, which demonstrated further the degree of openness incorporated by the researcher in this study.

The researcher aiming at salient factors affecting the adoption of e-banking technology by the older people in Sunderland, the deemed manually thematic analysis, was thought to be more appropriate and the ratings were considered during the initial and subsequent visual analysis process, though participants quotes were used during presentations of findings. However, Brocki and Wearden (2006) believed that researchers assigning meanings to expressions might weaken data. This belief did not have an impact on the data as the researcher made sure that the participant's transcript grounded the data interpretation.

6.4 Comparison of the Repgrids and SSIWTP - Practicalities of Use and Quality of Data

6.4.1 The utility of Data Collection

Repgrids interviews have better uniformity of evaluation, given that the researcher aimed to examine how participants construe the different forms of banking, coupled with its inherent feature of fixed interview schedule, the requirement to ask questions following the same format and sequence concerning each participant. As such they were able to answer questions in a manner that fits the response grouping, thereby making it have a higher consistency. Also it was more efficiently coded for subsequent analysis. Specifically, repgrids revealed why a particular means of banking was more important to them by uncovering their motivation. For instance, they had the opportunity of relating how solitary e-banking is to face to face banking, insurmountable as regards learning for the two forms of banking associated e-banking (Desktop and Mobile) in contrast face to face banking. However, the responses were shallow as they were the best the researcher could extract while trying to balance the ideas of laddering and not frustrating the participant when they feel that they can not comment any further on an element.

With the SSIWTP the researcher sought to examine older people’s perception of attitude and misconception toward the security of e-banking, revealed in the first study. Taking into account that it has more potential to focus more on the entirety of experience rather than a mere explanation of the concept, e.g. Defraud account – safe, Solitary – has company, insurmountable to learning - easy to use. The participants had sufficient opportunity to reveal their perceptions, as these technology probes were typical examples of a standard e-banking

website, as such have much higher confirmatory data. However, the responses are more tedious to code for subsequent analysis, as it requires filtering lots of relevant data.

6.4.2 Analysis Process

Concerning repgrids, the visual illustration assisted to focus the analysis and create connections with ease, given that there was no feeling of data overload, as specific insight was derived while assigning codes to the responses. Given that they were in line with the aim of the exploration, thereby enhancing the analysis process. For instance, the reactions that meant the same thing were grouped to achieve data reduction. However, unavoidably during the analysis process, the researcher needs to declare some pattern by allocating the constructs to themes. But according to Cassell and Symon (2004), such process of making sense of the grid tends to lean towards making the researcher reductionist, given that it requires the categorisation of emerged data in suitable ways to create a whole idea. Nevertheless, the researcher believes that, despite quantitative analysis have often been relied upon concerning counting the number of constructs, an in-depth thematic analysis has a lot to offer in terms to being immersed with the data.

With SSIWTP the researcher had to filter those responses that added to the understanding of areas of interest. This process made data reduction difficult, as the participants may be distinctly expressing the same idea, unlike the repgrids, this, however, requires careful observation as reframing the data could result in misinterpretation, thereby leading to highly time-consuming activities and a considerable volume of precious data.

6.4.3 Depth of Insights

According to Kelly, (1995), repgrids encourage the surfacing of implicit (how the similar elements yet differ), which is not recognisable. Consequently, repgrids proffer insight to a relevant data source, in this case towards how older people construed the various means of banking regarding the decision to how they access their financial need. Also, the repgrids availed the researcher the opportunity to seek clarification of meanings to situations described by the participants. However the structured nature narrowed the participants' responses, based on result of the prearranged schedule and the uniform format required for asking questions as revealed by (Smith et al., 2009).

The SSIWTP encouraged the emergence of vibrant, in-depth data through its flexible structure, application of technology probes to provide real-life scenarios, this technique availed the participants the opportunity to talk about a variety of opinions held towards e-

banking operations. For instance, a user that was not using a card reader expressed satisfaction on its use, based on a report from his son. He stated '*I think the further means of authentications is great and an extra security measure for the companies and my son used it and found it as extra level security'*. However, there was some drawback with SSIWTP as there was the need to assure the participants, that they are not required to reveal their details. Given that they kept on feeling that it is quite too sensitive to discuss e-banking as finance was involved.

In this vein, the repgrids was a helpful jumping-off point to SSIWTP, which enhanced the data. For interested researchers in this domain flexible construct elicitation process like employing dyadic and triadic process simultaneously where appropriate will be a useful tool for revealing more reserved issues for this age segment.

6.4.4 Validity and Reliability of the Data

According to Kelly, (1995), in terms of repgrids, it is not very good for the researcher to depend on conventional reliability test but rather assume reliability to mean a measure of the degree to which a test is susceptible to change Fransella and Bannister (1977). This affirmation is because constructs have the tendency of changing over time which invariably becomes a part of individuals' ability to make sense of their world like a scientist, as Kelly, (1995) proclaims us to be. However, it promoted a more highly structured understanding of what the users' experiences are concerning the perception of e-banking.

In the case of SSIWTP, the researcher thought it to be more appropriate and that it seemed to have more potential to focus on the entirety of experience, rather than a shallow explanation of a concept. But there were instances when the participants sometimes seem to deviate from the question asked, which made some of the data produced to be less robust.

6.4.5 Researcher Training

The researcher participated in one to one training on the use of repertory grid over a period of six sessions. These sessions involved conducting several interviews and responding to feedback on content and style. In this case, three sets of interviews were done with a total of six participants in all, on a topic of various interests, to get acquainted with the use of the technique. This stages involved rigorous interview flowchart and repeatable design of the procedure before the main interview. Given that process of adapting to the method was challenging with the researcher being relative inexperience in its usage. However, all this was in addition to exploring relevant literature.

But in the case of SSIWTP, the researcher only explored relevant literature to familiarise with the SSI technique and went ahead to design the interview schedule with the appropriate probes used, which was not tedious as in the case of repgrids interview preparations.

6.4.6 Researcher Bias

There are different ways of biasing research which might be in the form of body language, answers to questions by the participant and leading questions posed. In repgrids the role played by the interviewer is smaller; as such the minimal role reduces the chance of steering the participant through questioning thereby decreasing chances of interviewer bias and enhances the utility of rich data. Coupled with assisting in identifying critical issues as they see it, rather than as someone else understands. Though significant merit of the repgrids is in the illustration of participants constructs, however unavoidably during the analysis process, the researcher needs to declare some pattern.

In the case of SSIWTP, the interviewer plays an essential role by probing the participants to unveil deeper insight into the issue under investigation, which has a higher tendency of researcher bias.

The use of technology probes enhanced the production of rich data and at the same time guided the interview. Participants were allowed throughout the interview to air their views without interference. However, participants were reminded throughout the interview, of the need not to reveal their details, as they keep feeling that it is quite too sensitive to discuss e-banking as finance was involved.

6.4.7 Suitability for the User groups

In this study older people found the repgrids approach challenging to understand, as the technique was perceived to be somewhat complicated to grasp fully. This finding was in line with the evidence revealed by Cassell and Symon (2004), given that most of the terminologies associated with it (e.g. ‘constructs’ and ‘elements’) are strange to them in respect to their everyday language. Nevertheless, this research has confidently used a unique approach in the domain of e-banking and older people, to unveil why older people appear less willing to adopt e-banking.

In the case of SSIWTP, the researcher believes that for this age segment (60+years) the visual probes reminded them of their actual encounter.

6.4.8 Nature of the Domain and Context of Older People

In the course of the repgrids interview, participants were more relaxed regarding discussing their reactions to e-banking. Given that they were aware that all they need to do was to follow the highly structured procedure, in this case how they construe the different forms of banking and how their views differ from the third. Interest was on how the sense of the whole process was unfolding.

In the case of SSIWTP participants were more reserved regarding information sharing. But the researcher reassured them by a reminder of what they are required to do, which was to answer questions based on their views, attitudes and experiences towards the use of e-banking and that they will not be asked to use e-banking or log on to any system during the interview. Also, the researcher reiterated the need for them not to reveal any of their personal/confidential details with regards to e-banking, as emphasis seems to be about its relation to finance.

6.5 Discussion of Contribution to Knowledge

The research carried out in this thesis contributed to e-banking research and the academic community in the following ways:

6.5.1 The Improvement of Understanding on the Salient Factor that Older People Deemed Significant to Mediate their Use of E-Banking

A unique contribution of this work is that it has revealed what a sample of older people in Sunderland deem salient to mediate their use and interaction with e-banking as they see it, through a detailed analysis of factors; usability factors, security issues, IT competence, social factors, interest, satisfaction, conservative, cost, unemployment and brand. That was generated solely by the older people, which is the present evaluation situation of the older people in Sunderland. Given that prior studies in the e-banking domain (Arenas-Gaitan et al., 2015; Asmi, 2012; Choudrie et al., 2017), explored using established theories. In this case, there was no evidence if what older people deem significant was captured. Thus, this research was able to address the research gap by using another approach, rather than the pre-established theories to find out what might be salient to the participants in the context of e-banking. This research project did not only generate factors from older people at an in-depth level, but also grounded data collection with interview approaches (repgrids and SSIWTP), which offered the participants more opportunities to air their views freely. It also informed the usefulness of the emerged data among users and non-users of e-banking, which is of

utmost significance to obtaining a detailed understanding of the phenomenon of e-banking adoption by older people, for the benefits of practitioners. This process, however, enhanced the provision of precise information about older people's reactions that is the first of its kind in the context of e-banking adoption by older people as evidenced in research findings (Chapter 4 and 5), section 6.2 above and is succinctly reported in chapter 7 ahead.

These findings have revealed their apparent significance to e-banking practitioners needs. Given that these resultant data was factors generated solely from the participants through repgrids and SSI interview techniques and have aided the understanding of the issues therein. These advance in knowledge is a progression from current studies, that restricted their ability on technology adoption models in identifying older people's perception Chuttur (2009). Further details of this, are the discussions in the following section.

6.5.2 Methodological contribution -The Implementation of a Novel and Explicit Research Design

The carrying out of an explicit study plan as potential direction for understanding e-banking adoption by older people has contributed to the study on consumer perception in general and e-banking domain in particular in two distinctive ways: the adoption of explicitly refined research design and the expansion of such research to a new context older people and e-banking adoption, where series of concern exist (ideal means for accessing financial needs).

Concerning the study design, the specific methods adopted were interviews (repgrids and SSI). These are standard that has been used by other researchers in HCI design studies and more broadly in the Information system (Briggs et al., 2015; Edwards et al., 2010; Karapanos et al., 2009; Turner et al., 2013). The uniqueness of this research is the way the researcher has implemented study design in exploring older people 60+years and e-banking adoption, using a two-stage interview design with technology probe, which did enhance not only the in-depth elicitation of data but also allowed the understanding of how the factors interact. This revealed evidence helped to disclose an elaborate knowledge of the salient factors that influence e-banking adoption by the older people, which have not been explored previously. Given that the focus has been on the use of predictors of adoption models, which failed to capture older people's perception of e-banking. This affirmation was in line with Mason (2006), who revealed that interview approaches are an insightful research tool for exploring the understanding of individuals experiences, social reality. Given that, to make sense out of individuals' knowledge, researchers are urged to be more innovative about the tool that is

adapted Mason (2006). The first stage, concerned with personal constructs that mediate the use of e-banking by older peoples via repgrids interview approach, enabled how individuals construe e-banking and how their constructs differed among the two groups (users and non-users), as well as highlighting the issues relating to attitude and personal misconceptions about e-banking. This outcome as evident in results (chapter 4) was further explored enabling flexibility, alleviate rapport and produce in totality the wholeness of older peoples experience with e-banking through their account of it, using SSIWTP of typical e-banking website.

Of specific significance is getting the older people to look at the paper-based still videos to capture their practical experience of users and views for non-users, to address the revealed misconceptions from study one, which is novel in the context of older people and e-banking. This report evidenced that older people were continuously concern about their account being defrauded considering their vulnerable nature. Research in this area has barely been examined concerning older people, as such this research have made evident to practitioners what older peoples specific attitude to security issues are, how it interact with other factors and how strategies older people themselves adopt affect e-banking adoption. This report will, in turn, assist e-banking practitioner's reflection on how best to provide product and services that will support the older people in an extended financial plan.

6.5.3 Interesting Observation - Significance of background not impacting responses

Counter to expectation, the researcher observed that the socio-economic background factors of this kind of participants have no bearing on the data that came through. This was a major observation which evolved from this research as a contribution. Given that the non impact of participants' background on their responses, was seen to be quite significant to this research finding.

Following that, background of participants differ concerning present financial status, educational level and work experience, there were no trends in the data where the researcher spotted that educated people tends to respond in one way and uneducated people tends to respond in another way. As such this research has not explicitly identified how this factor influences their rationale to use e-banking. Though, evidence revealed that out of the ten non-users, three of them did not attain any educational qualification, but there was no evidence in the analysis, on how this might affect the decision to use e-banking. The question now is; do educational levels, financial status and work experience influence older peoples' decision to use e-banking?

6.6 Limitations/weaknesses

Despite the rigorous steps taken by the researcher throughout this research work, the study was not free of limitation. Aimed at obtaining a comprehensive understanding of older peoples' perspectives, incorporating a certified bank staff might have boosted participant's assurance, and would have thereby revealed some issues that influence their use of the technology.

Also, technology probe have been used to question people to get their ideas towards e-banking. Getting the participants to interact with the e-banking product, though it might have deterred them due to their sensitive nature of the subject matter, but that might have revealed some issues that affect their use of e-banking technology.

Furthermore, future research should endeavour to explore if the perceptions of the participants might change where reasonable time gap is given between both studies.

From another perspective, it will be necessary to consider the impact of the financial status of the participants on their personal perceptions towards e-banking adoption, given that the awareness of this might help financial marketing institutions to cater for their needs.

Lastly, focus on why the older peoples' interests have not been put into consideration by marketers in the design process of e-banking applications, may have also revealed some issues relating to non-adoption, if appropriate technique that will delve into their experience could be adopted.

There were also weaknesses associated with this research, given that there would have been a more compact analysis of older peoples' perception of e-banking if the participants and organisations used had a similar profile regarding age, education and socio-economic background. Given that required participants were not available at Age UK alone, as some declined to participate.

The older users that participated in this research work were customers in Sunderland that visit Age UK computer sessions and Christians from local churches. Therefore, there is no assurance that they would be a representative of older people in the North East of England, which may present different salient factors. Further research could be carried out by considering customers sample from other regions in the North East of UK to give a broader representation of the older people's voices. The widening of the location for the data collection will be promising for future studies.

The limited number of participants was acceptable because of the exploratory nature of the study. The figure was in line with advice deduced from examined literature concerning a

qualitative interview. According to Onwuegbuzie and Leech (2007), the number of samples in qualitative interviews should not be too small in order not to prevent the researcher from gaining new insights, and also not too large so as not to restrict the researcher from conducting an in-depth analysis. But using a different evaluation approach researchers might want to consider a more significant number of participants.

Furthermore, the element represented the object of the investigation but the researcher is not sure if it has missed out the functionalities used in the e-banking website, because during the pilot study it seems to be only concerned with users. In this vein, different variables outside the means of banking used in study one might be a way forward as well. Using new variables (e.g. bank functionalities) as constructs might give a different view from the participants as this might enrich the SSI with technology probes carried out.

6.7 Future Work

This research has been able to identify some salient factor that older people deem significant which is a continuous process. Based on the apparent setbacks in the previous section (limitations), the researcher proposes future work relevant to the software vendors, e-banking managers as well as researchers.

6.7.1 Software Vendors

Given the emerged factors from the present study as highlighted in chapter four and five of this thesis, there should be an urgent need for Software vendors to inform system developers to include the older peoples need during the software life circle. These needs should include issues relating to security and usability factors since this has emerged as the predominant factors surrounding the adoption of e-banking technology by the older banking customers.

6.7.2 E-Banking Managers

From the perspective of e-banking managers, the views and perception of customers as they see it not as someone else does should be paramount, if the continuous use of the technology is to be encouraged among the older people. Where possible, managers should organise forums from time to time for older customers, to unveil current happenings in their day to day usage of the e-banking technology. If done efficiently and without a biased mind, software developers of e-banking websites will then know how to incorporate the needs of this segment of the population into the design process.

6.7.3 Researchers

It is necessary for this research to be taken further using:

- Experimental approach as a potential direction for e-banking adoption by older people with the use of a designed website to see how they perceive the design features and if engaging them with the authentication processes explored in this study will reveal further insight through the practical means. Doing this will make the purpose of the research more productive.

Interestingly, it seems that investigations into the factors influencing e-banking adoption are gaining drive in the research community. Therefore, this ongoing evolution should continuously be carried out by:

- A qualitative approach, via interviews with technological probes should be adopted. In other to grasp a clearer insight into the motivators and inhibitors of e-banking adoption among the older banking customers should be an inclusive approach to any other approach researchers later opt for. Given that it seems to refresh their minds and presented the research like in the case of an ideal world as the researcher used a typical e-banking website technology probe.

6.8 Strengths of the Study

The researcher relied on the practical use of two methodological approaches, buttressing the degree of effectiveness that pluralism of plan can offer. (Smith et al., 2009) argue in their empirical research that studying one phenomenon from multiple perspectives is of immense value not only to the researcher but to the academic community at large as this will help significantly to unveil the reality of a more complex account investigated.

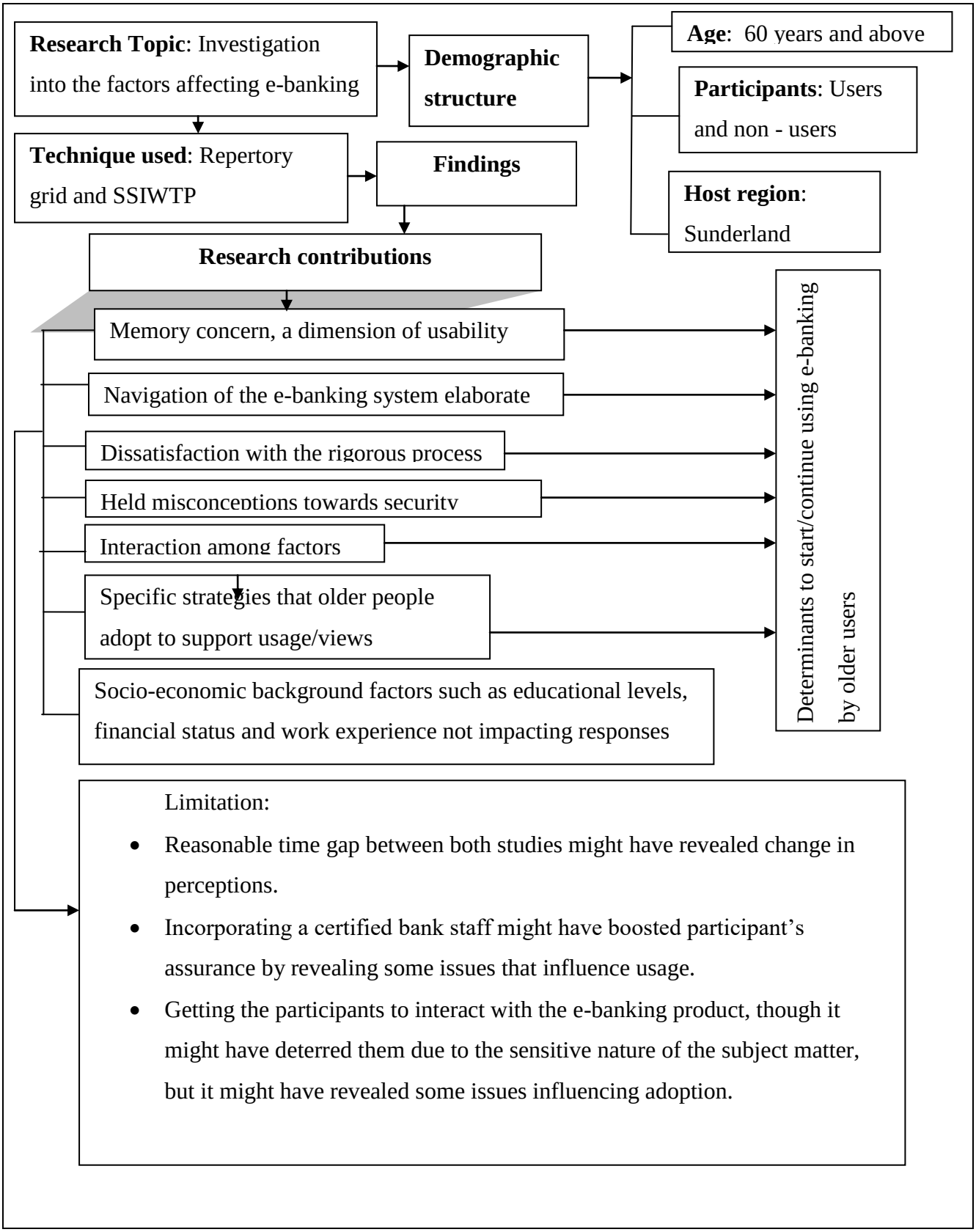
7 CHAPTER SEVEN: Concise Summary of Contribution to Knowledge

The specific areas that this research has contributed to the academic community and the banking sector can be summarised as follows:

1. The Improvement of Understanding on the Salient Factor that Older People Deemed Significant to Mediate their Use of E-Banking
    a. Memory concern, a dimension of usability while choosing the appropriate authentication details, like difficulty associated with PIN, password complexity
    b. Navigation of the e-banking system revealed to be elaborate.
    c. Dissatisfaction with the rigorous processes involved in the knowledge and token-based authentication as a non-user suggested that the use of biometrics could be more straightforward.
    d. Held misconceptions towards the security of e-banking
    e. How the identified factors interact with each other
    f. The specific strategy that older people themselves adapt to support their use/views of e-banking, as revealed by the findings.
2. Methodological contribution -The Implementation of a Novel and Explicit Research Design
    a. Specific attitude to security issues
3. Interesting Observation - Significance of background not impacting responses
    a. The socio-economic background factors of this kind of participants have no bearing on the data that came through.
    b. There was no evidence in the analysis, on how this might affect the decision to use e-banking. The question now is; do educational levels, financial status and work experience influence older peoples' decision to use e-banking?

Conclusively, the contributions of this research are more understood using an illustration; Figure 7-1 below presents the summary of the contribution, preceded by the research process.

Figure 7-1 Research Contribution and process at a glance



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APPENDICES

APPENDICES

Appendix 1: Summary of reviewed literature on e-banking adoption

Author(s)yrs	Participants				Data collection	Data Analysis	Key Findings
	No.	Age range (yrs)	users	non-users			
Summary of TAM related studies							
(Pikkarainen et al., 2004)	427	18 years +	427	-	Questionnaires	Factor analysis using principal axis factoring	Perceived ease use, perceived usefulness, perceived enjoyment, availability of information, security and privacy and the quality of internet connection
(Santouridis and Kyritsi, 2014)	271	18 years +	271		Questionnaire	Principal component analysis	Perceived ease of use and the perceived usefulness
(Wang et al., 2003)	123	20-40 years	123	-	Telephone interview	Confirmatory factor analysis using LISREL	Perceived credibility, privacy, self-efficacy, perceived ease of use, perceived usefulness.
(Yousafzai and Yani-de-soriano, 2012)	435	18 years +	435	-	Questionnaire	Cluster Analysis	Perceived value, perceived ease of use, optimism, Innovations, Discomfort and Insecurity
(Kesharwani and Singh Bisht, 2012)	619	20-33years	619	-	Questionnaire		perceived risk; website interactivity and trust
(Suh and Han, 2002)	845	18 years +	845	-	Web Survey through a questionnaire on a 7 point Likert scale	Structural Equation Modelling and LISREL 8.12	Ease of use, Usefulness and Trust

Author(s)yrs	Participants				Data collection	Data Analysis	Key Findings
	No.	Age range (yrs)	users	non-users			
(Alsajjan and Dennis, 2010)	618	18 years +	Not Specified	Not Specified	Questionnaires	Structural Equation Modelling	Perceived Usefulness, Trust,
(Zhou et al., 2010)	265	18 years +	265	-	Questionnaires	Structural Equation Model using LISREL 8.72	Perceived usefulness, perceived ease of use, interactivity, and relative advantage
(Yoon and Barker Steege, 2012)	125	18 years +	125	-	Survey questionnaire	Traditional covariance-based structural equation modelling approach	Openness, website usability, and perceived security concern influence use
(Martins et al., 2014)	249 participants	18 - 67	Yes	Yes	Questionnaire by email	7 point Likert type scale	Performance expectancy, Effort expectancy, Social Influence, Facilitating Conditions, gender, age, experience and voluntariness of Use.
(Lee et al., 2011)	250	18 years +	250	-	Questionnaire	Factor Analysis and Regression Analysis	Perceived usefulness, perceived ease of use, offline trust, offline loyalty, switching cost and Computer self-efficacy
(A. S. Al-Ajam and Nor, 2013)	1286	18 years +	-	1286	Questionnaire	Structural Equation Modelling	Perceived relative advantages, perceived ease of use, trust of the Internet banking
(Susanto et al., 2013)	174	25-45 years old	13	161	A questionnaire using a 7 point Likert scale	Confirmatory Factor Analysis using LISREL	Personalisation, Alliance Services, Task familiarity, Accessibility, Attitude, Perceived usefulness and ease of use
(Arenas-Gaitan et al., 2015)	474	55 years+	Not Specified	Not Specified	Questionnaire	Structural model analysis using WarpPLS3.0	Habit, performance expectancy, price value, Social influence, effort expectancy
(Yiu et al.,	15	18	2	148	Teleph	Pearson	Perceived usefulness, perceived ease of use

Author(s)yrs	Participants				Data collection	Data Analysis	Key Findings
	No.	Age range (yrs)	users	non-users			
2007)	0	years +			one Interview	correlation	and perceived risk
Summary of TAM and Additional Models related studies							
(Tat et al., 2008)	210 but 204 responded	18 years +	204	-	Questionnaire	Pearson correlation analysis	Trust, compatibility and ease of use
(Mansumitrchai and Chiu, 2012)	330	18 years+	Not specified	Not specified	Interview	Factor Analysis Cronbach's alpha	Compatibility, difficulty, security, trust, third-party concern, status, and human contact.
(Abu-Assi et al., 2014)	370	25-44 years	350	20	Questionnaire	Multiple Regression, Frequency distribution table and One Way ANOVA	Compatibility, perceived ease of use, security and perceived usefulness
(Nor et al., 2010)	1164	20-50 years	326	838	Paper-based questionnaire	Structural Equation Modelling	Relative advantage, complexity, compatibility, trialability, and observability
(Hernandez and Mazzon, 2007)	600	18-57 years +	300	300	Interview	Multiple linear regression equation	Relative advantage of control, compatibility with lifestyle, image, subjective norm, self-efficacy, relative advantage of security and privacy, results demonstrability, and trialability
(Lai et al., 2010)	241	25-45 Years	241	-	Questionnaire	Confirmatory Factor Analysis using LISREL	Perceived usefulness, Perceived ease of use, Compatibility and Relative advantage
(Tan et al., 2010)	231	18-25 years	231	-	Self-administered questionnaire	Factor Analysis and scale reliability	Social influences, perceived usefulness, trust, perceived ease of use, Security and Financial cost

Author(s)yrs	Participants				Data collection	Data Analysis	Key Findings
	No.	Age range (yrs)	users	non-users			
(Qureshi et al., 2008)	235	18 years +	Not Specified	Not Specified	Questionnaire	Regression and Correlation Analysis	Perceived ease of use, Perceived usefulness, Perceived enjoyment, amount of information the customer has, Security and privacy and quality of internet connection
(Srivastava, 2007)	500	18 years +	215	285	Questionnaire	Not Specified	Skills moderated by trust, gender, education, culture, religion and security
(Poon, 2008)	324	18 years +	324	-	Questionnaire	One Way Analysis of Variance	The convenience of usage, accessibility, features availability, bank management and image, security, privacy, design, content, speed, and fees
(Asmi, 2012)	100	55-65 years	30	70	Interviews	Descriptive Statistics	Attitude, perceived usefulness, resistance to change, perceived ease of use, peer influence and seen behavioural control.
(Davinson and Sillence, 2014)	29	Mean age for men =51.9. Then mean age for women =50.1	29	-	Semi-Structured Interview	Atlas.ti qualitative software	Perceived susceptibility, perceived cost, observed benefit, Cues to action, regarded control and security issues.
(Hanafizadeh et al., 2014a)	361	18 years +	361	-	Questionnaires	Structural equation modelling	Compatibility with lifestyle, needs of the technology, credibility, interaction, perceived risk, perceived cost,

Appendix 2A: Research Information Sheet (Study 1)

Research Information Sheet

Title of Study: Investigation into the factors that affect the use of e-banking.

Principal Investigator (PI): **MEG EGHEBI**

PhD Research Student, Department of Computing. Engineering and Technology. Faculty of Applied Science University of Sunderland, UK,

Aim: The aim of the research is to identify the factors, which affect older people's use of e-banking technology.

Study Procedures:

- Your tasks will be to answer questions about your opinion on the factors that affect the use of e-banking. The session will take approximately an hour to complete.

Confidentiality: All information collected about you during the course of this study will be anonymous and securely stored.

Voluntary Participation /Withdrawal:

You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study. You are free to not answer any questions or withdraw at any time. Should you withdraw your documents will be destroyed.

Questions: If you have any questions about this study now or in the future, you may contact MEG EGHEBI (bg40ug@research.sunderland.ac.uk) or by telephone on 07445382588

Participation:

By completing the interview you are agreeing to participate in this study.

Appendix 2B: Demographic Screening Interview Proforma

Screening interview proforma

The interviewer will ask all the questions and record the interviewee's responses and will be treated with all amount of confidentiality.

Part 1: About You

1. How old are you?
    a. 60-65 years
    b. 66-70 years
    c. 71 -76 years
    d. 76- 80 years
    e. 80 years and above
2. What is your marital status?
    a. Single, never married
    b. Married or domestic partnership
    c. Widowed
    d. Divorced
    e. Separated
3. Are you currently working or retired?
    a. Employed fulltime or part time
    b. Self-employed
    c. Out of work and looking for work
    d. A student
    e. Retired
4. What was your job when you worked?
    a. Teaching
    b. Driving
    c. Plumber-man
    d. Electrician
    e. Trading
    f. General factory work
    g. Civil servant
    h. None of the above

Part 2: Use of e-banking

5. Do you have an e-banking account?
    a. Yes
    b. No

6. Do you consider yourself as proficient in the use of e-banking technology?
    a. Yes
    b. No
7. Have you ever sought for personal assistance from family members or friends in the use of e-banking?
    a. Yes
    b. No
8. Please specify the activities that you normally do with the Computer from the list below?
    a. Playing games

b. Internet banking
c. Shopping
d. Reading newspapers
e. All of the above

Appendix 2C: Participant Consent form

Question: How do older people construe the different means of banking and their impact on e-banking?

Participant Consent form

Name: …….....

Email address: ……

I have been fully informed about what is involved in this study and that signing this form confirms that I wish to participate. I understand that I can withdraw at any time.

I give consent for voice to be recorded and for my supplied (anonymous) data to be discussed by researchers in the study, online and to be used for research dissemination.

Signed: ……

Date: ……

Contact details for further information are provided on the information sheet you were provided with.

Appendix 2D: SSIWTP protocol for e-banking users

Semi Structured Interview protocol for e-banking users

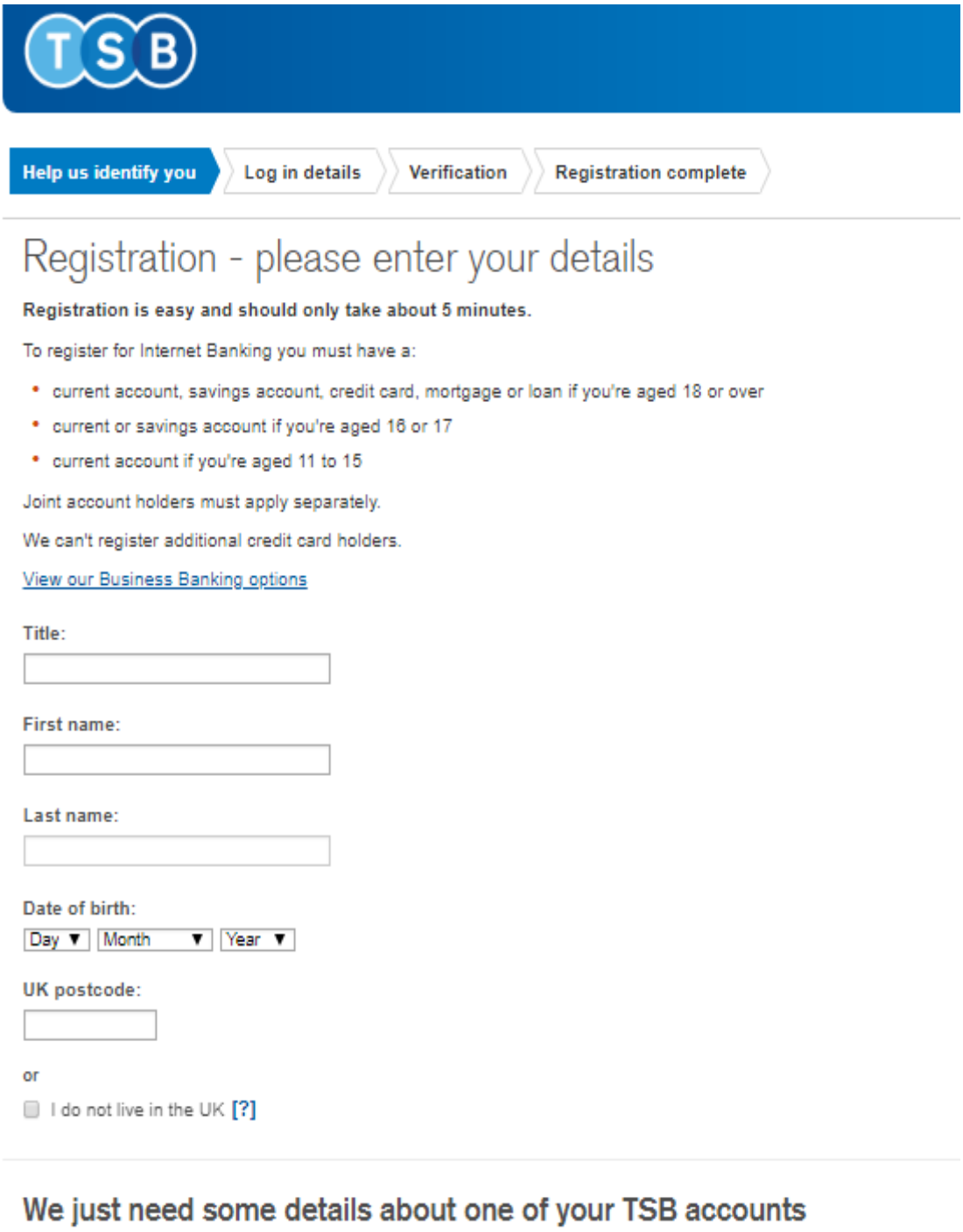
Introductory question

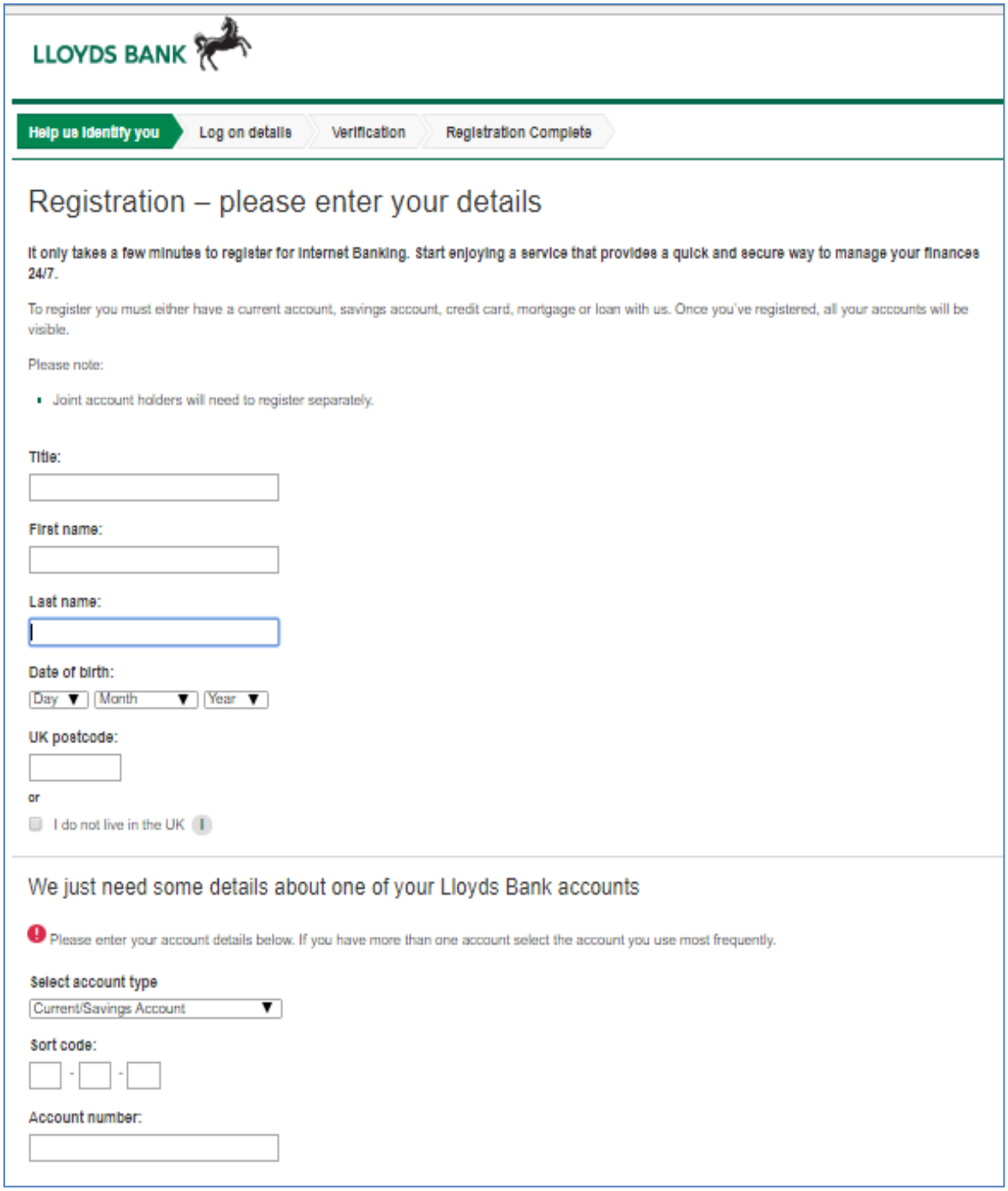
1. When carrying out your e banking activities, do you use Phone, IPad, laptop or desktop versions?
   Probe: Why would you prefer one mechanism to the other?
2. Well I have some examples about the process of registration to use e banking, these I would like to show you and talk you through.

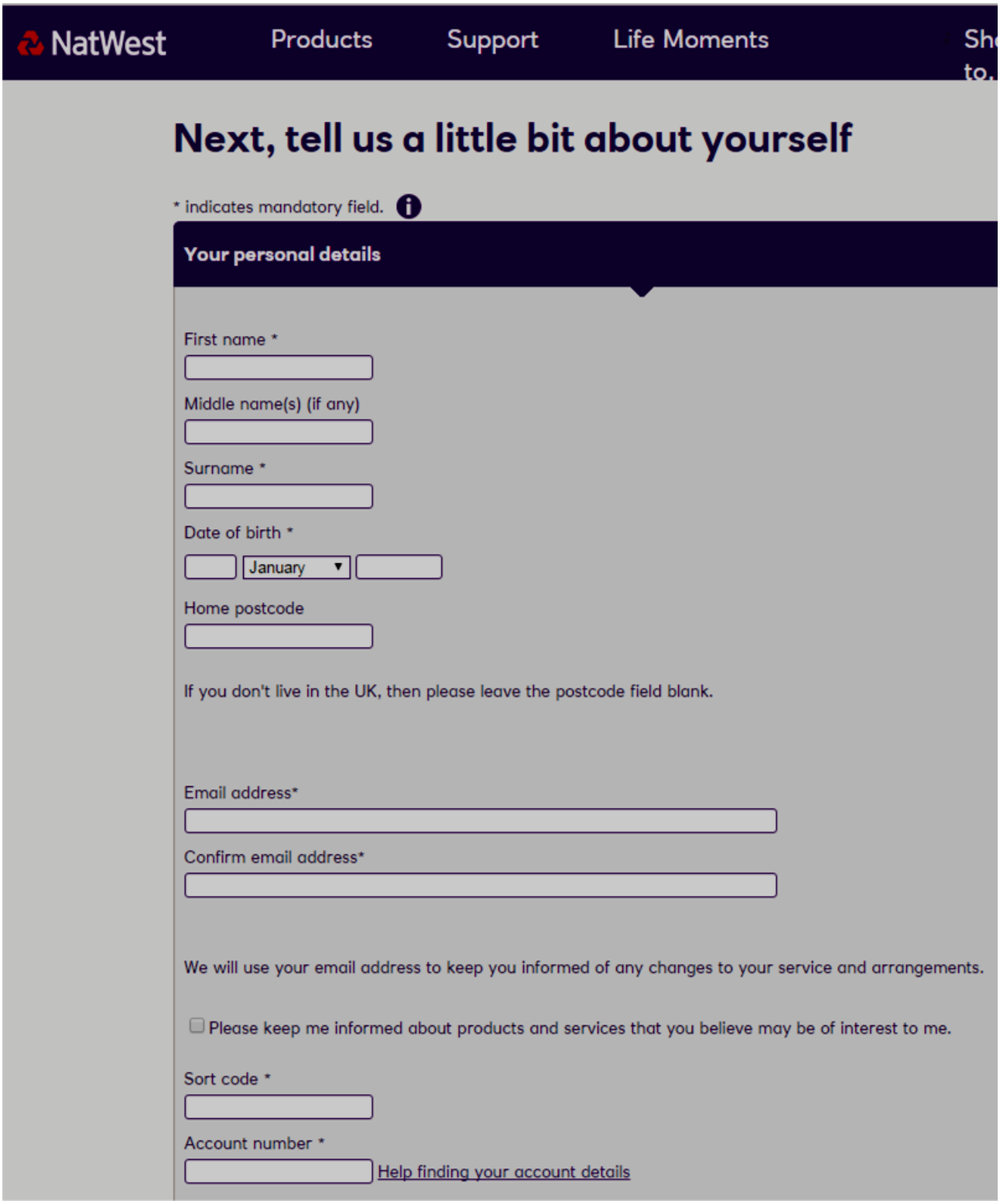
Register User

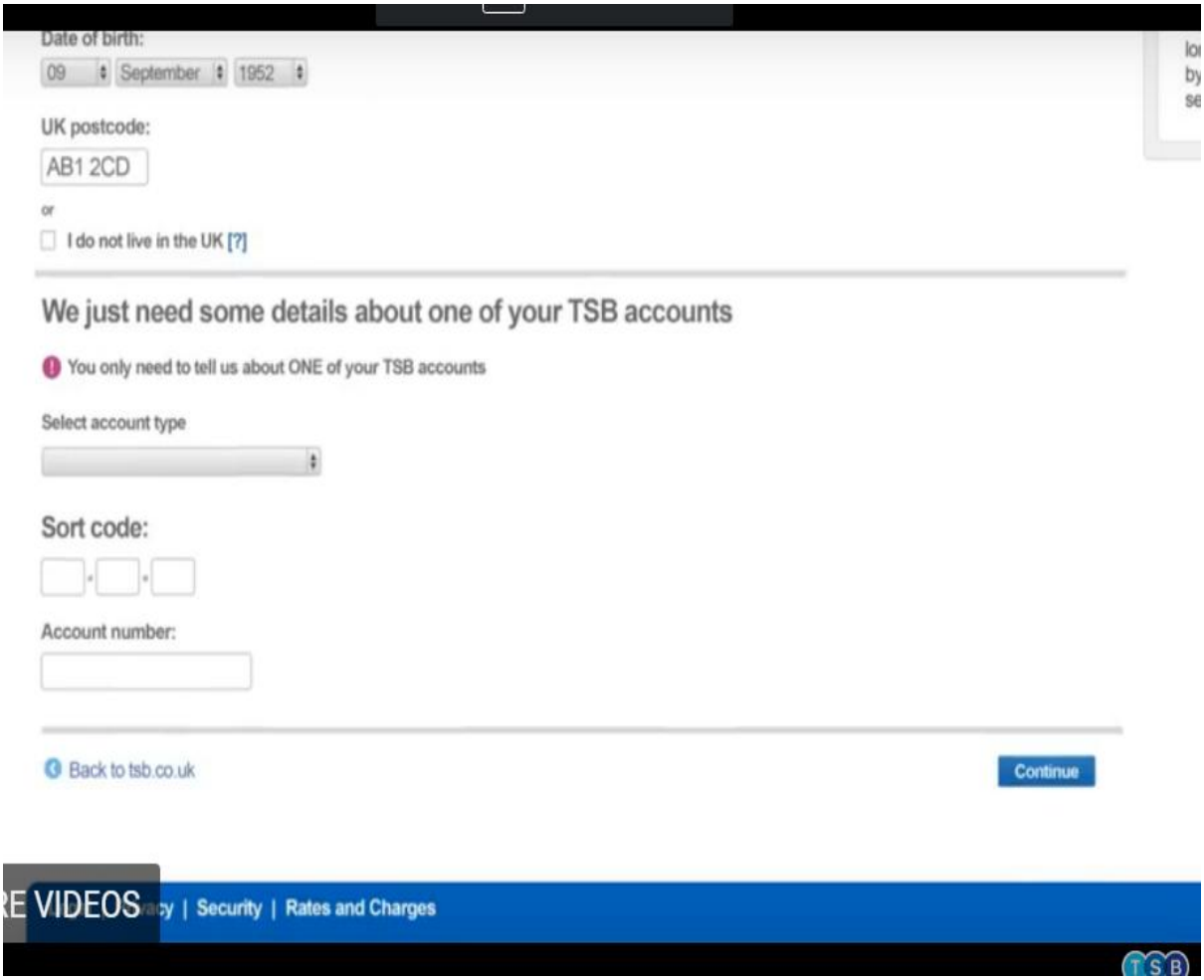
Participant will be shown typical e banking registration pages in order to find out what they have typically used

On this page you need to enter: Your personal details including your name and date of birth as well as sort code and account number




LLOYDS BANK
Help us identify you
Log on details
Verification
Registration Complete
Registration – please enter your details
It only takes a few minutes to register for Internet Banking. Start enjoying a service that provides a quick and secure way to manage your finances 24/7.
To register you must either have a current account, savings account, credit card, mortgage or loan with us. Once you've registered, all your accounts will be visible.
Please note:
Joint account holders will need to register separately.
Title:
First name:
Last name:
Date of birth:
Day
Month
Year
UK postcode:
or
I do not live in the UK
We just need some details about one of your Lloyds Bank accounts
Please enter your account details below. If you have more than one account select the account you use most frequently.
Select account type
Current/Savings Account
Sort code:
Account number:


NatWest
Products
Support
Life Moments
Next, tell us a little bit about yourself
* indicates mandatory field.
Your personal details
First name *
Middle name(s) (if any)
Surname *
Date of birth *
January
Home postcode
If you don't live in the UK, then please leave the postcode field blank.
Email address*
Confirm email address*
We will use your email address to keep you informed of any changes to your service and arrangements.
Please keep me informed about products and services that you believe may be of interest to me.
Sort code *
Account number *
Help finding your account details

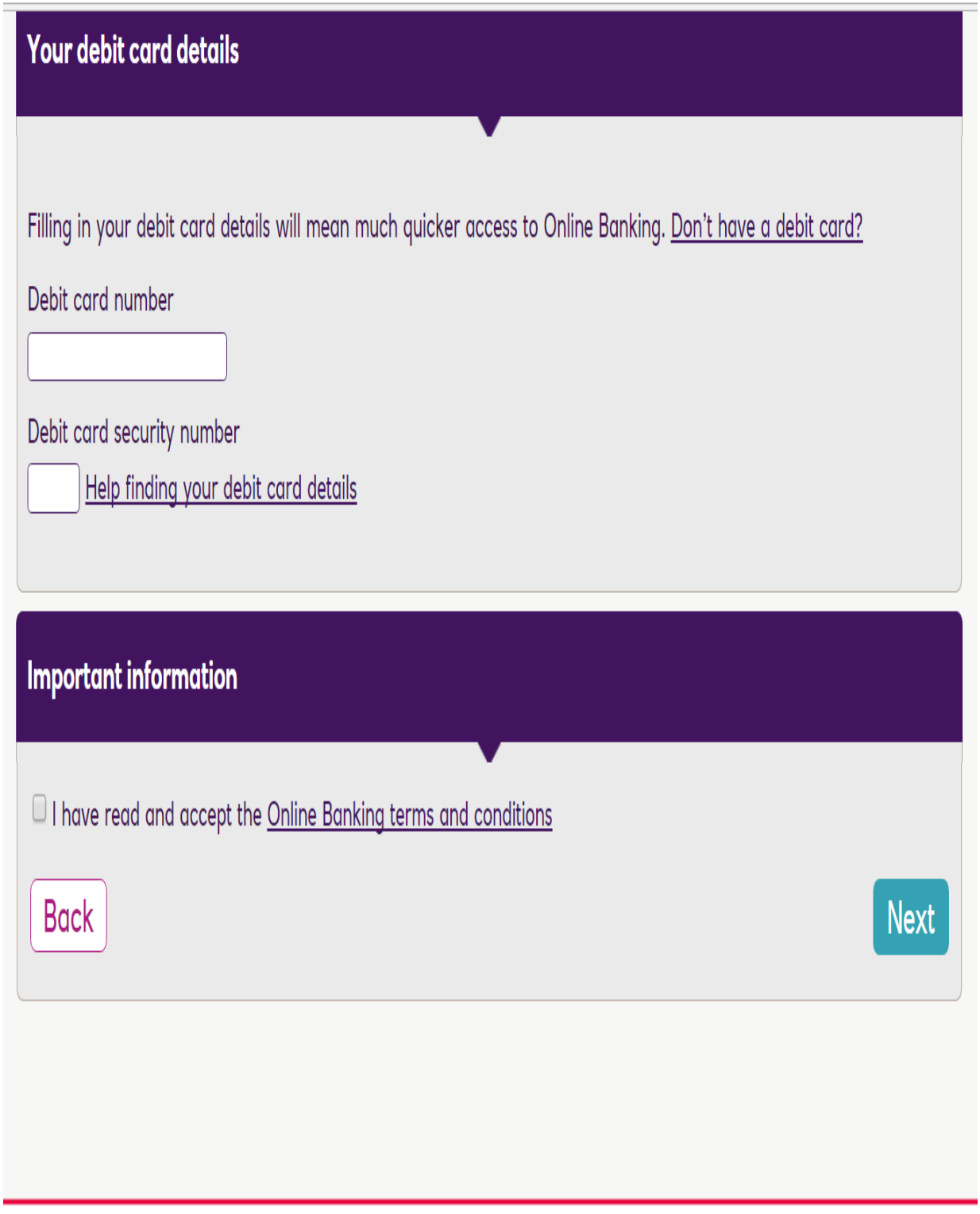


- Have you experienced the kind of registration set-up shown above that requires your personal details?
- Could you tell me more about your experience when inputting your personal details for account set up?

Probe:

- Do you see this as beneficial?

On the next page, you will need to enter your long debit card number and three digits from the back of the card (if you have these). Then check the box to say you accept the terms and conditions and click on 'Next'



1. Have you ever used your debit card details during registration?
2. Do you think that the use of debit card for e banking registration is more or less confidential?
3. What are your concerns with issues relating to confidentiality when registering with debit card?
4. How would you describe the registration with debit card?

Probe:

- Is it easy or stressful?
- Does that matter to you?

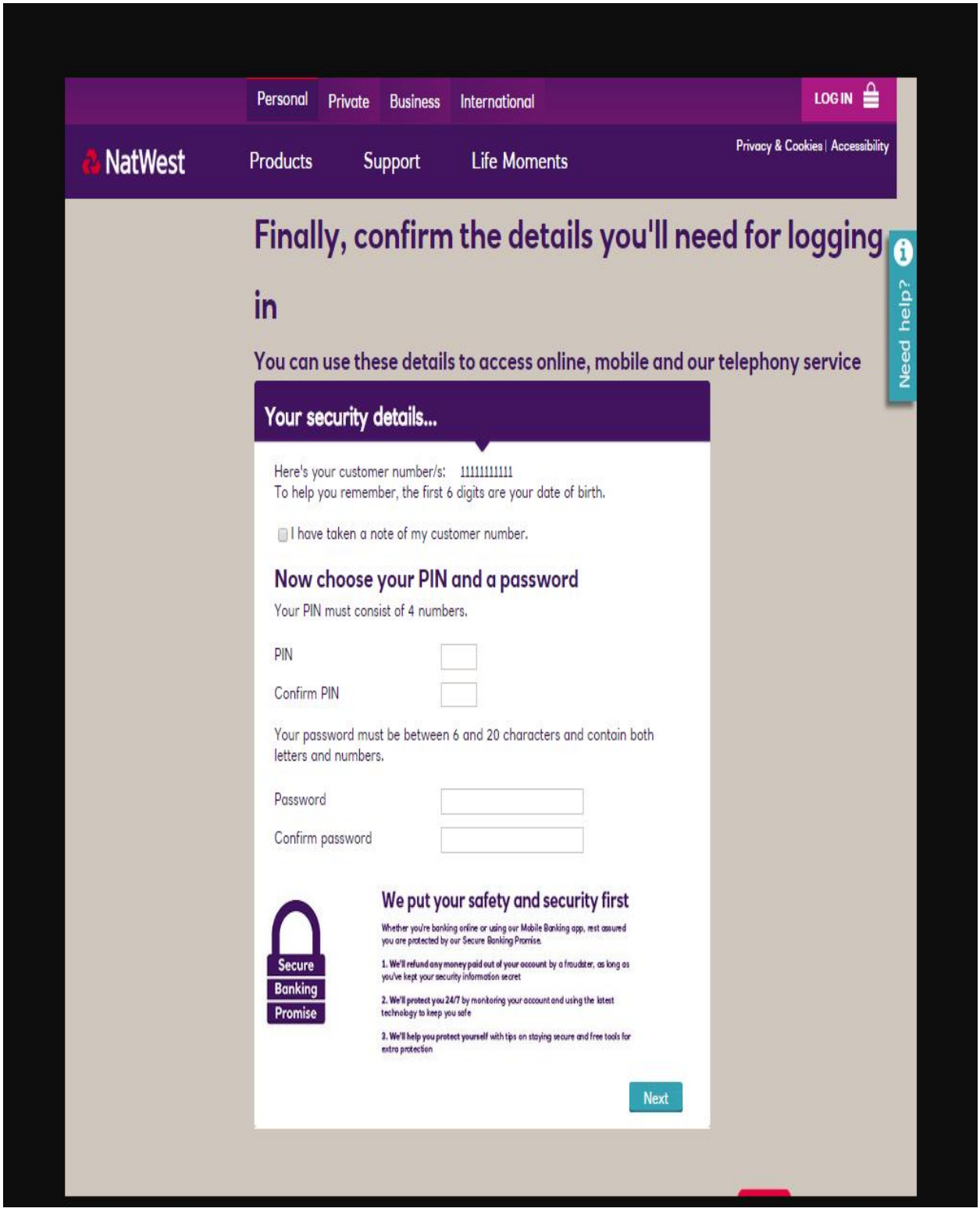
5. Does the process require you to be skilled in the use of computer / internet?
6. Could you tell me the strategies you have employed to protect your card details during registration?
7. Have you ever sought for assistance while registering with your debit card?

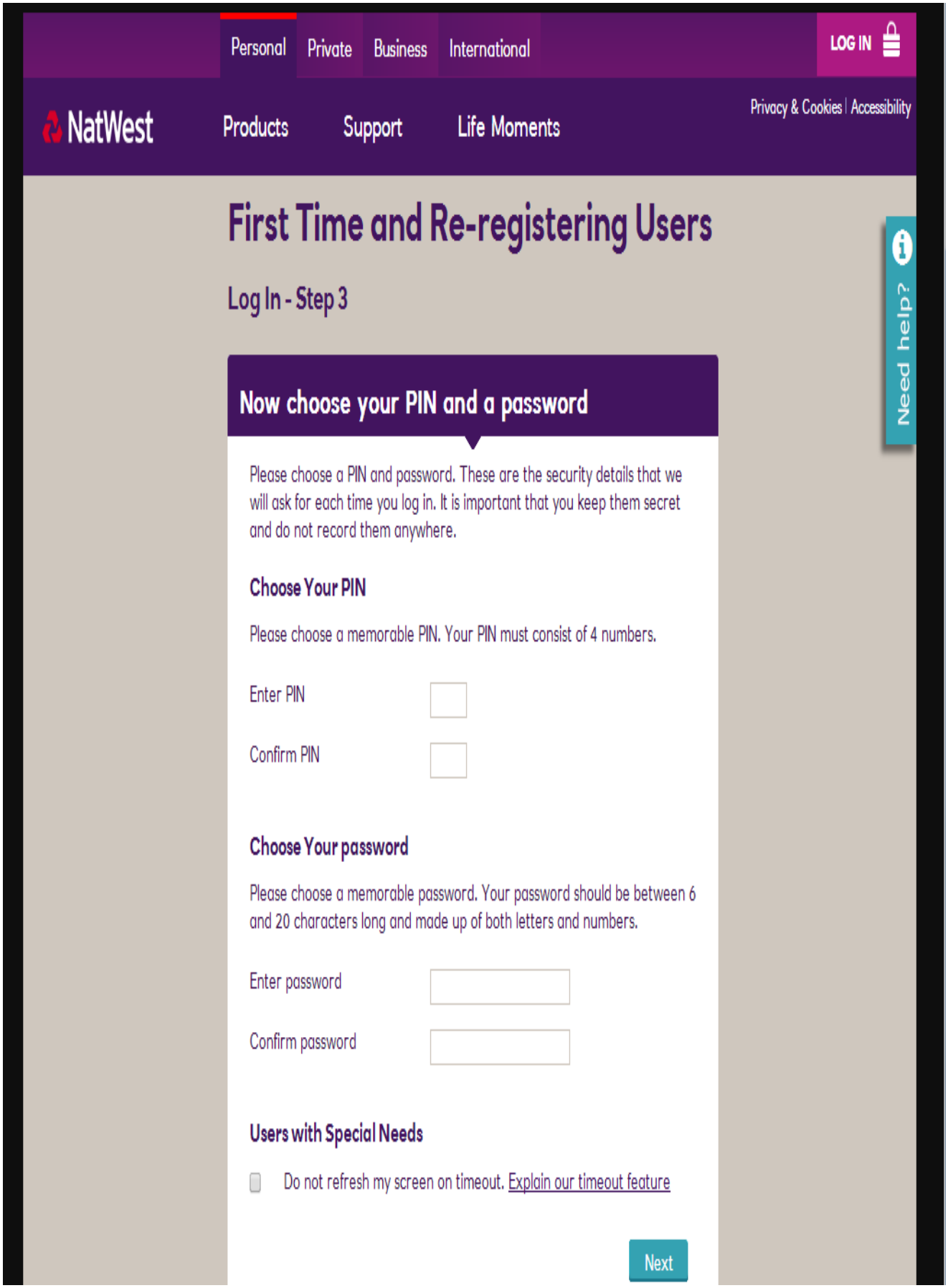
   Probe:

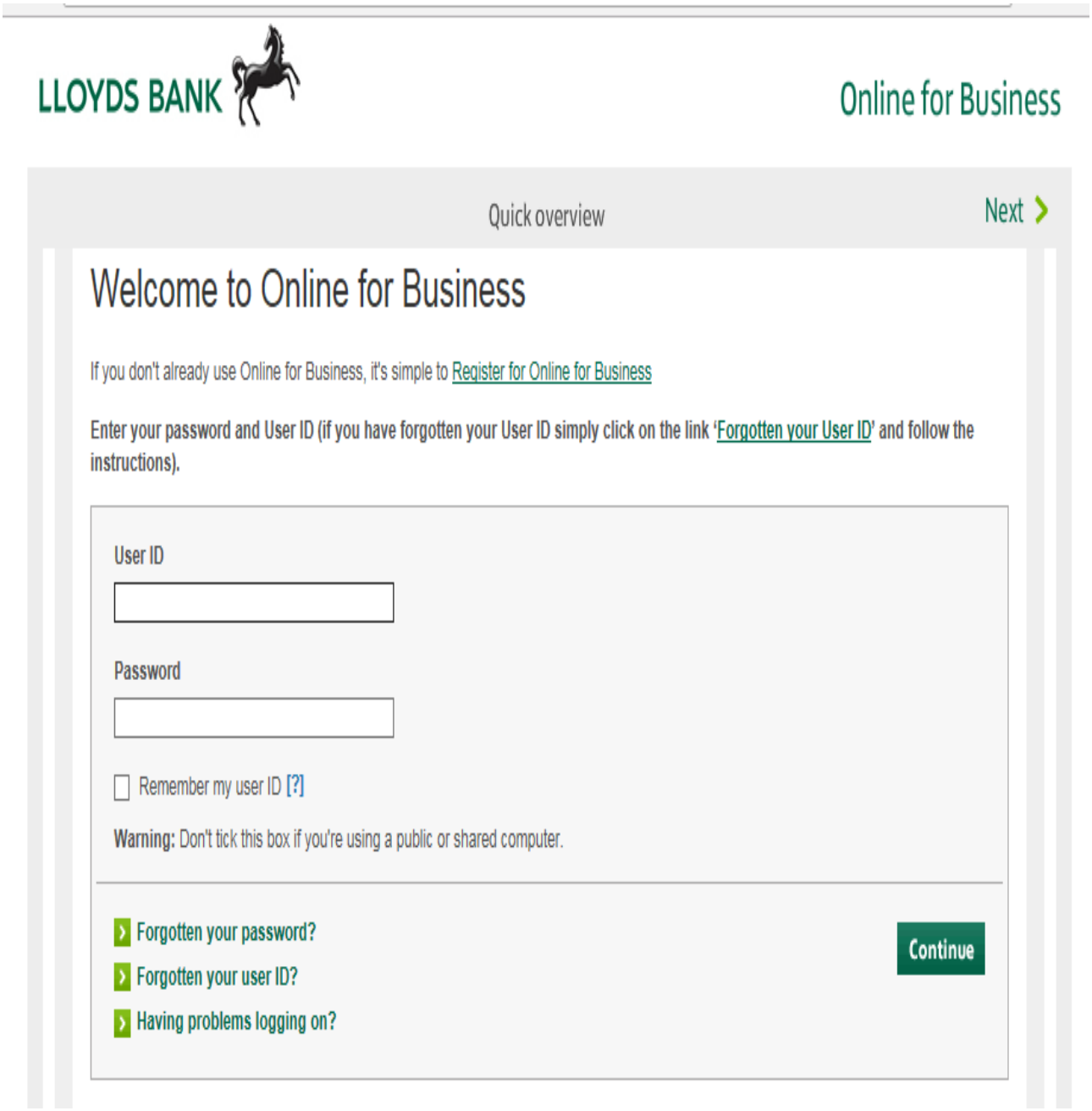
   - Perhaps online in the form of chat/call?

8. Could you tell me anything else that comes to your mind while registering with debit card?

The next screen gives you your customer number (date of birth followed by up to four digits). Make a note of this as you'll need it when you login in future, and if you download our mobile Banking app. Then click 'Next'




Personal
Private
Business
International
LOG IN
NatWest
Products
Support
Life Moments
Privacy & Cookies | Accessibility
First Time and Re-registering Users
Log In - Step 3
Need help?
Now choose your PIN and a password
Please choose a PIN and password. These are the security details that we will ask for each time you log in. It is important that you keep them secret and do not record them anywhere.
Choose Your PIN
Please choose a memorable PIN. Your PIN must consist of 4 numbers.
Enter PIN
Confirm PIN
Choose Your password
Please choose a memorable password. Your password should be between 6 and 20 characters long and made up of both letters and numbers.
Enter password
Confirm password
Users with Special Needs
Do not refresh my screen on timeout. Explain our timeout feature
Next



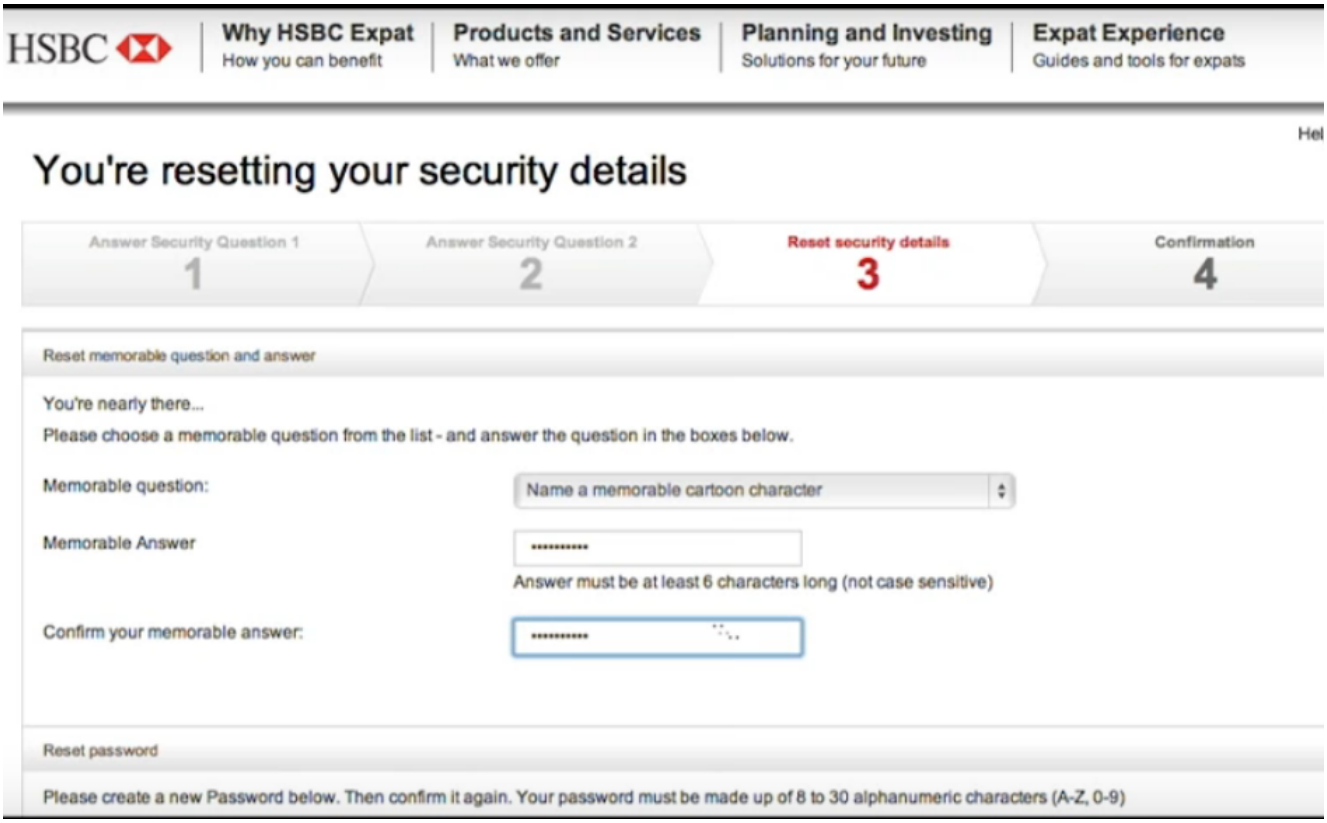
1. Looking at the examples above could you tell the kind of format you have ever used to create username/password during registration?
2. Can you tell me how you chose your username/password during registration?
   Probe:
   - In the case of username, was it suggested for you by the bank or you created it yourself?
3. Where the instructions clear/confusing while choosing your username/password for registration?
4. Have you encountered error while choosing username/password during registration process?
5. Were the displays of error messages helpful or hindering while imputing your username/password?

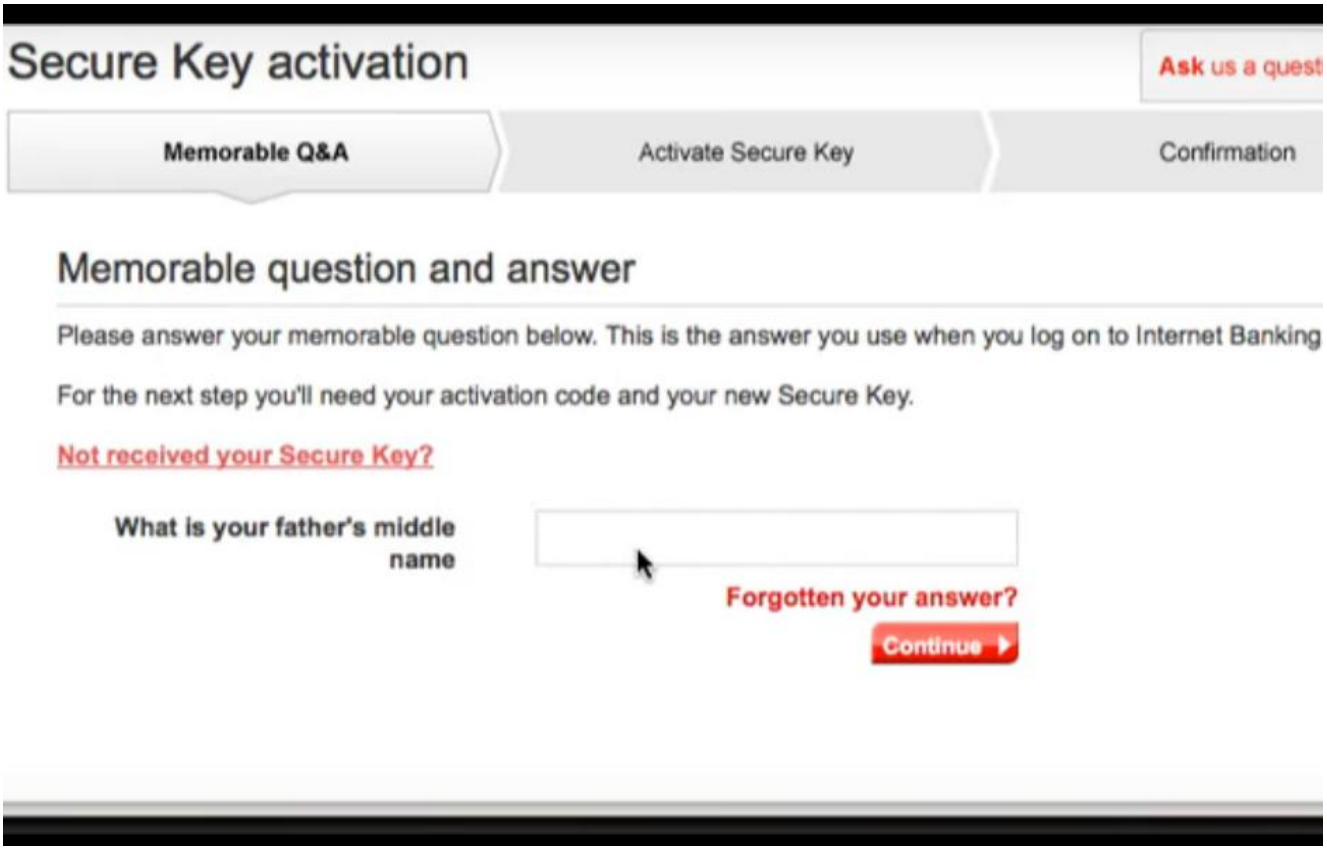
Probe: Participants will be shown different bank criteria for acceptable password during registration

- Combination of characters and numbers (123Sunderland)
- Use of symbols (/,@,_,)
- Case sensitive (EGHHDBV)
- Combination of the three examples above (124@Someone)

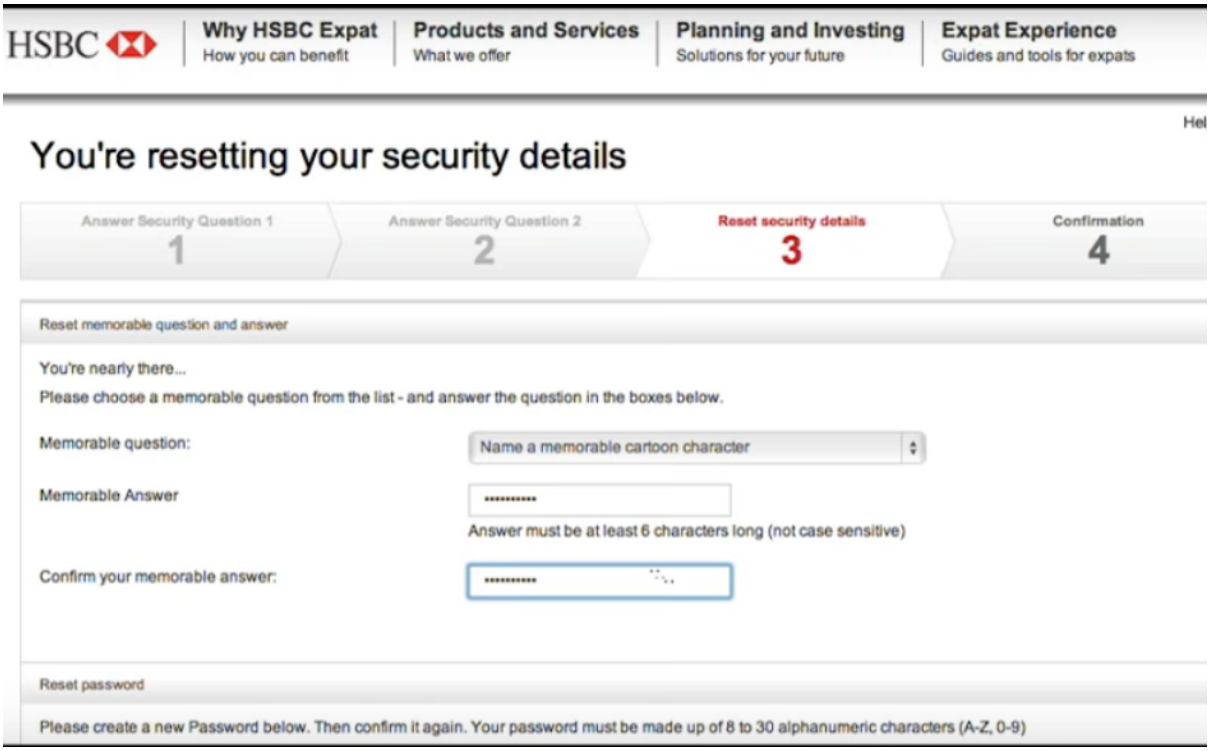
6. Could you tell me your experiences with the constraints required when creating password?
7. Would you like to seek help when you experience difficulties creating password?
   Probe: Will you rather chat or call the customer service of your bank

Support Demo


HSBC
Why HSBC Expat
How you can benefit
Products and Services
What we offer
Planning and Investing
Solutions for your future
Expat Experience
Guides and tools for expats
Hel
You're resetting your security details
Answer Security Question 1
1
Answer Security Question 2
2
Reset security details
3
Confirmation
4
Reset memorable question and answer
You're nearly there...
Please choose a memorable question from the list - and answer the question in the boxes below.
Memorable question:
Name a memorable cartoon character
Memorable Answer
Answer must be at least 6 characters long (not case sensitive)
Confirm your memorable answer:
Reset password
Please create a new Password below. Then confirm it again. Your password must be made up of 8 to 30 alphanumeric characters (A-Z, 0-9)



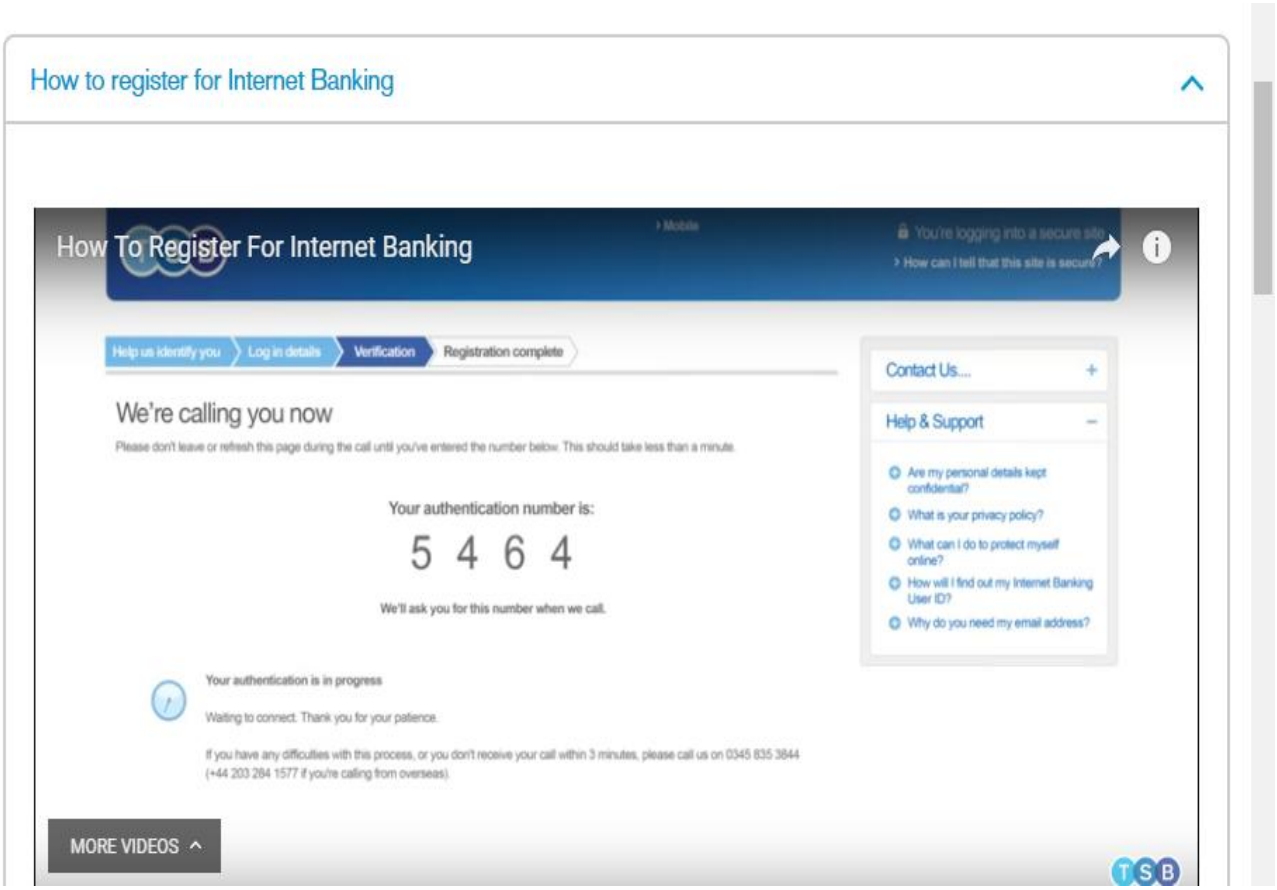
1. Have you ever used ‘memorable questions / data during registration process?
2. Could you tell me any difficulty you have encountered when creating memorable data
   - Do you always type it in lower case / uppercase?
   - What strategy do you have in place in case you forget your memorable data after registration?
     - Do you intend to use cookies [explain the meaning of cookies to participants]



When setting up your account, you are often asked security questions for use in case you forget your password, like pet name, mother's maiden name, best friend, or model of your first car.

1. Have you ever used security question during registration?
2. What strategies do you have in place in case you ever forget your security answer?
3. Have you considered giving a false answer to security questions that you know obviously that someone else would not guess?
4. Do giving right or wrong answers to security questions matter to you?
5. What are your views with regards to remembering your security answers?
   Probe:
   - Do you see these questions as facts that others might easily guess?
     - Is that helpful or hindering

The next screen tells you that an activation code will be sent to you. This will have been sent by text message (if we have your mobile number) or by letter. When you receive your activation code, go to the website and click on 'Login' in the right corner of the web page.

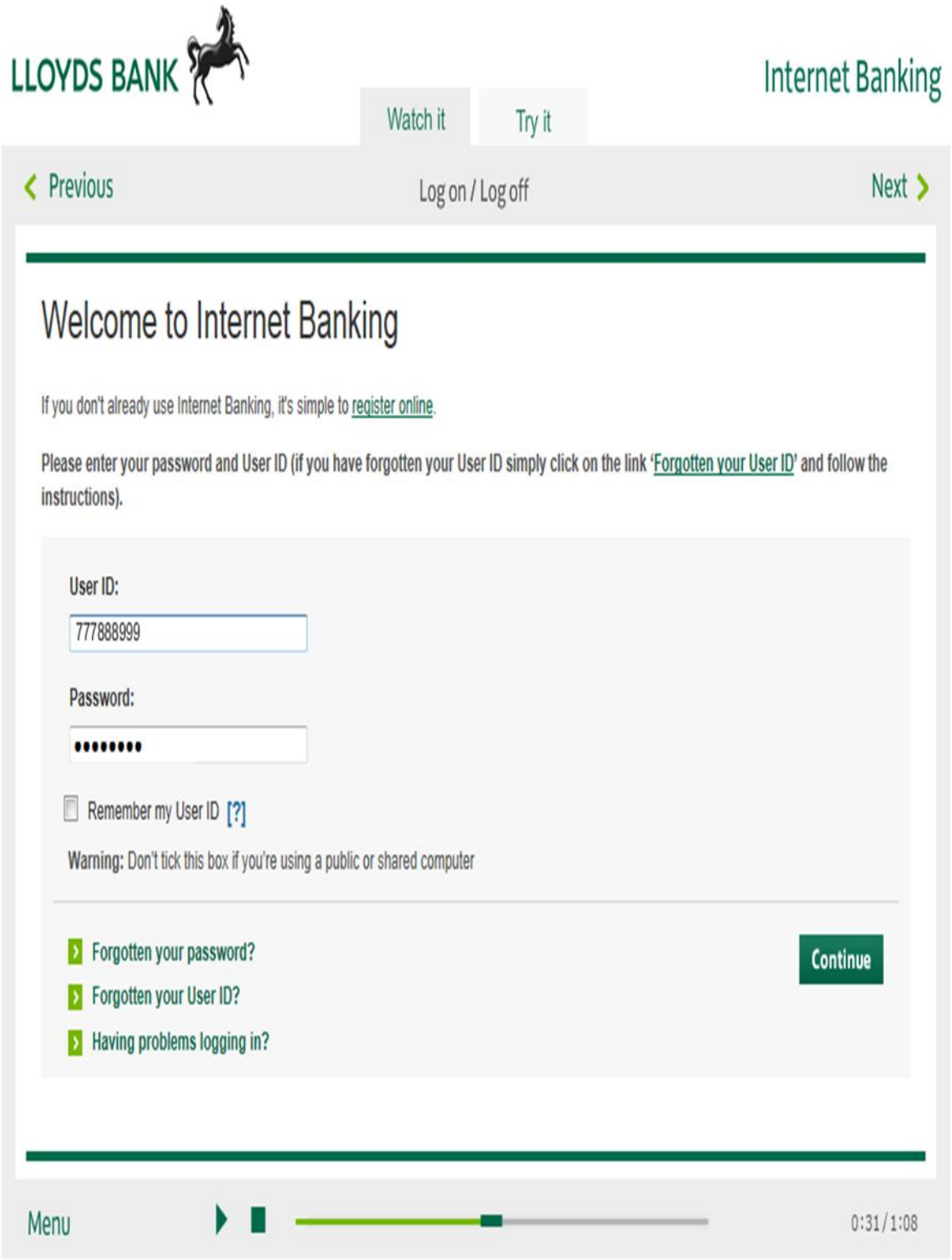


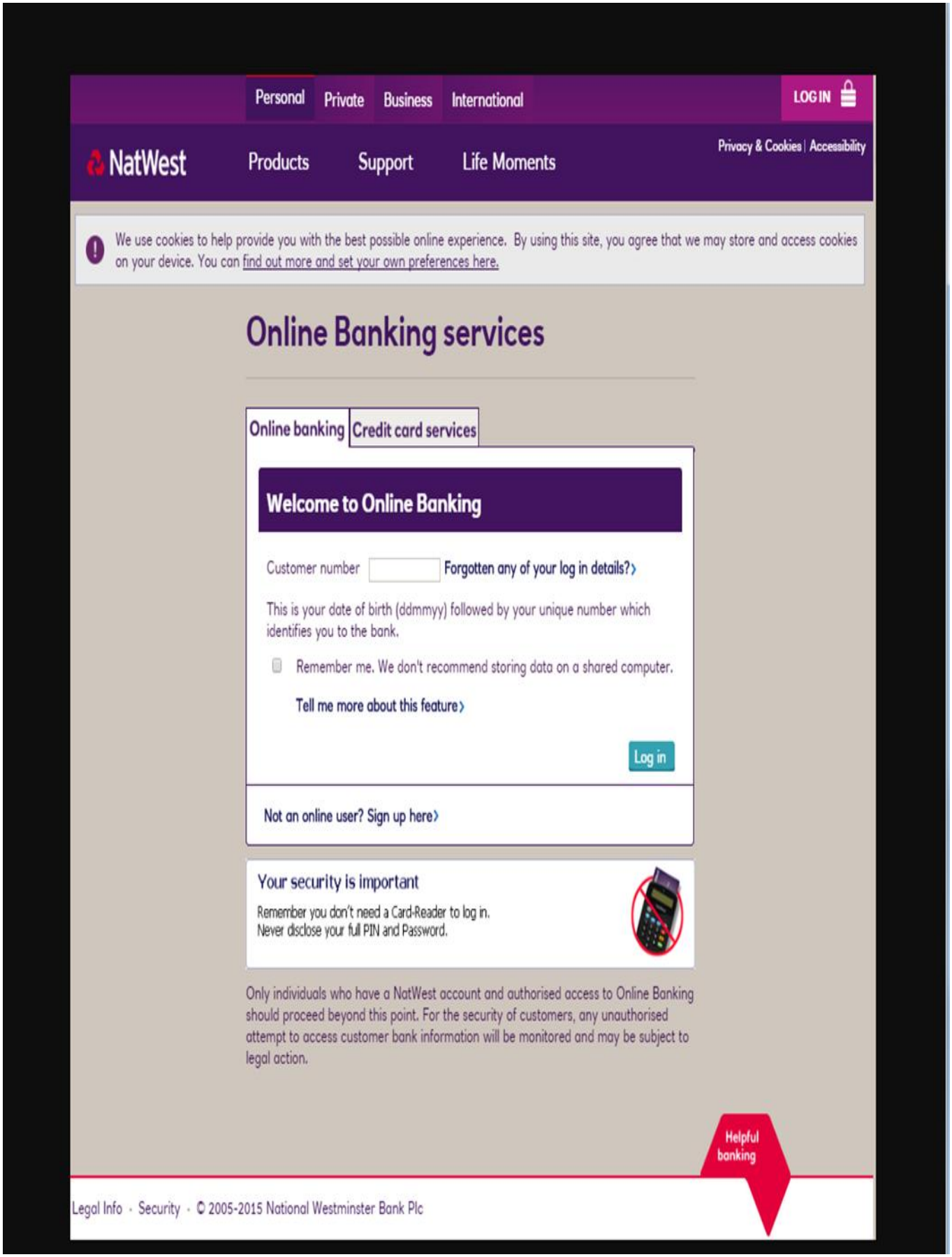
1. Have you experienced this kind of activation code alert after successful signing up?
2. What are your views concerning activation codes after registration?
   Probe
   - If you have the activation code through message (SMS), will you remember that is for your registration?
   - Would you have your phone charged up?
   - Would you have your phone nearby you?

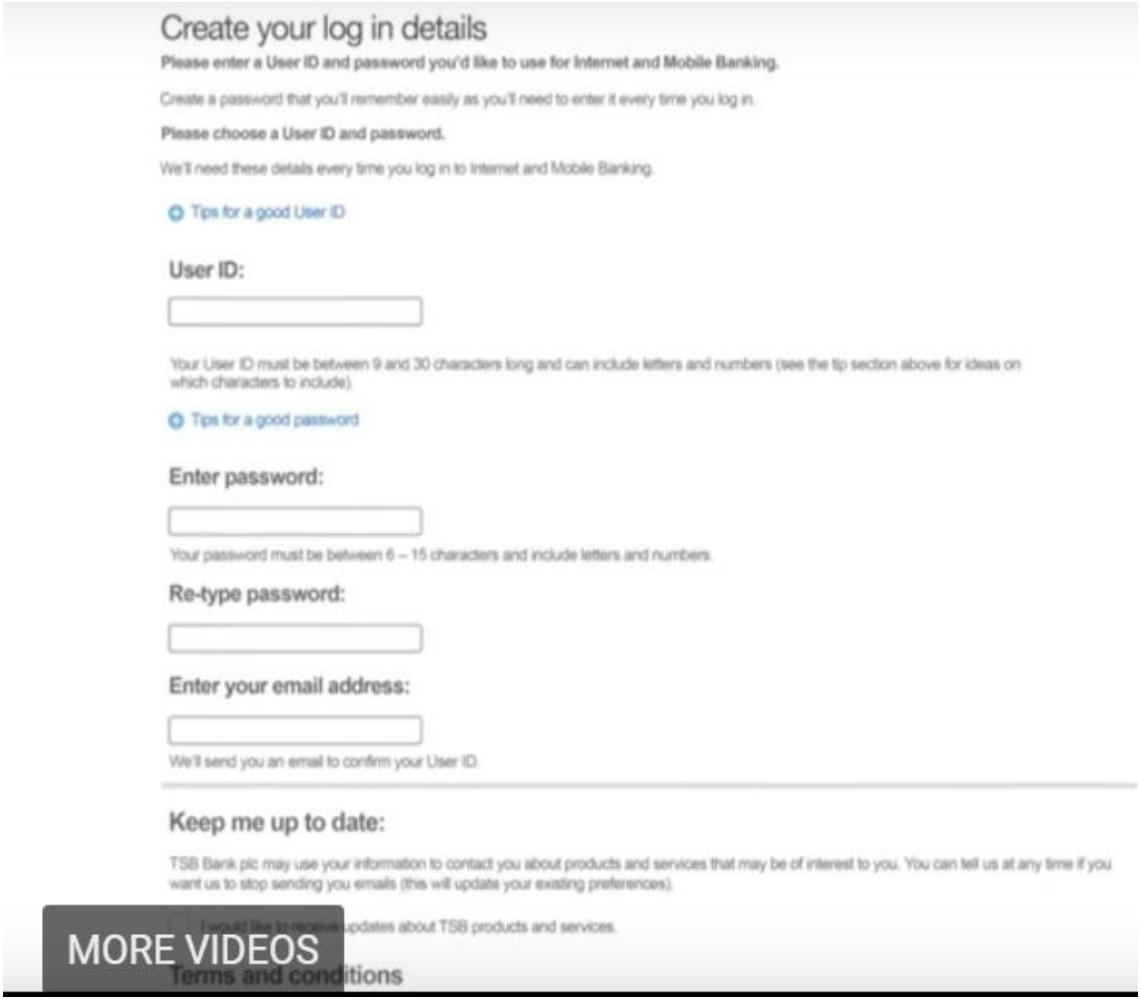
After registration, the next step is how to login to e banking applications. I have some examples about the processes of logging in to a typical e banking website, these I would like to show you and talk you through.

Login User

The participant is then presented with samples of e banking login pages, to find out what they typically use after registration process.


LLOYDS BANK
Internet Banking
Watch it
Try it
Previous
Log on / Log off
Next
Welcome to Internet Banking
If you don't already use Internet Banking, it's simple to register online.
Please enter your password and User ID (if you have forgotten your User ID simply click on the link 'Forgotten your User ID' and follow the instructions).
User ID:
777888999
Password:
Remember my User ID [?]
Warning: Don't tick this box if you're using a public or shared computer
Forgotten your password?
Forgotten your User ID?
Having problems logging in?
Continue
Menu
0:31/1:08


Personal
Private
Business
International
LOG IN
NatWest
Products
Support
Life Moments
Privacy & Cookies | Accessibility
We use cookies to help provide you with the best possible online experience. By using this site, you agree that we may store and access cookies on your device. You can find out more and set your own preferences here.
Online Banking services
Online banking
Credit card services
Welcome to Online Banking
Customer number
Forgotten any of your log in details?
This is your date of birth (ddmmyy) followed by your unique number which identifies you to the bank.
Remember me. We don't recommend storing data on a shared computer.
Tell me more about this feature
Log in
Not an online user? Sign up here
Your security is important
Remember you don't need a Card-Reader to log in.
Never disclose your full PIN and Password.
Only individuals who have a NatWest account and authorised access to Online Banking should proceed beyond this point. For the security of customers, any unauthorised attempt to access customer bank information will be monitored and may be subject to legal action.
Helpful banking
Legal Info · Security · © 2005-2015 National Westminster Bank Plc



Then the interviewer will let the participants know that one of the first areas that tend to cause problems for people is login into the systems. This is because there are different ways which they can do it and it requires them to remember different types of information

1. Looking at the login pages above, could you tell me the one you have typically used to login?
2. Could you tell me your experience with the appearance of the interface you have encountered while logging in?
3. Can you tell me more about the different login pages that you have encountered?
   Probe:
   - Do you prefer one to the other?
4. Can you tell me about any difficult time you have ever had using your preferred login?
5. How fast is the speed of login into your e banking accounts that you currently have?
   Probe:
   - Is it easy to find all the important information needed?
   - Is the site easy to navigate and simple to use?
   - Is it easy to find policy and notice statement on the site?
   - Do you ever feel lost when you browse through the website?

- Is the speed of the logout of your account fast or slow?

3. Have you ever forgotten your login details?
4. If yes, how do you tend to remember your password when trying to log on for either shopping or any other form of online activity

   Probe:
   - Do you feel safe using the browser functionality?
   - Would you like to write it down?
   - Do you use more than one password?
5. Do you find it helpful or hindering using different/same password for your online activities?
6. Have you ever had course to retrieve/reset your password while gaining access to the platform you have registered?
7. If yes, could you talk me through your experience with password retrieval while doing any form of online activities?

   Probe:
   - Did you have trouble during the retrieval/resetting process?
   - Could you tell me a specific difficulty you have encountered why retrieving your password online
8. Have you ever tried to seek support while logging in?
9. If yes, could you tell me what happen when you seek support from your bank?

The interviewer will let the participants know the various ways that a password could be retrieved irrespective of the purpose, either for shopping or general online activities. These will be followed by getting their opinions of what they have typically encountered/experienced. The retrieval means could either be by:

- Email
- Automated telephone service

1. Could you tell me if you have used any of the means above to retrieve your password online?
2. What was your experience with the password retrieval process?

   Probe:
   - Was it helpful or hindering?
   - Was the outcome of the password reset procedure immediate?
   - Did you have to wait for days before getting your desired outcome?
3. Do you envisage any difficulty capable of influencing further engagement in online activities like e banking?
4. Could you tell me your experience with the appearance of the interface you have encountered while retrieving password online?

The interviewer will present the participants with different images of factors use for authentication. This include token, pin sentry etc.[explain the meaning of terms (card reader/pins sentry and token) to participants]

Sample card reader/pins sentry and token

- Have you ever used pin sentry or token while logging in?
- If yes, could you tell me more about your experiences with pin sentry and the use of token during log on process?
- If No, what other means of verification have you ever used when logging in?

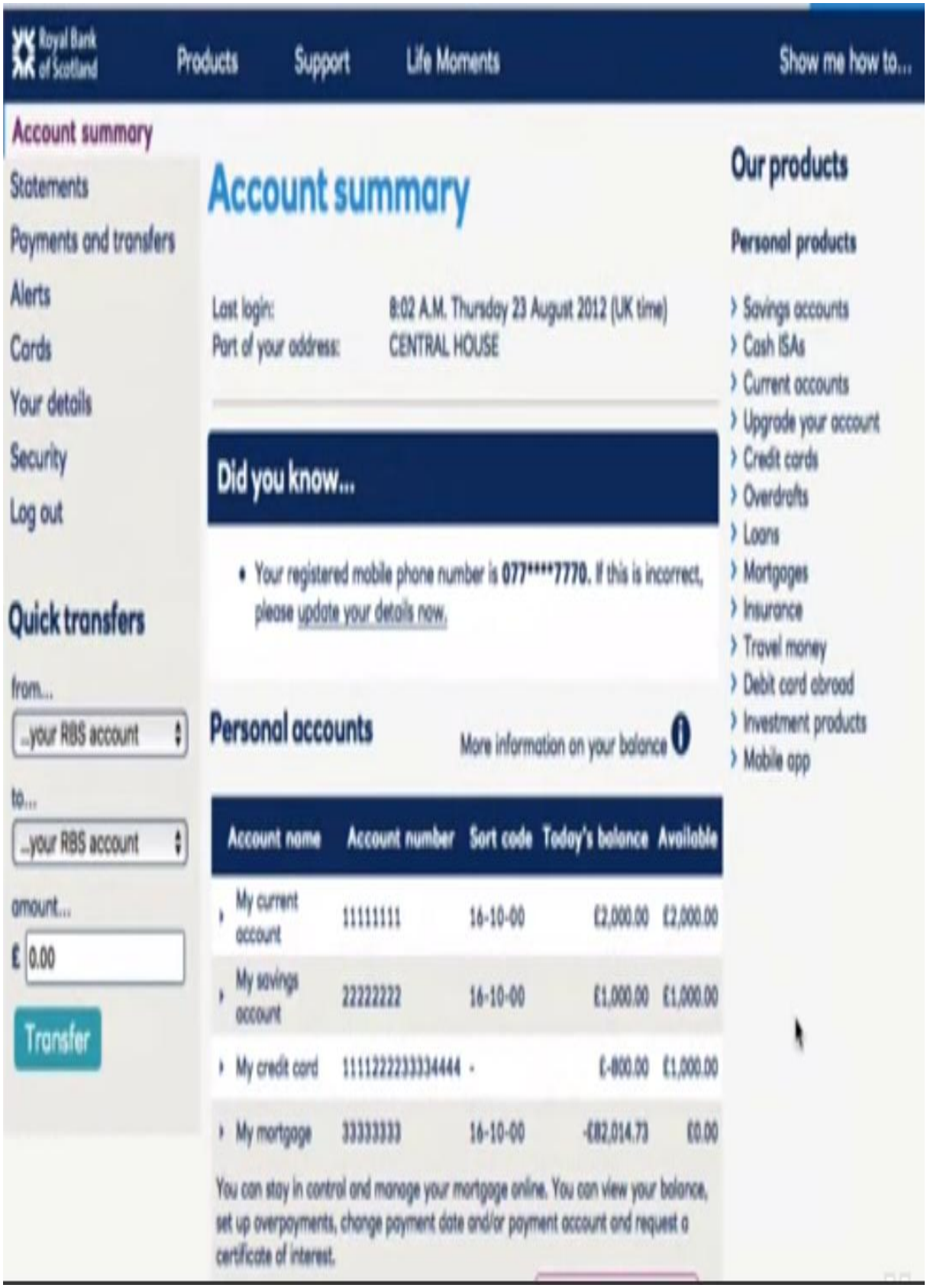
  Probe:
  - Do you have any concern about the use of pin sentry/token?
- Do you find the use of pin sentry and token helpful or hindering while logging in?
- Can you talk me through anything else that comes to your mind about the pin sentry above with regards to login?
- Have you encountered any difficulty using pin sentry/token as a means of further verification while logging in?

  Probe:
  - If yes, could you tell me more about your encounter?
  - Would you carry them about?

Furthermore, having concluded with issues about registration and login, the researcher will present to the participants an account summary page from a typical e banking website, and get their views, opinion and experiences about it.

General Questions

The participant is then presented a sample of e banking account activities, to find out how they typically carry out their transactions.



1. Based on your experience, which kind of activities do you normally carry out with e banking?
2. What are your experiences while carrying out the various tasks you perform while using e banking?
3. Do you find the instructions clear or confusing when carrying out a transaction with e banking?
4. Can you tell me about a difficult time you have had carrying out a transaction?
5. Does e banking offer all the services you need?

   Probe:
   - With regards to meeting your everyday banking needs?
6. Can you tell me more about your experience, when transferring money?
7. Do you have any difficulties when trying to accomplish a task while using e banking?
8. If yes, tell me more about the specific difficulties you have experienced when trying to accomplish a task?
9. Could you tell me what happens when you try to get help?

   Probe:
   - Would you just back out?
   - Would you use online support/chat?
   - Would you seek help from family members
   - Would you seek help from friends

General attitude towards e banking

1. Could you tell me more about your decision to use e banking?
1. What are your experiences based on the knowledge/skills required to do e banking?
2. Would you see e banking as a convenient or stressful way of banking?
3. Where are the likely places you would like to do e banking?

   Probe:
   - Home
   - Library
   - Café
4. Do you prefer one place to the other?
5. What were the main reasons for your choice of place to do e banking?
6. Have you ever had the need to launch complain while doing e banking?
7. Could you tell me about a specific encounter you have had when raising complain on an e banking platform?
8. How does e banking operating hours influence your decision to use the services offered?

Probe:
- In terms of the efficiency
- Reliability
- Usefulness and
- Have you found this to be satisfactory?

Privacy

9. Could you tell me if e banking would provide secure environment?

10. Do you think that e banking system or app can stop any unauthorised changes to a transaction?
11. What are your views about e banking in relation to trust?
    Probe:
    - Do you feel safe?
    - Do you have concerns?
12. Have you ever witnessed any form of security issues in any of your online activities?
6. Could you tell me if you have any concern about data protection while doing your e banking activities?
13. Do you trust e banking for its safety?
14. Could you tell me more about your experience getting into the e banking application?
15. If you are married, do you have joint accounts?

    Probe:
    - Do you share information?
    - Do you have separate log in?
    - Does that cause trouble?
16. Do you have different browsers set up for each user like safari and goggle?
17. How would you describe the services provided by e banking?

Conclusion/Feedback

The interviewer will thank the interviewee for making out time, and give the interviewee an opportunity to ask questions if there is any.

[Also, the interviewer will re-iterate how the data collected will be used and re- assure the interviewee that their information will be treated as anonymous].

Appendix 2E: SSIWTP protocol for e-banking non-users

Semi Structured Interview protocol for non e banking non-users

Introductory question

Banking Channels

1. Do you currently have a bank account?

Probe:

- This could be either current or savings account.
- Could you tell me the name of the bank that you are currently with?
    - **Probe:**
        - Barclays bank, RBS, Santander, HSBC, NatWest, Lloyds or Halifax.

2. Which banking channel do you currently use to do your banking transaction?

Probe:

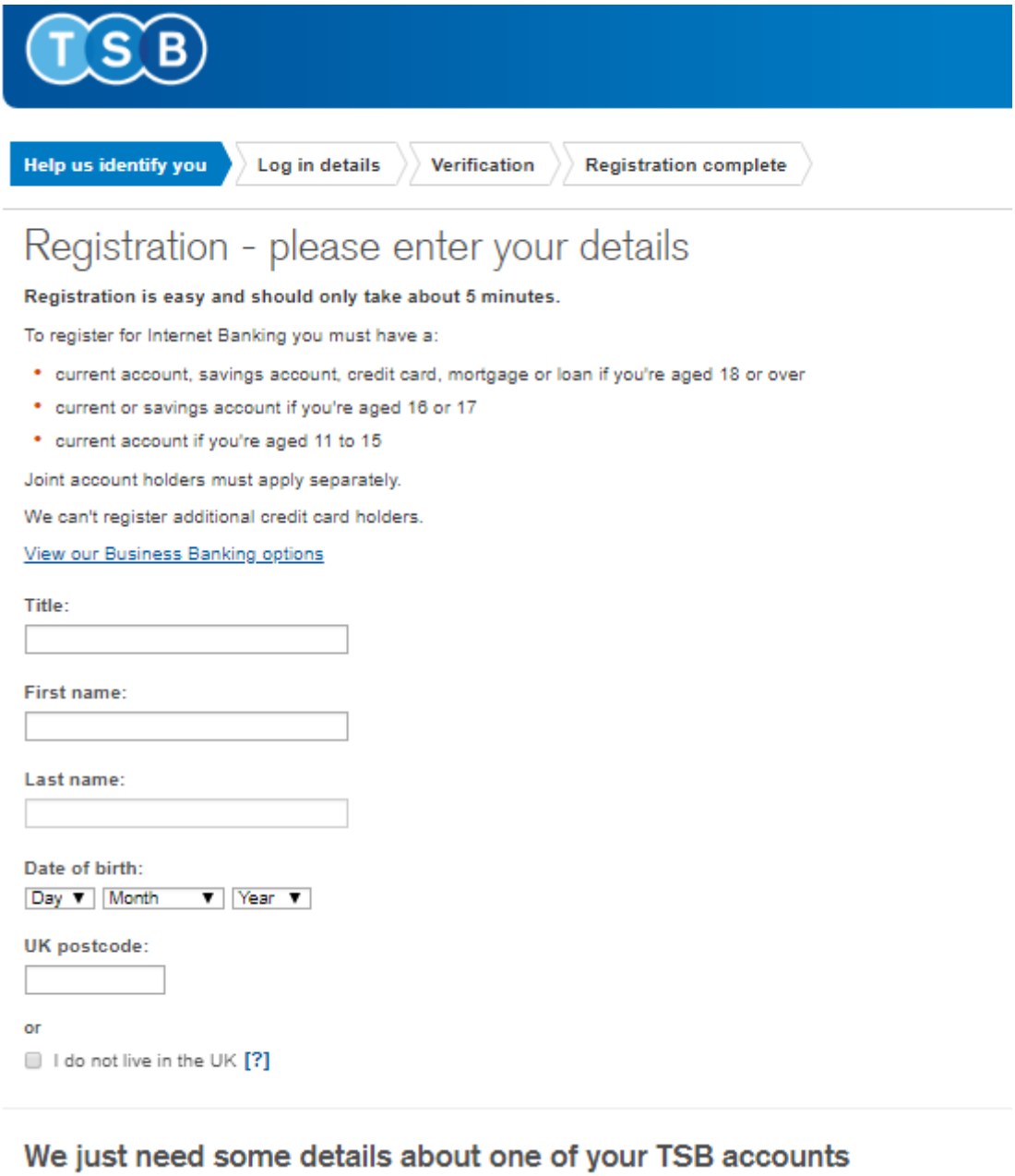
- Local branches or e banking.
- Why would you prefer one mechanism to the other?

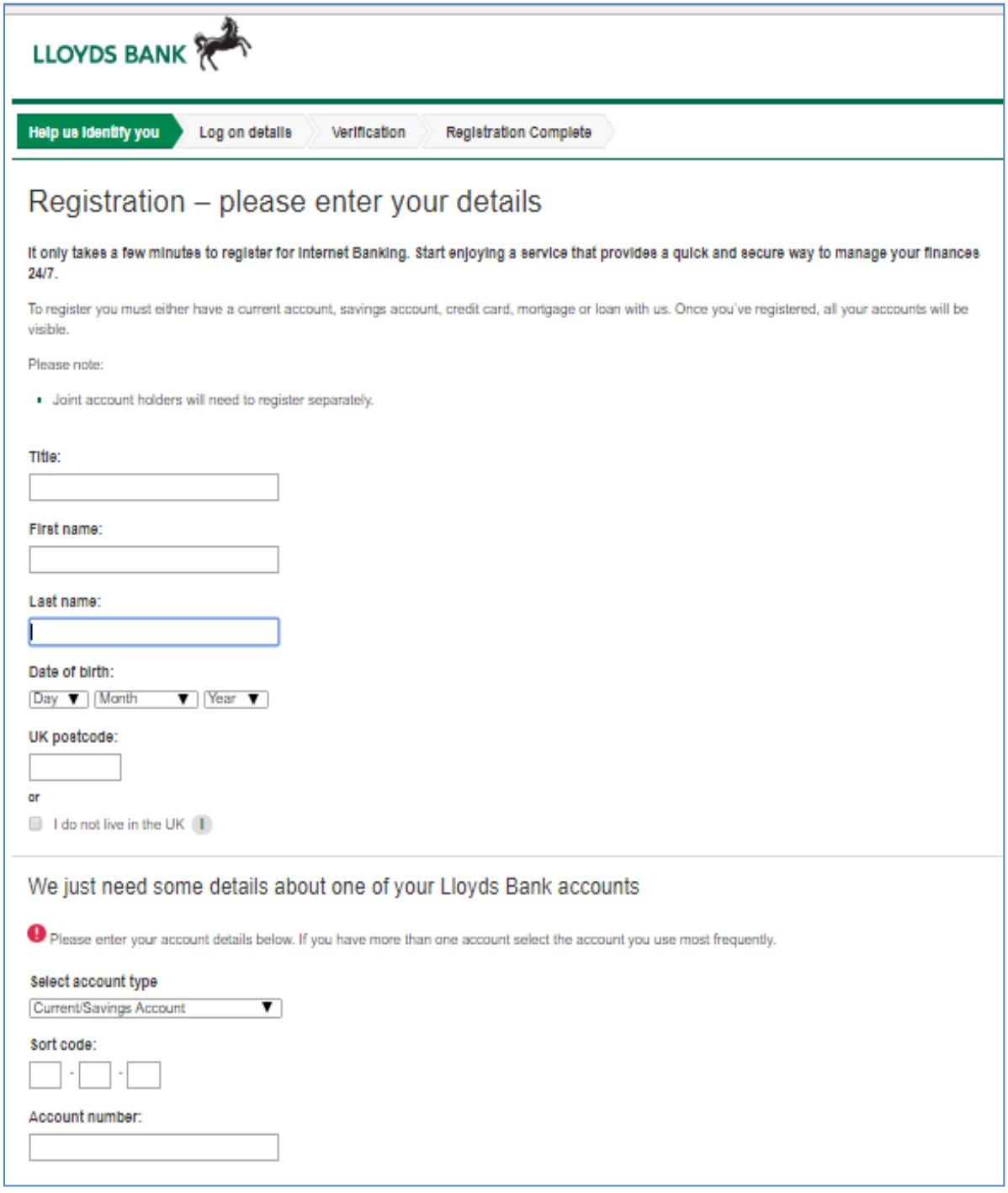
3. Could you tell me how satisfied you are with your present means of banking?
4. If you are not satisfied, could you please explain the rational for your decision?
5. How long have you been with your bank?

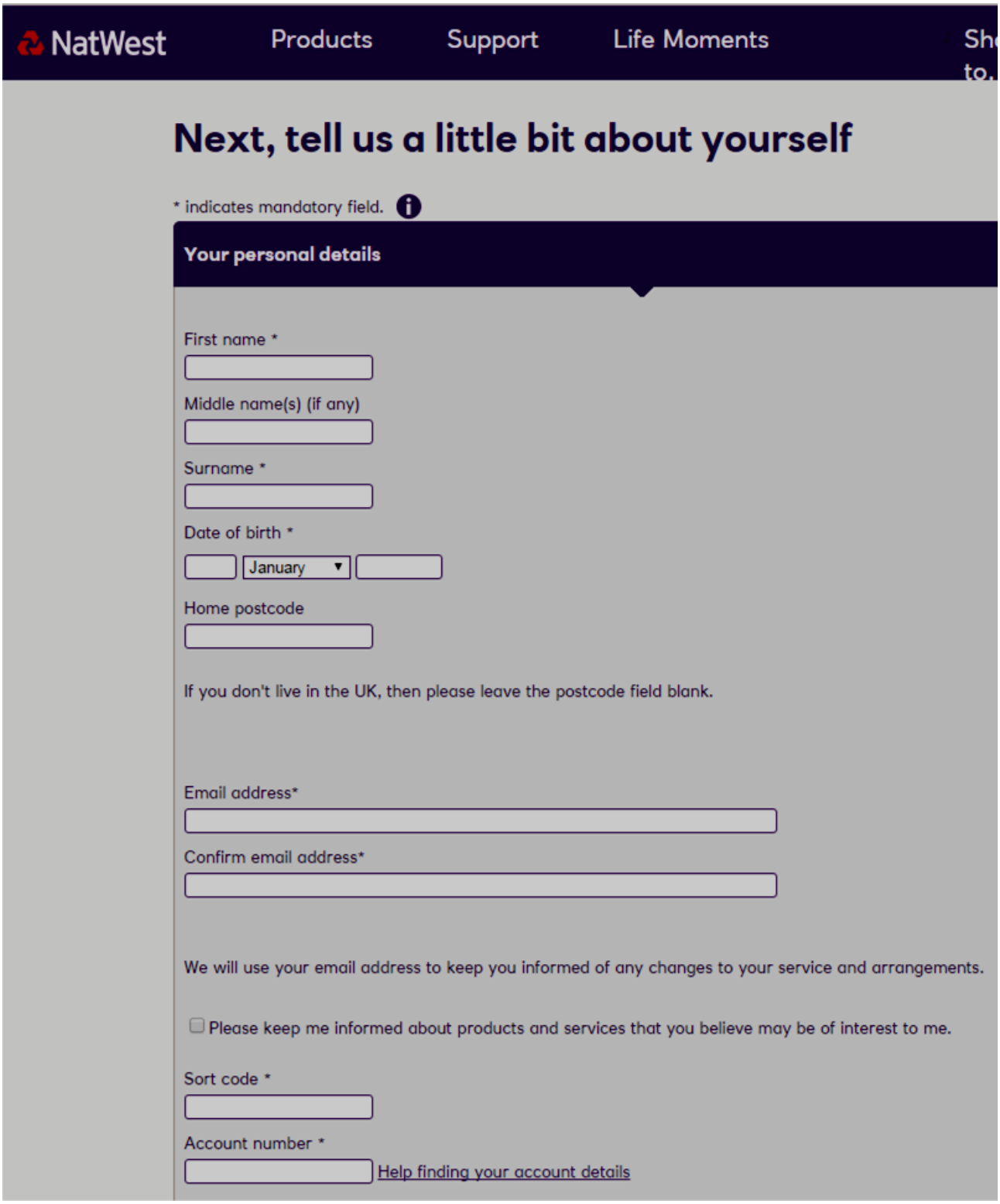
Register User

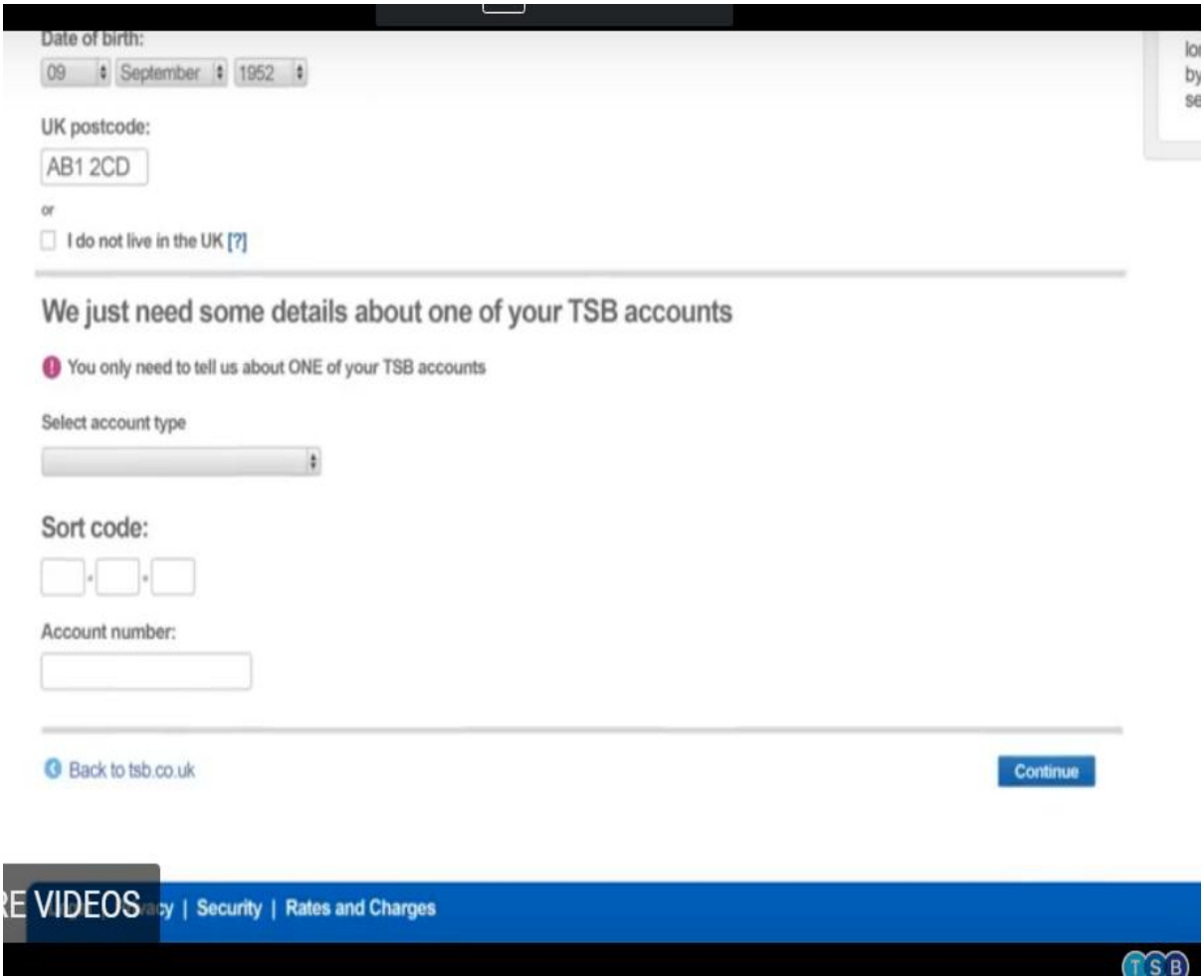
Participant will be shown typical e banking registration pages in order to find out what they have typically used

On this page you need to enter: Your personal details including your name and date of birth as well as sort code and account number



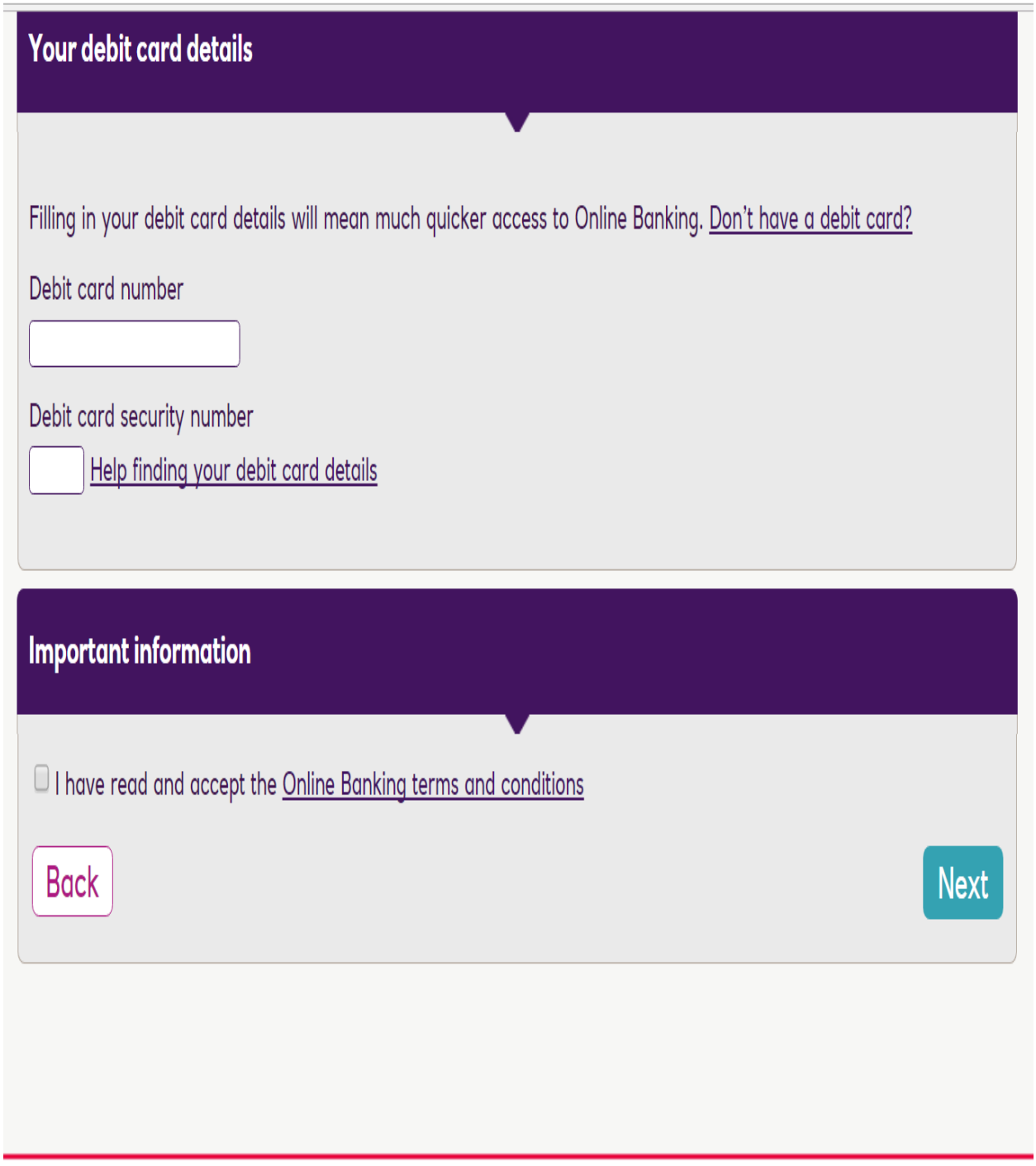

LLOYDS BANK
Help us identify you
Log on details
Verification
Registration Complete
Registration – please enter your details
It only takes a few minutes to register for Internet Banking. Start enjoying a service that provides a quick and secure way to manage your finances 24/7.
To register you must either have a current account, savings account, credit card, mortgage or loan with us. Once you've registered, all your accounts will be visible.
Please note:
Joint account holders will need to register separately.
Title:
First name:
Last name:
Date of birth:
Day
Month
Year
UK postcode:
or
I do not live in the UK
We just need some details about one of your Lloyds Bank accounts
Please enter your account details below. If you have more than one account select the account you use most frequently.
Select account type
Current/Savings Account
Sort code:
Account number:


NatWest
Products
Support
Life Moments
Next, tell us a little bit about yourself
* indicates mandatory field.
Your personal details
First name *
Middle name(s) (if any)
Surname *
Date of birth *
January
Home postcode
If you don't live in the UK, then please leave the postcode field blank.
Email address*
Confirm email address*
We will use your email address to keep you informed of any changes to your service and arrangements.
Please keep me informed about products and services that you believe may be of interest to me.
Sort code *
Account number *
Help finding your account details



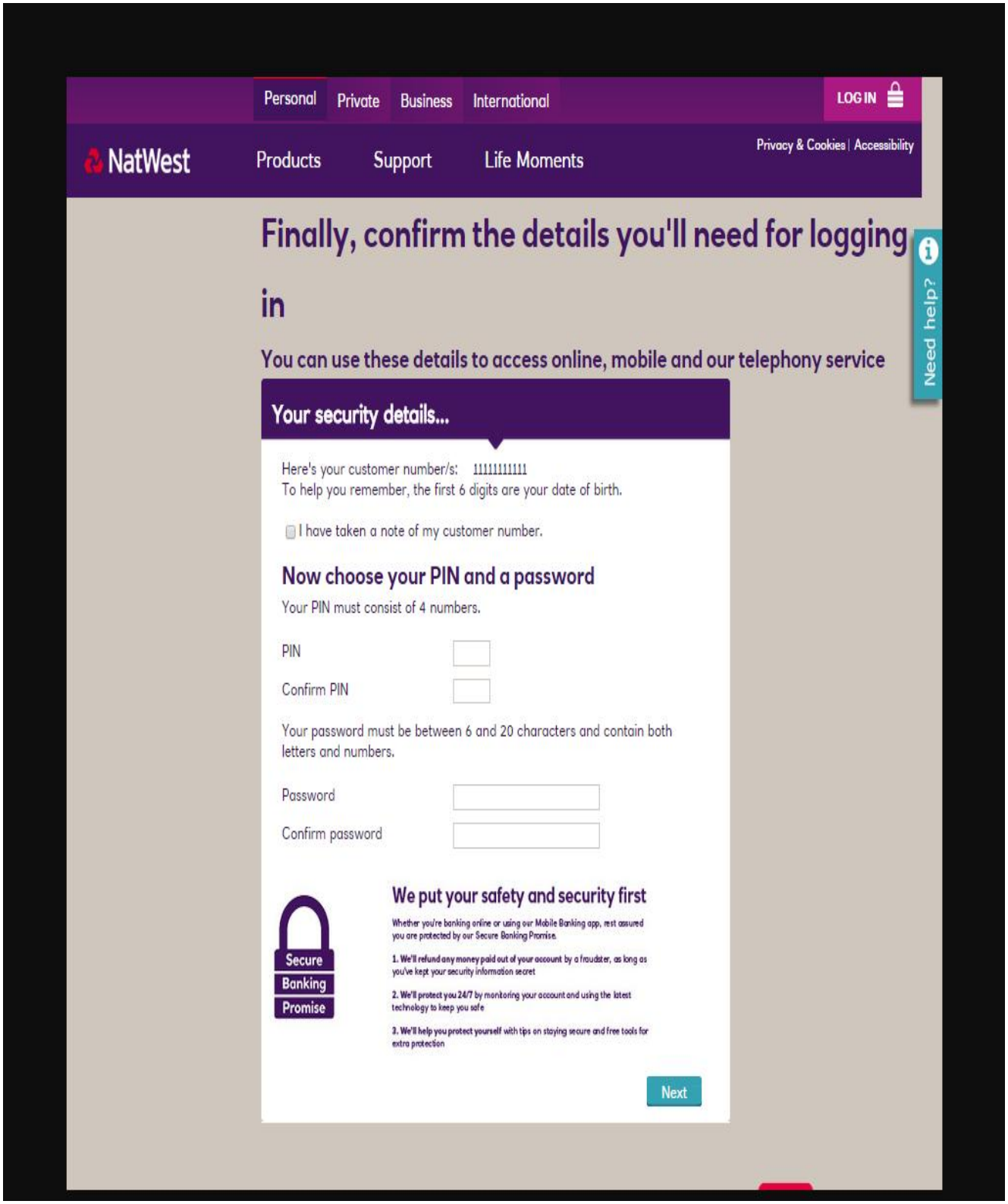
1. What are your views about the registration pages above where personal details are required for account set up?
2. Could you tell me more about what you find difficult with the examples shown above?

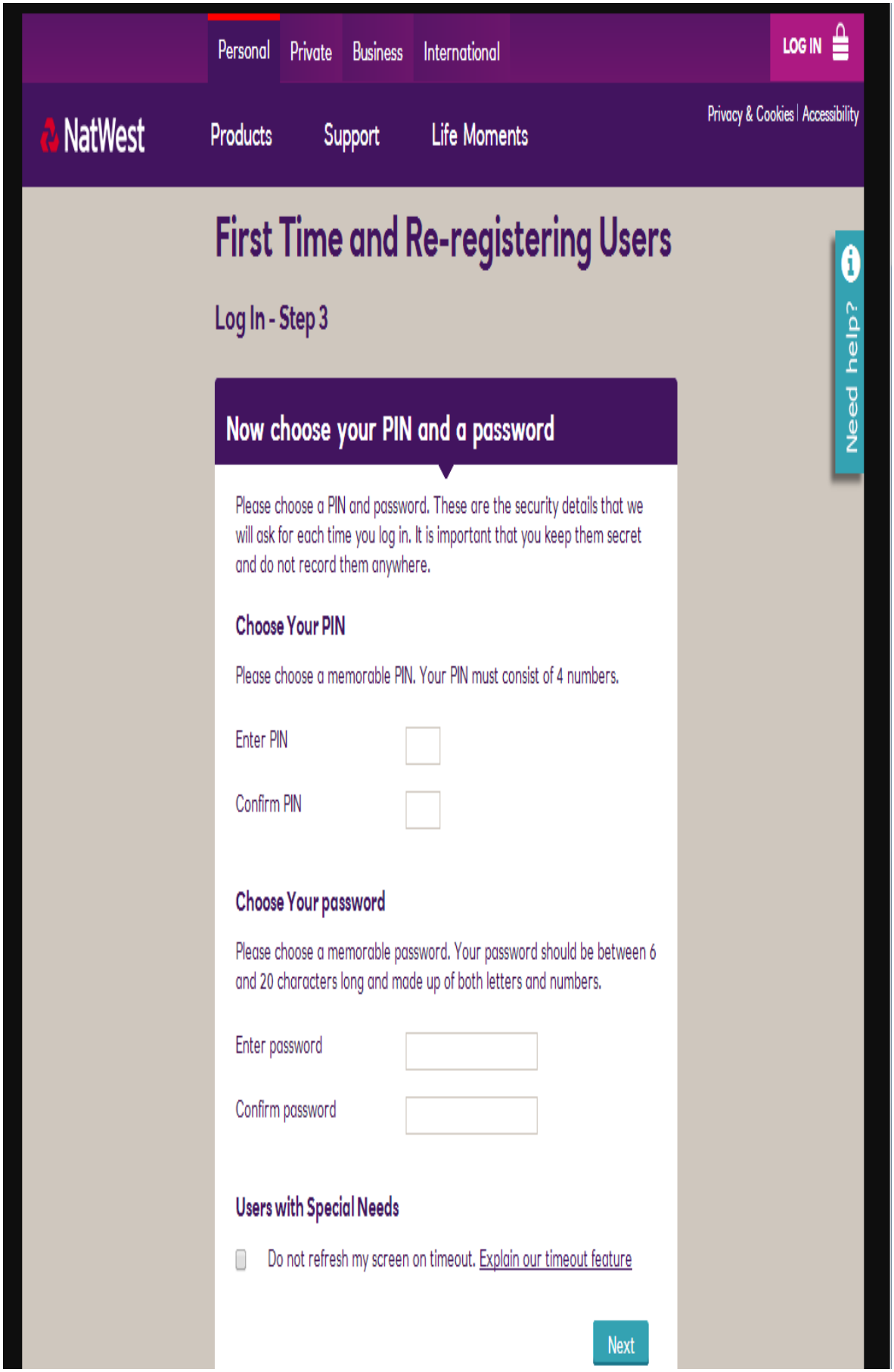
On the next page, you will need to enter your long debit card number and three digits from the back of the card (if you have these). Then check the box to say you accept the terms and conditions and click on 'Next'

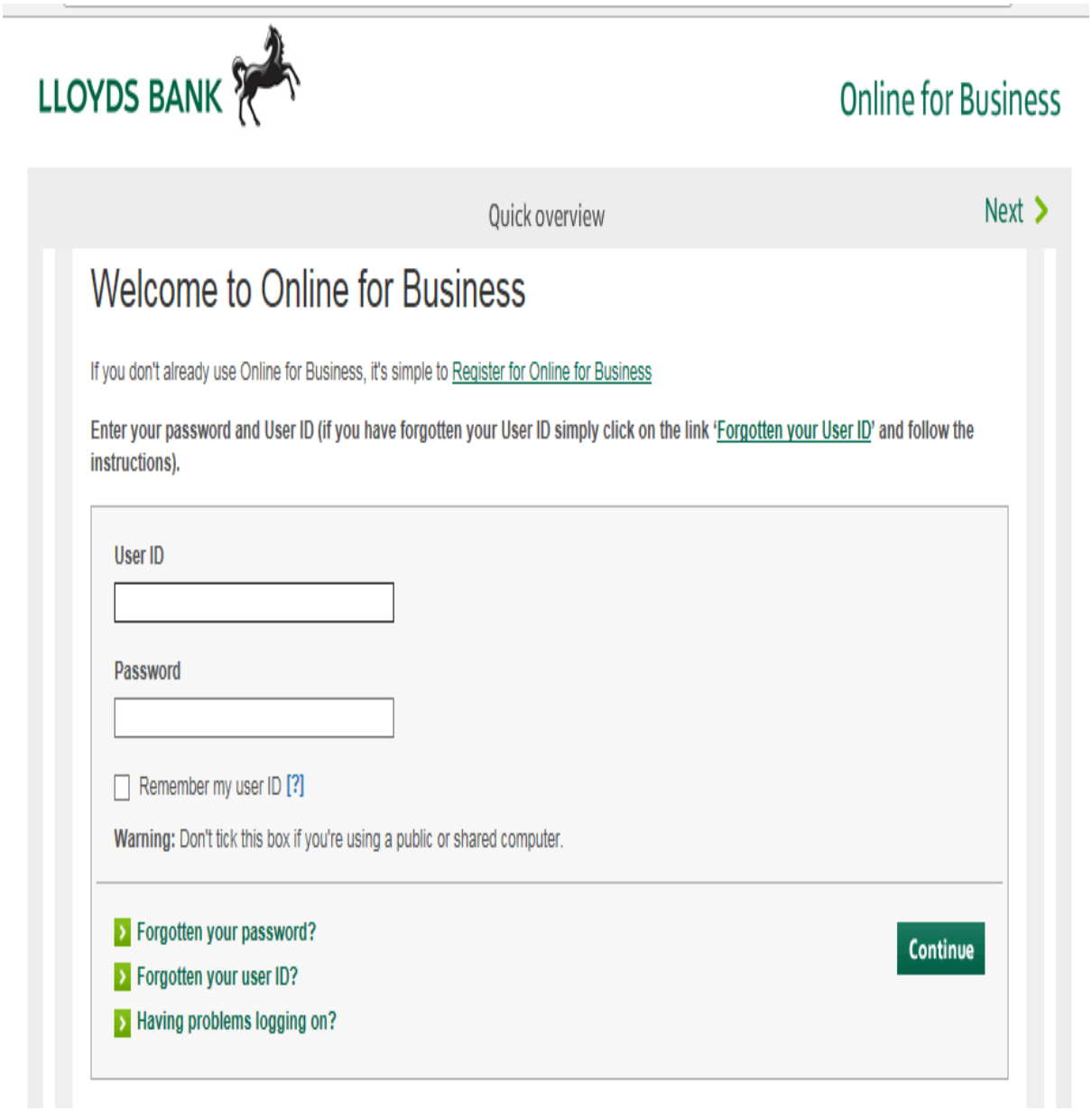


1. What are your views concerning the use of debit card for online account registration like e banking?
2. Do you have any concern about debit card details being compromised during account set up?
3. Do you consider the registration process above easy or difficult to use?
4. How much are you willing to reveal your debit card details when required during registration process?
5. Do you think that e banking registration with debit card is more or less confidential to other means of banking?
6. Could you tell me anything else that comes to your mind concerning e banking registration with a debit card?

The next screen gives you your customer number (date of birth followed by up to four digits). Make a note of thisyou will need it when you login in future, and if you download our mobile Banking app. Then click 'Next'




Personal
Private
Business
International
LOG IN
NatWest
Products
Support
Life Moments
Privacy & Cookies | Accessibility
First Time and Re-registering Users
Log In - Step 3
Need help?
Now choose your PIN and a password
Please choose a PIN and password. These are the security details that we will ask for each time you log in. It is important that you keep them secret and do not record them anywhere.
Choose Your PIN
Please choose a memorable PIN. Your PIN must consist of 4 numbers.
Enter PIN
Confirm PIN
Choose Your password
Please choose a memorable password. Your password should be between 6 and 20 characters long and made up of both letters and numbers.
Enter password
Confirm password
Users with Special Needs
Do not refresh my screen on timeout. Explain our timeout feature
Next



Looking at the examples above on how to choose password:

- Could you tell me about your personal experience with the use of username/password while shopping or doing any other form online activities?
- How would you describe your encounter while creating username/password to either shop or carry out any other activities online?
  Probe:
  - Did you choose your username or was it provided by service provider?
- Have you ever encountered error when choosing or creating username/password for any form of online transaction?
- Were the displays of error messages helpful or hindering while imputing your password for any form of online activities?

Participants will be shown different example of criteria for acceptable password

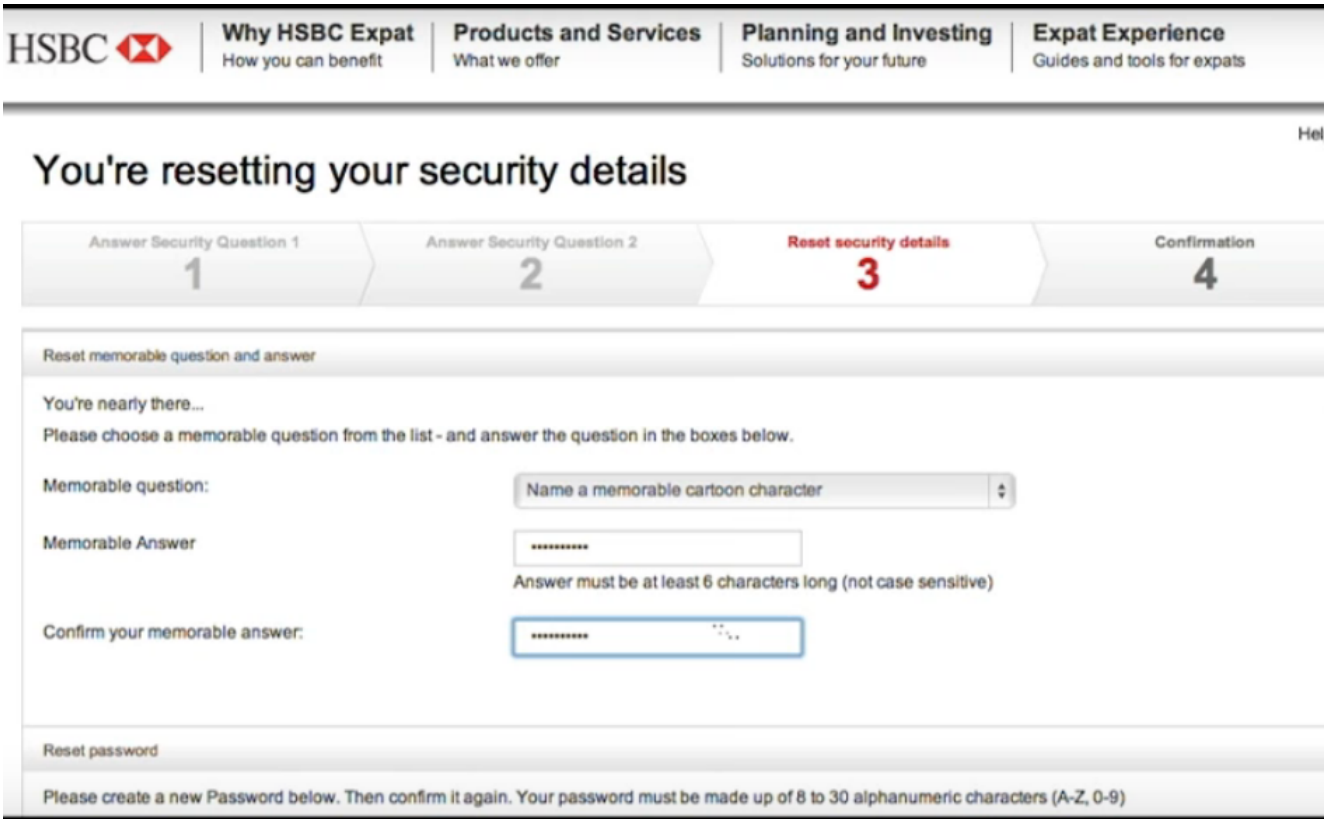
- Combination of characters and numbers (123Sunderland)
- Use of symbols (/,@,_,)
- Case sensitive (EGHHDBV)
- Combination of the three examples above (124@Someone)

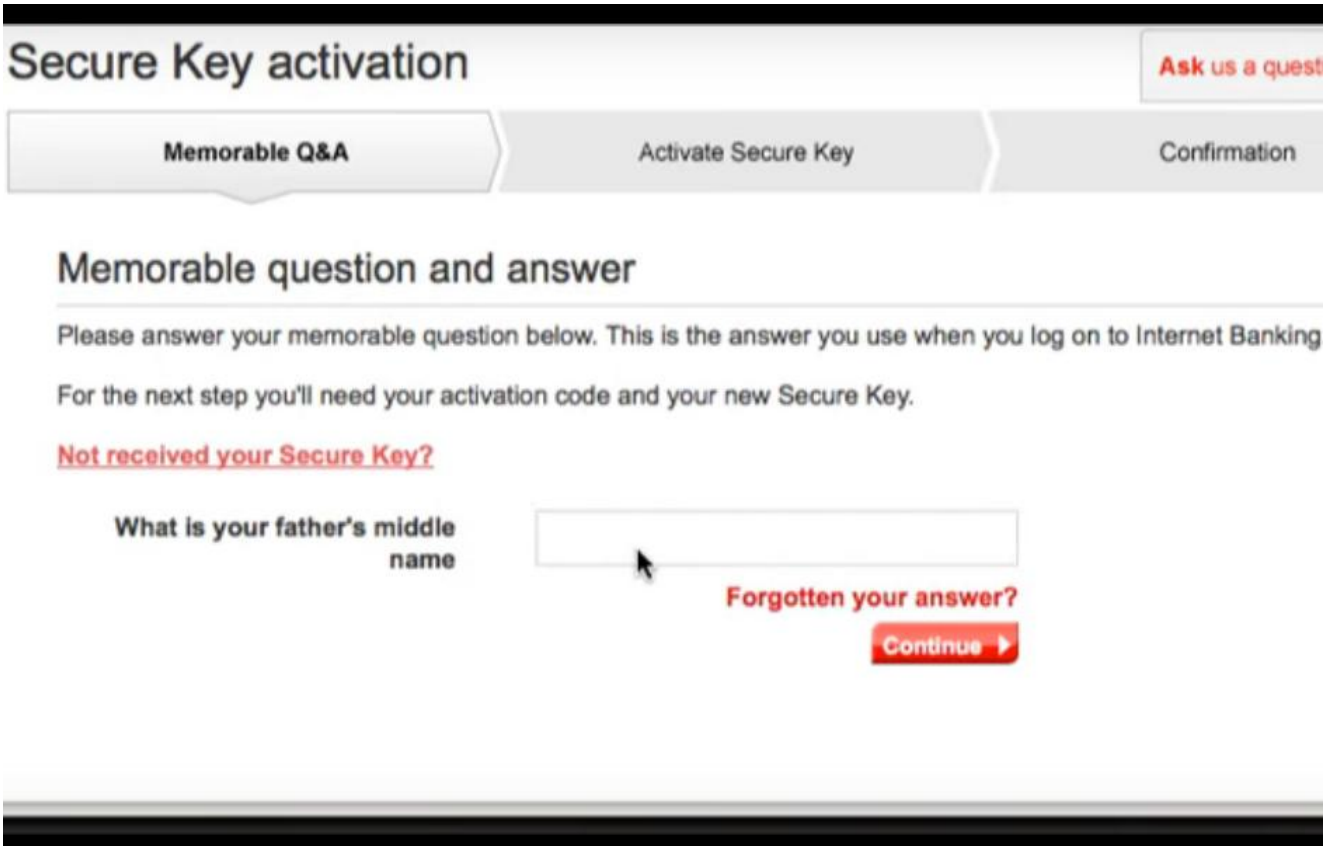
- Looking at the examples above. Could you tell me if you have ever used any of the criteria above while creating password?
- Could you tell me your experiences with the constraints required in creating password in relation to your general activities online?

  Probe:
  - Where the password guide clear/confusing?
- Could you tell me a specific difficulty that you have experienced while creating password online?
- Would this be hindering to your decision to use e banking

Support Demo

Support Demo

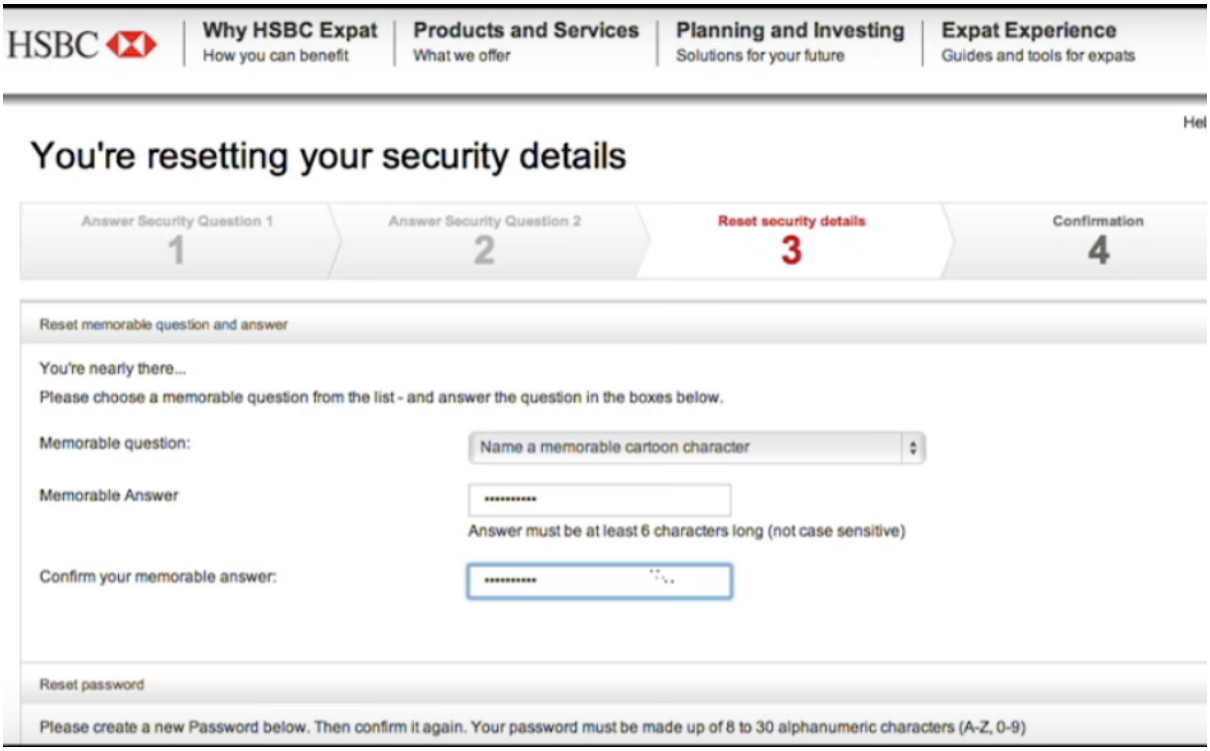

HSBC
Why HSBC Expat
How you can benefit
Products and Services
What we offer
Planning and Investing
Solutions for your future
Expat Experience
Guides and tools for expats
Hel
You're resetting your security details
Answer Security Question 1
1
Answer Security Question 2
2
Reset security details
3
Confirmation
4
Reset memorable question and answer
You're nearly there...
Please choose a memorable question from the list - and answer the question in the boxes below.
Memorable question:
Name a memorable cartoon character
Memorable Answer
Answer must be at least 6 characters long (not case sensitive)
Confirm your memorable answer:
Reset password
Please create a new Password below. Then confirm it again. Your password must be made up of 8 to 30 alphanumeric characters (A-Z, 0-9)



1. Have you ever used memorable data while registering for any form of online activity?
2. Have you ever encountered difficulty when creating memorable data for either shopping or any form of online activity?
3. If yes, what strategy do you adopt when you forget the memorable data that you have used for any form of registration online?

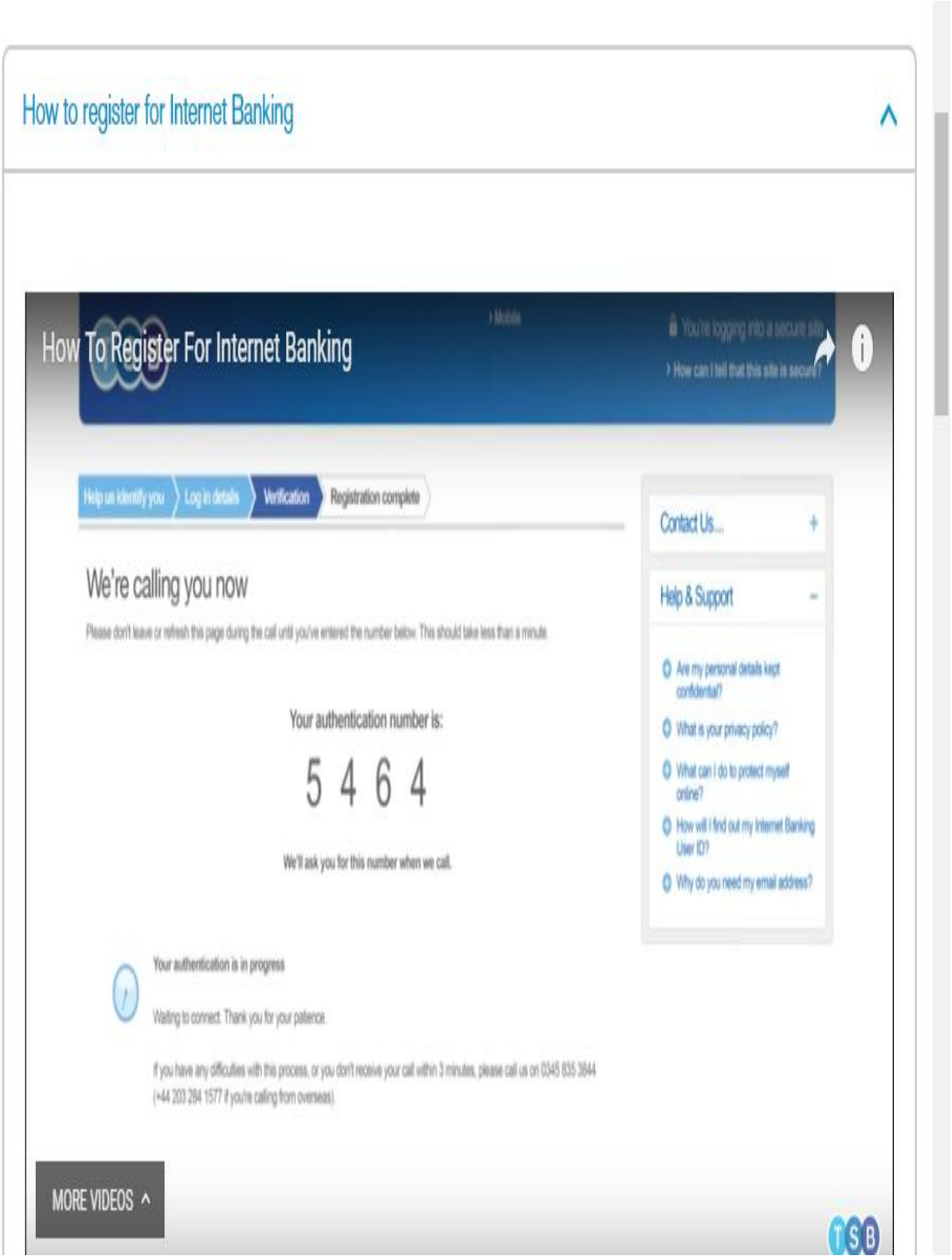
   Probe:

   - Do you intend to use cookies [explain the meaning of cookies to participants] to remember them?
4. Does the use of memorable data shown above, influence your decision to engage in any form of online activities?



1. From the example above, have you ever experienced any form of security question in relation to online activities.
2. If yes, what are your views about remembering them?
3. If no, could you tell me anything that comes to your mind in relation to use of security questions online?

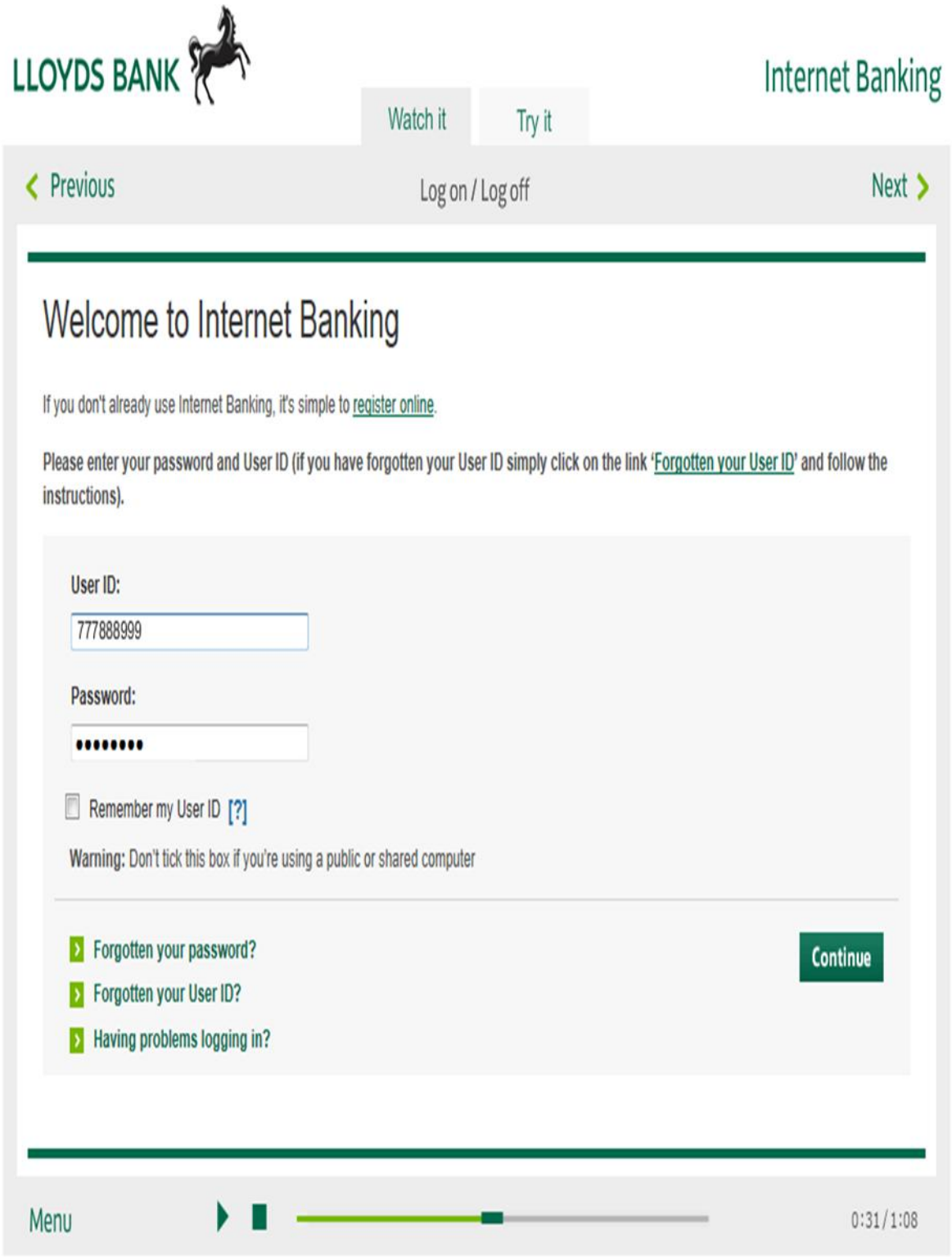
The next screen tells you that an activation code will be sent to you. This will be sent either by text message (if we have your mobile number) or by letter. Followed by an advice that when you receive your activation code, go to the website and click on 'Login' in the right corner of the web page.

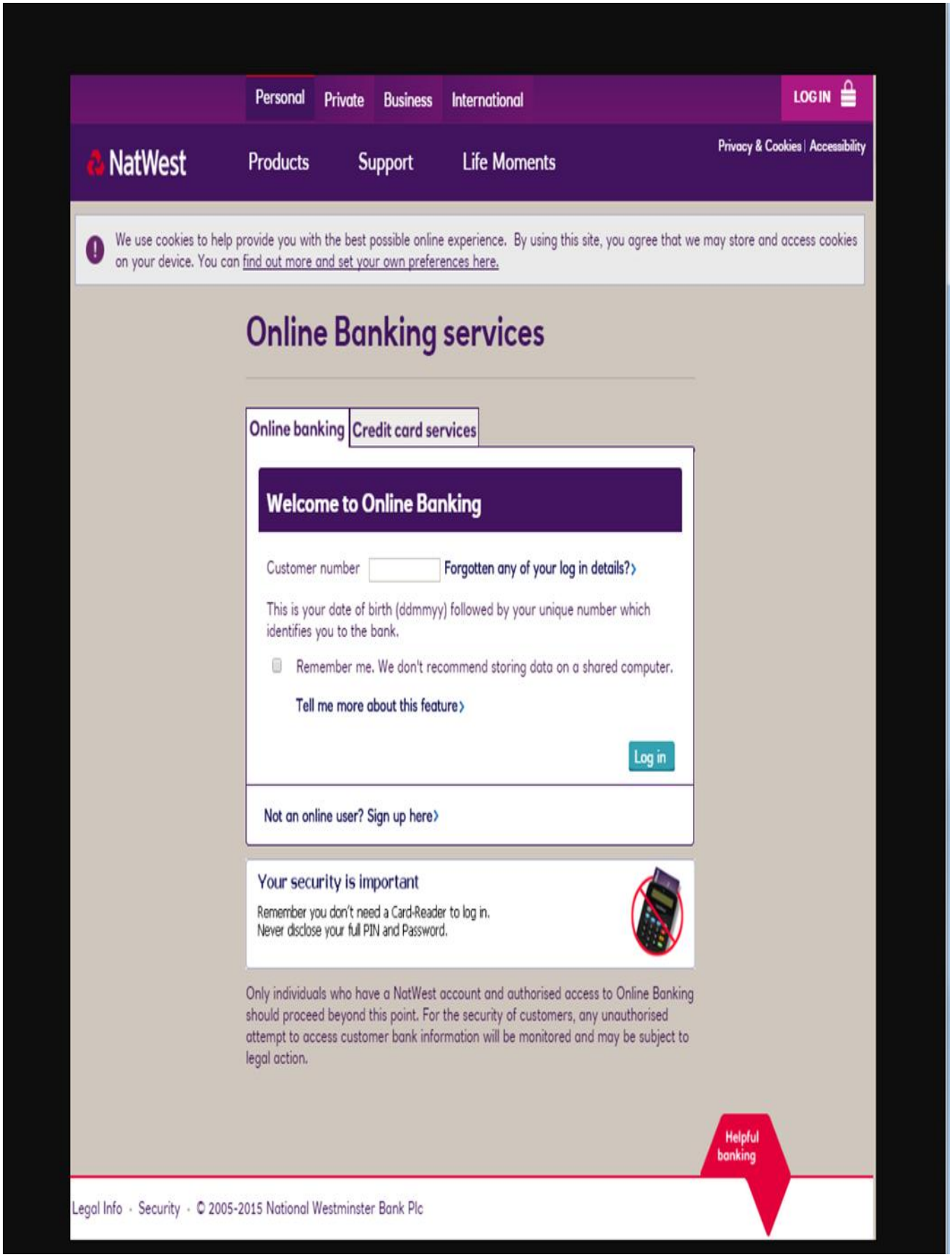


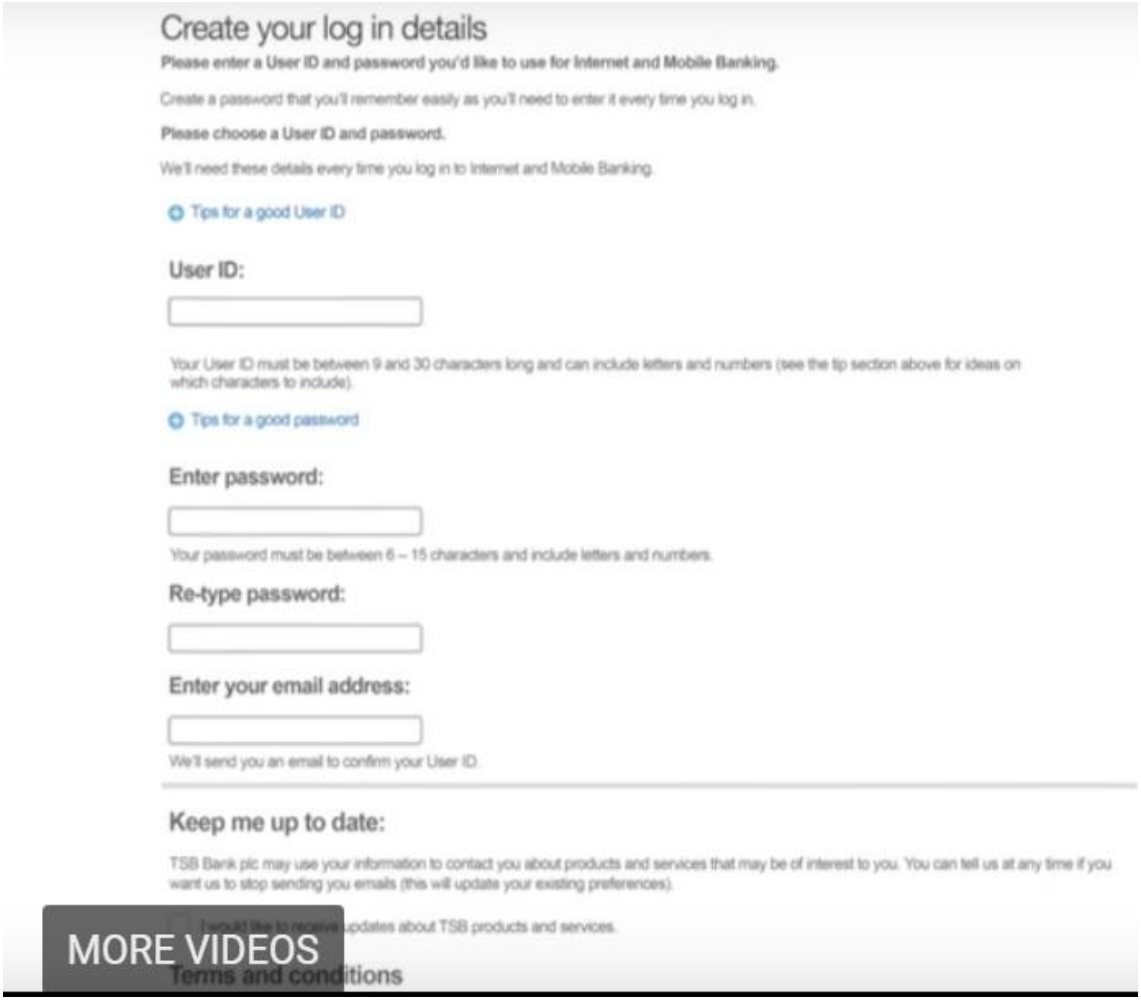
1. Have you ever used activation code sent as message as shown above to complete any form of online registration process?
   Probe:
   - Could you tell me if the code was sent to your mobile phone?
   - On the other hand, was it on screen activation code?
2. If you have the message come as short message system (SMS), will you remember that?
   Probe:
   - Would you have your phone charged up?
   - Would you have your phone nearby you?
3. What are your views concerning the use of activation codes during registration process for any form of online activities?
4. Could you talk me through any differences in the process/ways the code was sent from the one shown above?
5. Have you had any difficulty in the effective use of activation code?
   If yes,
   Probe:
   - Would you like to use online support in the form of chat?
   - Would you like to seek help from family members?
   - Would you like to seek help from friends?
6. Based on the example above, do you think that the use of activation codes is helpful or could be compromised?
7. Would your experience influence your decision to register for online activities in the future like e banking?

Login User

The participant will be presented with samples of e banking login procedures to find out what they typically use.


LLOYDS BANK
Internet Banking
Watch it
Try it
Previous
Log on / Log off
Next
Welcome to Internet Banking
If you don't already use Internet Banking, it's simple to register online.
Please enter your password and User ID (if you have forgotten your User ID simply click on the link 'Forgotten your User ID' and follow the instructions).
User ID:
777888999
Password:
Remember my User ID [?]
Warning: Don't tick this box if you're using a public or shared computer
Forgotten your password?
Forgotten your User ID?
Having problems logging in?
Continue
Menu
0:31/1:08


Personal
Private
Business
International
LOG IN
NatWest
Products
Support
Life Moments
Privacy & Cookies | Accessibility
We use cookies to help provide you with the best possible online experience. By using this site, you agree that we may store and access cookies on your device. You can find out more and set your own preferences here.
Online Banking services
Online banking
Credit card services
Welcome to Online Banking
Customer number
Forgotten any of your log in details?
This is your date of birth (ddmmyy) followed by your unique number which identifies you to the bank.
Remember me. We don't recommend storing data on a shared computer.
Tell me more about this feature
Log in
Not an online user? Sign up here
Your security is important
Remember you don't need a Card-Reader to log in.
Never disclose your full PIN and Password.
Only individuals who have a NatWest account and authorised access to Online Banking should proceed beyond this point. For the security of customers, any unauthorised attempt to access customer bank information will be monitored and may be subject to legal action.
Helpful banking
Legal Info · Security · © 2005-2015 National Westminster Bank Plc



The interviewer will let the participants know that the first areas that tend to cause problems for people are when logging into systems because there are different ways that they can do it and it requires them to remember different types of information.

1. Could you tell me the ways in which you usually log on to your account when carrying out online activities?
   Probe:
   - Either when shopping.
   - Playing games.
2. Could you tell me if any of the logins you have experienced are similar with the examples above?
3. If yes, have you had trouble while logging in to any form of online activities?
4. How fast is the speed of login into your online accounts that you currently have?
   Probe:
   - Is it easy to find all the important information needed?
   - Is the site easy to navigate and simple to use?
   - Is it easy to find policy and notice statement on the site?
   - Do you ever feel lost when you browse through the website?
   - Is the speed of the logout of your account fast or slow?

5. Could you tell me how you resolve difficulty while trying to log on for any form of online activities?
   Probe:
   - Do you just back out?
   - Seek help online either in the form of chat or call.
   - Seek help from family members.
6. Have you ever forgotten your login details?
7. If yes, how do you tend to remember your password when trying to log on for either shopping or any other form of online activity
   Probe:
   - Do you feel safe using the browser functionality?
   - Would you like to write it down?
   - Do you use more than one password?
8. Do you find it helpful or hindering using different/same password for your online activities?
9. Have you ever had course to retrieve/reset your password while gaining access to the platform you have registered?
10. If yes, could you talk me through your experience with password retrieval while doing any form of online activities?
    Probe:
    - Did you have trouble during the retrieval/resetting process?
    - Could you tell me a specific difficulty you have encountered why retrieving your password online

The interviewer will let the participants know the various ways that a password could be retrieved irrespective of the purpose, either for shopping or general online activities. These will be followed by getting their opinions of what they have typically encountered/experienced. The retrieval means could either be by:

- Email
- Automated telephone service

5. Could you tell me if you have used any of the means above to retrieve your password online?
6. What was your experience with the password retrieval process?
   Probe:
   - Was it helpful or hindering?
   - Was the outcome of the password reset procedure immediate?
   - Did you have to wait for days before getting your desired outcome?
7. Do you envisaged any difficulty capable of influencing further engagement in online activities like e banking?
8. Could you tell me your experience with the appearance of the interface you have encountered while retrieving password online?

The interviewer will present the participants with different images of factors use for authentication. This include token, pin sentry etc.[explain the meaning of terms (card reader/pins sentry and token) to participants]

Sample card reader/pins sentry and token

- Have you ever used pin sentry or token while logging in?
- If yes, could you tell me more about your experiences with pin sentry and the use of token during log on process?
- If No, what other means of verification have you ever used when logging in?

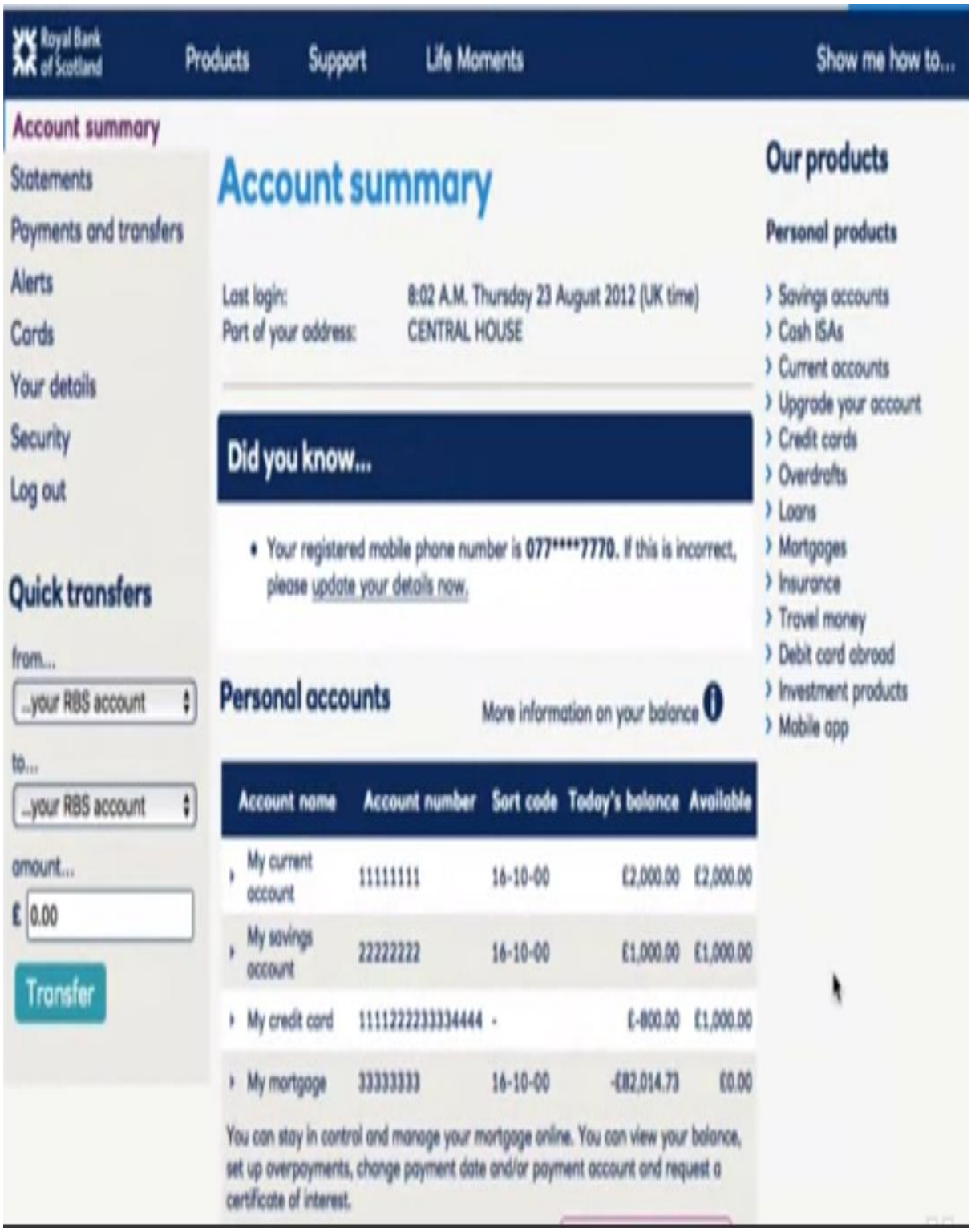
  Probe:
  - Do you have any concern about the use of pin sentry/token?
- Do you find the use of pin sentry and token helpful or hindering while logging in?
- Can you talk me through anything else that comes to your mind about the pin sentry above with regards to login?
- Have you encountered any difficulty using pin sentry/token as a means of further verification while logging in?

  Probe:
  - If yes, could you tell me more about your encounter?
  - Would you carry them about?

Furthermore, having concluded with issues about registration and login, the researcher will present to the participants an account summary page from a typical e banking website, and get their views, opinion and experiences about it.

Transactional Issues

The participant is then presented a sample of e banking account activities, to find out how they typically carry out their transactions.



1. What is your believes regarding online banking information?

Probe:

- In terms of efficiency, reliability, effectiveness and recognisability.

2. What is your general believe about e banking services?

Probe:

- How do you perceive e-banking services offered in terms of response time and reliability?
- Functionality

3. Could you tell me some of the new features that might interest you to do e-banking?
4. Could you tell me about a typical activity you do online?
5. Could you tell me about a difficult time you have had carrying out an activity online?
6. What are the specific difficulties you have experienced when trying to accomplish a task online?
7. How often do you carry out activities online?

General attitude towards e banking

Intention

1. To what extent do you use each of the following banking services?

Probe:

- Checking of account balance
- Printing of statement
- Setting up standing order
- Cash withdrawal,
- Setting up of direct debit,
- Bill payments,
- Fund transfer.

1. If it is provided within existing United Kingdom banking regulations, will you use online banking for most of your banking needs?
2. To what extent do you agree on the availability of information about e-banking services?
3. Do you have concerns using e banking?
4. What are the specific concerns you have concerning e banking?
5. Would you see e banking as a convenient or stressful way of banking?
6. Is there any other thing that you would like to consider that may lead to more efficiency on e-banking websites?
7. In what ways will the mentioned features encourage you to adopt e-banking technology?
8. Would you like to interact with your bank from anywhere?
9. Where are the likely places you would like to do e banking in case you want to?
10. Do you prefer one place to the other?
11. What are your views about e banking in relation to trust?

Ease of use

1. Could you tell me if you have ever raised complaints with your bank before?
2. Could you tell me if the stages of raising complaints by your bank are easy to follow?
3. To what extent do you agree on the role of your bank branch location and operating hours in supporting banking services:

Probe:

- Have you found this to be satisfactory?

4. To what extent do you agree on the ability of e-banking services to meet your financial requirements?
5. What is your believes regarding transactions conducted within online banking websites?
6. Could you tell me any form online activity challenge you have experienced?

Reputation issues

1. Have you ever sought for help when carrying out a banking activity?
2. If yes, do you consider the use of friends, relatives and online chat to be helpful when completing your activities?
3. Do you see your friends and relatives influencing your behaviour; think that you must use online banking?
4. To what extent do you agree on the effect of other factors existing in the United Kingdom environment in supporting the use e-banking services?

Perceived Privacy

1. Could you tell me if e banking would provide secure environment?
2. Do you think that e banking system or app can stop any unauthorised changes to a transaction?
3. Could you tell me if you have any concern about data protection while doing any form of online activities?

Security issues

1. Have you ever witnessed any form of security issues in any of your online activities?
2. Do you trust e banking for its safety?
3. Do you trust internet as a reliable medium for banking transaction?
4. Have you ever had a difficult time getting to use the computer/internet?
2. What are your experiences based on the knowledge/skills required to do activities online?
3. If you are married, would you like to do your banking together?
4. Do you think banking together as couple might cause trouble?
5. How would you describe the perceived services provided by e banking?

Conclusion/Feedback

The interviewer will thank the interviewee for making out time, and give the interviewee an opportunity to ask questions if there is any.

[Also, the interviewer will re-iterate how the data collected will be used and re- assures the interviewee that their information will be treated as anonymous].

Appendix 3A: Participant's profile for study 1

PT No	Age range	Marital status	Employment status	Job type	Hold e banking account?	Self-reliant of e banking?	Main reason for using computer
1	71-75	Married	Retired	Unskilled	No	No	Browsing
2	81 & above	Married	Retired	Skilled	Yes	Yes	Internet banking
3	60-65	Single	Retired	Skilled	Yes	Fairly	General activity
4	60-65	Married	Employed	Skilled	Yes	Yes	General activity
5	76-80	Divorced	Retired	Unskilled	No	No	Reading newspapers
6	71-75	Married	Retired	Unskilled	No	No	Playing games and reading newspapers
7	66-70	Single	Retired	Unskilled	No	No	Playing games and shopping
8	60-65	Married	Retired	Unskilled	Yes	Yes	Internet banking and shopping
9	66-70	Married	Retired	Unskilled	Yes	Yes	Internet banking
10	66-70	Married	Retired	Unskilled	No	No	Shopping, playing games and reading newspapers
11	66-70	Divorced	Retired	Unskilled	Yes	Yes	Browsing
12	60-65	Divorced	Retired	Unskilled	No	No	Playing games and browsing
13	81 & above	Singled	Retired	Skilled	No	No	Emails
14	66-70	Married	Retired	Unskilled	No	No	Playing games and Google news
15	66-70	Single	Retired	Unskilled	Yes	No	Internet banking
16	71-75	Single	Retired	Unskilled	No	No	Shopping
17	66-70	Single	Retired	Unskilled	No	No	Catalogue mail-ways modelling
18	71-75	Married	Retired	Unskilled	No	No	General activities (Playing games)
19	66-70	Married	Retired	Skilled	Yes	Yes	General activity
20	60-65	Married	Retired	Unskilled	Yes	Yes	Playing games
21	60-65	Single	Employed	Skilled	Yes	Yes	Shopping, banking and newspapers
22	66-70	Divorced	Employed	Skilled	No	No	Shopping
23	60-65	Separated	Employed	Unskilled	Yes	Yes	General activity
24	60-65	Single	Employed	Unskilled	No	No	Shopping, movies and reading newspapers
25	60-65	Married	Employed	Skilled	Yes	Yes	Shopping
26	60-65	Single	Employed	Skilled	Yes	Yes	Shopping, internet banking and reading newspapers

Appendix 3B: The emerged sub-categories, definitions, construct examples and source of the constructs for study 1

Table showing category and sub category labels, definitions and examples

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
IT Competence	It implies to the understanding and application of the skills, training, education and experience to perform a given task which is the responsibility of the top management for which the system product is designed for.	"New things to learn", Familiarity" (P3) user. "In control as printed confirmation is gotten", "Only in control when right button is pressed" (P13) non user	Nil	Nil	Nil
Usability factors	This term implies to the degree to which users can perform a set of task, correctly perform the function, the time required to perform a set of task, the speed in performing a task procedure, the degree of error tolerant as well as how users feel about using the system to perform a set of task		Effectiveness	This term implies to the accuracy and completeness with which users achieve specific goals	"Cannot be accessed easily", "Cannot be accessed easily" (P25) user. "Will not entertain it as do not know about it", "You know what you have got left" (P5) non user

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
			Complicatedness	This refers to a derived property that characterizes an execution unit's ability to manage a complex system. Which comprises issues like screen layouts, font size as well as the navigation of the system	"Modern", "Century" (P3) user. "Have no interest as it seems complicated", "Easy as I am use to the method" (P1) non-user.
			Memorability	How easy a software product is easy to remember for example password, memorable word etc.	"Lots of questions to be remembered", "Require just PIN" (P7) non user

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
			Perceived Usefulness	This term implies to the degree to which a user is satisfied with their perceived achievement of pragmatic goals, including the results of use and the consequences of use	"Accesses more bank products (services)", "No facility to choose bank products" (P4) user. "Can not use it for enquiries purpose", "Can use it for queries" (P6) non user
			Reliability	This term means the probability of a device performing its purpose adequately for the period of time intended under the operating condition encountered	"Clever as technology have moved on", "Takes time" (P8) user. "Banks can handle any issue as is their property", "Details can be lost when it crashes (P10) non user

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
			Perceived effort	This implies to the degree of endeavour exerted by a user a complete a task. This is usually characterised by users perceptions of difficulty and moderated by habit and intention.	"Do not require queuing", "Require standing in queue" (P8) user. "Account balance known with ease", "More difficult to get account balance (P1) non user
			Flexibility	It clearly implies to the ability for the solution to adapt to possible or future changes in its requirements. In other words if you think flexibility when	"Can be done anywhere with necessary equipment", "Location base as does not offer mobility" (P19) user. "Set of restrictions", "No restrictions" (18) non

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
				designing a solution then you will definitely come out with a better solution.	user
			Convenience	This refers to a situation when a product or service saves time for a user, which is moderated by time, place, acquisition, use and execution.	"Controlled by me", "Controlled by the bank" (P21) user. "Help with contactless phone payment", "Require ringing someone" (P25) user. "Can be done from armchair", "Have to travel to do them" (P1) non user

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
Security Issues	This relates to the ability to protect data from unauthorised access. In that one entity can verify that another entity is who they are, ensures that the person has the right to access certain resources, keeping private of sensitive information from being disclosed to unauthorised individuals and protecting data from being altered as well as limiting parties from refusing that legitimate transaction took place by means of signature	"Secured as it requires password", "signature can be compromised" (P11) user. "Do not know who you are dealing with", "There are various people to talk to" (P17) non user	Nil	Nil	Nil
Social Support	It refers to the persuasive effect of people by means of help towards the using of an information technology system	"Can not picture if who you are dealing with has good rapport", "Have personal touch"(P23) user. "I get worked up and panic", "can be calmed down"(P12) non user	Nil	Nil	Nil

Categories	Definition	Examples	Codes (sub categories)	Definitions	Examples
Cost	This term implies to the financial involvement in getting the necessary devices required to use an Information system	"Do not require telephone", "Require telephone" (P4) user “Require internet for usage”, “do not require internet” (P1) non user.	Nil	Nil	Nil

Appendix 3C: Summary of themes, sub themes and their related number of construct for elements (DB) and (MB)

Themes		E-banking users		Non e-banking users	
Usability factors		Desktop banking	Mobile banking	Desktop banking	Mobile banking
1	Complicatedness	8	8	4	4
2	Reliability	6	4	10	10
3	Memorability	3	4	2	3
4	Perceived usefulness	40	32	20	19
5	Convenience	30	26	9	9
6	Effectiveness	4	6	2	3
7	Flexibility	13	17	5	3
8	Perceived effort	4	1	1	1
Security factors					
9	Personal safety	3	3	2	2
10	Security issues	3	4	4	3
11	Privacy	6	5	6	6
12	Cyber crime	1	1	3	3
13	Trust	1	1	3	3
Social support					
14	Social support	20	18	25	22
IT Competence					
15	IT Competence	5	4	11	10
Cost					
16	Cost	4	4	2	2
Brand					
17	Brand	1	2	0	0

Appendix 4A: Participant Information Sheet on factors that affect the use of e banking.

Participant Information Sheet on factors that affect the use of e banking.
Requirements of Study

Who is Included

Individuals aged 60-80years who are users of e banking system and people of the same age who are internet users but do not use e banking in Sunderland.

Aim of the Study

To understand older users' awareness of financial security in relation to e banking, more specifically, to investigate what older users' attitude / preconceptions are concerning security issues in relation to e banking and to explore the factors that mediate their use of e-banking? These include: social factors, usability factors and IT competence.

What You Will be Asked to Do

You will be asked to take part in a one-to-one Semi Structured Interview (SSI). The SSI is designed to elicit information about your own experience. The questions will focus on what your views, attitudes and experiences are towards the use of e banking. You will not be asked to use e banking or log on to any system during the interview. During this interview notes will be taken and your voice will be recorded. The interviews will be held in Computer room of Age UK Sunderland. Each interview will take approximately one hour.

Data Storage and Anonymity

All data will be anonymous as your name will not be recorded on the interview proforma. You will be assigned a participant number and that number will be used in all printed sheets and files. The digital record of the interview will be transcribed by the researcher and when this is complete the record will be deleted within 6 months. The research student will store the data on her password protected PC. Also the data will only be accessed by the research team- including the student and supervisors and will not be available to any third party.

Benefits of Participation

The results and outputs from this study may be used to help design and develop guidelines on how to address issues of technology-mediated fraud, and may be used for research dissemination. Taking part in the study is entirely voluntary and if you agree to take part, you are free to withdraw at any time. If you chose to withdraw the researcher will delete the digital record of the interview there and then, along with any written notes she has made.

Confidentiality

The interviewer will not ask anything about your confidential / personal details relating to e banking.

Approval of the Study

The study has been approved by university ethics committee

Contact Details for Further Information

If you have any questions about the study or issues you want to discuss **contact m*eg.eghebi@research.sunderland.ac.uk* or by telephone on 07490717951.**

You can also contact:

Dr. Sharon McDonald
Research Supervisor and Member of University
Ethics Committee
Faculty of Computer Science
University of Sunderland
email: sharon.mcdonald@sunderland.ac.uk

By completing the interview, you are agreeing to participate in this study.

Appendix 4B: Particpant Consent form

This study involves participating in a semi-structured interview. The resarcher will also show you some typical examples (paper-based) of e banking website in order to get your views, attitude and experiences. The whole interview session will last approximatly 1 hour.

It is important you understand that your participation is considered voluntary. This means that even if you agree to participate you are free to withdraw from the study at any time, and any data collected will be destroyed.

In course of the interview your voice will be recorded. All recordings will remain confidential and anonymous: your name will not be associated with any of the recordings as participant number will be used. Also the data will only be accessed by the research team-including the student and supervisors and will not be available to any third party.

If you have any questions, please do not hesitate to ask.

Please indicate that you have read and understood the study information sheet

☐ I have read and understood the study information sheet

If you agree to participate in this study please tick the boxes below, print your name, sign and date the form.

Thank you.

Please tick the box below if you consent to:

☐ Your voice being recorded

Print Name: _____

Signature: _____

Date: _____

Participant Number: _____

Appendix 4C: Demographic Screening Proforma for study 2

Demographic Screening Interview Proforma

First part of the interview is to find out information about the interviewees. The interviewer will ask all the questions and record the interviewees' responses. This the interviewer intend to treat with high level of confidentiality.

About You

1. What is your age?
   - (Option to enter text)
2. What is your gender?
   - Male
   - Female
3. What is your marital status?
   - Single, never married
   - Married or domestic partnership
   - Widowed
   - Divorced
   - Separated
4. What is your educational status?
   - Doctorate degree
   - Master's degree
   - Bachelor's degree
   - Higher National Diploma
   - A-level
   - GCSE (Applied, 14 – 19 Diploma, BTEC/NVQ)
   - None of the above
5. Are you currently working?
   - Yes
   - No
6. If yes, are you full time or part time, retired or not.
   - (Option to enter text)
7. Do you have some other work you do sometimes?
   - (Option to enter text)
8. What type of job are you currently doing?
   - (Option to enter text)

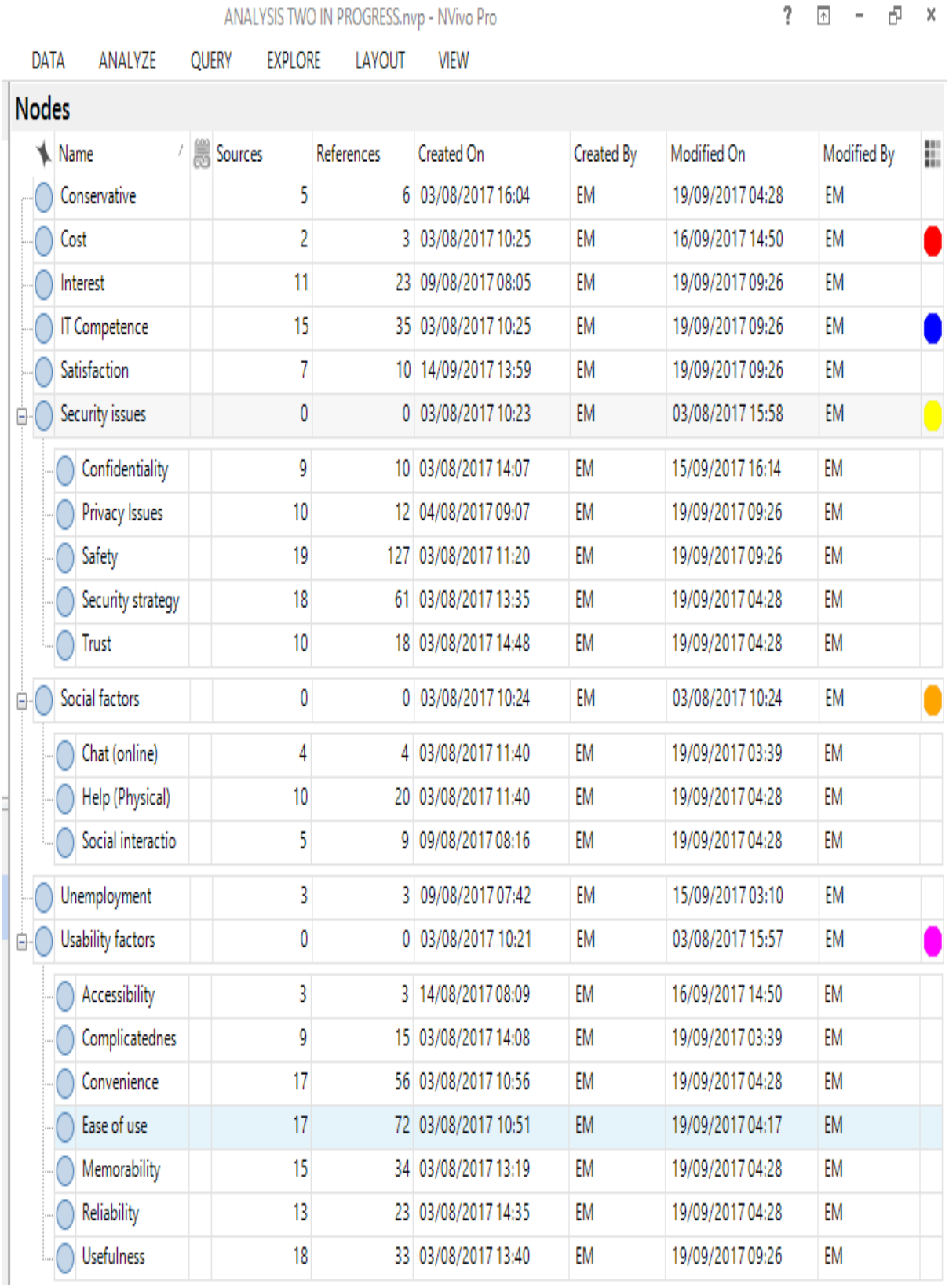
About use of e banking

1. Which of these activities do you normally do with the computer?
   - Playing games
   - E banking
   - Shopping
   - Reading newspapers
   - All of the above
2. How long is your internet experience (years)?
   - No experience
   - 0-5
   - 6-10
   - 11-15
   - 16 and above
3. How often do you use the internet?
   - Daily
   - Weekly
   - Fortnightly
   - Monthly
4. Do you have an e-banking account?

- Yes
- No

5. How long does your typical session last when using your e banking account?
   - 10 minutes
   - 20 minutes
   - 30 minutes
   - Depending on task

Appendix 4D: Coding process



Nodes

Name	Sources	References	Created On	Created By	Modified On	Modified By
Conservative	5	6	03/08/2017 16:04	EM	19/09/2017 04:28	EM
Cost	2	3	03/08/2017 10:25	EM	16/09/2017 14:50	EM
Interest	11	23	09/08/2017 08:05	EM	19/09/2017 09:26	EM
IT Competence	15	35	03/08/2017 10:25	EM	19/09/2017 09:26	EM
Satisfaction	7	10	14/09/2017 13:59	EM	19/09/2017 09:26	EM
Security issues	0	0	03/08/2017 10:23	EM	03/08/2017 15:58	EM
Confidentiality	9	10	03/08/2017 14:07	EM	15/09/2017 16:14	EM
Privacy Issues	10	12	04/08/2017 09:07	EM	19/09/2017 09:26	EM
Safety	19	127	03/08/2017 11:20	EM	19/09/2017 09:26	EM
Security strategy	18	61	03/08/2017 13:35	EM	19/09/2017 04:28	EM
Trust	10	18	03/08/2017 14:48	EM	19/09/2017 04:28	EM
Social factors	0	0	03/08/2017 10:24	EM	03/08/2017 10:24	EM
Chat (online)	4	4	03/08/2017 11:40	EM	19/09/2017 03:39	EM
Help (Physical)	10	20	03/08/2017 11:40	EM	19/09/2017 04:28	EM
Social interactio	5	9	09/08/2017 08:16	EM	19/09/2017 04:28	EM
Unemployment	3	3	09/08/2017 07:42	EM	15/09/2017 03:10	EM
Usability factors	0	0	03/08/2017 10:21	EM	03/08/2017 15:57	EM
Accessibility	3	3	14/08/2017 08:09	EM	16/09/2017 14:50	EM
Complicatednes	9	15	03/08/2017 14:08	EM	19/09/2017 03:39	EM
Convenience	17	56	03/08/2017 10:56	EM	19/09/2017 04:28	EM
Ease of use	17	72	03/08/2017 10:51	EM	19/09/2017 04:17	EM
Memorability	15	34	03/08/2017 13:19	EM	19/09/2017 04:28	EM
Reliability	13	23	03/08/2017 14:35	EM	19/09/2017 04:28	EM
Usefulness	18	33	03/08/2017 13:40	EM	19/09/2017 09:26	EM