

**Towards the functionality South African Internet banking websites  
should provide to address the needs of Generation-Y users**

by

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I declare that TOWARDS THE FUNCTIONALITY SOUTH AFRICAN INTERNET BANKING WEBSITES SHOULD PROVIDE TO ADDRESS THE NEEDS OF GENERATION-Y USERS is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



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SIGNATURE

(Mrs Sebatatso Mtimkulu)

20 July 2014

DATE

## Abstract

Despite the widespread adoption of Internet banking, no guidelines exist on what functionality the techno-savvy Generation-Y customer segment (20–37 years) expects from Internet banking websites. This research investigated the functionality that South African Generation-Y customers require from this transacting platform. A user-centred design philosophy with a mixed method research design was used.

The technological characteristics of Generation-Y, abstracted from the literature, were aligned with functionality trends of future Internet banking websites to formulate an initial list of Internet banking functionality guidelines. These were evaluated using a survey and interviews, and were also used in a heuristic evaluation of the Internet banking platforms of five South African banks.

The findings were integrated to synthesise functionality guidelines. A visual representation of these guidelines was constructed as wireframes for evaluation by Generation-Y users. This study makes a contribution by providing a validated list of Internet banking functionality guidelines for Generation-Y banking customers.

**Keywords:** functionality; Internet banking, Generation Y; user experience

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## Table of contents

<b>ABSTRACT</b> .....	<b>III</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>IV</b>
<b>LIST OF FIGURES</b> .....	<b>X</b>
<b>LIST OF TABLES</b> .....	<b>XI</b>
<b>LIST OF APPENDICES</b> .....	<b>XIII</b>
<b>ACRONYMS</b> .....	<b>XIV</b>
<b>CHAPTER 1: INTRODUCTION</b> .....	<b>1</b>
1.1    BACKGROUND AND PURPOSE OF THE STUDY .....	1
1.2    INTRODUCTORY LITERATURE REVIEW .....	4
1.2.1 <i>Internet banking functionality and Generation-Y users</i> .....	4
1.2.2 <i>Strategic importance of Generation-Y users to banks</i> .....	5
1.3    PROBLEM STATEMENT .....	6
1.4    RESEARCH PHILOSOPHY .....	7
1.5    RESEARCH QUESTION .....	7
1.5.1 <i>Sub-questions</i> .....	7
1.6    SCOPE OF THE STUDY .....	8
1.7    LIMITATIONS OF THE STUDY .....	9
1.8    ASSUMPTIONS OF THE STUDY .....	10
1.9    VALUE OF THE STUDY .....	11
1.10   RESEARCH DESIGN AND METHODOLOGY .....	12
1.10.1 <i>Overview of the study</i> .....	12
1.10.2 <i>Research design</i> .....	12
1.10.3 <i>Existing functionality on Internet banking websites</i> .....	16
1.10.4 <i>Data generation method: surveys</i> .....	16
1.10.5 <i>Data generation method: interviews</i> .....	17
1.10.6 <i>Heuristic evaluation</i> .....	17
1.10.7 <i>Functionality validation</i> .....	18
1.10.8 <i>Sampling technique</i> .....	19
1.10.9 <i>Definition of target population</i> .....	19
1.10.10 <i>Sampling unit</i> .....	20
1.10.11 <i>Data analysis and presentation of results</i> .....	21
1.10.12 <i>Demonstration of data reliability</i> .....	21
1.10.13 <i>Ethical considerations</i> .....	21
1.11   STRUCTURE OF THE STUDY .....	22
<b>CHAPTER 2: THE STRATEGIC IMPORTANCE OF INTERNET BANKING</b> .....	<b>25</b>
2.1    INTRODUCTION .....	25
2.2    THE INTERNET AND THE BANKING TECHNOLOGIES IT HAS ENABLED .....	25
2.2.1 <i>The Internet in everyday life</i> .....	26
2.2.2 <i>What is self-service?</i> .....	26
2.2.3 <i>Self-service technologies in the banking sector</i> .....	27
2.2.4 <i>The Internet banking self-service technology</i> .....	27
2.2.5 <i>Internet, online and electronic banking</i> .....	28
2.3    THE STRATEGIC IMPORTANCE OF INTERNET BANKING .....	28

2.3.1	<i>Internet banking integrates other banking channels</i> .....	29
2.3.2	<i>Internet banking promotes client retention</i> .....	30
2.3.3	<i>Internet banking results in an increase in equity</i> .....	30
2.3.4	<i>Internet banking can save operating costs</i> .....	31
2.3.5	<i>Internet banking is convenient for customers</i> .....	31
2.4	INTERNET BANKING USAGE IN SOUTH AFRICA.....	31
2.5	SUMMARY.....	32
<b>CHAPTER 3: GENERATION-Y CHARACTERISTICS .....</b>		<b>33</b>
3.1	INTRODUCTION .....	33
3.2	THE ACTIVE INTERNET BANKING USER: THE GENERATION-Y USER.....	33
3.3	GENERATION-Y USERS IN THE SOUTH AFRICAN CONTEXT.....	36
3.4	CHARACTERISTICS OF GENERATION-Y USERS.....	37
3.4.1	<i>Intrinsic and educational characteristics of Generation-Y users</i> .....	37
3.4.2	<i>Technological characteristics of Generation-Y users</i> .....	38
3.5	SUMMARY.....	41
<b>CHAPTER 4: FUNCTIONALITY TRENDS: DIGITAL FINANCIAL SERVICES .....</b>		<b>43</b>
4.1	INTRODUCTION .....	43
4.2	WHAT IS WEBSITE FUNCTIONALITY, AND WHY IS IT IMPORTANT? .....	44
4.3	CURRENT FUNCTIONALITY ON INTERNET BANKING WEBSITES .....	45
4.4	SEVEN FUNCTIONALITY TREND CATEGORIES OF FUTURE DIGITAL FINANCIAL SERVICES .....	45
4.5	PERSONAL FINANCIAL MANAGEMENT (PFM).....	46
4.5.1	<i>What is personal financial management?</i> .....	46
4.5.2	<i>Benefits of personal financial management tools</i> .....	46
4.5.3	<i>PFM early adopters: Barclaycard, Standard Bank and 22seven</i> .....	47
4.5.4	<i>PFM tools on Internet banking platforms</i> .....	49
4.5.5	<i>Guidelines for implementing personal financial management on Internet banking websites</i> .....	50
4.6	MULTI-DEVICE BANKING .....	51
4.6.1	<i>Responsive design</i> .....	51
4.6.2	<i>Transactional banking apps in South Africa</i> .....	51
4.6.3	<i>Importance of multi-device usage</i> .....	53
4.7	PERSONALISATION .....	54
4.7.1	<i>Difference between personalisation and customisation</i> .....	54
4.7.2	<i>Personalisation on future digital financial services</i> .....	54
4.7.3	<i>Personalisation of website content: cross selling and targeted marketing</i> .....	55
4.7.4	<i>Personalisation of website content: value-add content</i> .....	56
4.8	CONTENT PRESENTATION.....	56
4.8.1	<i>Types of online video</i> .....	56
4.8.2	<i>Online video early adopters: Commonwealth Bank, Easy Credit and Discovery</i> .....	57
4.9	PROCESS AUTOMATION .....	59
4.10	HUMAN TOUCH .....	59
4.10.1	<i>Human touch: Wells Fargo case study</i> .....	59
4.10.2	<i>Human touch: Hapoalim case study</i> .....	60
4.10.3	<i>Types of technology that assist with human touch</i> .....	61
4.11	SOCIAL BANKING .....	62
4.11.1	<i>Use of social media in transactional banking</i> .....	63
4.11.2	<i>Social banking early adopter: Citibank and FNB</i> .....	64
4.12	THE DIRECTION OF FUTURE ONLINE EXPERIENCES .....	65
4.12.1	<i>Classifications of the projected innovation</i> .....	65
4.13	SUMMARY.....	68

<b>CHAPTER 5: INITIAL FUNCTIONALITY REQUIREMENTS: INTERNET BANKING FOR GENERATION-Y USERS.....</b>	<b>70</b>
5.1 INTRODUCTION .....	70
5.2 OVERVIEW: GENERATION-Y CHARACTERISTICS .....	70
5.2.1 <i>Intrinsic and educational characteristics of Generation-Y users</i> .....	71
5.2.2 <i>Technological characteristics of Generation-Y users</i> .....	71
5.3 OVERVIEW: FUNCTIONALITY CATEGORIES AND PROJECTED DIRECTION OF DIGITAL FINANCIAL SERVICES .....	73
5.4 FUNCTIONALITY OF FUTURE DIGITAL FINANCIAL SERVICES MAPPED TO GENERATION-Y CHARACTERISTICS ..	75
5.5 INITIAL FUNCTIONALITY REQUIREMENTS: INTERNET BANKING FOR GENERATION-Y USERS .....	76
5.6 SUMMARY.....	79
<b>CHAPTER 6: RESEARCH DESIGN AND METHODOLOGY .....</b>	<b>80</b>
6.1 INTRODUCTION .....	80
6.2 RESEARCH PHILOSOPHY .....	80
6.2.1 <i>What is User-Centred (UCD) design philosophy?</i> .....	81
6.2.2 <i>Distinguishing between User-Centred Design (UCD), user experience (UX) and usability</i> .....	82
6.2.3 <i>UCD, UX and usability in context of this study</i> .....	84
6.3 RESEARCH APPROACH.....	85
6.4 RESEARCH DESIGN .....	86
6.4.1 <i>Research process</i> .....	87
6.5 ETHICAL CLEARANCE.....	93
6.6 THE SAMPLING UNIT.....	93
6.6.1 <i>Permission to conduct research at AquaOnline</i> .....	93
6.7 SELECTING DATA GATHERING METHODS TO USE .....	94
6.8 LITERATURE REVIEW .....	95
6.9 THE SEQUENTIAL EXPLANATORY STRATEGY.....	96
6.10 THE ONLINE SURVEY.....	97
6.10.1 <i>The survey creation process</i> .....	97
6.10.2 <i>Survey participants</i> .....	98
6.10.3 <i>The survey procedure</i> .....	99
6.11 THE INTERVIEWS.....	99
6.11.1 <i>Interview participants</i> .....	100
6.11.2 <i>Interview procedure</i> .....	101
6.12 THE HEURISTIC EVALUATION .....	102
6.12.1 <i>The evaluators</i> .....	103
6.12.2 <i>Heuristic evaluation procedure</i> .....	104
6.13 FUNCTIONALITY VALIDATION .....	105
6.13.1 <i>Participants: functionality validation</i> .....	106
6.13.2 <i>Procedure: functionality validation</i> .....	106
6.14 DATA ANALYSIS AND PRESENTATION OF RESULTS .....	107
6.15 DEMONSTRATING THE RELIABILITY OF THE RESEARCH.....	107
6.15.1 <i>Piloting questions for the different research activities</i> .....	108
6.16 SUMMARY.....	109
<b>CHAPTER 7: RESEARCH FINDINGS: ONLINE SURVEY AND PARTICIPANT INTERVIEWS.....</b>	<b>110</b>
7.1 INTRODUCTION .....	110
7.2 CONSENT FOR PARTICIPATION.....	111
7.3 DEMOGRAPHIC DETAILS.....	111
7.4 PRE-SURVEY INPUT .....	117
7.4.1 <i>Overview of feedback</i> .....	117
7.4.2 <i>Primary bank used</i> .....	119

7.4.3	<i>Internet banking usage duration and frequency</i> .....	120
7.4.4	<i>Internet banking functionality most used</i> .....	120
7.4.5	<i>What participants found most beneficial about their current Internet banking platform</i> .....	121
7.4.6	<i>What participants dislike about their current Internet banking platform</i> .....	121
7.4.7	<i>Modern users' perceptions of Internet banking</i> .....	122
7.5	RECAP: VALIDATION OF INTERNET BANKING FUNCTIONALITY FORMULATION .....	124
7.5.1	<i>Overview of the literature</i> .....	124
7.6	FUNCTIONALITY RATING SCALE USED.....	125
7.7	INTERNET BANKING FUNCTIONALITY VALIDATION FINDINGS: SIMPLE .....	126
7.8	INTERNET BANKING FUNCTIONALITY VALIDATION FINDINGS: UBIQUITOUS (ANYWHERE, ANYTIME).....	128
7.8.1	<i>Follow-up question: Information to share on social media platforms</i> .....	129
7.9	INTERNET BANKING FUNCTIONALITY VALIDATION FINDINGS: PERSONAL .....	131
7.10	INTERNET BANKING FUNCTIONALITY VALIDATION FINDINGS: EMPOWERMENT.....	133
7.11	INTERNET BANKING FUNCTIONALITY VALIDATION FINDINGS: REASSURING .....	135
7.12	POST-SURVEY INPUT .....	137
7.12.1	<i>Additional Internet banking functionality requested by users</i> .....	138
7.12.2	<i>Functionality that represents innovation on current Internet banking platforms</i> .....	139
7.12.3	<i>Functionality rating on current Intranet banking websites</i> .....	140
7.12.4	<i>The role of Internet banking</i> .....	140
7.13	MEASURING THE RELIABILITY OF THE RESEARCH .....	141
7.14	AVERAGE RATING OF THE FIVE FUNCTIONALITY CATEGORIES .....	142
7.15	VALIDATED INTERNET BANKING FUNCTIONALITY GUIDELINES.....	143
7.16	SUMMARY.....	149

**CHAPTER 8: RESEARCH FINDINGS: HEURISTIC EVALUATION OF CURRENT SOUTH AFRICAN INTERNET BANKING**

<b>WEBSITES</b> .....	<b>151</b>	
8.1	INTRODUCTION .....	151
8.2	WHAT IS A HEURISTIC EVALUATION? .....	152
8.3	THE PROCESS OF EVALUATION .....	152
8.4	HEURISTIC EVALUATION RESULTS .....	153
8.4.1	<i>The Simple category</i> .....	153
8.4.2	<i>The Ubiquitous category</i> .....	154
8.4.3	<i>The 'Personal' category</i> .....	155
8.4.4	<i>The Empowering category</i> .....	157
8.4.5	<i>The Reassuring category</i> .....	158
8.4.6	<i>The Participant-generated category</i> .....	159
8.5	HEURISTIC EVALUATION REPORT .....	161
8.5.1	<i>Time spent on the website evaluation</i> .....	161
8.5.2	<i>The overall compliance of the websites with the functionality heuristics</i> .....	162
8.5.3	<i>Identification of innovative functionality not covered by the heuristics</i> .....	163
8.6	SUMMARY.....	164

**CHAPTER 9: RESEARCH FINDINGS: VALIDATION OF THE VISUALLY INTERPRETED FUNCTIONALITY GUIDELINES .....166**

9.1	INTRODUCTION .....	166
9.2	WHAT ARE WIREFRAMES?.....	166
9.3	THE FUNCTIONALITY VALIDATION PROCESS .....	167
9.4	THE WIREFRAME PRESENTATION.....	170
9.4.1	<i>Reading the wireframe</i> .....	170
9.4.2	<i>Wireframe example: Simple category task 2: Divide your account into two money pockets, and increase Electronic Transfer limit to R10 000 per month</i> .....	171
9.5	FUNCTIONALITY VALIDATION RESULTS .....	172



<i>Simple Task 4: Open home loan video that will explain everything to you.</i>	173
<i>Simple task 3: View the home loan deal the bank is making you, and find out more about it.</i>	174
<i>Empowering task 6: Apply for this Life Cover product.</i>	177
9.6    POST-VALIDATION QUESTIONS	179
9.6.1 <i>Does the proposed functionality enhance or complicate the Internet banking offering?</i>	179
9.6.2 <i>Please list additional functionality you would like to see on Internet banking that was not captured in the prototype</i>	179
9.6.3 <i>How would you rate the functionality on the prototype?</i>	179
9.7    SUMMARY	180
<b>CHAPTER 10: INTERNET BANKING FUNCTIONALITY GUIDELINES FOR</b>	<b>184</b>
<b>GENERATION-Y USERS</b>	<b>184</b>
10.1    INTRODUCTION	184
10.2    INTERNET BANKING FUNCTIONALITY IMPLEMENTATION GUIDELINES	185
10.3    INTERNET BANKING FUNCTIONALITY GUIDELINES FOR SOUTH AFRICAN GENERATION-Y USERS	188
10.4    SUMMARY	194
<b>CHAPTER 11: CONCLUSIONS</b>	<b>196</b>
11.1    OVERVIEW	196
11.2    REVISITING THE PROBLEM STATEMENT	200
11.3    RESPONSES TO THE RESEARCH QUESTIONS	200
11.3.1 <i>Answer to sub-question 1: Why is Internet banking important for banking institutions?</i>	201
11.3.2 <i>Answer to sub-question 2: What characteristics of Generation-Y users influence their expectations and preferences in terms of online platforms?</i>	202
11.3.3 <i>Answer to sub-question 3: What are the projected functionality trends of financial services websites like Internet banking?</i>	203
11.3.4 <i>Answer to sub-question 4: What kind of functionality are South African Generation-Y users looking for on their Internet banking platform?</i>	207
11.3.5 <i>Answer to sub-question 5: How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?</i>	209
11.3.6 <i>Answer to sub-question 6: What Internet banking functionality appeals to South African Generation-Y users?</i>	211
11.4    LIMITATIONS OF THE STUDY	213
11.5    CONTEXTUALISATION OF THE STUDY	214
11.6    CONTRIBUTIONS OF THE STUDY	218
11.7    AREAS FOR FURTHER RESEARCH	219
11.8    REFLECTION	220
<b>REFERENCES</b>	<b>222</b>

## List of figures

FIGURE 1.1: DIFFERENT VIEWS OF THE RELATIONSHIP BETWEEN USABILITY AND UX (MOCZARNY ET AL. 2012) .....	3
FIGURE 1.2: RESEARCH ACTIVITIES AND THEIR OUTPUT .....	15
FIGURE 1.3: STRUCTURE OF THE STUDY .....	24
FIGURE 2.1: INTERNET USERS AS PERCENTAGE OF POPULATION: SOUTH AFRICA (GOOGLE PUBLIC DATA EXPLORER 2012) .....	26
FIGURE 2.2: CROSS-CHANNEL EXPERIENCE DURING A USER'S PURCHASING JOURNEY (HESSE 2011) .....	30
FIGURE 3.1: EXAMPLE OF GENERATION-Y LANGUAGE (TEMKIN & POPOFF-WALKER 2007) .....	40
FIGURE 4.1: FUNCTIONALITY AS A KEY CONTRIBUTOR OF UX (RUBINOFF 2004).....	44
FIGURE 4.2: A VISUALLY APPEALING PRESENTATION OF CARD STATUS – MYBARCLAYCARD (NIEMEYER 2011) .....	48
FIGURE 4.3: EXAMPLE: STANDARD BANK BUDG TOOL.....	49
FIGURE 4.4: JYSKE BANK'S RESPONSIVE WEBSITE RENDERED ON DESKTOP, TABLET AND SMARTPHONE DEVICES (BOYE 2012) .....	52
FIGURE 4.5: EXAMPLES OF TRANSACTIONAL MOBILE APPS FROM FNB, STANDARD BANK, NEDBANK AND ABSA .....	52
FIGURE 4.6: COMPARISON BETWEEN THE MOBILE DEVICES OF YESTERYEAR AND TODAY (DORSEY 2010).....	53
FIGURE 4.7: PRODUCT VIDEO: COMMONWEALTH BANK OF AUSTRALIA (HESSE 2011) .....	57
FIGURE 4.8: EDUCATIONAL VIDEO: EASY CREDIT FINANCIAL SERVICES PROVIDER (ENSOR, POLTERMANN 2011) .....	58
FIGURE 4.9: EDUCATIONAL VIDEO: DISCOVERY – HEALTH INSURANCE AND FINANCIAL SERVICES PROVIDER (DISCOVERY HEALTHID 2012).....	58
FIGURE 4.10: HAPOALIM'S CONNECT FUNCTIONALITY (MONTEZ 2012) .....	61
FIGURE 4.11: CITIBANK PEER COMPARISON FUNCTIONALITY (WANNEMACHER 2012) .....	64
FIGURE 4.12: TRANSACTIONAL BANKING IN FACEBOOK – FNB SOUTH AFRICA (CLARK 2012) .....	65
FIGURE 6.1: THE HUMAN-CENTRED DESIGN PROCESS (USABILITY PARTNERS 2014) .....	82
FIGURE 6.2: INTERPRETATION OF UCD, UX AND USABILITY IN CONTEXT OF THIS STUDY .....	85
FIGURE 6.3: RESEARCH DESIGN FLOW: FUNCTIONALITY FOR INTERNET BANKING GENERATION-Y USERS .....	88
FIGURE 7.1: ONLINE SURVEY AND INTERVIEWS: PARTICIPANT AGE BREAKDOWN .....	113
FIGURE 7.2: ONLINE SURVEY AND INTERVIEWS: EDUCATION LEVEL .....	114
FIGURE 7.3: ONLINE SURVEY AND INTERVIEWS: MOST USED INTERNET CONNECTION DEVICES .....	115
FIGURE 7.4: ONLINE SURVEY AND INTERVIEWS: SOCIAL MEDIA NETWORKS MOST ACTIVE ON.....	116
FIGURE 7.5: ONLINE SURVEY AND INTERVIEWS: BANKS MAINLY USED TO TRANSACT .....	119
FIGURE 7.6: ONLINE SURVEY AND INTERVIEWS: INTERNET BANKING FREQUENCY OF USE .....	120
FIGURE 7.7: REASSURING FUNCTIONALITY PREFERRED BY USERS.....	136
FIGURE 8.1: IDENTIFIED INNOVATIVE FUNCTIONALITY: USERS CAN CHANGE A BANK ACCOUNT NAME.....	163
FIGURE 9.1: ACCOUNT WITH TECHNO BANK SELECTED: TECHNO BANK FUNCTIONALITY WIREFRAMES.....	171
FIGURE 11.1: OVERVIEW OF STUDY: CHAPTER 2: STRATEGIC IMPORTANCE OF INTERNET BANKING.....	196
FIGURE 11.2: OVERVIEW OF STUDY: CHAPTERS 3-5.....	197
FIGURE 11.3: OVERVIEW OF STUDY: CHAPTERS 7-9.....	198
FIGURE 11.4: SUMMARISED VIEW OF THE STUDY: CHAPTERS 2-10.....	199
FIGURE 11.5: TRIANGULATION IN THE FORMULATION OF THE INITIAL LIST OF INTERNET BANKING FUNCTIONALITY GUIDELINES.....	206
FIGURE 11.6: THIS STUDY'S HTML PROTOTYPE AND MOMENTUM'S FINANCIAL WELLNESS PLATFORM. ....	215
216	
FIGURE 11.7: THE RISE OF MOBILE BANKING IN SOUTH AFRICA (COLUMINATE 2013B) .....	216
FIGURE 11.8: SOUTH AFRICAN ELECTRONIC/INTERNET BANKERS DO MORE ONLINE (COLUMINATE 2013B).....	217
FIGURE 11.9: THE REFLECTING THINKING CYCLE (READING UNIVERSITY 2013) .....	221

## List of tables

TABLE 1.1: RESEARCH DESIGN AND METHODOLOGY .....	14
TABLE 1.2: TARGET SYSTEMS FOR HEURISTIC EVALUATION .....	17
TABLE 1.3: PARTICIPANT BREAKDOWN .....	20
TABLE 2.1: IMPORTANCE OF SELF-SERVICE TO ORGANISATIONS (GOLDSTUCK 2010).....	27
TABLE 2.2: TYPES OF INTERNET BANKING (SAFEENA ET AL. 2010).....	28
TABLE 2.3: WHAT SOUTH AFRICANS DO ONLINE (MULLER 2011).....	31
TABLE 3.1: TYPES OF INTERNET BANKING USER (DAFFUE 2005).....	34
TABLE 3.2: CROSS TABULATION: ACTIVE INTERNET BANKING USER AND GENERATION-Y CHARACTERISTICS .....	36
TABLE 3.3: GENERATION-Y TECHNOLOGICAL CHARACTERISTICS (TEMKIN & POPOFF-WALKER 2007).....	39
TABLE 4.1: BENEFITS OF PERSONAL FINANCIAL MANAGEMENT (ENSOR ET AL. 2011).....	46
TABLE 4.2: QUESTIONS TO ANSWER FOR THE SUCCESSFUL IMPLEMENTATION OF PFM TOOLS (HESSE 2011) .....	50
TABLE 4.3: FOUR WAYS IN WHICH PERSONALISATION WILL MATERIALISE (HESSE 2011) .....	55
TABLE 4.4: DIFFERENT TYPES OF FINANCIAL VIDEO (ENSOR & POLTERMANN 2011) .....	57
TABLE 4.5: FOUR FORMS OF AUTOMATION TECHNOLOGY (HESSE 2011) .....	59
TABLE 4.4: ONLINE CHAT TECHNOLOGIES (HESSE 2011).....	61
TABLE 4.5: FIVE OBJECTIVES OF SOCIAL MEDIA WHEN USED BY ORGANISATIONS (NOBLE 2009) .....	62
TABLE 4.6: FUTURE OF ONLINE CUSTOMER EXPERIENCE (DORSEY 2010) .....	66
TABLE 4.7: ATTRIBUTES OF FUTURE FINANCIAL DIGITAL SERVICES (HESSE 2011) .....	67
TABLE 4.8: SUPER: CROSS TABULATION OF FUTURE ONLINE EXPERIENCES .....	68
TABLE 5.1: INTRINSIC AND EDUCATIONAL CHARACTERISTICS OF GENERATION-Y USERS AS PER SECTION 3.4.1 .....	71
TABLE 5.2: TECHNOLOGICAL CHARACTERISTICS OF GENERATION-Y USERS AS PER SECTION 3.4.2.....	72
TABLE 5.3: PROJECTED FUNCTIONALITY CATEGORIES: DIGITAL FINANCIAL SERVICES.....	73
TABLE 5.4: SUPER DEFINITION: FUTURE DIGITAL FINANCIAL SERVICES (HESSE 2011).....	74
TABLE 5.5: MAPPED: SUPER TO IDENTIFIED SEVEN FUNCTIONALITY CATEGORIES.....	75
TABLE 5.6: SUPER FUNCTIONALITY CATEGORIES MAPPED TO GENERATION-Y CHARACTERISTICS .....	76
TABLE 5.7: INITIAL FUNCTIONALITY REQUIREMENTS: INTERNET BANKING FOR GENERATION-Y USERS (SYNTHESISED BY THE RESEARCHER).....	77
TABLE 6.1: ACTIVITIES OF THE HUMAN-CENTRED DESIGN PROCESS (USABILITY PARTNERS 2014).....	82
TABLE 6.2: UCD METHODS AND THE ACTIVITIES THEY COVER (USABILITY.GOV 2012C).....	83
TABLE 6.3: ADVANTAGES OF A MIXED-METHOD COMBINATION IN A STUDY (ROSSMAN & WILSON 1985) .....	86
TABLE 6.4: RESEARCH SUB-QUESTIONS AND THEIR ACTIVITIES.....	91
TABLE 6.5: SELECTED DATA GATHERING METHODS, THE UCD ACTIVITIES AND SELECTION CRITERION THEY SUPPORT .....	95
TABLE 6.6: INTERVIEW PARTICIPANTS' PROFILES.....	101
TABLE 6.7: TEN COMMONLY USED USABILITY HEURISTICS FOR USER INTERFACE DESIGN (NIELSEN 1995).....	103
TABLE 6.8: HEURISTIC EXPERTS PROFILES .....	104
TABLE 6.9: WEBSITE ADDRESSES OF THE INTERNET BANKING WEBSITES.....	104
TABLE 6.10: FUNCTIONALITY VALIDATION PARTICIPANTS' PROFILES .....	106
TABLE 6.11: RESEARCH DATA RELIABILITY AND VALIDITY .....	108
TABLE 7.1 LIKES OF INTERNET BANKING – INTERVIEW AND ONLINE SURVEY FEEDBACK.....	121
TABLE 7.2 DISLIKES OF INTERNET BANKING; INTERVIEW AND ONLINE SURVEY FEEDBACK .....	121
TABLE 7.3 MODERN USERS' PERCEPTIONS OF INTERNET BANKING; INTERVIEW AND ONLINE SURVEY RESPONSES....	123
TABLE 7.4: SUMMARY: DIRECTION OF FUTURE FINANCIAL DIGITAL SERVICES (HESSE 2011).....	124
TABLE 7.5: LIKERT SCALE STATEMENTS AND ASSIGNED NUMERIC VALUES.....	126
TABLE 7.6: SIMPLE: FUNCTIONALITY VALIDATION FINDINGS.....	127
TABLE 7.7: UBIQUITOUS: FUNCTIONALITY VALIDATION FINDINGS.....	128
TABLE 7.8 TYPE OF FINANCIAL INFORMATION TO SHARE ON SOCIAL MEDIA NETWORKS– INTERVIEW AND ONLINE SURVEY RESPONSES .....	130

TABLE 7.9: PERSONAL: FUNCTIONALITY VALIDATION FINDINGS .....	131
TABLE 7.10: EMPOWERMENT: FUNCTIONALITY VALIDATION FINDINGS .....	133
TABLE 7.11: REASSURING: FUNCTIONALITY VALIDATION FINDINGS.....	135
TABLE 7.12 PREFERRED REASSURING FUNCTIONALITY: INTERVIEW AND ONLINE SURVEY RESPONSES .....	137
TABLE 7.13 THE ROLE OF THE INTERNET BANKING PLATFORM OF THE FUTURE.....	140
TABLE 7.14 AVERAGE RATINGS: FUNCTIONALITY CATEGORIES .....	142
TABLE 7.15 SIMPLE: VALIDATED FUNCTIONALITY LISTING .....	144
TABLE 7.16 UBIQUITOUS: VALIDATED FUNCTIONALITY LISTING.....	145
TABLE 7.17 PERSONAL: VALIDATED FUNCTIONALITY LISTING.....	145
TABLE 7.18 EMPOWERING: VALIDATED FUNCTIONALITY LISTING .....	146
TABLE 7.19 REASSURING: VALIDATED FUNCTIONALITY LISTING.....	147
TABLE 7.20 ADDITIONAL PARTICIPANT GENERATED FUNCTIONALITY .....	148
TABLE 8.1 HEURISTIC EVALUATION RESULTS: SIMPLE CATEGORY .....	153
TABLE 8.2 HEURISTIC EVALUATION RESULTS: UBIQUITOUS CATEGORY .....	155
TABLE 8.3 HEURISTIC EVALUATION RESULTS: PERSONAL CATEGORY .....	155
TABLE 8.4 HEURISTIC EVALUATION RESULTS: EMPOWERING CATEGORY .....	157
TABLE 8.5 HEURISTIC EVALUATION RESULTS: REASSURING CATEGORY .....	159
TABLE 8.6 HEURISTIC EVALUATION RESULTS: PARTICIPANT-GENERATED CATEGORY.....	160
TABLE 9.1: GOAL-ORIENTED TASKS PRESENTED TO GENERATION-Y USERS DURING THE FUNCTIONALITY VALIDATION EXERCISE .....	168
TABLE 9.2: SIMPLE: PROTOTYPE FUNCTIONALITY LISTING.....	172
TABLE 9.3: UBIQUITOUS: PROTOTYPE FUNCTIONALITY LISTING.....	173
TABLE 9.4: PERSONAL: PROTOTYPE FUNCTIONALITY LISTING.....	174
TABLE 9.5: EMPOWERING: PROTOTYPE FUNCTIONALITY LISTING .....	175
TABLE 9.6: REASSURING: PROTOTYPE FUNCTIONALITY LISTING.....	177
TABLE 9.7: PARTICIPANT-GENERATED FUNCTIONALITY: PROTOTYPE FUNCTIONALITY LISTING.....	177
TABLE 10.1: RESEARCHER-SYNTHESED, INTERNET BANKING FUNCTIONALITY IMPLEMENTATION GUIDELINES.....	186
TABLE 10.2: SIMPLE CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES.....	189
TABLE 10.3: UBIQUITOUS CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES.....	190
TABLE 10.4: PERSONAL CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES .....	190
TABLE 10.5: EMPOWERING CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES.....	191
TABLE 10.6: REASSURING CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES.....	193
TABLE 10.7: PARTICIPANT GENERATED CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES .....	193
TABLE 10.8: PROTOTYPE VALIDATION GENERATED CATEGORY: FINAL VALIDATED LIST OF FUNCTIONALITY GUIDELINES .....	194
TABLE 11.1: SUMMARY: HOW BANKING INSTITUTIONS CAN BENEFIT FROM THE INTERNET BANKING PLATFORM ....	202
TABLE 11.2: SUMMARY: TECHNOLOGICAL CHARACTERISTICS OF GENERATION-Y USERS.....	203
TABLE 11.3: SUMMARY: SEVEN INNOVATIVE FUNCTIONALITY CATEGORIES.....	204
TABLE 11.4: SUMMARY: PROJECTED USER EXPERIENCE ON FUTURE DIGITAL FINANCIAL SERVICES .....	205
TABLE 11.5: SUMMARY – HEURISTIC EVALUATION RESULTS: FIVE SOUTH AFRICAN BANKS.....	210
TABLE 11.6: SUMMARY: HTML PROTOTYPE FUNCTIONALITY VALIDATION FEEDBACK .....	211
TABLE 11.7: HIGH-LEVEL COMPARISON OF SIMILAR RECENT STUDIES AND THIS RESEARCH PAPER .....	214
TABLE 11.8: RESEARCH OUTPUT AND RELATED CONTRIBUTIONS .....	217
TABLE 11.9: RESEARCH OUTPUT AND RELATED CONTRIBUTIONS .....	218
TABLE 11.10: THREE TYPES OF REFLECTIVE THINKING (TISHMAN 1999) .....	220

## List of Appendices

<b>APPENDIX A: ETHICAL CLEARANCE AND GENERAL RESEARCH PERMISSION .....</b>	<b>232</b>
APPENDIX A1: ETHICAL CLEARANCE FOR THE STUDY .....	233
APPENDIX A2: PERMISSION TO CONDUCT RESEARCH AT AQUAONLINE PTY (LTD).....	234
<b>APPENDIX B: INTERVIEWS - INTERNET BANKING FUNCTIONALITY VALIDATION WITH REPRESENTATIVE GENERATION-Y USERS .....</b>	<b>235</b>
APPENDIX B1: INTERVIEW SCHEDULE .....	236
APPENDIX B2: INTERVIEWS – RESEARCH PARTICIPANT CONSENT FORM .....	239
APPENDIX B3: INTERVIEWS – PARTICIPANT SURVEY .....	241
<b>APPENDIX C: SURVEY - INTERNET BANKING FUNCTIONALITY VALIDATION WITH REPRESENTATIVE GENERATION-Y USERS .....</b>	<b>253</b>
APPENDIX C1: ONLINE SURVEY TOOL: SURVEY MONKEY .....	254
APPENDIX C2: ONLINE PARTICIPANT CONSENT PROMPT .....	255
APPENDIX C3: SURVEY: INTERNET BANKING FUNCTIONALITY VALIDATION QUESTIONS .....	256
<b>APPENDIX D: HEURISTIC EVALUATION OF FIVE SOUTH AFRICAN INTERNET BANKING WEBSITES .....</b>	<b>262</b>
APPENDIX D1: EVALUATOR CONSENT FORM .....	263
APPENDIX D2: HEURISTIC EVALUATION PROCEDURE.....	265
APPENDIX D3: WEBSITE FAMILIARISATION TASKS FOR EVALUATORS.....	267
APPENDIX D4: FUNCTIONALITY HEURISTICS .....	270
APPENDIX D5: HEURISTIC EVALUATION REPORT .....	275
<b>APPENDIX E: WIREFRAME PROTOTYPE FUNCTIONALITY VALIDATION .....</b>	<b>278</b>
APPENDIX E1: FUNCTIONALITY VALIDATION CONSENT FORM .....	279
APPENDIX E2: FUNCTIONALITY VALIDATION PROCEDURE .....	281
APPENDIX E3: TASKS FOR GENERATION-Y USERS.....	283
APPENDIX E4: FUNCTIONALITY VALIDATION FORM: GENERATION-Y USERS .....	286
<b>APPENDIX F: STATISTICAL ANALYSIS RESULTS – RELIABILITY OF RESEARCH CONSTRUCTS .....</b>	<b>292</b>
1.    RESPONSES PER CONSTRUCT .....	292
2.    RELIABILITY SCORES.....	294
3.    OVERALL RELIABILITY REPORT .....	298
<b>APPENDIX G - PUBLISHED INTERACT 2013 ARTCILE BASED ON THIS STUDY .....</b>	<b>299</b>

## Acronyms

Acronym	Description
ABSA	Amalgamated Banks of South Africa. To date, the name of the bank is recognised as a whole; the acronym is ignored.
BBVA	Banco Bilbao Vizcaya Argentaria
CARS	Customised, Aggregated, Relevant, Social
FNB	First National Bank
HCI	Human-Computer Interaction
HTML	Hyper Text Markup Language
IVR	Interactive Voice Response
PFM	Personal Financial Management
SMS	Short Messaging Service
SUPER	Simple, Ubiquitous, Personal, Empowering, Reassuring
UCD	User-Centred Design
UX	User Experience

## **Chapter 1: Introduction**

### **1.1 Background and purpose of the study**

South Africa is recognised as having one of the more sophisticated communications infrastructures in the African continent, with the Internet having been commercially available since 1994. (Brown & Buys 2005).

Since then, Internet technology has significantly altered industry structures and has given rise to new ways of doing business by reducing the once important need for physical space and organisational personnel (Gopalakrishnan, Wischnevsky & Damanpour 2003). This is evident in the rise of platforms where customers access certain services without any human intervention from the organisation itself; especially in industries with a large customer base, such as retail, telecommunications and banking. This concept is known as customer self-service (Goldstuck 2010).

Internet banking is one of the most highly utilised customer self-service platforms in South Africa (Wu 2005). It allows bank customers to use remote access to manage their bank accounts and transactions (Calisir & Gumussoy 2008), in their own time and at their convenience, without leaving their homes or work places (Hasan, Baten, Kamil & Parveen 2010).

Of the four million South African users who had access to the Internet at the end of 2008, 2.4 million were registered Internet banking users (Naidu 2008). This means that 60% of South African Internet users were identified users of the Internet banking platform, further accentuating the importance of this type of service. Whilst it is therefore evident that Internet banking usage and adoption in South Africa is increasing, it is less obvious whether users are really satisfied with the functionality offered on this platform (Homan 2009).

According to Rubinnof (2004), functionality encompasses all technical and task-supporting processes and applications; it entails the delivery of the website's interactive services to its users. Goodwin (1987) adds that how a user perceives and accepts a system is strongly affected by how the functionality is invoked on that system, as well as what specific functions a system contains. If the functions provided for the user do not support the specific user goals and needs, the system will

not be usable (Bayraktaroglu, Calisir & Gumussoy 2009), ultimately leading to a negative user experience on the website.

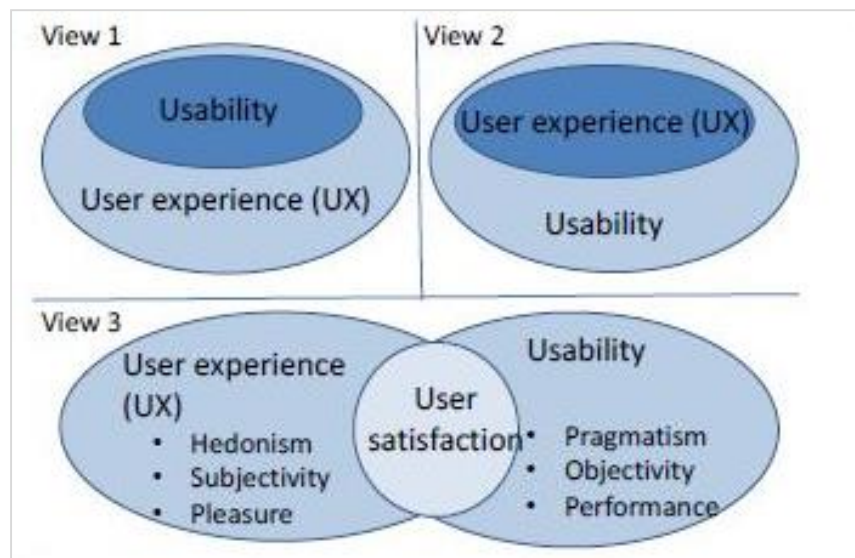
User experience (UX) describes the overall satisfaction a user has when dealing with a system (Paluch 2006). Rubinnof (2004) discusses this relationship between the user experience of a system and its functionality in more detail. He explains that user experience is made up of four components, of which functionality is one. He explains that the other three are usability, content and branding of a website. Usability is one of the quality attributes that assess how easy an interface is to use. It is based on five quality components: learnability, efficiency, memorability, errors and satisfaction (Nielsen 2012b). Content refers to the way in which the actual information such as text and multimedia are structured on the website in terms of meeting the user needs and business requirements, while branding refers to the aesthetic and all the design-related elements on the website

In the literature, however, the relationship between usability and user experience (UX) is regarded as complex. Despite the widely accepted importance of UX as a concept related to and yet distinct from usability, there is still some ambiguity about the relationship between UX and usability (Moczarny, De Villiers & Van Biljon 2012). Moczarny et al. (2012) identify three perspectives relating to this relationship as follows:

- *UX subsumes usability.* This view is also implied by Rubinnof (2004) above and alludes to the fact that UX includes usability, and that the evaluation of UX entails the extension of existing methods for evaluating usability.
- *Usability subsumes UX.* This perspective is held by researchers who believe that satisfaction is the overarching subjective component of usability, and that UX is a broad and rich term for satisfaction.
- *Usability and UX are separate but closely-related concepts.* These two notions can be viewed as intersecting, with similar attributes, but which also have certain individual differences.

Moczarny et al. (2012) depict this relationship in a visual as shown in Figure 1.1.





**Figure 1.1:** Different views of the relationship between usability and UX (Moczarny et al. 2012)

Rogers, Sharp and Preece (2012) maintain that, traditionally, usability has been perceived as only being concerned with meeting specific usability criteria (e.g. efficiency), while UX has been concerned with explaining the nature of the user experience (e.g. whether a user finds a product aesthetically pleasing or not). These authors explain that the distinction between the two notions is not clear cut, since usability is fundamental to the quality of the UX and, conversely, qualities of a UX are linked with how usable a product is. They therefore express the importance of looking at these two factors together when designing for an improved UX.

With this in mind, Schulze and Krömker (2010) assert that the measurement of UX in a product can be explicitly targeted to evaluate just a single component, depending on what goals and objectives of the product are. This study will therefore focus on, and examine only, the functionality component of UX within the Internet banking domain. However, it will recognise a limitation that may mean other influencing components of UX, as explained by Rubinnof (2004) (i.e. usability, content and branding), may need to be further investigated to provide a comprehensive guideline for an enhanced UX on Internet banking websites. Section 6.2.3 examines in further detail the way in which this relationship is perceived in the context of this study.

## **1.2 Introductory literature review**

### **1.2.1 Internet banking functionality and Generation-Y users**

In recent years, banking customers worldwide have become comfortable with a digital lifestyle and their expectations of banks have undergone a significant transformation. These customers fully understand the power of technology and seek to use it to exercise better control over their Internet banking operations (Finacle 2009). Such users are the Generation-Ys also known as the Millennials (Smith 2010). Generation-Y users were born between the years 1977 and 1994, which means they fall within the 20 to 37-year age group (Noble, Haytko & Phillips 2009).

This is a generation that has been brought up in a consumption-driven society (Noble et al. 2009) with the added distinction of having been exposed to technology since early childhood (Djamasbi, Siegel & Tullis 2010). Millennials have technological tendencies such as preferring portable mobile devices and social computing; qualities that shape their perceptions of interactions with websites (Temkin & Popoff-Walker 2008). Given these unique characteristics, specific online experiences need to be designed just for these users.

Internet banking is projected to be the preferred banking platform for Generation-Y users (Leggatt 2010). However, Internet banking platforms have not significantly evolved over recent years (Peter 2007), as they continue to pay attention to basic functionality such as viewing online statements, fund transfers and bill payment; functionality that does not differentiate the Internet banking offering, nor caters for the more sophisticated online habits and preferences of Generation-Y customers (Enterprise Innovation Editors 2009).

Despite this, the specific requirements for enhanced Internet banking functionality have not been fully explored. This may prove to be unfavourable to banks as functionality is an important quality attribute of a website, as explained by Nielsen (2012b). He states that it matters little to users if an interface is easy to use, if it does not contain the functionality they want.

Research evaluating functionality on the Internet banking websites of six of the largest banks in the United States (Bank of America, Chase, Citibank, PNC Bank, US Bank, and Wells Fargo) (Wannemacher 2011) used a Website User Experience and Functionality Benchmark methodology to evaluate how the different banks measure up against an already established set of Internet

banking functionality guidelines. These guidelines outline conventional functionality currently existing on Internet banking platforms, such as paying beneficiaries, inter-account transfers, and so on, but do not explore the next level of functionality innovation this platform can offer to banking customers.

In his research, Ravendran (2011) identifies a single advanced functionality component of Internet banking in the Australian context, namely *customisation*. He explains in this regard that customisation is an imperative functionality dimension for the Internet banking platform, particularly among the younger generation, and continues by stipulating relevant technology that may assist to bring this dimension to life. Although customisation is identified as a vital functionality need, the paper does not identify additional functionality dimensions that may satisfy this younger segment of banking clients, nor does the paper reveal the characteristics of these banking clients that result in their inclination to customisation.

A study by Green and Van Belle (2002) investigated expectations of Internet banking in South Africa, and found that customers were satisfied with the basic Internet banking experience, but were concerned about high costs (i.e. bank fees and Internet access costs), the lack of integration with other banking channels, as well as the lack of more advanced functionality. Besides identifying the need for advanced functionality, they do not expand on what this functionality should be. The possible mismatch between the expectations of Generation-Y banking customers and the functionality currently offered by South African Internet banking websites provides the rationale for this study.

### **1.2.2 Strategic importance of Generation-Y users to banks**

The 2010 mid-year population estimate from Statistics South Africa states that approximately 37% of South Africans are in the Generation-Y age bracket, amounting to over one-third of the total population (Statistics South Africa 2010). Growing up in a world immersed in digital technologies, Generation-Y users hold the highest and most unique expectations about what their Internet banking experience should be (Hutcherson 2009), as compared to earlier generations. This therefore makes it imperative for banks to align the UX on Internet banking websites accordingly.

Moreover, the future of business is largely dependent on this next wave of consumers (Smith 2010), as this segment is expected to have higher disposable income than any other predecessor generation (Noble et al. 2009). This means that banks need to start investigating and investing in technology (Leggatt 2010) that supports and enhances the Internet banking experience for this next generation of consumers (Green & Van Belle 2002).

Generation-Y users will demand that organisations understand them and their needs and adapt accordingly in order to maintain relevance in a competitive marketplace (Djamasbi et al. 2010). Banks need to start engaging with these users now, and build relevant online experiences in order to reap the benefits in the future (Oracle Financial Services 2010).

As users become more used to technology, it is taking less time to adopt and incorporate it into everyday life. This further encourages innovation, and thus increases the beneficial impact on organisations. If banks are not introducing innovation at the same rate at which customers are requesting and adopting it, they are at a considerable disadvantage and risk losing customers to more agile organisations that are able to capture the benefits of modernisation quickly (King 2010).

### **1.3 Problem statement**

Generation-Y users are an important segment of the market (Smith 2010), therefore making certain that functionality on websites caters to their specific needs has become an important challenge for many organisations. Despite the relevance of Generation-Y users to the future of business, there is a lack of research that could be found regarding their web preferences (Djamasbi et al. 2010).

This study will address this gap in the literature by investigating, in the South African context, Generation-Y functionality preferences, specifically for the Internet banking platform. The study will examine what this functionality is and how it should be presented in order to reflect this user group's characteristics and online inclinations.

## **1.4 Research philosophy**

This study has a distinct focus on the Generation-Y user group and, because of this, it was important that the findings reflect to a large extent the likely needs of this unique user base. Based on this, a philosophy placing the user at the centre of the design experience in order to clearly understand their system requirements, namely, user centred design (UCD) (Tullis & Albert 2008), acted as a core philosophy for this study.

UCD is an approach to system design that is grounded on information about the people who will be using the product (The Usability Professionals Association [UPA] 2013). In UCD the design process focuses on the users throughout the planning, design and development of any online product.

In order to reflect this definition throughout the study, it was important that the research design incorporate Generation-Y user involvement a large extent and effectively making certain that insights were derived from this segment in order to capture and synthesise any functionality requirements they may have. The research design and methodology in section 1.10 addresses the way in which this was achieved.

## **1.5 Research question**

The main research question of the study is as follows:

**What functionality should South African Internet banking websites provide to address the needs of Generation-Y users?**

### **1.5.1 Sub-questions**

The questions listed below arise from the main research question, and will be answered during the study.

1. Why is Internet banking important to banking institutions?
2. What characteristics of Generation-Y users influence their expectations and preferences in terms of online platforms?

3. What are the projected functionality trends of financial services websites like Internet banking?
4. What kind of functionality are South African Generation-Y users looking for on their Internet banking platforms?
5. How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?
6. What Internet banking functionality appeals to South African Generation-Y customers?

## 1.6 Scope of the study

The study spans four main research areas:

1. *The area of Human-Computer Interaction (HCI)*: This discipline is generally concerned with the design, evaluation and implementation of interactive computing systems for human use and with any phenomena surrounding them (Hewett, Baecker, Card, Carey, Gasen, Mantei 1996).
2. *The functionality aspect of user experience (UX)*. Rubinnof (2004) identifies functionality as being one of the aspects of UX, the others being usability, content and branding. This study focuses purely on the functionality aspect of UX, implying that the other aspects may have to be researched in order to make thorough recommendations on the improvement of UX for Internet banking platforms.
3. *The Internet banking domain*. The guidelines that will be articulated as a final set of functionality recommendations at the end of this study will focus particularly on the Internet banking channel of transacting. Although this study provides views on how other transacting platforms influence the self-service experience as a whole, it will not touch on the detailed intricacies of other self-help channels like mobile and telephone banking.
4. *A specific set of Internet banking customers, namely, Generation-Y users*. As this research focuses in particular on the techno-savvy Generation-Y user, the sample may be biased towards a certain socioeconomic group that is particularly interested in the Internet bank channel.

The research will specifically focus on the functionality aspect of UX. It will examine specific characteristics that influence the online preferences of Generation-Y users in order to determine the type of Internet banking functionality innovation that would appeal to this set of users. The functionality identified will subsequently be validated with representative Generation-Y Internet banking users, as well as with currently functional Internet banking platforms, in order to further crystallise and finalise the set of functionality guidelines.

## **1.7 Limitations of the study**

The following limitations are identified for this study:

- 1 *Focus on a specific segment of the Generation-Y group.* According to (Muller 2010), the most prevalent age group of South African Internet users is 25 to 35 year olds. This age group makes up 31% of the total Internet users in the country. In addition, Muller (2010) adds that most Internet connections are made from the user's place of work. This research, therefore, primarily focused on Generation-Y users within this age group, as they are more likely to be apprentice and/or established professionals and are therefore better equipped to comment on the current state of Internet banking platforms, as they are likely to be using them frequently.

Therefore, the study excluded Internet banking users who are outside the Generation-Y age group of focus. The functionality guidelines recommended at the end of this study may therefore not apply to older users of Internet banking websites because of a number of influencing factors, such as their age, past exposure to technology and interest in current technologies (e.g. social networking and portable mobile devices), all of which are distinct features and main influencers of Generation-Y online behaviour.

- 2 *Focus on a single component of user experience (UX).* As mentioned in section 1.1, UX is made up of four components: the functionality, usability, content and branding of a website (Rubinnof 2004). This study explicitly focuses on the functionality component of UX. This may mean that other influencing components of UX within the Internet banking domain may need to be further investigated to provide a comprehensive guideline for an enhanced UX on Internet banking websites.

## 1.8 Assumptions of the study

The following three assumptions are made for this study:

1. *Similar behavioural tendencies across the broader Generation-Y segment.* The 25 to 37-year-old Generation-Y age group is the main focus of this study. An assumption is however made that the younger, 20 to 24-year-old members of the Generation-Y segment might not currently be at a life-stage that fully exposes them to the Internet banking platform. Although this is the case, it is assumed that the characteristics and preferences gathered for the 25 to 37-year-old Generation-Y age subset are reflective and represented across the broader Generation-Y segment.
2. *The heuristic evaluation of five South African Internet banking platforms.* As part of validating and gathering additional Internet banking functionality requirements, a heuristic evaluation administered by five experienced evaluators was performed on five South African Internet banking platforms (Standard Bank, ABSA, FNB, Nedbank and Capitec). Although the opinions of the evaluators are presented, this was a snapshot in time and cannot be seen as representative of the current functionality on the banks' Internet banking websites. Furthermore, this study focused only on the presentation of functionality for a specific group of users, at a specific time, and is not a general usability evaluation nor a comparison of the banks' overall usability.
3. *Differences in socioeconomic status in South Africa.* Despite the possible differences based on situational contexts in South Africa, this study assumes that all members of the Generation-Y segment, irrespective of race, social and economic background, subscribe to similar patterns, ideas and views of technology consumption. This view is also, to a certain extent, shared by Smith (2010), when he states that members of this generation have been equally affected by globalisation and international influences, and therefore the same set of attributes can be used to describe them worldwide.



## 1.9 Value of the study

The study makes both practical and theoretical contributions.

### **Theoretical:**

1. *Deeper insight into the Generation-Y market.* This research will give Web managers in banking institutions more insight into the online preferences of a user base that is of strategic importance to the future of their organisations. This will enable banks to be responsive in meeting the needs of this customer base, and even allow them to translate these preferences to other web-based self-service channels like mobile and application-based banking.
2. *Better conceptualisation of Generation-Y user needs.* This study will also act as a reference point for user interface and Web designers in the banking industry and may assist them to conceptualise and design Internet banking interfaces that address the likely needs of Generation-Y users more effectively and efficiently. The research may also indirectly give banks an objective view of the importance of Internet banking among the Generation-Y segment compared with other self-service channels.
3. *Contribution to the overall body of knowledge in the Internet banking and Generation-Y domains.* Given the paucity of structured research in the Internet banking and Generation-Y domains, the validated set of functionality guidelines makes a theoretical contribution to the existing body of knowledge, while the abstraction of Generation-Y user needs is a related yet independent contribution that can be applied and transferred to other studies and sectors.

### **Practical:**

1. *Identification of areas for functionality enhancement.* The research identifies areas that need functionality enhancement in order to make Internet banking websites more attractive and appealing. This is important to banks as Internet banking is a valuable self-service channel, with the cost per transaction on this platform being much lower when compared to other banking channels like the conventional bricks and mortar branch (Daffue 2005).

2. *Value-add for Internet banking platforms.* When the functionality guidelines are implemented successfully, Generation-Y Internet banking users will benefit from the enhanced user experience on their Internet banking platform. Furthermore, the study may also reveal issues that call for future investigation within the Internet banking domain.

## **1.10 Research design and methodology**

### **1.10.1 Overview of the study**

This is a mixed methods study involving both quantitative and qualitative data capturing and analysis. It comprises a literature analysis, analytical evaluation (heuristic evaluation), and empirical evaluation (online survey, interviews and prototype evaluation). The aim is to propose a set of Internet banking functionality guidelines suitable for Generation-Y Internet banking users in South Africa.

### **1.10.2 Research design**

An initial literature review aimed at identifying the strategic importance of Internet banking to banking institutions was performed. This was purely for background purposes, and did not directly affect or influence the findings of the study. A further literature study was conducted to investigate the characteristics that influence the online preferences of Generation-Y users; and from this a set of characteristics for this segment was formulated.

An additional literature study was conducted on issues that are forecast as being future functionality trends in online financial services such as Internet banking. Similarities between such functionality trends and the previously identified Generation-Y characteristics were then consolidated and mapped to formulate an initial list of future Internet banking functionality requirements that might be suited to the unique traits of Generation-Y users.

An online survey was then drawn up to validate this initial list of functionality guidelines gathered from the literature, and also to identify additional, desired areas of functionality that had not yet been uncovered. Interviews with representative Generation-Y users were used to validate and uncover additional functionality requirements, also in addition to providing insights into certain

functionality inclinations and avoidances of this user group that had not been revealed by the survey.

The requirements identified from the literature, in addition to the additional user input, were then consolidated to formulate a list of functionality heuristics which were subsequently used to inspect the Internet banking websites of five major banks in South Africa (Standard Bank, ABSA, FNB, Nedbank and Capitec). This inspection, which was performed by five proficient UX professionals, who also fall into the target Generation-Y age bracket, was intended to ascertain whether the functionality currently available on the banks' Internet banking websites met the identified Generation-Y functionality requirements, as well as to uncover any existing functionality on these platforms that might be worthy of being labelled futuristic.

A set of Generation-Y Internet banking functionality guidelines was then constructed from all these different sources and visually represented in the form of user interface diagrams, also known as wireframes, for Generation-Y Internet banking users to further validate. These wireframes were rendered in a semi-functional, Web-based prototype that Generation-Y users could interact with easily. Wireframes are schematic presentations that define a webpage's content and functionality structure in order to portray the page concept before it is designed and developed. Wireframes usually do not contain any design elements like colour and graphics (Glen 2007).

Figure 9.1 later in the document depicts an example of a wireframe. A full set of wireframes presented to representative Generation-Y users can also be viewed on the accompanying disc and accessed on the interactive HTML prototype (Prototype link 2012) used during this phase of the study.

The changes recommended by the participants from this functionality validation exercise were then consolidated and used to formulate a validated set of Internet banking functionality guidelines for Generation-Y users in South Africa.

Table 1.1 shows the various research activities, as outlined in this section. The table links the research sub-questions, as outlined in section 1.5, to a specific research activity while also outlining the anticipated output.

<b>Table 1.1: Research design and methodology</b>		
<b>Research sub-question</b>	<b>Research activity</b>	<b>Output</b>
1. Why is Internet banking important to banking institutions?	<ul style="list-style-type: none"> <li>Literature study.</li> </ul>	Background, definitions and explanations.
2. What characteristics of Generation-Y users influence their preferences in terms of online platforms?	<ul style="list-style-type: none"> <li>Literature study.</li> </ul>	Characteristics of Generation-Y users.
3. What are the projected functionality trends of financial services websites such as Internet banking?	<ul style="list-style-type: none"> <li>Literature study.</li> </ul>	Innovative functionality requirements.
4. What kind of functionality are South African Generation-Y users looking for on their Internet banking platforms?	<ul style="list-style-type: none"> <li>Online survey (50 participants).</li> <li>Interviews (12 participants).</li> </ul>	Validated functionality requirements as heuristics.
5. How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?	<ul style="list-style-type: none"> <li>Heuristic evaluation of five South African Internet banking websites.</li> <li>Five evaluators.</li> </ul>	Evaluation report and functionality guidelines.
6. What Internet banking functionality appeals to South African Generation-Y users?	<ul style="list-style-type: none"> <li>User interface diagrams (wireframes) into semi-functional web-based prototype.</li> <li>Functionality validation.</li> <li>Ten participants.</li> </ul>	Validated, visual Internet banking functionality guidelines.

Figure 1.2 gives a diagrammatic representation of these research activities and their outputs.

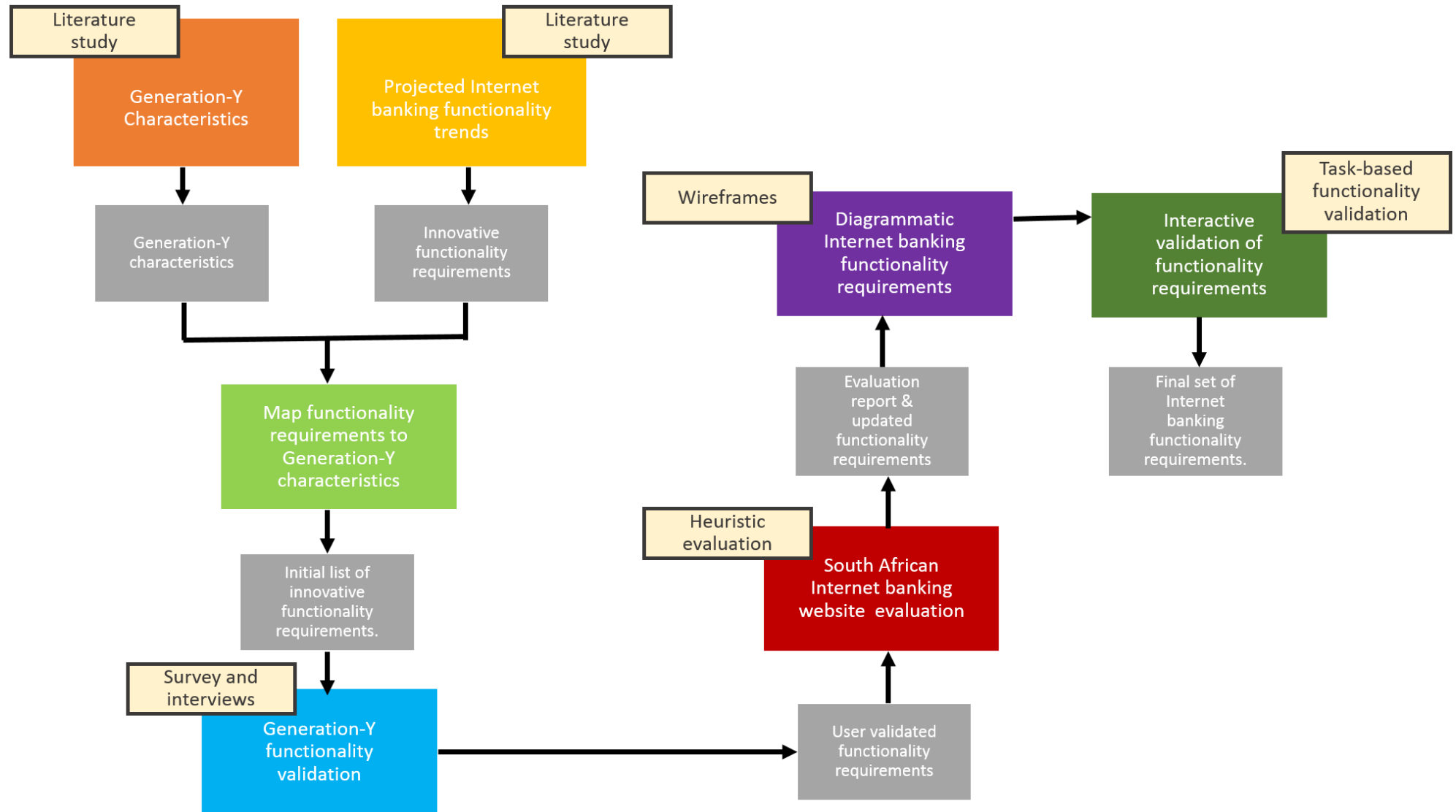


Figure 1.2: Research activities and their output

### **1.10.3 Existing functionality on Internet banking websites**

According to Shead (2009), it has come to be expected that any Internet banking website provides users with what they label as ‘key’ or ‘core’ functionality, such as the following:

- Account balances
- Transaction history
- Viewing of bank statements
- Inter-account transfer
- Transfer to other accounts
- Bill payments
- Security alerts and notification

Some Internet banking platforms may even provide more than this functionality set, for example, where users are able to apply for commercial products, and perform online share trading.

This study primarily focuses on the next wave of functionality on the platform, but nevertheless recognises that universal and necessary functionality is still very relevant and vital. The study therefore outlines functionality value-adds, and does not detract from the key features that have made Internet banking what it is today.

### **1.10.4 Data generation method: surveys**

In order to validate the functionality requirements that were taken from the literature, as well as uncover additional ones, a large amount of input was required from representative Generation-Y Internet banking users. For this reason, a survey was used as the initial data-gathering method. Oates (2006) defines surveys as pre-defined set of questions assembled in a particular order, where participants are asked to answer the questions, in order to accumulate data for the researcher.

Although surveys can also be administered on paper, a manner more suitable and convenient to the target audience was chosen by the researcher: rendering the survey online. An anonymous electronic survey link, created through SurveyMonkey (SurveyMonkey 2012), was emailed to all participants. SurveyMonkey is an online survey tool that allows researchers to create and publish online surveys and view results graphically and in real time. Participants were accordingly

requested to administer the survey independently, as a preliminary pilot study was performed (section 1.10.12), ensuring that all questions were adequately understood.

### 1.10.5 Data generation method: interviews

According to (Nielsen 2010), interviews are a good supplement to other data gathering methods, a view that is also captured by Usability.gov (2012a). Accordingly, researchers can use interviews first to refine questions for a survey, or interviews can be conducted after a survey, in order to probe for details and reasons behind the responses that users give in a survey. The latter technique is what was used in this study.

In essence, interviews are a particular type of conversation between people. This type of conversation has a set of assumptions (usually unspoken) that do not apply to normal conversations. In interviews, one person, usually the researcher, has a purpose for undertaking the interview, and will set an agenda of what needs to be covered (Oates 2006).

In this study, the same types of question as were included in the online survey were administered to interview participants. Despite these questions being very similar, personal interaction with the participants meant gathering more insights into specific Internet banking inclinations than the survey could uncover.

### 1.10.6 Heuristic evaluation

The list of functionality requirements validated by participants in the online survey and interviews were then used to formulate a list of principles which, in turn, were used to inspect the Internet banking websites of five banks in South Africa. These banks and the associated target systems are listed in Table 1.2.

<b>Name of bank</b>	<b>Target system</b>
Standard Bank	<a href="https://www.encrypt.standardbank.co.za/ibsa/InternetBanking">https://www.encrypt.standardbank.co.za/ibsa/InternetBanking</a>
FNB	<a href="https://www.fnb.co.za/">https://www.fnb.co.za/</a>
ABSA	<a href="https://ib.absa.co.za/ib/ib.jsp">https://ib.absa.co.za/ib/ib.jsp</a>
Nedbank	<a href="https://netbank.nedsecure.co.za/">https://netbank.nedsecure.co.za/</a>
Capitec	<a href="https://direct.capitecbank.co.za/ibank/">https://direct.capitecbank.co.za/ibank/</a>

This inspection investigated whether the functionality currently available on these sites met the Generation-Y functionality criteria as identified in the previous phases of the study. Furthermore, the inspection was intended to uncover any additional functionality on these platforms that might be deemed innovative.

The recognised industry term for this ‘inspection’ is a ‘heuristic evaluation’. A heuristic evaluation is a method for finding problems in a user interface design so that they can be attended to as part of an iterative design process. This evaluation involves having a small set of evaluators examine the interface and judge its compliance with recognised principles (the ‘heuristics’) (Nielsen 1995a).

Although a commonly known set of usability principles is generally used during a heuristic evaluation, Pinelle, Wong and Stach (2008) advocate that a heuristic evaluation should be flexible and versatile enough to be adapted to specialised domains. Based on this, functionality requirements gathered up to this point of the study were used as the interface heuristics for examining the Internet banking sites of the five banks. Five proficient UX professionals, also falling into the target Generation-Y age bracket, performed the evaluation. They were each provided with secure login details in order to access the transactional sites.

### **1.10.7 Functionality validation**

Following the heuristic evaluation of the Internet banking websites, functionality requirements from the various phases of the study were consolidated and visually presented on user interface diagrams, commonly known in the industry as wireframes. The wireframes were constructed using a wireframing tool, Axure RP Pro 6.5 (Wireframing tool 2012), which allowed for a low fidelity prototype of the gathered functionality guidelines to be rendered on any of the commonly used web browsers, such as Internet Explorer, Firefox and Google Chrome, for Generation-Y users to conveniently validate.

According to Bailey (2005), low-fidelity prototypes are semi-functional representations of a Web product that is in the development phase, and are limited in one or more of the dimensions listed:

- *Amount of functionality.* Low-fidelity prototypes usually do not include all the features of a website.



- *Interaction capabilities.* These prototypes do not usually allow for complex mouse and keyboard interactions.
- *Aesthetic refinement.* Low-fidelity prototypes are usually very plain, with limited use of screen colour and complex graphics.

The researcher performed the validation by taking the formulated low fidelity prototype through a functionality validation exercise with Generation-Y Internet banking users. During this exercise, participants were requested to complete tasks related to the identified functionality guidelines, and to subsequently state whether they agreed or disagreed that the functionality on the prototype adequately represented what they would like to see on their Internet banking platform in future. Feedback from this exercise was incorporated into the functionality guidelines and formulated to present the final, recommended set of Internet banking functionality for Generation-Y users.

#### **1.10.8 Sampling technique**

In this study, probability sampling was used as the characteristics and demographics of Generation-Y users have been plainly outlined by the literature. Probability sampling may be described as a particular sample that is chosen because the researcher believes there is high probability that the samples of respondents are representative of the overall population being studied (Oates 2006). A stratified sampling technique in terms of which participants will reflect the Generation-Y proportions presented in the literature has been used.

#### **1.10.9 Definition of target population**

Generation-Y user characteristics and demographics gathered in the literature review were used as a point of departure for the target population. According to the literature, Generation-Y users possess the following attributes:

- Born between the year 1977 and 1994, meaning that they fall into the 20 to 37 year age bracket (Noble et al. 2009)
- Technologically savvy, as they have been exposed to technology since early childhood and have tendencies like preferring portable mobile devices and being on social networking websites (Djamasbi et al. 2010)
- Mostly well educated and affluent (Daffue 2005)

All the participants who were identified for this research possessed all the above-mentioned characteristics. Table 1.3 gives a participant breakdown and the amount of time spent by each of the participants in the various phases of the study.

<b>Research activity</b>	<b>Number of participants</b>	<b>Motivation</b>	<b>Anticipated time</b>
Online survey	Unlimited, accessible-to-all, online link; 50 responses ultimately gathered.	A large amount of input was required from representative Generation-Y Internet banking users.	40-minute online survey.
Individual interviews	Twelve participants.	Benchmarked on an industry accepted standard of 8–12 participants in a group format interview (Usability.gov 2012b).	40-minute individual, face-to-face interviews.
Heuristic evaluation	Five evaluators.	It is recommended that 3 to 5 evaluators be used for a heuristic evaluation as one only would not uncover a large number of interface issues (Nielsen 1995a).	Each evaluator captured the amount of time it took to complete the website inspections.
Wireframe functionality validation	Ten participants.	As more and more users are tested or observed, the researcher will pick up the same types of problems. There is therefore no real need to keep observing the same problems multiple times, without any real new findings (Nielsen 2000).	1.5 hour, face-to-face evaluation.

#### **1.10.10 Sampling unit**

The sampling unit refers to the place where the research was conducted (Wu 2005). The location of the study was the AquaOnline (Pty) Ltd offices in Hyde Park, Johannesburg, South Africa.

AquaOnline is a full service digital and direct marketing agency in South Africa, with a presence in Johannesburg and Cape Town. The agency employs 190 people in both these offices. The average age of employees in the organisation is 31 years, and because this study focuses particularly on the Generation-Y segment, which falls within the age group of 20 to 37 years, AquaOnline's employees are representative of this segment.

Because of the nature of AquaOnline's business, which requires employees to have a wide knowledge of and exposure to digital technology in general, this location was best positioned as a representative sample of the Generation-Y population at large.

### **1.10.11 Data analysis and presentation of results**

The nature of the data to be gathered required computerised statistical analysis in order to interpret and derive insights. The online tool, SurveyMonkey (SurveyMonkey 2012), used to administer the survey automatically produced results in a computer-based spreadsheet processing format (Microsoft Excel 2010). The rest of the data (collected from the interviews, heuristic evaluation and functionality validation) was collated using a computer-based Word processing program (Microsoft Word 2010), and was analysed and interpreted using a computer-based spreadsheet processing program (Microsoft Excel 2010). All the results were interpreted as readable and easy-to-understand frequencies, percentages, lists, tables and graphs.

### **1.10.12 Demonstration of data reliability**

The reliability of the different functionality concepts was analysed. Reliability is the consistency of the measurement, or the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects (Golafshani 2003). In order to ascertain reliability, a statistician was appointed and requested to provide statistical analysis and validation in order to measure the numerical coefficient of reliability in the study. Please see Appendix F for the detailed statistical analysis results.

Furthermore, to ensure high levels of quality across the different data-gathering and functionality validation methods, all material presented to research participants underwent a piloting exercise, where appointed individuals, similar to the target audience (i.e. either a Generation-Y user, or an expert evaluator), scrutinised them and provided feedback on how they could be simplified further. Please see section 6.15.1 for a detailed breakdown. All this feedback was incorporated before formal participant feedback was obtained. As all questions were in English, all respondents taking part in the study would need to be able to communicate proficiently in English.

### **1.10.13 Ethical considerations**

The ethical clearance certificate for this study can be found in Appendix A1. The following was done to ensure that the participants were protected and that the researcher behaved with integrity.

### **Participants:**

- Each participant was selected for their willingness to participate in the study without any obligation on their part to do so.
- Participation was anonymous (specifically relating to the online survey data gathering method).
- Participants were informed of the purpose of the research and what benefits would result from it.
- The researcher was introduced (full name, name of organisation and contact details) to each participant and the role they played in the research was explained.
- Participants were informed of what would be involved during each research process, as well as how long the process would take.
- Participant were told how the data they provided would be used and how the final research findings would be compiled and presented.
- The participants were treated with respect and courtesy in all stages of the research process.

### **Researcher:**

- The researcher was under an obligation to record all data gathered honestly, accurately and fully.
- The researcher cited all sources used during the research and did not pass off anyone else's work as her own.

## **1.11 Structure of the study**

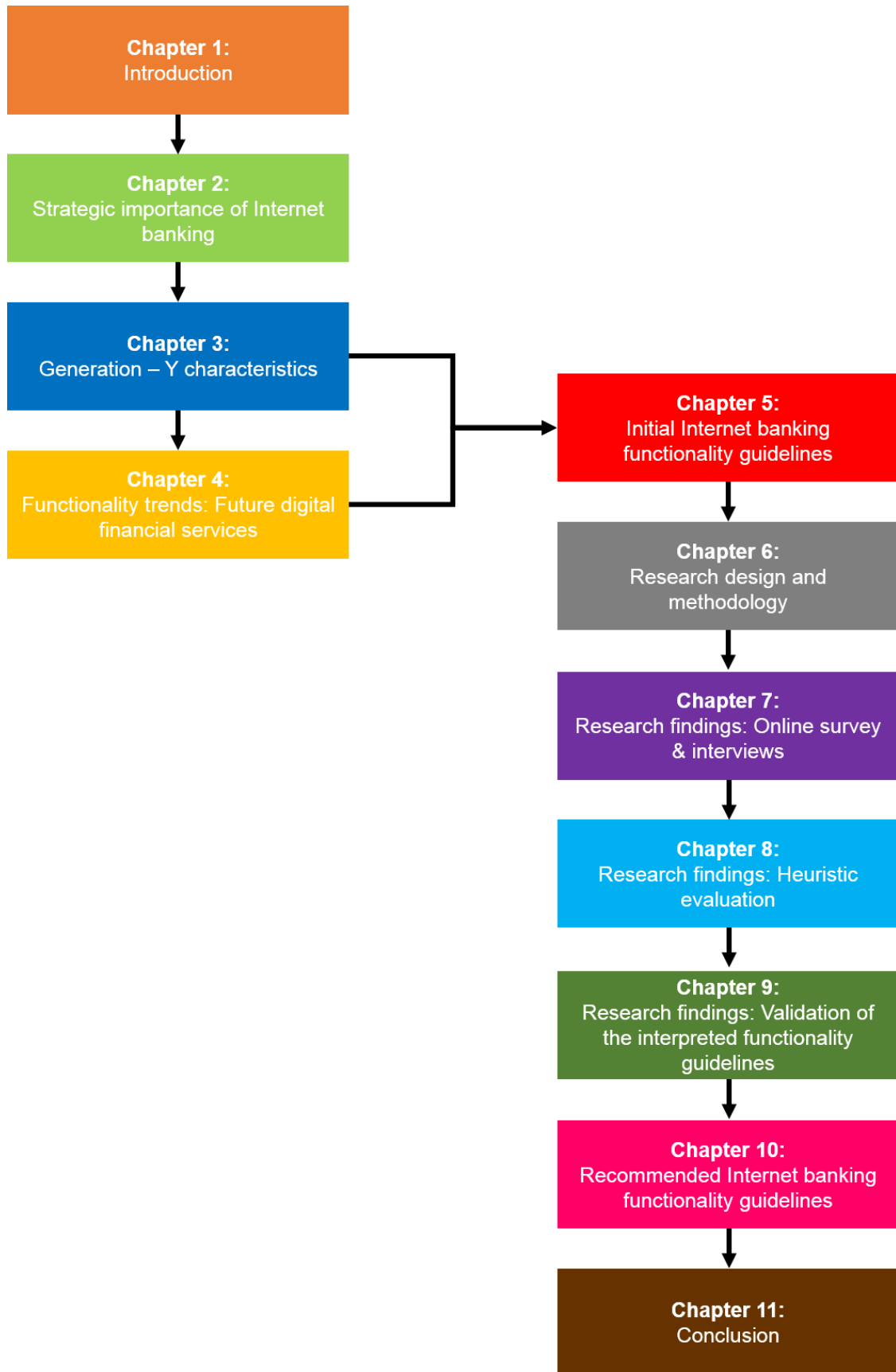
This study will be represented in 11 chapters, all aimed at identifying Internet banking functionality guidelines for Generation-Y users. An overview of each of these chapters is given below.

- *Chapter 1 – Introduction.* This chapter provides an overview of the study, outlines the research problem and discusses the research methodology used.
- *Chapter 2 – Strategic importance of Internet banking.* This chapter presents a literature review aimed at identifying the strategic importance of Internet banking for banking institutions. This literature review will answer research sub-question 1.
- *Chapter 3 – Generation-Y characteristics.* This chapter outlines the literature study that was conducted in order to identify the online characteristics of Generation-Y users. This was to

understand how these shape their expectations of online platforms. This literature review answers research sub-question 2 which is given in section 1.5.1.

- *Chapter 4 – Functionality trends: Future financial digital services.* A further literature study was conducted to identify the projected direction and trends of future online financial services such as Internet banking. This literature review answers sub-question 3 (see section 1.5.1).
- *Chapter 5 – Initial functionality requirements: Internet banking for Generation-Y users.* In this chapter the functionality guidelines and the Generation-Y characteristics are consolidated and cross-tabulated to form an initial list of the functionality requirements to be used during the user validation sessions (online survey and interviews).
- *Chapter 6 – Research design and methodology.* This chapter explains how the research was conducted and comprises a detailed account of the research philosophy, approach and design. The chapter also outlines the sampling method used, the data collection techniques and the various methods used to analyse the data gathered.
- *Chapter 7 – Research findings: online survey and interviews.* This chapter presents the functionality validation results from the online survey and the face-to-face user interviews. Any additional functionality needs uncovered by the users are also listed. This chapter answers sub-question 4 (see section 1.5.1).
- *Chapter 8 – Research findings: heuristic evaluation of functionality on current South African Internet banking websites 1.* This chapter reports on the heuristic evaluation results of the functionality of five South African banks (Standard Bank, FNB, ABSA, Nedbank and Capitec). The chapter also outlines any additional functionality which has been labelled as futuristic by the evaluators. This answers sub-question 5 (see section 1.5.1).
- *Chapter 9 – Research findings: validation of the visually interpreted functionality guidelines.* This chapter gives an example of the wireframe diagrams which were constructed using the validated functionality requirements identified in the various phases of the study. Participant feedback on these wireframes is also presented in this chapter.
- *Chapter 10 – Recommended Internet banking functionality guidelines for Generation-Y users.* This chapter will outline the final, recommended set of functionality guidelines for South African Generation-Y Internet banking users. These guidelines will be based on all the feedback and validation that was obtained in the prior stages of this study. This answers sub-question 6 (see section 1.4.1).
- *Chapter 11 – Conclusion.* This chapter will conclude the study by providing a summary of the findings and proposing additional areas of research.

Figure 1.3 captures a diagrammatic representation of the structure of this study.



**Figure 1.3:** Structure of the study

## **Chapter 2: The strategic importance of Internet banking**

### **2.1 Introduction**

In order to investigate the way in which the Internet banking platform of the future will operate, it is important to understand the origins of the Internet, as well as the varying types of services it has enabled. In this chapter, the history of the Internet as a driver of innovation is briefly examined, and Internet banking, a self-service channel that has stemmed from this innovation, is defined and discussed (see section 2.2).

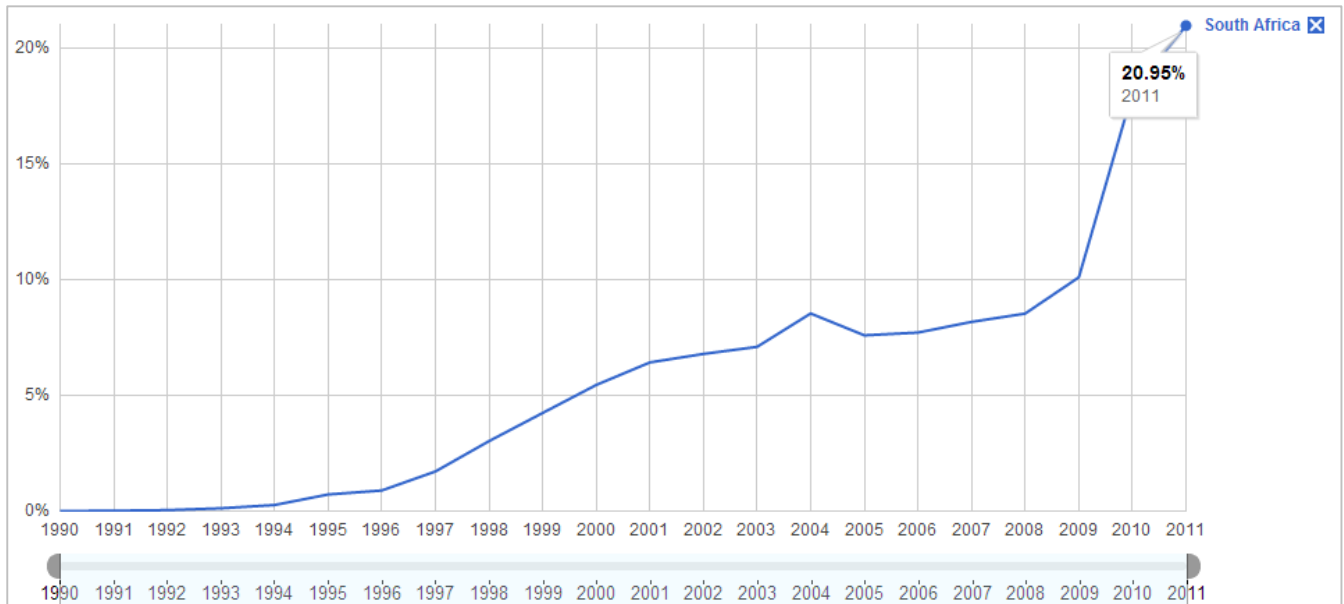
Over and above outlining the different types of Internet banking platforms available, this chapter also provides an overview of the strategic importance of the Internet banking channel to banking institutions (section 2.3), as well as the prevalence of use, and the general perceptions of South African banking clients in this regard (section 2.4). Section 2.5 concludes the chapter.

### **2.2 The Internet and the banking technologies it has enabled**

The Internet developed towards the end of the 1960s. The technology initially comprised a handful of computers connected to the Advanced Research Project Agency Network (ARPAnet) with the primary objective of enabling military personnel and academics to exchange defence information (Sterling 1993).

It was not until the arrival of the World Wide Web in the early 1990s that the substantial growth in the use of the Internet was witnessed (Wu 2005). This meant that the interface that was previously accessed by a select few would now be a relatively easy-to-use, openly accessible tool for both businesses and consumers alike.

The use of the Internet has risen substantially in South Africa. In the year 2011, 21% of the South African population had access to the Internet; this amounted to Internet reaching over ten million of the approximately fifty million total inhabitants of the country, as depicted in Figure 2.1.



**Figure 2.1:** Internet users as percentage of population: South Africa (Google Public Data Explorer 2012)

### 2.2.1 The Internet in everyday life

The Internet has proven to be a crucial part of contemporary life with prevalence not only in areas such as electronic commerce, but also as a utility for accessing up-to-date information and social networking, and as a medium for interaction and exchange of opinions (Israelashvili, Kim and Bukobza 2012). For most people, contemporary life also means convenience and quick access to what would have conventionally taken longer amounts of time to achieve. This has led to the fast development of self-service platforms in various industries around us today.

### 2.2.2 What is self-service?

Goldstuck (2010) defines self-service as platforms established by organisations to enable customers to access certain services without any human intervention from the organisation itself. In his 2010 *Customer self-service strategies survey*, which was conducted among leading players in the financial services, telecommunications, healthcare and retail industries in South Africa, he asked participating industries about the importance of self-service in their organisations. All respondents rated this as very important and vital for the survival of their businesses; with banks giving a relatively higher rating than their industry counterparts.



<b>Table 2.1: Importance of self-service to organisations (Goldstuck 2010)</b>	
<b>Sector</b>	<b>Importance of self-service 2010</b>
Banks.	90%
Insurance.	70%
Telecoms.	84%
Retail.	66%
Overall.	80%

### **2.2.3 Self-service technologies in the banking sector**

Banks offer products that can be easily sold online and they are best positioned to leverage self-service for customer acquisition and product support. It is therefore not surprising that, in recent years, the banking industry has been the most innovative and aggressive in introducing and developing self-service technologies across multiple delivery channels as compared to other industries in the South African market (Goldstuck 2010). Goldstuck states further that growth has been witnessed in the development and use of ATMs, telephone banking, interactive voice response (IVR) technologies, as well as Internet banking.

Hernández-Murillo, Llobet and Fuentes (2010) estimate that, by the end of 1999, about 1 100 banks worldwide had an Internet banking website. This figure had increased to around 4 000 banks at the beginning of 2003. Since 2003, banking institutions have adopted this technology at a rate of about 5% per quarter. By the end of 2006, an estimated 6 600 banks (80% of the total) were providing an Internet banking platform for their customers.

### **2.2.4 The Internet banking self-service technology**

Safeena, Abdullah and Date (2010) define Internet banking as systems that enable bank customers to gain access to their accounts and general financial information services through the use of the bank's website, without the intervention or inconvenience of sending letters, faxes, original signatures and telephone confirmations. These authors maintain that banks can implement any of three functional types of Internet banking. These functional types are listed below and further elaborated on in Table 2.2.

1. Informational websites
2. Simple transactional websites
3. Advanced transactional websites

<b>Table 2.2:</b> Types of Internet banking (Safeena et al. 2010)
<b>Informational websites</b>
Informational websites are often described as the first level of Internet banking. The bank usually places all marketing information about its products and services (and even its organisational information) on a standalone server. There is very little risk associated with this type of Internet banking as informational systems typically have no link between the server and the bank’s internal network where the transacting platform usually lies.
<b>Simple transactional websites</b>
Some interaction is permitted between the bank’s transacting systems and the customer. The type of interaction between the bank and the customer is often limited to e-mail, light account enquiries, loan applications or static data updates such as the client’s name and address. This level does not permit any complex interaction such as fund transfers.
<b>Advanced transactional websites</b>
This level permits customers to transfer funds electronically to/from their accounts, perform activities like bill payments and conduct other banking-related transactions.

In the South African landscape, advanced transactional websites are most prominent, and often incorporate features of simple transactional websites. They are also the main focus of this study. Informational websites are usually the first layer a user comes across, and these subsequently redirect the user to the lower lying secure transacting platform.

### 2.2.5 Internet, online and electronic banking

It is important to note that the terms ‘Internet banking’(used in this study) and ‘online banking’ are often use interchangeably and refer to the same type of technology discussed in section 2.2.4. Electronic banking, however, refers to a broader level of activity that comprises not only Internet banking, but also other delivery channels (ATMs, telephone banking and IVR technologies) (Cheng, Lam & Yeung 2006).

## 2.3 The strategic importance of Internet banking

The introduction of electronic banking platforms has become a necessity if banks are to remain profitable and successful (Auta 2010). Internet banking is therefore one of the ways that make it possible for banks to achieve their mandate of seeking innovative ways to acquire new clients, retain existing ones and promote product cross-selling opportunities to their client base (Hesse 2009).

According to Daffue (2005), there are three ways in which the Internet banking platform can be of strategic importance to banks. The platform can:

1. Act as an integrator with other banking channels
2. Promote client retention
3. Result in an increase in equity for the bank.

Hernández-Murillo et al. (2010) and Wu (2005) add two more factors of strategic importance. They mention that Internet banking:

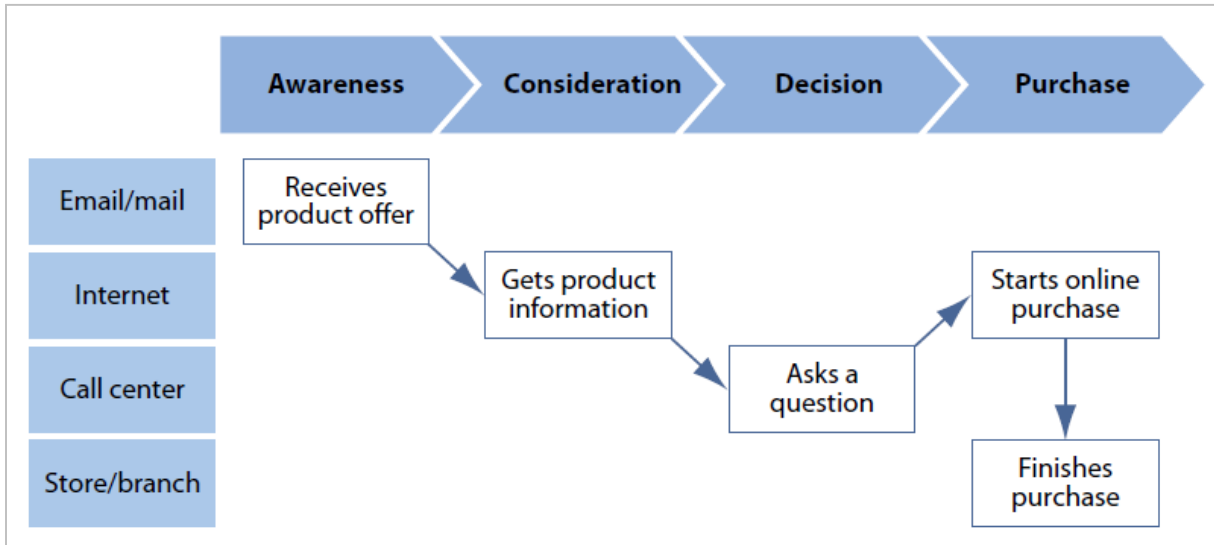
4. Saves operational costs, and
5. Provides banking customers with convenience.

These factors by the authors are discussed in more detail below.

### **2.3.1 Internet banking integrates other banking channels**

Internet banking can be successfully integrated with other banking channels to assist the bank in implementing its strategic goals of acquiring new and retaining existing clients. Banking websites that provide helpful information may encourage prospective customers to investigate the products and services offered by the bank; subsequently redirecting them to other channels (ATMs, telephone banking, IVR technologies) on which they can carry out or even finalise their transactions (Daffue 2005).

This view is also supported by Hesse (2011). He argues that, currently, banks do not always make it easy for clients to achieve their goals effectively and efficiently, as banks often struggle to provide compelling cross-channel experiences. Hesse continues, stating that today most consumers utilise a number of digital devices, and this often leads to a number of banking channels being utilised almost simultaneously. Today, it is common for customers to cross a number of channels during a single product purchasing journey as depicted in Figure 2.2.



**Figure 2.2:** Cross-channel experience during a user’s purchasing journey (Hesse 2011)

Internet banking therefore plays an important role of channel mediation, as digitally sophisticated clients are more likely to use it as a starting point for their investigation, and may even begin their first step of purchasing on this channel.

### 2.3.2 Internet banking promotes client retention

If used effectively, Internet banking can facilitate the retention of existing clients with the bank. In this way, it can be used for two-way communication between bank and customers to learn about existing and potential problems clients are experiencing in order to deal with such problems in a timely fashion (Daffue 2005).

### 2.3.3 Internet banking results in an increase in equity

Internet banking also makes it possible to monitor the online interaction patterns of clients, and therefore makes it possible for banks to identify emerging service trends and predict prospective products and services for their clients, before they even know they need them. This proactive approach to customer-based marketing means that new revenue streams are likely to materialise for banks (Daffue 2005).

### 2.3.4 Internet banking can save operating costs

Banks also benefit from the lower operating costs made possible by the Internet banking offering as compared to other banking channels. Rebello (2013) estimates that it costs around thirty times more to do a similar transaction in a branch, as compared to utilising an Internet banking platform. The implementation of this service usually means that the bank require fewer personnel and the need for physical branches decreases (Hernández-Murillo et al. 2010), all cost-cutting exercises for banking institutions.

### 2.3.5 Internet banking is convenient for customers

Using Internet banking, customers enjoy the advantage of 24-hour access to their transacting platform, with expenditure cuts witnessed on travelling to and from a bank branch. This means that banking customers are able to manage and control their financial matters in a private space, whenever they wish to do so (Wu 2005).

## 2.4 Internet banking usage in South Africa

Muller (2011) outlines statistics on what South African users do on the Internet, and exposes the popularity of the Internet banking channel. The results (Table 2.3) reveal that banking is the second most used service on the Internet, coming in at 72%.

<b>Use the Internet for</b>	<b>Frequency of use</b>
E-mail.	89%
<b>Banking.</b>	<b>72%</b>
Reading news/magazine articles online.	69%
Research/obtaining information.	65%
Social networking.	51%
Job search.	35%
Shopping.	33%
Chat.	29%
Directory services.	26%
Music downloads.	25%
Instant messaging.	23%
Watch TV and videos online.	16%
Listen to the radio online.	15%
Podcast/video downloads.	14%
Blogging.	12%

Share trading.	9%
Dating.	4%
Gambling.	3%
None of the above.	1%

Although the use of this channel is prevalent and growing in South Africa, a 2012 study conducted by an online research company, Columinate, reveals that the overall Internet banking customer satisfaction score among the five major banks reviewed (Standard Bank, FNB, ABSA, Nedbank and Capitec) in the survey was a modest 55% (Pretorius 2012), revealing that there is still room for improvement in this domain. This is a view also expressed by Green and Van Belle (2002), who state that there are still a number of factors hampering the acceptance of Internet-based money management services in South Africa, and a perceived lack of utility in the Internet banking channel is one of them. They continue by explaining that this is especially true for the younger users of this channel, as they have very different demands and expectations of online channels, presenting banking institutions with an opportunity to find more beneficial ways of connecting with these customers on this platform of choice.

## **2.5 Summary**

The closing thought by Green and Van Belle (2002) in the preceding paragraph is what makes this study important. The use and the importance of Internet banking to banking customers, as highlighted earlier in this chapter, have been explained and presented. The benefits of Internet banking are also of importance for banking institutions themselves, as there are significant cost and customer retention benefits linked to this technology. Judging by the frequency of use of this platform, it is evident that it is a self-service channel that has helped customers realise the power of technology and the value-add capabilities it brings to modern lifestyles.

This chapter acts as a prelude to this research study by positioning the significance of this banking channel for customers and banks alike. The next chapter looks at the target population group of this study, Generation-Y users, and reveals the specific characteristics that will assist in understanding their inclination towards certain online preferences.

## **Chapter 3: Generation-Y characteristics**

### **3.1 Introduction**

*It is necessary to know the class of people who will be using the system. By knowing the user's work experience, education level, age, previous computer experience, and so on, it is possible to anticipate their learning difficulties to some extent, and to better set appropriate limits for the complexity of the user interface (Nielsen 1993:74).*

This statement by Nielsen (1993) summarises what this chapter intends to achieve. The chapter aims to identify Generation-Y user characteristics from the literature in order to understand how these users' opinions and behaviour influence their perceptions of online platforms.

The chapter begins by identifying exploring the literature in order to identify the different types of Internet banking user, and consequently making a correlation between the active Internet banking user and the Generation-Y user (section 3.2). Generation-Y is then looked at from a South African perspective in order to find out whether situational contexts hamper with their generic characteristics and behaviour (section 3.3). In section 3.4, a formal collection of Generation-Y characteristics is discussed, helping to form an understanding of what is likely to shape this segment's manner of interaction with online properties. Section 3.5 summarises the contents of this chapter.

### **3.2 The active Internet banking user: the Generation-Y user**

As a first step towards understanding the nature of the Generation-Y user, this section aims to understand the type of individual who would typically access the Internet banking platform in order to identify possible correlations between these users.

According to Brown and Buys (2005), the typical South African Internet user is highly educated, with an above-average income. These authors maintain that Internet banking users represent a subset of these Internet users and, in most cases, are even more affluent and educated.

To get better insight, Daffue (2005) identifies three types of Internet banking users, which he has classified as

1. Active Internet banking users
2. Moderate Internet banking users, and
3. Non-users of Internet banking.

Each user type is discussed in detail in Table 3.1.

<b>Table 3.1: Types of Internet banking user (Daffue 2005)</b>
<b>Active Internet banking users</b>
<ul style="list-style-type: none"> <li>• Uses the platform as a primary channel for their banking services.</li> <li>• Strong involvement with the Internet for many other different activities.</li> <li>• Becomes interested in the Internet banking service as a simple offer from the bank.</li> <li>• These users do not need any special orientation to the platform.</li> <li>• This user group holds high expectations of what the Internet banking service should entail.</li> <li>• Among other things they are seeking fast connections, constantly available websites and high levels of customer service.</li> <li>• State that banks do improve Internet banking services over time.</li> <li>• Convenience and being in control of their banking services is one of the major drivers of use.</li> </ul>
<b>Moderate Internet banking users</b>
<ul style="list-style-type: none"> <li>• Hybrid of customers seeking to satisfy basic human need for interaction and convenience at the same time.</li> <li>• Generally use multiple banking channels (Internet, branch, etc.) to meet specific needs at a particular point in time.</li> <li>• When utilising the Internet banking platform, these users carefully select the type of functionality that will improve their life immediately, and completely avoid elements that do not.</li> <li>• Most register for the service with the expectation that their lives will be improved, and often this expectation is not met.</li> <li>• Active marketing campaigns with or without incentive get this type of user onto the platform.</li> <li>• These users believe that it is still easier to walk into a branch or use a channel like the ATM, than to log onto Internet banking and try to find answers.</li> <li>• Users still believe that complex service-related issues are better handled in person.</li> </ul>
<b>Non-users of Internet banking</b>
<ul style="list-style-type: none"> <li>• These users have not yet formed any relationship with the Internet banking platform.</li> <li>• Within this group, there are potential Internet banking users, but they have not yet been approached by the bank about the service.</li> <li>• These users generally do not show and enthusiasm or interest towards the platform,</li> <li>• They also feel that most interactions with the Bank lead to a branch or an ATM anyway.</li> <li>• This group is also reluctant to pay for a service that reduces costs for the bank.</li> </ul>

Daffue (2005) delves deeper when describing the active Internet banking user. In addition to the characteristics already listed in Table 3.1, he states that active users of the service are

- Innovators and early adopters of technology
- More educated



- Affluent
- Younger and more knowledgeable about technology in general
- Willing to try new technologies, and
- Experienced with computers and other technologies.

As discussed in section 2.2.3, Internet banking is just one of several self-service platforms in the banking industry (others being branch, ATM, telephone banking, etc.). However, it is one of the most utilised. This therefore raises the question of whether the personal characteristics and the early exposure to technology of active Internet banking users contribute to the increased use of the platform as compared to the traits of light and non-users of the platform, which incline them to more physical, non-technological ways of transacting.

Wu (2005) insinuates that this might be the case. He states that different consumers perceive a product offering differently. Depending on their specific needs and perceptions, the adoption of a particular product may be influenced by the user's socioeconomic and demographic characteristics.

With this in mind, the characteristics of the active Internet banking user discussed in section 3.2 correlate closely with the description of the Generation-Y user previously discussed in section 1.2.1. This section defines this user group as follows:

- Brought up in a consumption-driven society with the added distinction of having been exposed to technology and the Internet from a very early age (Djamasbi et al. 2010)
- More likely than older Internet users to use the Internet in more interactive ways such as creating blogs, downloading music, instant messaging, and playing online games (Djamasbi et al 2010).
- Expected to have higher disposable income than any other generation (Noble et al. 2009).
- Attached to technological tendencies like preferring portable mobile devices and social computing (Temkin & Popoff-Walker 2008).

These characteristics go hand in hand with Muller's (2010) breakdown of the South African Internet banking user demographics. He explains that the most prevalent age group in accessing the Internet in South Africa is the 25 to 34 year age bracket. These users do so mainly from their place of work. In the same research, he found that 30% of these users have a university degree.

These qualities can therefore be mapped back to Daffue's (2005) characteristics of active Internet banking users to make the informed deduction that the group that is highlighted as the most important and prevalent user of the Internet banking platform is the Generation-Y user, further accentuating the importance of understanding these users' needs and making certain the platform caters adequately for them. Table 3.2 shows the similarities between active Internet banking users and the Generation-Y user characteristics as identified from the literature.

<b>Characteristics of active Internet banking users (Daffue 2005)</b>	<b>Generation-Y characteristics (as identified by the literature)</b>
Innovators and early adopters of technology.	Have been exposed to technology and the Internet from a very early age (Djamasbi et al 2010).
Educated.	30% of Internet users have a university degree (Muller 2010).
Affluent.	50% of South African Internet users access the Web mainly from their place of work (Muller 2010). They are expected to have higher disposable income than any other generation (Noble et al. 2009).
Younger and knowledgeable about technology in general.	The most prevalent age group accessing the Internet in South Africa is the 25–34 year age bracket (Muller 2010).
Willing to try new technologies.	Explore interactive Internet activities such as creating blogs, downloading music, instant messaging, and playing online games (Djamasbi et al. 2010).
Experienced with computers and other technologies.	Attached to technological trends, such as preferring portable mobile devices and social computing (Temkin & Popoff-Walker 2008).

### 3.3 Generation-Y users in the South African context

In South Africa, Smith (2010) explains that it is important to note that there might be local differences based on situational contexts (e.g. township vs. suburb dwellers). It is, however, likely that the members of this generation have been equally impacted by globalisation and international influences, and therefore the same set of attributes should be used to describe them. Smith (2010) explains these collective attributes as Generation-Y members being:

- Highly self-esteemed
- Optimistic
- Independent
- Goal and success driven
- Lifestyle oriented
- Diverse but inclusive
- Global, yet community-minded, as well as entrepreneurial.

According to the 2010 mid-year population estimate from Statistics South Africa, approximately 37% of South Africans are in the Generation-Y age bracket (Statistics South Africa 2010). For a demographic breakdown that is more relevant to the South African landscape and population make-up, Smith (2010) estimates the total Generation-Y population in South Africa to be approximately 83% black African, 8% coloured, 3% Indian/Asian and 6% White.

### **3.4 Characteristics of Generation-Y users**

*Today's multichannel customers demand better experiences than they get from firms that design underperforming, one-off touch points. Faced with an expanding ecosystem of legacy websites, mobile sites, and apps, firms need a plan that will help them align their investments with their customers' most pressing needs. How can they do this? They can accomplish this by taking a user-centred approach to understanding the needs and behaviours of their customers and filling in the experience gaps (Rogowski, Manning & Stone 2012:1).*

The essence of this quote by Rogowski et al. (2012) is also communicated by Bernoff, Cooperstein, De Lussanet and Madigan (2011), who explain that the customer of today is empowered by and accustomed to technology, and that the only way in which to obtain sustainable competitive advantage is for all organisations to know their customer needs.

With this in mind, Djasabi et al. (2010) reveal that very little research has been conducted on the online preferences of Generation-Y users, and because of this urgent need for organisations to have deeper insight into their target audience; more findings about this user group follow.

#### **3.4.1 Intrinsic and educational characteristics of Generation-Y users**

According to Brown (2010), the Generation-Y segment values lifestyle, career and personal development far more than any other preceding generation. She expands to this by saying that flexibility and professional satisfaction are important to this generation. The group thrives on new challenges, creativity, and always seeks and expects more responsibility in their career lives.

This view is also elaborated on by *Business News Daily* (2012), where it is stated that this user base is continuously seeking new ways to approach business, and is not satisfied by the 'normal' status quo. This can be attributed to the fact that members of this group have grown up in an environment

of constant technological and societal change, and the fact that they have witnessed and been in the midst of this change has opened their eyes to realising that the older way of doing things can be challenged.

This generation is also highly educated and, according to Patterson (2011), is the most educated generation in history. For this reason, their educational level translate to their career lives, hence they are the most powerful consumer group with more disposable income than any other predecessor generation (Noble et al. 2009). This generation is therefore of very high strategic importance to institutions, and building relevant online experiences for them is bound to help reap future benefits (Oracle Financial Services 2010).

### **3.4.2 Technological characteristics of Generation-Y users**

A generation is generally believed to exhibit a common mind-set that is based on a shared set of experiences from a location in history. Generation-Y is therefore the first generation to be brought up with ubiquitous exposure to digital technologies and, as a result, has adopted technology as a primary tool for communication, education, as well as information gathering and sharing (Smith & Cha 2009). Temkin and Popoff-Walker (2007) identify three main characteristic groups of this generation that they believe shape their expectations of online platforms. They describe Generation-Y users to be:

1. Technologically fluid and highly networked
2. Emotionally looking for connections, and
3. Unpredictable and creative.

Temkin and Popoff-Walker (2007) break each of these groups down further into individual qualities they believe describe this unique segment. These individual qualities, as well as the main groups they fall under, are listed in Table 3.3. Where relevant, the views of other authors supporting those of Temkin and Popoff-Walker (2007) are captured.

<b>Table 3.3: Generation-Y technological characteristics (Temkin &amp; Popoff-Walker 2007)</b>
<p><b>1. Technologically fluid and highly networked</b></p> <p>Generation-Y users generally utilise technology for communication and entertainment purposes. These users:</p> <p><b>Are continually connected:</b></p> <ul style="list-style-type: none"> <li>• They are owners of technology gadgets like portable MP3 players, laptops, tablet devices, smartphones, etc.</li> <li>• This is also a view, as expressed by Patterson (2011), of this generation as “not wanting to be seen as out of touch”.</li> <li>• The acquisition and interaction with multiple digital platforms such as those listed above is therefore more prevalent in this generation than any of their predecessors.</li> </ul> <p><b>Speak their own language:</b></p> <ul style="list-style-type: none"> <li>• Generation-Y users are influenced by communication technologies such as chat, text and instant messaging.</li> <li>• Because of this, this user base has developed their own language consisting of acronyms, emoticons, modified spelling and slang.</li> <li>• In South Africa, this is commonly known as ‘SMS language’.</li> <li>• This type of language has resulted in web properties such as SMS Dictionary (SMS Dictionary 2012) where a formal collection of this new form of Generation-Y language has been captured.</li> <li>• In order to cater for this characteristic on online platforms, Temkin, McInnes and Zinser (2008) recommend that online platforms speak in a tone that authentically addresses these users, as well as keeping instructions simple, using shorter sentences and where possible substituting long text with images and other interactive visuals.</li> <li>• Figure 3.1 gives an example of the typical language used in a chat session between two Generation-Y members.</li> </ul>
<p><b>2. Emotionally looking for connections</b></p> <p>Most Generation-Y users create specific paths and networks usually around friends and other individuals they perceive to be of influence and on a level they can relate to. These users:</p> <p><b>Are influenced by peers:</b></p> <ul style="list-style-type: none"> <li>• This user base relies heavily on recommendations from friends and family, hence the high prevalence of use on social networking platforms such as Facebook.</li> <li>• In the year 2012, South Africa had a total of 6 263 300 Facebook users, 63% of which fall into the Generation-Y 18 to 37 year age bracket (Socialbakers 2012).</li> <li>• With this said, Patterson (2011) maintains that although technology is an ordinary part of their everyday lives, these users perceive it as a facilitator, and not an end goal. Human connections and real experiences that platforms like social media allow are far more valuable to them. McCrindle (2012) adds to this, stating that this group is seeking more than just friendships; they are after a sense of community that will understand, accept, respect and include them in a world of common interests.</li> <li>• Because of this, online platforms should seek to provide tools for self-expression that will allow these users to communicate with others (Temkin et al. 2008).</li> </ul> <p><b>Enjoy humour with an odd slant:</b></p> <ul style="list-style-type: none"> <li>• Most of these users spend time actively seeking online experiences that are both humorous and entertaining</li> <li>• This is proven by the high access to social media platforms like YouTube, where Generation-Y users can consume humorous content, as well as the subscriptions to funny quote websites such as Cool Funny Quotes (Cool Funny Quotes 2012).</li> </ul>

### 3. Unpredictable and creative

Having been exposed to technology and the Internet from a very early age, most members of this generation are accustomed to quick access, instant gratification and online experiences that reflect their unique sense of self. The latter notion is also expressed by Hobart (2012), who states that Generation-Y users are generally optimistic and have high expectations for themselves and others.

In addition, these users:

#### Skim content very quickly, and are easily bored

- These users are used to instant technology; they scan through information quickly and absorb content rapidly without dwelling on or reading any text-heavy pages.
- These users therefore require instant gratification and immediacy on everything they come across, usually waiting for just three seconds for a webpage to load before clicking away.
- In order to help meet this need, Temkin et al. (2008) recommend that online platforms for these users be designed with immediacy in mind, by exposing immediate value on key pages of a web product, as well as updating and refreshing content and providing them with regular feedback.

#### Are expressive and creative

- Most of these users are active content creators, continuously updating blogs, uploading videos, sharing pictures, and suchlike. They should therefore not only be regarded as consumers of content on websites, but also be awarded an opportunity to create it.
- Because of this expressive nature, they also respond to online experiences that provide them with the freedom to personalise and customise interactions and supply them with products and services in a manner they believe befits their individual preferences.

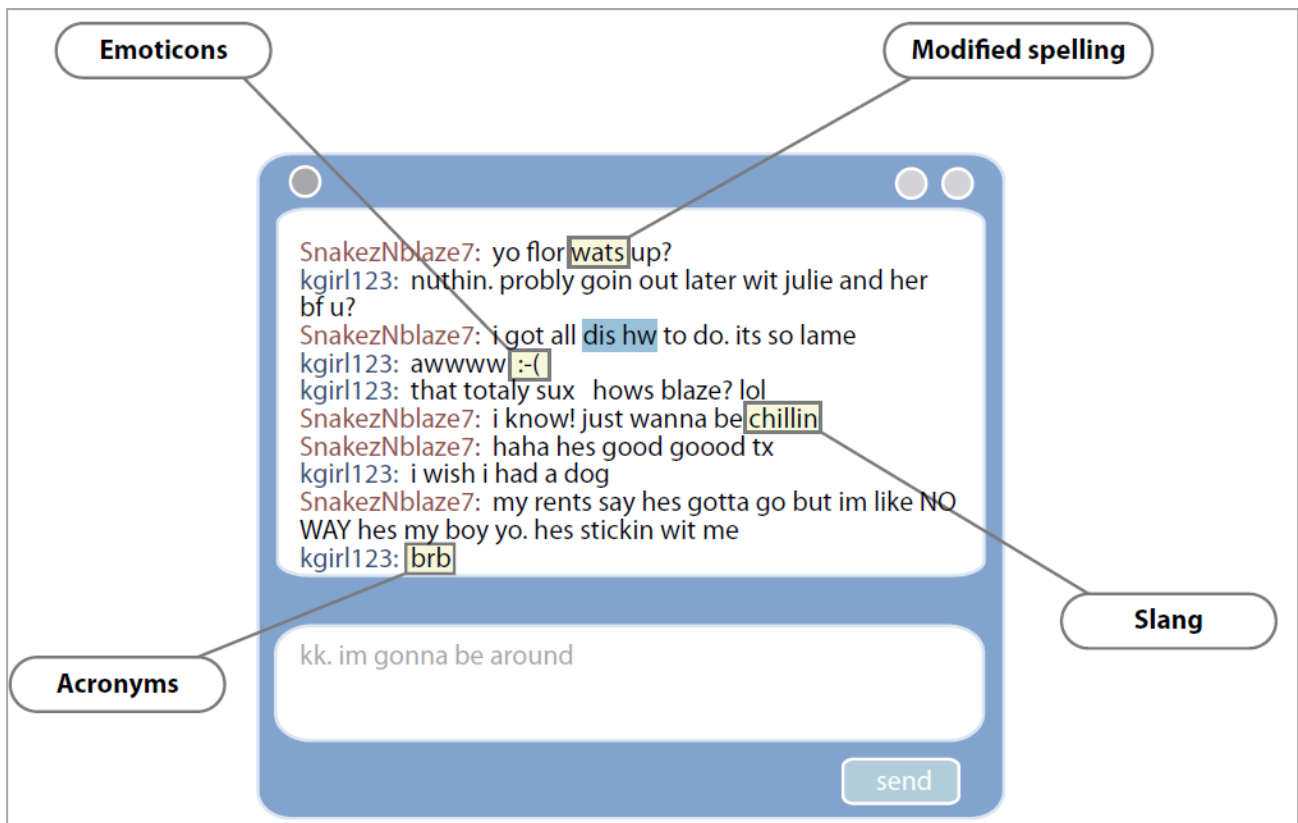


Figure 3.1: Example of Generation-Y language (Temkin & Popoff-Walker 2007)

### 3.5 Summary

This chapter presented the unique nature of the Generation-Y segment, according to Temkin et al. (2008) and others. As a result of this unique nature, organisations cannot interact with these customers in the same way as they do with older customers. The chapter started by identifying the different types of Internet banking user and, after concentrating on the traits of the active user of this platform, came to the conclusion that the typical user of Internet banking websites is the Generation-Y user.

With this in mind, a renewed quest was undertaken to find out more about the Generation-Y user and, subsequently, their intrinsic, educational and technological characteristics were discussed. The literature reveals this user base to have self-esteem and to be career oriented. These users are generally well educated, with a greater disposable income than any other predecessor generation. Technology wise, they are likely to be owners of multiple digital devices including smartphones, tablets and MP3 players. The literature also reveals that general mannerisms that have developed from the use of these devices, such as the ‘SMS language’ are popular among this group. Accordingly, it is recommended that online platforms speak to this group of users in a manner they can relate to, always seeking to simplify instructions and where possible use visuals instead of lengthy text.

These users are greatly influenced by peers and family, and are constantly looking for online human connections and an exchange of real experiences that make them feel a sense of community, respect and acceptance. Tools of expression that will enable them to communicate with others are therefore recommended for any online platform aiming to cater for this user group.

These users are also described as light-hearted with a tendency to seek out humorous online content. Because of their constant exposure to technology, they expect instant gratification, and do not take well to having to wait for online processes to execute. This is why it is important for online platforms to be designed with immediacy in mind; thus exposing the immediate value of key pages and regularly updating content, whilst providing these users with constant feedback. This market segment is also more than just mere consumers of online content; these users are also active creators of content, constantly updating online blogs, uploading videos, and sharing personal pictures and generic life events. Because of their diverse and expressive nature, these users expect to be provided

with levels of personalisation and customisation by means of which they are able to change their interactions, and even products and services, to reflect their individual personalities.

The following chapter presents a number of functionality trends that are likely to shape the future of digital financial services such as Internet banking. Consequently, with a clearer knowledge and understanding of Generation-Y users, it is now easier to comprehend the types of online interaction such users are likely to be attracted to.

The preceding statement will be examined further in chapter 5, where the characteristics of Generation-Y users will be mapped onto the projected functionality of Internet banking platforms (detailed in Chapter 4) in order to ascertain whether any identified futuristic functionality is aligned to the characteristics of this user group gathered in this chapter. From this mapping, an initial list of Internet banking functionality guidelines will be formulated.



## **Chapter 4: Functionality trends: Digital financial services**

### **4.1 Introduction**

Next-generation financial websites will typically use new technologies and tactics to best meet key user objectives (Strothkamp, Ensor & Hoffman 2011). Green and Van Belle (2002) state that banks in particular need to constantly reinvent themselves by scrutinising existing infrastructure and focusing on digital trends that have emerged in recent years. They need to critically evaluate how these can benefit their customer base in order to place themselves at a competitive advantage.

More and more customers who bank online are looking for advanced online banking features (Strothkamp & Wannemacher 2012). As stated by research sub-question three in Table 1.1, what are these features, these projected technologies and digital trends that banking institutions should be closely monitoring and starting to implement? This chapter aims to answer this question by identifying financial services functionality trends in the literature and highlighting financial institutions already exhibiting one or more of these developments.

The chapter begins by defining website functionality and why it is important on organisations' web platforms (see section 4.2). Section 4.3 then looks at existing Internet banking functionality and what future innovation on this platform means for the key functions that users are accustomed to.

Section 4.4 then identifies a number of innovative functionality trends that define a clear path for the way online experiences will unfold in the future, particularly in terms of digital financial services, in the literature; seven distinct functionality categories are identified. Sections 4.5 to 4.11 take a closer look at each of the seven functionality trends identified.

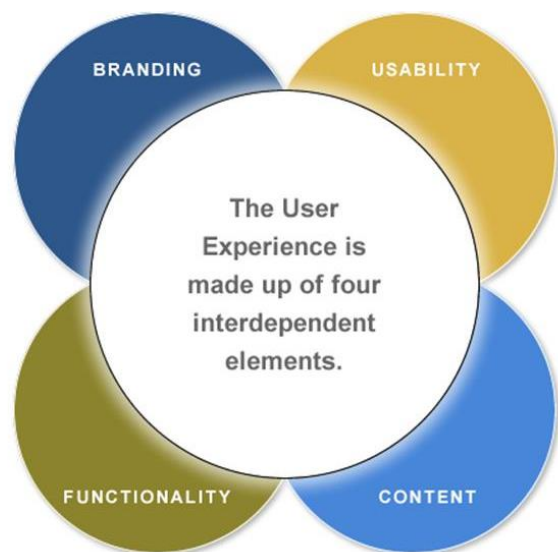
Section 4.12 encapsulates the identified functionality trends in a single, solid direction that can be used to describe collectively this next wave of functionality innovation. Section 4.13 provides a summary of the chapter.

## 4.2 What is website functionality, and why is it important?

Boiko (2002) defines website functionality as the way an organisation uses computers to do business. This definition alludes to and accentuates how important functionality is on the Web platforms of organisations today. The use of digital technology has broken down many barriers, and has made accessible to customers extensions of an organisation's services that can be accessed at their own leisure and convenience. Many banking customers now prefer to pay bills, apply for services, initiate bill disputes, update account information, initiate and track support requests, and more, all from the convenience of their home or office (Goldstuck 2010), and all made possible by the functionality offered on these online self-service platforms.

If the functionality offered on a website is a reflection of how an organisation does business as Boiko (2002) suggests, it is therefore vital for organisations to make certain that the correct functions, that accurately and positively reflect the customers' real-life experiences with the organisation's services are adequately catered for on this always-on face of the business, that is, digital. Organisations are expanding their business offerings on the Internet and in order to keep a competitive advantage, their online platforms need to offer more than just good presentation; they need to offer a good user experience (Moczarny 2011).

Rubinoff (2004) classifies functionality as one of the key contributors to a positive user experience on a site. Alongside branding, usability and content, all technical and task-supporting processes and applications that entail the delivery of the website's interactive services, need to cater adequately for the unique needs of the user on the site. Figure 4.1 depicts a visual representation of these key contributors to user experience (UX).



**Figure 4.1:** Functionality as a key contributor of UX (Rubinoff 2004).

Goodwin (1987) adds that the user's need for functionality on a system is somewhat obvious, as users will most likely select systems that provide functions that support them in achieving their specific tasks and goals. She continues, stating that users would not select a reservations system to manage banking tasks, or a spreadsheet to do word processing. If the functions provided for the user do not support the specific user goals and needs, the system will not be usable (Bayraktaroglu et al. 2009), leading to a negative UX and, ultimately, rejection.

### **4.3 Current functionality on Internet banking websites**

As mentioned in section 1.10.3, this study primarily focuses on futuristic Internet banking requirements, while recognising that existing functionality on this platform is still relevant and vital. This chapter therefore adds to, rather than takes away from, the key features of Internet banking platforms such as account balances, transaction history, viewing of bank statements and inter-account transfers, which have made Internet banking what it is today.

### **4.4 Seven functionality trend categories of future digital financial services**

More and more financial decisions are researched and executed online (Strothkamp et al. 2011). This can be attributed to the freedom and convenience this platform offers to bank customers. The rate at which digital financial services functionality has evolved means that customers of online financial self-service sites are able to enjoy even more power and control over their financial lives.

The literature reveals seven distinct functionality trend categories. These are labelled as being pioneering and definitive of the future of digital financial services such as Internet banking. The trend categories are personal financial management (PFM), multi-device banking, personalisation, process automation, content presentation, human touch, and social banking.

A number of banking institutions around the world have already started implementing this next wave of functionality on their web platforms and, needless to say, they are already reaping the rewards. In the following section we take a closer look at what each functionality category entails and, where relevant, the early adopter institution(s) that have already started implementing them.

## 4.5 Personal financial management (PFM)

### 4.5.1 What is personal financial management?

According to Hesse (2011), next generation financial services will not only provide standard functionality on Internet banking platforms, such as bill payment and money transfers, but will also help customers manage their financial lives by introducing utility such as transaction categorisation, budgeting, savings goal tracking, multi-organisation account aggregation, and personalised savings tips. All this is made possible by the introduction of online PFM tools, also referred to in the financial industry as money management tools; a phenomenon that is already being embraced by a number of banks and wealth management institutions worldwide.

### 4.5.2 Benefits of personal financial management tools

Ensor, Wannemacher, Stark and Da Costa (2011) explain that deploying PFM tools on digital financial platforms gives financial institutions four key benefits: service differentiation, customer engagement, increased customer loyalty, and richer customer insight. Table 4.1 explains what these entail.

<b>Table 4.1: Benefits of personal financial management (Ensor et al. 2011)</b>
<b>1. Service differentiation</b>
Many banks invest heavily in improving the presentation and functionality of their public facing websites. Currently, most secure, transacting platforms are still electronic versions of static paper statements. However, secure sites are becoming the main interaction points between banks and their customers, and incorporating online money management into these platforms offers a way to differentiate the bank from competitors by offering much richer functionality.
<b>2. Increased customer engagement</b>
Money management tools may encourage customers to spend more time with their bank's online services. Banking institutions carrying this functionality on their Internet banking platforms show that users spend about twice as long per session than users of the regular online service. This means that banks have an extended opportunity for to provide their customers with value-add services like actionable budget alerts and product recommendations.
<b>3. Increased customer loyalty</b>
Once customers rely on using PFM functionality, they become less likely to switch to another provider, as they will not want to lose the feature or set it up again with another bank. This is especially relevant if another banking institution does not have this type of functionality on their online transacting platform. This can have a positive effect on customer retention.
<b>4. Richer customer insight</b>
PFMs helps bank collect a rich set of customer insights, giving them a detailed view of the customer's spending patterns and financial goals in general. Where national regulations permit, customer intelligence teams can use this data to inform the development of more relevant products.

The following section gives a number of examples of financial service providers that have already implemented this money management functionality on their online transacting platforms. These include Barclaycard, Standard Bank, and 22seven money management websites.

### **4.5.3 PFM early adopters: Barclaycard, Standard Bank and 22seven**

Barclays Bank in the United Kingdom is one of the early adopters of this money management functionality. According to Niemeyer (2011), Barclaycard, the credit card division of Barclays Bank, has implemented a secure website called Mybarclaycard. Mybarclaycard allows users to manage their credit card spending online. On logging in, users are able to see a visual representation of their card, automatic categorisation of their spending, and graphical representations of their spending patterns, from which they can select the best way in which to view this information. Figure 4.2 gives a visual example of the card interface from Mybarclaycard.

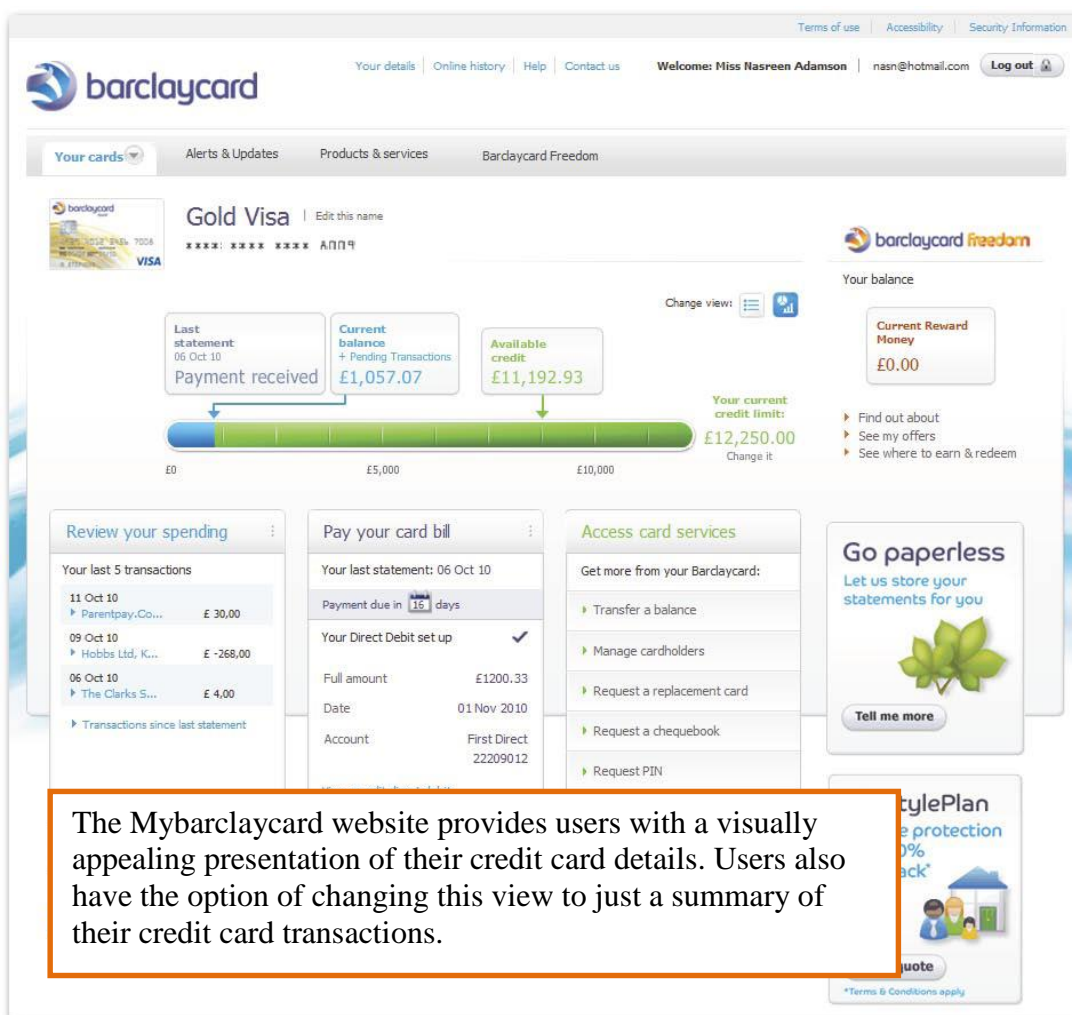
Another example of a bank successfully implementing personal financial management tools on its Internet banking website is a Spanish bank BBVA. BBVA has called this additional service Tú Cuentas ('You count for us') and it allows users access to account aggregation, social media engagement and personalised campaigns on the site. According to a case study by Hesse (2009), the Tú Cuentas service has given users a modern and practical approach to managing their finances, an approach that had not been previously attempted. Among other functions, the platform allows users to obtain better insight into their personal finances by automatically categorising their transactions into categories such as transport, groceries, and suchlike, as well as assisting users to track budget goals, create periodic reports and opt to receive alerts when their budget limits come within certain thresholds they have set.

According to Browne, Dorsey, Hesse and Catino (2010), since the launch of the Tú Cuentas banking platform with the improved functionality in early 2010, customer activity on the site has increased by 25%, and the number of online transactions has increased by 15%. These authors state that the BBVA bank also believes that the improved platform will open an opportunity for the bank to introduce enticing product prospects to customers that will in turn pave the path toward a greater, long-term engagement with the bank.

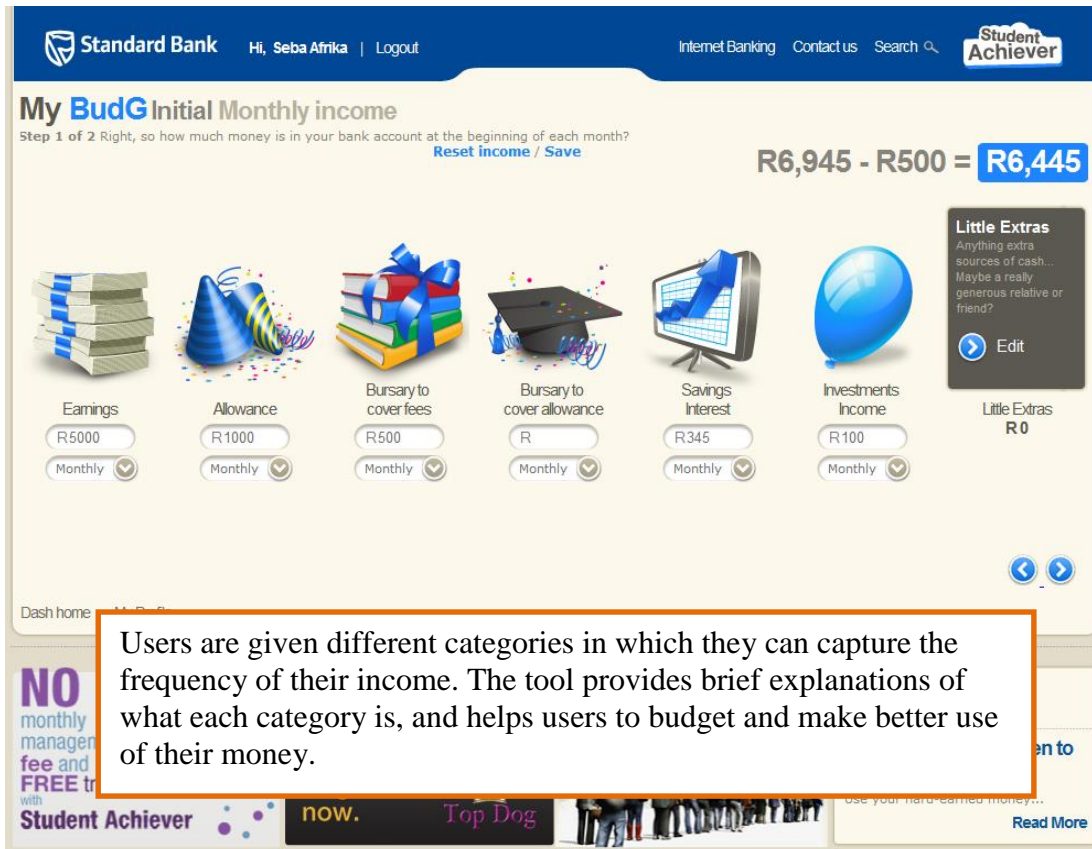
Standard Bank, one of the five major banks in South Africa, has recently experimented with a similar concept to that of money management, by launching in July 2011 a stand-alone portal

targeted at the youth market in South Africa. The Student Achiever portal (Student Achiever 2011) provides financial information to the youth in a manner they can relate to, by making use of playful visual language and copy with a relaxed tone.

On logging in, the platform offers users a number of tools that can help them meet their financial goals. One such tool is the ‘BudG’ financial management tool that allows users on this platform to obtain a consolidated view of their finances by helping them understand their total income, while also giving them money management tips to help them reach their financial goals. An example of the BudG interface is shown in Figure 4.3.



**Figure 4.2:** A visually appealing presentation of card status – Mybarclaycard (Niemeyer 2011)



**Figure 4.3:** Example: Standard Bank BudG tool

South Africa has also recently witnessed the introduction of the first financial aggregation technology, through an organisation with the name of 22seven (22seven 2012). 22seven is a stand-alone, third-party site that links with various financial institutions and allows users to track and monitor how they spend their money. For a monthly fee of R70, the company's website helps users see how their money comes in and goes out of their pockets.

#### 4.5.4 PFM tools on Internet banking platforms

According to Ensor et al. (2011), customers want money management tools from their bank's main website. When asked where they would prefer to access these tools, 63% of European customers said that they preferred their bank's website, compared to fewer customers who did not mind accessing them on third-party websites.

Peter (2007) states South African banks are still providing basic functionality on Internet banking websites, thus making this platform uncompetitive with no value add for banking customers. With the benefits money management tools offer, as stated by Ensor et al. (2011) in section 4.5.2, the

introduction of functionality such as that on BudG and 22seven could prove to be a powerful step and major differentiation factor for the Internet banking offering, as currently, these are stand-alone portals with no integration to the customer’s transacting reality, captured in the Internet banking website.

#### 4.5.5 Guidelines for implementing personal financial management on Internet banking websites

Sections 4.5.3 to 4.5.4 above give examples of banking institutions and stand-alone service providers that are already harnessing money management tools on their online platforms. As previously discussed, the functionality they provide speaks to the very important need to assist users in taking better control of their financial lives.

Because of the varying ways PFMs can be interpreted on online financial platforms, it is vital to have a set of guidelines to make certain that this functionality can be implemented in meaningful ways across the board. Accordingly, Hesse (2011) provides four guidelines that can be used as a checklist when implementing PFM tools on Internet banking websites. He maintains that these tools should always answer four user questions: What do I own? How am I doing? What should I do? How can I take action? These questions are discussed in detail in Table 4.2 below.

<b>Table 4.2: Questions to answer for the successful implementation of PFM tools (Hesse 2011)</b>	
<b>1. What do I own?</b>	PFM tools should provide a real-time view of the customer’s financial position. This should ideally include the different categories of all their assets and liabilities (e.g. loans, property details, investments, etc.)
<b>2. How am I doing?</b>	PFM tools should allow customers to create budget and savings goals, and assist them to track and reach their targets. As support to user-specified goals, platforms should provide time-triggered account alerts that help users keep track of their goals. Peer comparisons should also be considered as users will most likely benchmark their progress against those of people in similar positions.
<b>3. What should I do?</b>	The tools should not only enable users to specify financial objectives, but also make proactive recommendations based on the customer’s spending patterns.
<b>4. How can I take action?</b>	PFM tools need to allow users to take instant action after they have attained their goal. This can be a link to a product or a tool that will allow them to take the first step towards acting on their goal.



## **4.6 Multi-device banking**

Device portability has rewritten the boundaries of the keyboard and mouse, presenting user interfaces in a manner that is much more convenient and customised to users (Dorsey 2010). According to Goldstuck (2012), 90% of regular Internet users in South Africa access the Web on their smartphones, and tablet pervasiveness continues to grow, with one million tablet devices being estimated to be in the South African market by the end of the year 2012 (Mfuphi 2012). These and other similar statistics worldwide have meant that organisations have had to make certain that users are able to access key online services in usable and compelling formats, regardless of the device on which they are viewed, and the banking industry is no exception.

### **4.6.1 Responsive design**

This growing need for mobility and instant utility from users has led to a recent explosion in mobile technologies such as responsive design and the development of mobile applications, commonly known as ‘apps’. Responsive design, also known as adaptive design, allows a site to automatically format to a range of screen sizes, from desktop to smartphone, and anything in between. The navigation, design and layout gracefully shift and resize without breaking, which ensures that a site is always usable, on whatever device the user views it (Kissoyan 2012). A number of organisations have started adopting this manner of design; Jyske Bank being one of them. Figure 4.4 depicts how the organisation’s website renders the responsive interface across devices of varying sizes.

### **4.6.2 Transactional banking apps in South Africa**

An application, or ‘app’ for short, on the other hand refers to a computer program that runs mainly on mobile devices such as smartphones and tablets. Such apps allow smartphone and tablet devices do almost anything that programmers can imagine (Duin 2012). Because of the great convenience these devices offer most users, it has become imperative for most organisations to offer this channel as another form of self-service to their customers; especially as mobile apps currently offer better usability than mobile sites (Nielsen 2012a).

The South African banking industry has begun to make great progress in the mobile app sphere. As a support channel to the Internet banking offering, banking institutions offer their customers the ability to perform key transactional tasks such as viewing balances, making payments, transferring

money and buying pre-paid airtime on the go, all from the convenience of their smart device. Figure 4.5 shows an example of the transactional apps from four of the five largest South African banks.



**Figure 4.4:** Jyske bank's responsive website rendered on desktop, tablet and smartphone devices (Boye 2012)



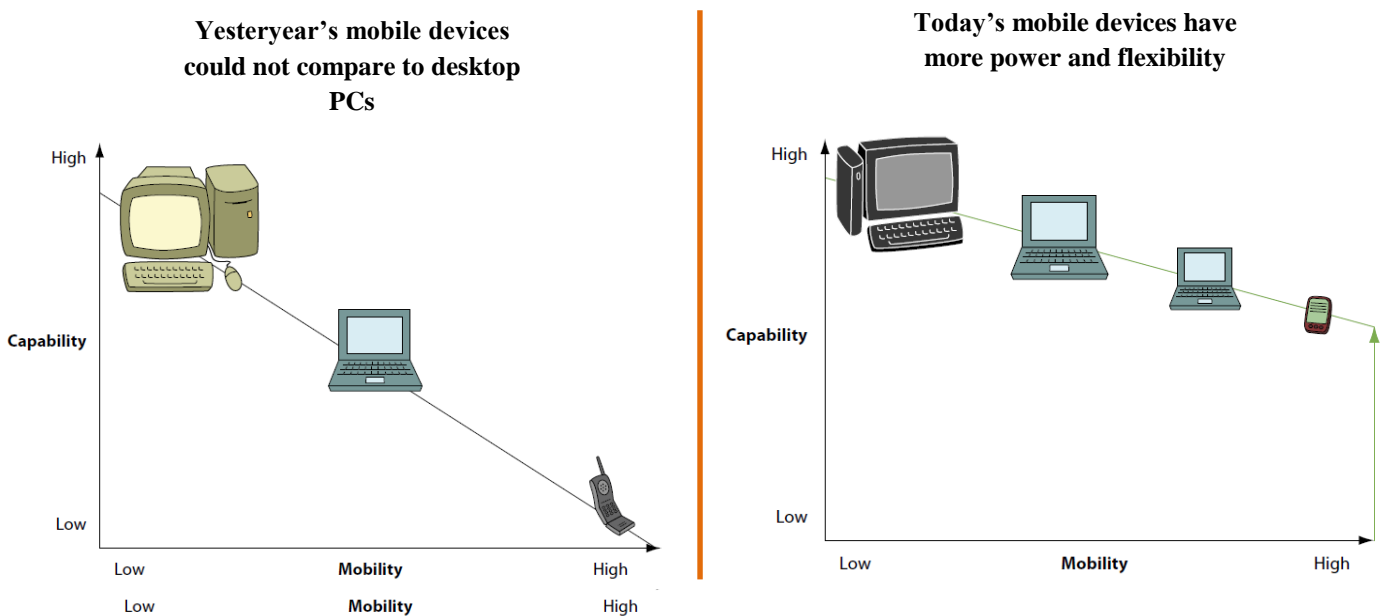
**Figure 4.5:** Examples of transactional mobile apps from FNB, Standard Bank, Nedbank and ABSA

Increasingly, banking institutions around the world are recognising the importance of on-the-go utility made possible by applications rendered on smaller devices. Citibank, the fifth largest bank in the United States of America, has also provided its customers with a tablet banking app that offers not only key transactional functionality, but also additional personal financial management

capabilities. The tablet app allows customers to have a consolidated view of all their accounts, plot a visual representation of their past and pending transactions and even compare their budgets and spending with those of others people (Wannemacher 2012).

### 4.6.3 Importance of multi-device usage

According to Strothkamp et al. (2011), cross-channel usage is a reality for selling products and services online. This implies that customers are no longer one-dimensional and that multiple devices are likely to be used to perform certain tasks online, depending on the context of use the customer finds themselves in at any given point in time. Today’s mobile devices offer significant power and flexibility, as compared to those of yesteryear (Dorsey 2010). It is therefore important to make certain that when new channels such as tablets and smartphones emerge on the market, organisations quickly develop a plan for servicing their customers through those touch points (Wannemacher 2012). This, in turn, complements and supports full-service platforms like Internet banking, which are mainly accessible and best utilised on full-width devices like desktops and laptops.



**Figure 4.6:** Comparison between the mobile devices of yesteryear and today (Dorsey 2010)

## **4.7 Personalisation**

According to Mohanty and Jagatram (2009), personalisation is the process of tailoring content and functionality on a website according to the user's learnt behaviour, characteristics and preferences. This concept has evolved in recent years and has today become a key online trend. Personalisation is often mistaken for, and used interchangeably with, what is known as customisation, resulting in some confusion on what the differences between these two concepts are. This issue is addressed in the next section.

### **4.7.1 Difference between personalisation and customisation**

Personalisation has been defined in the preceding section. Customisation, on the other hand, does not involve any learnt user behaviour, as the user usually selects the type of content or functionality they would like see. Having made this distinction, Mohanty and Jagatram (2009) perceive personalisation to be more powerful on online platforms, as personalisation:

- Allows the website to meet the users' needs more efficiently by serving them with content that is based on how they have interacted previously and are therefore more likely to interact again
- Eliminates unnecessary steps in the user journey by allowing online platforms to adequately and realistically predict the customer's needs and purchasing patterns
- Makes it possible for organisations to facilitate and successfully implement targeted marketing, consequently increasing customer satisfaction and retention.

Both these trends have formidable benefits, with personalisation being worthwhile for both the customer and the organisation, while customisation allows users to express personal preferences according to their unique characteristics.

### **4.7.2 Personalisation on future digital financial services**

Hesse 2011 foresees that, in the future, organisations will make use of available customer information to personalise the financial website experience for customers. He outlines four different levels in which this type of functionality will materialise. Available customer information will be used to personalise:

1. Website content
2. Website navigation
3. Websites presentation, and
4. The products being marketed to users.

Table 4.3 discusses these four types of personalisation in more detail.

<b>Table 4.3: Four ways in which personalisation will materialise (Hesse 2011)</b>
<b>1. Personalisation of website content</b>
Customers will be notified of details from their last visit, as well as be provided with recommendations and suggestions for their new interaction. Depending on the type of products they have or do not have, they will be provided with different navigation paths that best meet their needs.
<b>2. Personalisation of website navigation</b>
Users will be able to continue the journey on the website from the point that they had stopped on their last visit. The links and tasks they access the most will be prioritised and prominently positioned as compared to all other links on the page.
<b>3. Personalisation of website presentation</b>
Websites will allow users to select language preferences. Layout and format of pages will change depending on the types of product of the organisation that customers use.
<b>4. Personalisation of the products being marketed to users</b>
More and more organisations will allow users to customise products according to their specific needs rather than just recommending off-the-shelf solutions that are meant to cater for all customers at the same level.

### 4.7.3 Personalisation of website content: cross selling and targeted marketing

As previously discussed in section 2.3.3, a key strategic importance of Internet banking is to increase equity for the bank, implying that the platform needs to enable the bank to predict prospective products and services for clients, even before they know they need them. These are functions of cross selling and targeted marketing, which are extensions that the personalised experience make possible.

According to Corcoran (2011), organisations need to build relationships with customers, especially the most loyal and influential, in order to drive further sales. Scott (2008) also explains that to keep engagement and involvement in the organisation, it is important to send out a correct and relevant message to the correct customer at the right time. This is especially important within the context of Internet banking, where the user’s financial patterns are already known and monitored by the bank, and can therefore be used to serve content and products that are relevant and directly related to their learnt behaviour and likely needs.

This is further emphasised by Strothkamp (2009), when he states that one of the greatest opportunities for the online channel is to engage passive users with relevant product offers. Organisations need to go beyond placing ordinary banners on websites and start crafting more compelling engagements for potential customers.

#### **4.7.4 Personalisation of website content: value-add content**

Most organisations are making use of relevant value-add content that is related to the user's interaction pattern in order to keep users constantly engaged with the organisation. Locally, the Standard Bank Student achiever portal (Student Achiever 2011) is a good example of the implementation of relevant educational content that keeps users engaged with the brand and guarantees repeat visits.

The Student Achiever platform integrates the portal content with television content from the youth television show (Craz-e) on e-TV, South Africa's independent television station. Here, users can interact with the site by viewing competitions, financial articles and other content advocated by the television show. Users also have the option of subscribing to a number of communications that are delivered to them in a tone they can relate to, addressing topics relevant to their financial situation.

### **4.8 Content presentation**

The key principle with any online platform is to make it easy for users to find what they need. This rings true for all types of content presented on any online platform, transactional or otherwise. Wannemacher (2012) explains that it is no longer enough just to have the right content; content needs to be presented in such a way that it is easy to read and comprehend so that users can absorb key details quickly. Future financial digital services will employ innovative ways to present content to users; one such rising innovation is the use of online video to simplify content being presented to users.

#### **4.8.1 Types of online video**

With the evolution of the Internet over the past few years, online video has become an expected medium that brings real-life emotion into a world of content that was previously static (Ensor and Poltermann 2011). Ensor and Poltermann (2010) maintain that four different types of video will be

used on future financial services platforms: TV adverts, educational or ‘how to’ videos, product videos and interactive videos. Table 4.4 describes these different types of financial video formats.

<b>Table 4.4: Different types of financial video (Ensor &amp; Poltermann 2011)</b>	
<b>1. TV ads</b>	These videos are primarily meant for brand awareness, and are a direct replica of TV commercials on the financial site.
<b>2. Education or ‘how to’ videos</b>	These videos educate customers on general financial topics such as optimising savings and general awareness about trends in the market.
<b>3. Product videos</b>	These are videos that explain the specific products and services the organisation offers to users. They usually give guidance on how to use certain services the organisation offers.
<b>4. Interactive videos</b>	This type of video uses graphics, a presenter and clickable links where users are generally led to fill in some details about themselves in order to be contacted by the organisation.

Hesse (2011) further affirms the increasing prevalence of online video space that will be witnessed because, he maintains, this medium will enable organisations to provide experiences that will deliver complex information in a format that is much easier for users to comprehend and enjoy.

#### 4.8.2 Online video early adopters: Commonwealth Bank, Easy Credit and Discovery

The screenshot shows a web page for 'Episode 3 - Home loan options' on the Commonwealth Bank website. The page includes a navigation menu (Home, Personal, Business, Corporate, About Us), a search bar, and a breadcrumb trail: Home > Personal > Home loans > First home buyers > Episode 3 - Home loan options. The main content area features a video player with a play button and a text box that reads: 'The Commonwealth Bank of Australia uses online video to explain the complex process of acquiring a home loan to users.' Below the video player, there are links for 'Home loan comparison table', 'Line of credit', and 'Related videos'. The 'Related videos' section lists 'Episode 4: The home buying process', 'Episode 1: Finding the ideal property', and 'Episode 2: Home loan options', along with a 'Back to homepage' link.

**Figure 4.7:** Product video: Commonwealth Bank of Australia (Hesse 2011)

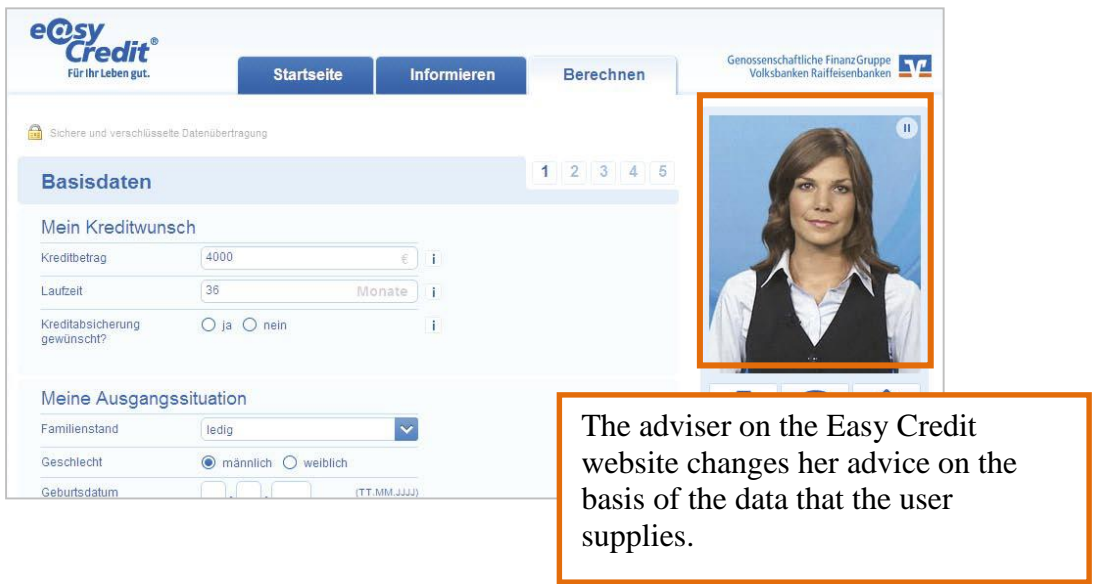


Figure 4.8: Educational video: Easy Credit financial services provider (Ensor, Poltermann 2011)



Figure 4.9: Educational video: Discovery – health insurance and financial services provider (Discovery HealthID 2012)



## 4.9 Process automation

Financial customers who are confident about managing their own finances should be able to do so by accessing the empowering tools that are put in place, allowing them to start and complete transactions online (Hesse, Ensor, Doyle, Poltermann and Hoffmann 2011). This is not, however, the case with most online financial platforms today, with users more often than not being required to complete a financial product purchase in a branch because inadequate tools are provided for them to make informed financial decisions online.

As a first step to empowering users, automation technologies that simplify and speed up online processes will be adopted by future online digital services. According to Hesse (2011), this automation technology will take four forms, that is, introduction of rich Internet applications (RIAs), application pre-fills, e-signatures, and straight through processing (STP).

<b>Table 4.5: Four forms of automation technology (Hesse 2011)</b>
<b>1. Introduction of rich Internet applications (RIAs)</b>
RIAs will permit multifunction interfaces where data from multiple sources will be consolidated and accessed on a single modifiable screen. This will in turn allow richer user experiences that will effectively adapt to users' needs in their relevant contexts. Use of advanced tools, such as calculators and wizards, will also become more prevalent in order to assist users make better financial decisions.
<b>2. Application pre-fill</b>
Pre-fills will search internal and external databases in real time and return customer information for ease of use in advice tools and application processes. This will dramatically reduce applications and transacting time for banking customers.
<b>3. eSignatures</b>
eSignatures will replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction. This will in return minimise the time and effort required to complete online transactions.
<b>4. Straight through processing (STP)</b>
This means that transactions will automate from start to finish, allowing users to complete transactions without any human intervention from the organisation itself regardless of any outstanding requirements or minor account restrictions detected. This will automatically translate to fewer visits to the branch.

## 4.10 Human touch

### 4.10.1 Human touch: Wells Fargo case study

A case study by Strothkamp (2010) examined the way Wells Fargo, an American bank, successfully implemented an online chat functionality on their online loan application section of the website. The organisation was looking for a way to introduce human assistance when users were shopping

for lending products on their website. The online chat functionality enabled the organisation to successfully achieve this by assisting customers with potential problems related to the loan application process. The online chat functionality was targeted at customers who, because they had questions, would potentially abandon the application process. The bank successfully administered this by monitoring and determining the average amount of time needed to complete the online application, taking into account that a potentially struggling customer would spend more time on the application process than the estimated average. The website would then offer the customer an invitation to chat, even before they called the bank for assistance or, worse still, gave up on the application process completely.

The implementation of this functionality led to improved customer satisfaction ratings, motivated and engaged internal staff, as well as measurable increased revenue for the organisation.

Hesse (2011) agrees with this type of functionality on sales-driven sections of financial services websites. He maintains that human beings remain the best sales and service channel for many interactions. It is therefore very important to make certain that, where possible, technology is balanced with human effectiveness, and functionality such as online chat best represents this balance. He projects that future digital financial platforms will intelligently integrate relevant human assistance into any purchasing or loyalty process on the website.

#### **4.10.2 Human touch: Hapoalim case study**

A case study by Montez (2012) examined another human touch innovation recently implemented by Bank Hapoalim. This bank is one of Israel's largest, with approximately 300 branches. In a country of an estimated 7.5 million people, Hapoalim's Internet banking platform has more than 1 million users, showing its significance in this market.

In early 2011, the bank introduced a new service, called Poalim Connect, which was aimed at providing customers who mostly or entirely used digital channels with the ability to communicate with a personal banker, or an extended team of bankers during working hours.

The introduction of this functionality has led to a number of successes being witnessed by the bank. The bank has seen improved customer satisfaction for both human and digital touch points. When Poalim Connect customers were surveyed, 92% of the respondents were satisfied with the service they received from the personal banking team through the interface, 85% were satisfied with Poalim

Connect, and 77% would recommend the service to others. Moreover, customer engagement increased, with more than 25 000 meetings having been scheduled by bankers, and over 50 000 online conversations already held with banking customers.

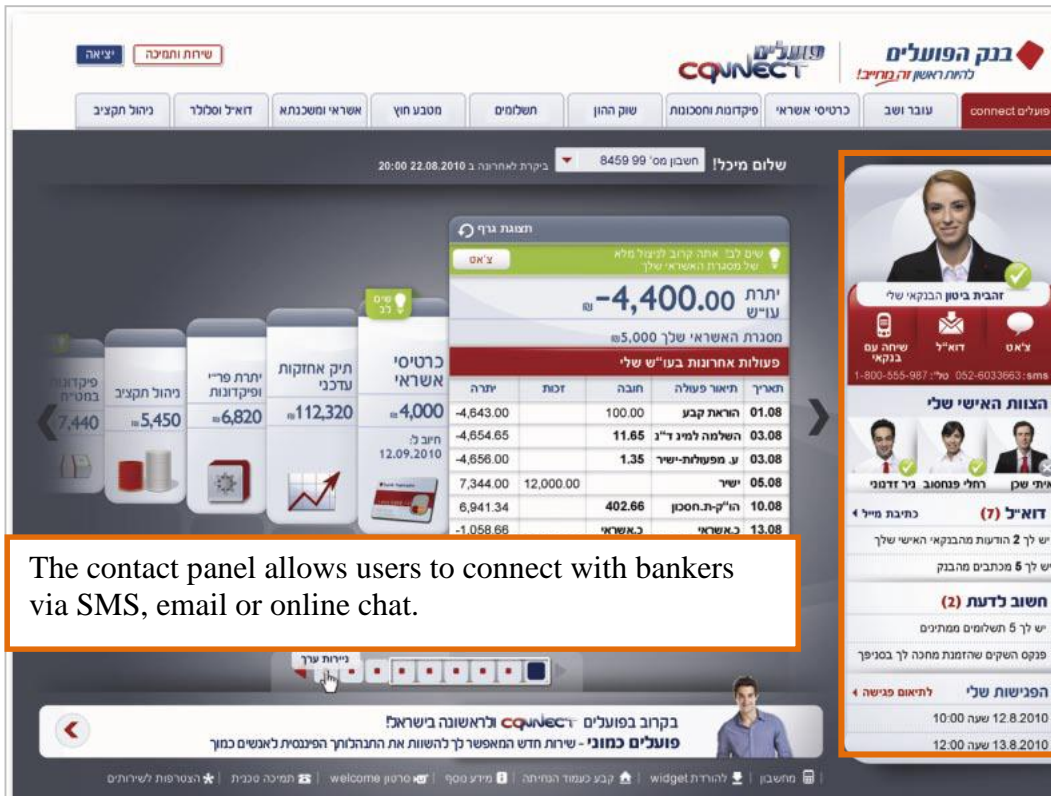


Figure 4.10: Hapoalim’s Connect functionality (Montez 2012)

### 4.10.3 Types of technology that assist with human touch

There are a number of technologies that can help provide human assistance during online interactions. Hesse (2011) emphasises the importance of selecting the correct technology for the user, bearing in mind their context of use, and how best human intervention can add value and not increase the difficulty or discomfort already experienced. He outlines five key technologies future digital financial services can use: click to call back, click to chat, proactive chat, secure inbox/secure messaging, and web conferencing. These are discussed in more detail in Table 4.4.

Table 4.4: Online chat technologies (Hesse 2011)	
<b>1. Click to call back</b>	Users complete their contact details in the fields on the website. A sales assistant from the organisation then contacts them and assists with the query.
<b>2. Click to chat</b>	

When users require help on a website, they can click on a chat link on the page to be able to speak to someone from the organisation.
<b>3. Proactive chat</b>
A system initiated chat invitation based on a predetermined list of user behaviour on the website. The website will open a window where the user and the representative from the organisation are able to talk.
<b>4. Secure inbox/secure messaging</b>
Users are able to receive personal messages from the bank, and are usually also able to send messages to the bank.
<b>5. Web conferencing</b>
Usually a click-to-chat functionality with additional video functionality. Users are able to see the bank representative when talking.

#### 4.11 Social banking

Social media can be described as a group of Web 2.0 applications that allows non-technical individuals to publish content such as profiles, opinions, videos and pictures, and from this create social dialogue with other members on the same or different platforms (Naidu 2010). The rise of social technologies such as Facebook has seen significant growth in recent years, with an estimated 6 460 900 Facebook users in South Africa alone recorded at the end of the year 2012 (Socialbakers 2012).

This popularity has seen the use of such platforms become a societal norm, and it is for this reason that many organisations worldwide have taken to these platforms in order to form and maintain relations with their customers. According to Noble (2009), there are five key reasons organisations take to social media platforms; they do so in order to listen, talk, energise, support, and embrace their customers. This is discussed in more detail in Table 4.5.

<b>Table 4.5:</b> Five objectives of social media when used by organisations (Noble 2009)
<b>1. Listen</b>
Organisations need to have profound insight and understanding of their customer. Social media platforms allow them to understand what customers really want and also hear about problems before they can reach or harm the organisation.
<b>2. Talk</b>
Organisations are also better able to market and communicate with their customers, as they are able to reach them wherever they are. These platforms also provide a more humane, relatable tone that positions the organisation as more approachable.
<b>3. Energise</b>
For better brand promotion and association, social media platforms allow organisations to communicate with customers about competitions and loyalty programmes, all factors that build brand loyalty and appreciation.
<b>4. Support</b>
These platforms can also be used as customer support channels, where customers are exposed to communities that help them with certain product and service concerns, even before they call the

organisation. Another use is that of sharing organisational material such as manuals with the rest of the customer base.

#### **5. Embrace**

For better product development, organisations can also involve customers and gain their opinions before new products are designed, making it more likely for the customer's real product needs to be met.

#### **4.11.1 Use of social media in transactional banking**

Naidu (2010) suggests that banks that engage with social media ultimately win more customers and increase profits. This deduction also reflects the estimation by Higdon (2010), who suggests that more than 250 financial institutions from 40 different countries globally have joined Facebook. Many of these financial institutions have successfully managed to engage customers in product-related discussions, and have even resolved customer service queries on these platforms. However, very few banks have managed to convince their customers to access some sort of transactional capabilities on these social platforms. Higdon (2010) explains further in this regard that most customers are still very concerned about hackers and the privacy of their information on such sites; and despite sharing all other details of their lives, most still prefer to keep explicit details of their financial lives private.

Hesse (2011), however, projects that the digital financial services of the future will demand integration across several processes, systems, applications and channels; and the social channel is part of this equation. This will be in order to support interactions across multiple touch points so that users are always able to access the content and functionality they deem important, regardless of the website they are on. This view is also expressed by Dorsey (2010), when she projects that social integration will likely become a rule, and not an exception, in future online experiences.

Naidu (2010) contends that transacting on social media is still shunned by most Internet banking users. She explains that this can be compared to the reluctance of use encountered in the beginning stages of Internet banking. She mentions that very similar concerns of trust and security were raised at that time; however, as would seem from the use of Internet banking today, these concerns have observably been overcome.

The sections that follow give a number of examples of early adopter sites; Citibank and FNB have already incorporated certain aspects of transactional banking into the social media space.

### 4.11.2 Social banking early adopter: Citibank and FNB

Citibank provides its customers with peer comparison functionality that gives customers a certain level of comfort, which ensues from the anonymity of the functionality and the fact that no real customer details are exposed (see Figure 4.11). Locally, FNB has recently joined Citibank in becoming one of the selected financial institutions worldwide to offer customers some banking functionality through the social networking website Facebook (Clark 2012). By linking their cellphone banking profile and their Facebook profile, FNB customers have access to basic transactional capabilities, without having to start a separate browsing session (see Figure 4.12).

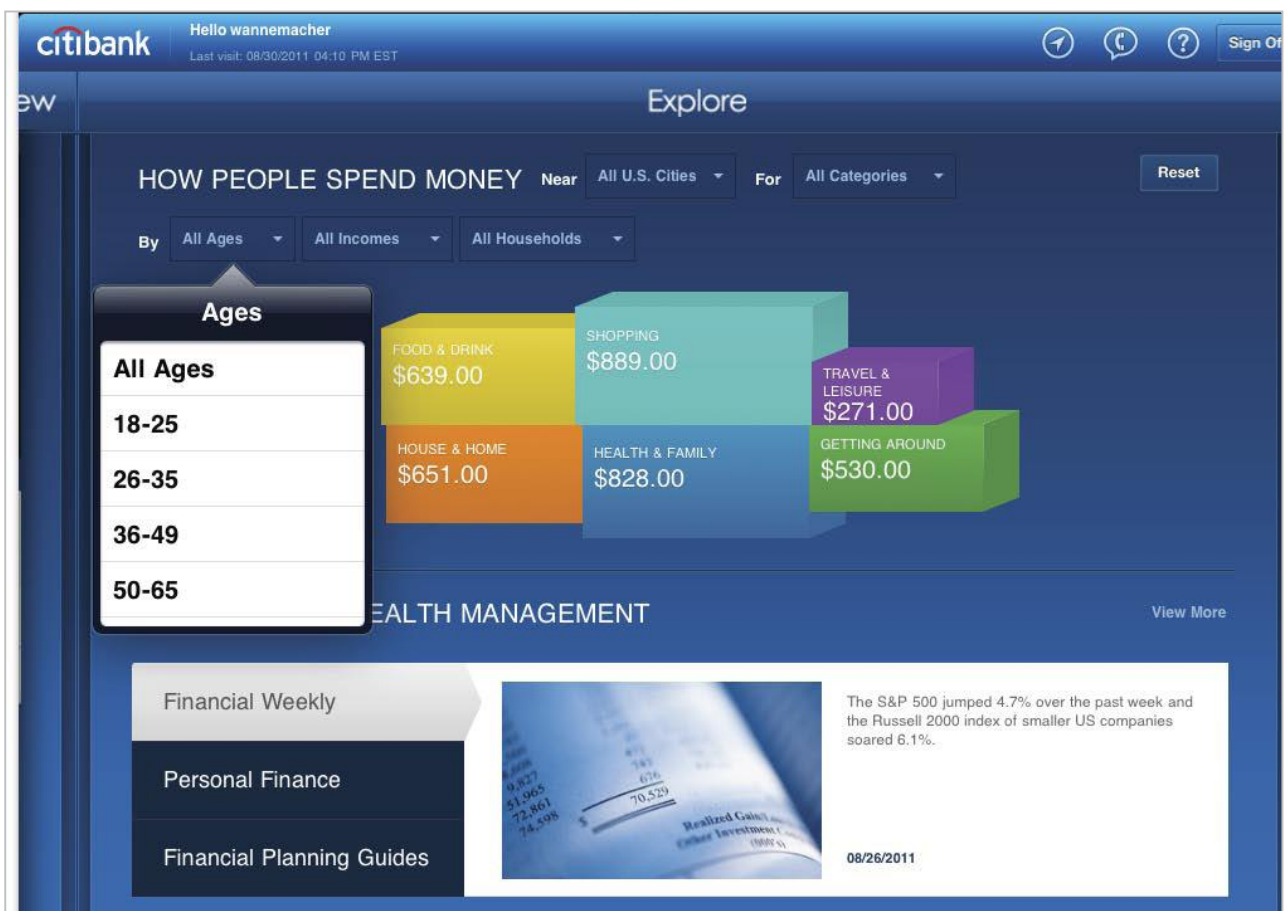
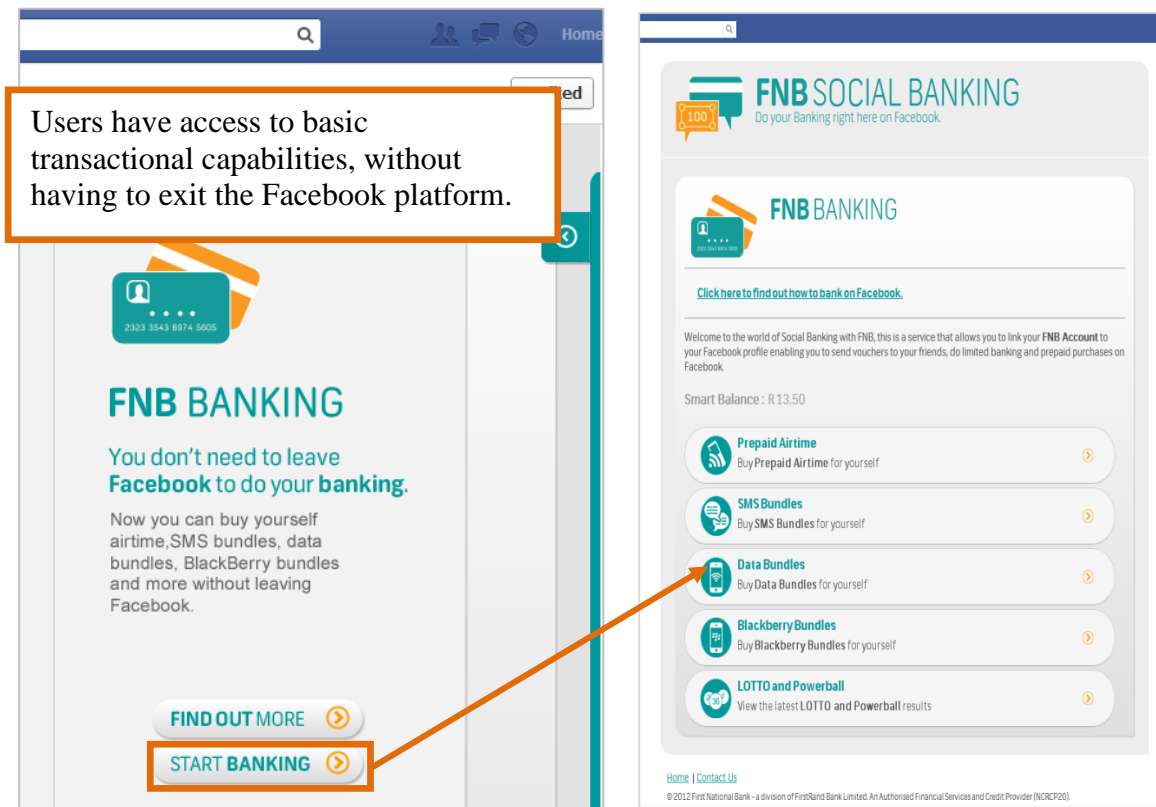


Figure 4.11: Citibank peer comparison functionality (Wannemacher 2012)



**Figure 4.12:** Transactional banking in Facebook – FNB South Africa (Clark 2012)

## 4.12 The direction of future online experiences

The functionality discussed in this chapter opens a number of opportunities for the Internet banking channel; as well as forms part of the projected movement of the web platform in general. This movement is described by a number of authors in the literature, each giving a collection of specific inclinations that online services will most likely move towards. This section outlines these inclinations in order to obtain a single, comprehensive reference for future online financial services to be used in this study.

### 4.12.1 Classifications of the projected innovation

Six classifications have been identified in Chapman (2009), each relating to the trends in Internet banking functionality discussed earlier. Chapman (2009) proposes that experiences on future online platforms will:

1. Contain more interactive content
2. Incorporate real-time collaboration on websites
3. Use applications (‘apps’) that will simplify online processes
4. Comprise of social integration
5. Use high quality online video, and
6. Make use of customised interfaces.

Along similar lines, Dorsey (2010) outlines four attributes she believes will characterise the next phase of development on the Web. She predicts that the online experience will be encompassed in an acronym she has labelled ‘CARS’:

1. **C** – Customised by the end user
2. **A** – Aggregated at the point of use
3. **R** – Relevant to the moment, and
4. **S** – Social as a rule, not an exception.

Table 4.6. contains definitions of what is encompassed by the four attributes:

<b>Table 4.6:</b> Future of online customer experience (Dorsey 2010)
<b>Customised by the end user</b>
Customers will not only control what they do online; they will also control the form that they get it in to a much greater degree than they do today.
<b>Aggregated at the point of use</b>
Content and functionality will be pulled from different sources and combined at a common destination to create a unique experience.
<b>Relevant to the moment</b>
Customised, aggregated content will appear on the device that is best suited to the customer’s context at a given point in time.
<b>Social as a rule, not an exception</b>
Social content will be integrated into most online experiences, not segregated into blogs and stand-alone social media platforms.

As an additional contribution, Hesse (2011) gives input on the way in which the functionality change in specifically digital financial technologies will unfold. According to him, the next generation digital financial services will be ‘SUPER’, an acronym he uses to summarise these new developments.



1. **S** – Simple
2. **U** – Ubiquitous
3. **P** – Personal
4. **E** – Empowering
5. **R** – Reassuring

Table 4.7 explains these projected developments represented by the ‘SUPER’ acronym.

<b>Table 4.7: Attributes of future financial digital services (Hesse 2011)</b>
<b>Simple</b>
It will be much easier for customers to achieve goals and tasks on digital financial websites, as product and services information will be presented in a manner that is easy to comprehend.
<b>Ubiquitous</b>
Customers will be able to interact seamlessly with their financial services provider through an increasing number of touch points like mobile devices and social networks. There will be continuity and consistency across all these platforms, making users comfortable and reassured that their needs will be met regardless of the device and platform they choose to transact on. Because of the limitless nature of the platform and device being used, they will be able to access the transactional platform, anywhere and anytime.
<b>Personal</b>
The entire online experience will be relevant to unique customer needs, and will not use a one-size-fits-all approach when it comes to handling the customer’s data. The customer’s experience on the platforms will therefore be personalised according to what collected data shows what they deem important.
<b>Empowering</b>
Customers will be able to take action by themselves, as they will be provided with an aggregated view of content from multiple sources. This aggregation puts them in control of whatever content is being presented to them on the site.
<b>Reassuring</b>
As human beings still remain the best sales and service channel for many high-value interactions, future digital services will provide human help whenever the user feels the need.

When all three projections are compared side by side, the prediction by Hesse (2011) comprehensively encapsulates what is projected by both Chapman (2009) and Dorsey (2010), as well as comprehensively accommodates all the functionality categories outlined in sections 4.5 to 4.11 of this chapter.

To demonstrate this encapsulation, Table 4.8 depicts a cross-tabulation and mapping of Hesse (2011) attributes to Chapman’s (2009) and Dorsey’s (2010) online experience projections. In order to affirm that SUPER is indeed a comprehensive representation of the projected direction, the table also depicts how the functionality categories identified earlier in this chapter align with the acronym.

<b>Table 4.8: SUPER: cross tabulation of future online experiences</b>			
Future of online digital services (Hesse 2011)	Future of online digital services (Chapman 2009)	Future of online digital services (Dorsey 2010)	Identified digital financial services functionality trends (sections 4.5–4.11)
Simple.	<ul style="list-style-type: none"> <li>• Have more interactive content.</li> <li>• Use high quality online video.</li> </ul>	-	<ul style="list-style-type: none"> <li>• Process automation.</li> <li>• Content presentation.</li> </ul>
Ubiquitous.	<ul style="list-style-type: none"> <li>• Use applications ('apps') that will simplify online processes.</li> <li>• Consist of social integration.</li> </ul>	<ul style="list-style-type: none"> <li>• Social as a rule, not an exception.</li> </ul>	<ul style="list-style-type: none"> <li>• Multi-device banking.</li> <li>• Social banking.</li> </ul>
Personal.	<ul style="list-style-type: none"> <li>• Make use of customised interfaces.</li> </ul>	<ul style="list-style-type: none"> <li>• Customised by the end user.</li> </ul>	<ul style="list-style-type: none"> <li>• Personalisation.</li> </ul>
Empowering.	-	<ul style="list-style-type: none"> <li>• Relevant to the moment.</li> <li>• Aggregated at the point of use.</li> </ul>	<ul style="list-style-type: none"> <li>• Personal financial management (PFM).</li> </ul>
Reassuring.	<ul style="list-style-type: none"> <li>• Incorporate real-time collaboration on websites.</li> </ul>	-	<ul style="list-style-type: none"> <li>• Human touch.</li> </ul>

Whilst Chapman's (2009) and Dorsey's (2010) projections have failed to cover all these services, Hesse's (2011) SUPER has comfortably accommodated all seven identified digital financial services functionality trends identified in section 4.5 – 4.11. For this reason, SUPER can be described as encompassing all seven functionality categories, and can thus be confidently used as the guiding principle which future online financial services are most likely to apply. SUPER will therefore be regarded in this manner in the chapters to follow in this study.

### 4.13 Summary

The ultimate objective of this chapter was to collect what is projected to be next generation functionality for digital financial services. The chapter presented the importance of functionality on online platforms, emphasising the key role it plays as an extension and reflection of any organisation's services.

This then led to the identification of next generation functionality trends for digital financial services. These fell into seven distinct categories, namely, personal financial management (PFM),

multi-device banking, personalisation, process automation, content presentation, human touch and social banking.

Each category is discussed, listing intricate innovations relating to it and, where applicable, showing early adopter financial services institutions already implementing these on their digital platforms. An overarching direction for where future digital financial services are headed is then formulated, comfortably encapsulating all seven of these functionality trend categories. This direction reveals that the next wave of digital financial services will be SUPER: S – Simple, U – Ubiquitous, P – Personal, E – Empowering and R – Reassuring.

The identified functionality categories, now represented by the SUPER acronym, will be mapped to the Generation-Y characteristics identified in Chapter 3 in order to determine whether a possible alignment exists. This is for the purposes of formulation an initial list of Internet banking functionality that supports the gathered unique needs of this user base. Chapter 5 to follow details this.

## **Chapter 5: Initial functionality requirements: Internet banking for Generation-Y users**

### **5.1 Introduction**

The two preceding chapters identified specific characteristics of Generation-Y users (Chapter 3), as well as gave direction to the type of functionality future Internet banking platforms are likely to have (Chapter 4). With an in-depth knowledge of both this user segment's characteristics and a directive of where Internet banking functionality is headed, it is now possible to compare them, and assess whether the functionality identified is aligned with and caters for the specific characteristics of Generation-Y users.

This chapter explores this alignment by mapping the functionality identified in the literature to the Generation-Y characteristics, thus formulating an initial list of Internet banking functionality requirements suitable for Generation-Y users.

The chapter starts by providing a quick overview of the Generation-Y characteristics in section 5.2. It continues to revisit the identified Internet banking functionality categories, as well as the collective direction for future digital financial services (see section 5.3).

Section 5.4 maps the functionality projections to the relevant Generation-Y characteristics, making way for section 5.5, which provides a detailed account of 30 functionality requirements that can be used for validation by representative Generation-Y Internet banking users (see Chapter 7). Section 5.6 summarises the chapter.

### **5.2 Overview: Generation-Y characteristics**

In Chapter 3, a review of the literature revealed the intrinsic, educational and technological characteristics of Generation-Y users. This section takes a look at what makes up each characteristic category.

### 5.2.1 Intrinsic and educational characteristics of Generation-Y users

Four intrinsic and educational characteristics of the Generation-Y user base have been extracted from the literature. These characteristics state that Generation-Y users are highly educated, with a high disposable income. They are also lifestyle and career oriented, with a tendency to regularly challenge the status quo. Table 5.1 explains these further.

**Table 5.1:** Intrinsic and educational characteristics of Generation-Y users as per section 3.4.1

Characteristic	Explanation
Highly educated.	This generation is said to be the most educated generation compared to any predecessor generation in history (Patterson 2011).
High disposable income.	Their education level translates to more progressive career lives, and thus makes them the most powerful consumer group with more disposable income compared to any other predecessor generation (Noble et al. 2009).
Lifestyle and career oriented.	Generation-Y users value lifestyle, career and personal development far more than any other preceding generation. Flexibility and professional satisfaction is important to them, and they thrive on new challenges and creativity, and always seek and expect more responsibilities in their career lives (Brown 2010).
Challenges the status quo.	This group is continuously seeking new ways to approach business, and is not satisfied with the 'normal' status quo. Exposure to constant technological and societal change has made it aware that the old way of doing things can be challenged ( <i>Business News Daily</i> 2012).

### 5.2.2 Technological characteristics of Generation-Y users

Over and above intrinsic and educational characteristics, Chapter 3 also outlined the technological characteristics of this user group (section 3.4.2), believed to shape the way they interact with online platforms. These characteristics are divided into three main categories, explaining that these users are technologically fluid and highly networked, emotionally looking for connects, as well as unpredictable and creative (Temkin and Popoff-Walker 2007). Table 5.2 discusses these technological characteristics further, and where relevant, outline the views of other authors supporting the notion.

<b>Table 5.2: Technological characteristics of Generation-Y users as per section 3.4.2</b>	
<b>1. Technologically fluid and highly networked (Temkin &amp; Popoff-Walker 2007)</b>	
<b>Sub-characteristic</b>	<b>Explanation</b>
Continually connected.	<ul style="list-style-type: none"> <li>• These users are the owners of and use multiple technology gadgets like portable MP3 players, laptops, tablet devices, smartphones, etc., and never want to be seen as being ‘out of touch’ (Patterson 2011).</li> </ul>
Speak their own language.	<ul style="list-style-type: none"> <li>• Generation-Y users are influenced by communication technologies such as chat, text and instant messaging. Because of this, this user base has developed its own language (‘SMS language’) comprising acronyms, emoticons, modified spelling and slang.</li> <li>• It is recommended that online platforms speak in a tone that authentically addresses these users, as well as keeping instructions simple, using shorter sentences and, where possible, substituting long text with images and other interactive visuals (Temkin et al. 2008).</li> </ul>
<b>2. Emotionally looking for connections (Temkin &amp; Popoff-Walker 2007)</b>	
<b>Sub-characteristic</b>	<b>Explanation</b>
Influenced by peers.	<ul style="list-style-type: none"> <li>• This generation relies heavily on recommendations from friends and family, hence the high prevalence of use of social networking platforms such as Facebook.</li> <li>• Members of this group are seeking more than just friendships; they are after a sense of community that will understand, accept, respect and include them into a world of common interests (McCrinkle 2012).</li> <li>• Because of this, online platforms should seek to provide self-expression tools that will allow these users to communicate with others (Temkin et al. 2008)</li> </ul>
Enjoy humour with an odd slant	<ul style="list-style-type: none"> <li>• Most of these users spend time actively seeking online experiences that are both humorous and entertaining.</li> </ul>
<b>3. Unpredictable and creative (Temkin &amp; Popoff-Walker 2007)</b>	
<b>Sub-characteristic</b>	<b>Explanation</b>
Skim content very quickly, and are easily bored.	<ul style="list-style-type: none"> <li>• This generation is used to instant technology, and therefore quickly scans through information and rapidly absorbs content, without dwelling on or reading any text-heavy pages.</li> <li>• Online platforms designed for Generation-Y users should therefore expose immediate value on key pages of the website, as well as update and refresh content, whilst regularly providing them with feedback (Temkin et al. 2008)</li> </ul>
Expressive and creative.	<ul style="list-style-type: none"> <li>• Most of these users are active content creators, continuously updating blogs, uploading videos, sharing pictures, etc.</li> <li>• They are also expressive and respond to online experiences that provide them with the freedom to personalise and customise interactions, as well as products and services, in a manner they believe befits their individual personalities</li> </ul>

### 5.3 Overview: Functionality categories and projected direction of digital financial services

The literature in section 4.4 outlined seven distinct functionality categories that are likely to make headway in digital financial space. These functionality categories were identified as: personal financial management (PFM), multi-device banking, personalisation, process automation, content presentation, human touch and social banking.

Moreover, section 4.12 also outlined a projected direction future online financial services are likely to take. This projection by Hesse (2011) captured the direction in the acronym SUPER, with each letter representing innovation forecasted to change interaction on digital financial platforms. Table 5.3 and 5.4 provide high level explanations of the functionality categories, and the SUPER classification.

<b>Projected functionality category</b>	<b>Explanation</b>
Personal financial management (see section 4.5).	This projected functionality category alludes to users being able to manage their money by using money consolidation technology that enables them to have a comprehensive view of their financial standing, usually across a number of financial services providers. Where relevant, users are provided with personalised budgeting and money management hints and tips for better money use and thus improved financial standing.
Multi-device banking (see section 4.6).	The literature revealed the prevalence of portable mobile devices such as smartphones and tablets, especially in the South African community. Because of this growing use, organisations have had to make certain that their online platforms can be comfortably viewed by their users, regardless of the device they are viewing them from. For this reason an increase in the mobile apps and responsive websites that adapt to any device size being used has been witnessed. This applies to digital financial services, which are projected to provide users with usable financial content and functionality, regardless of the device they are accessing.
Personalisation (see section 4.7).	Future digital financial services will give users the opportunity to determine their own website settings in a manner that suits their own personal preferences. In addition, this platform will learn about the user on the site and recommend product and site-related content and functionality relevant to them.

Content presentation (see section 4.8).	Wannemacher (2012) explains that it is no longer enough just to have the right content; content needs to be presented in a way that makes it easy to read and comprehend so that users can absorb key details quickly. Future financial digital services will employ innovative ways to present content to users – one such rising innovation is the use of online video to simplify content being presented on the platform.
Process automation (see section 4.9).	This category addresses functionality that will enable users to perform certain transactions, from start to finish, without having to access the bank. These transactions include increasing certain account limits, product applications, and suchlike. This category also alludes to the users’ details with the bank being reused where relevant so that it is unnecessary to capture them from scratch.
Human touch (see section 4.10).	As human beings remain the best sales and service channel for many interactions (Hesse 2011), this category includes making certain that technology is balanced with human interaction, by allowing users to access human assistance from the bank on their transacting platform whenever they feel the need.
Social banking (see section 4.11).	Although the idea of incorporating banking into the social media sphere is still shunned (Naidu 2010), Hesse (2011) predicts that the digital financial services of the future will demand integration across several processes, systems, applications and channels, with social media forming part of this equation.

<b>Table 5.4: SUPER définition: Future digital financial services (Hesse 2011)</b>	
Simple.	It will be much easier for customers to achieve goals and tasks on digital financial websites, as product and services information will be presented in a manner that is easy to comprehend.
Ubiquitous.	Customers will be able to interact seamlessly with their financial services provider through an increasing number of touch points like mobile devices and social networks. There will be continuity and consistency across all these platforms, making users comfortable and reassured that their needs will be met regardless of the device and the platform they choose to transact on. Because of the limitless nature of the platform and device being used, they will be able to access the transactional platform, anywhere and anytime.
Personal.	The entire online experience will be relevant to unique customer needs, and will not use a one-size-fits-all approach when it comes to handling the customer’s data. The customer’s experience on the platforms will therefore be personalised according to what pre-gathered data show they deem to be important.
Empowering.	Customers will be able to take action by themselves, as they will be provided with an aggregated view of content, from multiple sources. This aggregation will puts them in control of whatever content is being presented to them on the site.



Reassuring.	As human beings still remain the best sales and service channel for many high-value interactions, future digital services will provide human help whenever the user feels the needs.
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Based on Hesse’s (2011) explanation of what the SUPER acronym represented (see Table 5.4), and the literature-gathered explanations of the seven distinct functionality categories (see Table 5.3), it was now possible to align SUPER to the functionality categories that best corresponded to the projected innovation. This alignment initially takes place in Table 4.8, but is summarised again in Table 5.5.

<b>Table 5.5: Mapped: SUPER to identified seven functionality categories</b>	
Future direction of online financial services (SUPER) (Hesse 2011)	Seven functionality trends (sections 4.5–4.11)
Simple.	Process automation. Content presentation.
Ubiquitous.	Multi-device banking. Social banking.
Personal.	Personalisation.
Empowering.	Personal financial management.
Reassuring.	Human touch.

The alignment depicted that all seven functionality categories were accounted for within all letters of the SUPER acronym. Although this was the case, it was still important to investigate whether this acronym had similarities with the identified Generation-Y characteristics. Section 5.4 depicts these results.

## **5.4 Functionality of future digital financial services mapped to Generation-Y characteristics**

Sections 5.3 has outlined the initial alignment of the SUPER acronym to the identified functionality trend categories. If SUPER was to be confidently used as the overarching classification for Internet banking functionality guidelines within this study, it was important to make certain that this direction also aligned closely with the technological tendencies of Generation-Y users; as these are the main contributors to the perceptions this user base has about online platforms.

Table 5.6 shows a three-way alignment of the discussed SUPER acronym, the seven functionality categories, and now the alignment to the various technological characteristics of Generation-Y users. Please note that the intrinsic and educational characteristics of Generation-Y users do not translate into specific online preferences, hence they were left out of the classification.

**Table 5.6:** SUPER functionality categories mapped to Generation-Y characteristics

Future of online digital services (Hesse 2011)	Identified digital financial services functionality trends (sections 4.5–4.11)	Generation-Y technological characteristics (section 3.4.2)
Simple.	<ul style="list-style-type: none"> <li>• Process automation (section 4.9).</li> <li>• Content presentation (section 4.8).</li> </ul>	<ul style="list-style-type: none"> <li>• Skim content very quickly, and are easily bored.</li> </ul>
Ubiquitous.	<ul style="list-style-type: none"> <li>• Multi-device banking (section 4.6).</li> <li>• Social banking (section 4.11).</li> </ul>	<ul style="list-style-type: none"> <li>• Continually connected.</li> <li>• Influenced by peers.</li> </ul>
Personal.	<ul style="list-style-type: none"> <li>• Personalisation (section 4.7).</li> </ul>	<ul style="list-style-type: none"> <li>• Expressive and creative.</li> <li>• Speak their own language.</li> <li>• Enjoy humour with an odd slant.</li> </ul>
Empowering.	<ul style="list-style-type: none"> <li>• Personal financial management (section 4.5).</li> </ul>	<ul style="list-style-type: none"> <li>• Expressive and creative.</li> </ul>
Reassuring.	<ul style="list-style-type: none"> <li>• Human touch (section 4.10).</li> </ul>	<ul style="list-style-type: none"> <li>• Influenced by peers.</li> </ul>

This three-way mapping depicts the literature identified Generation-Y characteristics aligned with the gathered functionality trends, as well as the SUPER acronym that represents the overall direction digital financial services are likely to take. In turn, this alignment also accentuated the likelihood of Generation-Y customers accepting the projected functionality trends.

The successful mapping captured in Table 5.6, meant that ‘SUPER’ could be confidently used as the overarching classification of functionality guidelines in this study, as both the distinct functionality trends and Generation-Y characteristics were inherent in it. This was ideal, as the user validation phase of the study would require a structured, and easy to comprehend manner in which representative Generation-Y users were to provide their feedback. Section 5.5 depicts how the SUPER classification provided this structure, subsequently leading to the initial list of 30 Internet banking functionality guidelines validated by users in Chapter 7.

### 5.5 Initial functionality requirements: Internet banking for Generation-Y users

Section 5.4 outlined the successful alignment of the gathered functionality trends and Generation-Y characteristics to the SUPER classification. This classification, as outlined in Table 5.4 encapsulates the direction digital financial services are likely to take. As the seven functionality categories were inherent within this classification, the researcher elicited specific functionality descriptions captured in section 4.5-4.11 of the literature. These amounted to a total of 30 functionality guidelines that

required validation from Generation-Y users. Table 5.7 lists this initial set of guidelines, within the relevant SUPER category.

<b>Table 5.7: Initial functionality requirements: Internet banking for Generation-Y users (synthesised by the researcher)</b>	
<b>1. SIMPLICITY</b>	
To support the ease of use and promptness of Internet banking, functionality provided should ...	
	<b>Functionality criteria</b>
1.1	Automate transactions from start to finish by allowing users to complete transactions without having to request assistance from the bank, or go into a bank branch.
1.2	Offer e-signatures (electronic signatures) to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction such as applying for a loan.
1.3	Pre-fill applications or any online process that requires users to capture their personal details.
1.4	Offer tools that assist users in simplifying difficult tasks such as applying for a certain product.
1.5	Present difficult-to-understand content in innovative ways such as using videos, audio clips, online games, polls, etc.
<b>2. UBIQUITOUS (ANYWHERE, ANYTIME)</b>	
To make certain that functionality offered to the user is on any platform and on any device of their choice, Internet banking platforms should ...	
	<b>Functionality criteria</b>
2.1	Make users aware of other banking channels they can access in order to perform their transactions.
2.2	Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet.
2.3	Facilitate the accessing and requesting of account and service information on various social networking websites such as Facebook and Twitter.
2.4	Facilitate the sharing of certain financial information on a social networking website of their choice.
<b>3. PERSONALISATION</b>	
To support the personal nature of Internet banking, where functionality provided adapts to the unique financial needs of a user, Internet banking platforms should ...	
	<b>Functionality criteria</b>
3.1	Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.
3.2	Facilitate the customisation of the website in a manner that suits the user's preference such as changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.
3.3	Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future.
3.4	Create different navigation paths for different users with or without certain products.
3.5	*Make the tone and character of the site modern and appropriate for the younger Generation-Y user.
<b>4. EMPOWERMENT</b>	
To support the empowering nature of Internet banking, where the functionality provided adds value to users by enabling them to initiate action that helps them to manage certain aspects of their financial lives better, Internet banking platforms should ...	
	<b>Functionality criteria</b>

4.1	Provide users with a real-time, consolidated view of their financial life by showing them, on a single screen, all their financial accounts across the different financial services providers.
4.2	Estimate the user's assets and liabilities value by providing them with a single view of their financial worth.
4.3	Allow users to track their spending over a period of time.
4.4	Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns.
4.5	Assist users in creating an online budget.
4.6	Facilitate users in creating savings targets to assist them in reaching certain financial targets.
4.7	Provide alerts and notifications to assist users in reaching their financial goals.
4.8	Educate the user on their financial standing and how they can improve it.
4.9	Provide savings tips that assist the user in reaching a specific goal or target.
4.10	Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group.
4.11	Encourage users to take immediate action on a particular goal.
<b>5. REASSURANCE</b>	
To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, Internet banking platforms should ...	
	<b>Functionality criteria</b>
5.1	Allow users to fill in their contact details in input fields on a page and have a representative from the bank contact them (request a call back).
5.2	Allow users to start a chat session with the bank by clicking on a link that opens a chat window on the screen (click to chat).
5.3	Trigger a chat invitation based on a set of predefined user behaviour on the page (proactive chat).
5.4	Provide chat functionality with additional video capability for the user to be able to see the representative from the bank (Web conferencing).
5.5	Allow users to receive and send secure messages to the bank.

\* The tone of a site is not necessarily a functionality type, but because of the strong inclination of Generation-Y users to speak their own language and enjoy humour with an odd slant (section 5.2.2), this website quality required further validation.

## 5.6 Summary

The aim of this chapter was to formulate an initial list of Internet banking functionality requirements that is aligned to the identified characteristics of Generation-Y users. As the two preceding chapters have already identified these user characteristics (Chapter 3), and projected banking website functionality (Chapter 4), it was now possible to identify similarities between them, and assess whether these functionality guidelines catered for the identified traits of Generation-Y users.

The chapter provided an overview of the technological characteristics of Generation-Y users, as well as the projected Internet banking functionality trends. It also reflected on what the literature identified as a collective direction for future digital financial services, an acronym outlined as 'SUPER' (Simple, Ubiquitous, Personal, Empowering and Reassuring). These three sections were then mapped to each other, revealing that an association between them exists, in turn accentuating that the identified functionality is aligned to the technological characteristics of the Generation-Y segment.

From this, an initial list of functionality was synthesised by the researcher, referencing the different functionality descriptions gathered from the literature. This led to an easy to comprehend list of 30 functionality requirements to be validated by representative Generation-Y users. The results of this validation exercise can be found in Chapter 7 of this study.

The next chapter outlines the research design and methodologies used in this study.

## Chapter 6: Research design and methodology

### 6.1 Introduction

The purpose of this chapter is to provide the background on the research approach and design, as well as to discuss the data collection methods used in this study. As has already been noted, the objective was to formulate a list of Internet banking functionality guidelines suitable for South African Generation-Y users. Section 6.2 starts by outlining the underlying User Centred Design (UCD) research philosophy on which this study is based. The section provides a description of this philosophy and contextualises the complexity often encountered in the field of Human Computer Interaction (HCI); distinguishing between UCD, user experience (UX) and usability. Once the philosophy has been outlined, the mixed method research approach used in the study will be discussed in section 6.3. Section 6.4 examines the research design, outlining the way in which the study was structured from the initial literature review through to the way the data was gathered and insights derived.

Ethical clearance had to be granted before the study could be conducted at the sampling unit. This unit was a digital agency, AquaOnline Pty (Ltd), with a presence in Johannesburg and Cape Town. Sections 6.5 and 6.6 discuss these two aspects of the study, that is, ethical clearance and the sampling unit, respectively. Section 6.7 discusses the way in which the data gathering methods were selected, while sections 6.8 to 6.13 delve deeper into these methods (literature review, online survey, interviews, heuristic evaluation and prototype functionality validation). Section 6.14 elucidates on the analysis and presentation of the data, with an explanation of how reliability was demonstrated in the research being outlined in section 6.15. Section 6.16 summarises the chapter.

### 6.2 Research philosophy

*Among the issues that you need to consider in the beginning of your research project are philosophical aspects and questions that lurk behind every research method and methodological approach. ... In order to gain a good understanding of what you can do with methods in your research, you should be at least somewhat familiar with the basic philosophical concepts, positions and traditions. All research methods are in close connection to research philosophy and to the ways it is possible to bring forward new knowledge through research (Errikson & Kovalainen 2008).*

This quotation by Errikson and Kovalainen (2008) contains in it the starting point for determining the overall direction of the study; which was understanding and identifying the ways in which it was possible to bring new knowledge to light. The importance of identifying a research philosophy at the very beginning, as well as the subsequent relationship it forms with the research approach and methods is further highlighted by Knox (2004), when he states that this relationship allows the researcher to:

- Take a more informed decision about the research approach
- Decide which method(s) are appropriate for the piece of research, and
- Think about constraints and what impact these may have on the research.

The main objective of the study was to formulate a list of Internet banking functionality guidelines suitable for South African Generation-Y users, particularly those between the ages of 25 and 34. Because of a distinct focus on this user group, it was important that the study findings reflect the likely needs of this technologically inclined user base; therefore a philosophy advocating the active involvement of users for a clear understanding of their system requirements was adopted; the User Centred Design (UCD) philosophy (Tullis & Albert 2008).

### **6.2.1 What is User-Centred (UCD) design philosophy?**

The Usability Professionals Association (UPA 2013) defines UCD as an approach to system design that extracts information about the people who will be using the product. This process focuses on users throughout the planning, design and development of any online product. Furthermore, an international standard that is the basis of the UCD philosophy has emerged. This standard for a human-centred design process (Usability Partners 2014) outlines a general process for including human-centred activities throughout the product development life-cycle, but does not stipulate the exact methods required to go about achieving this. Figure 6.1 gives a view of these human-centred activities, with Table 6.1 providing an explanation of what the various activities represent once a need for the UCD approach has been identified.

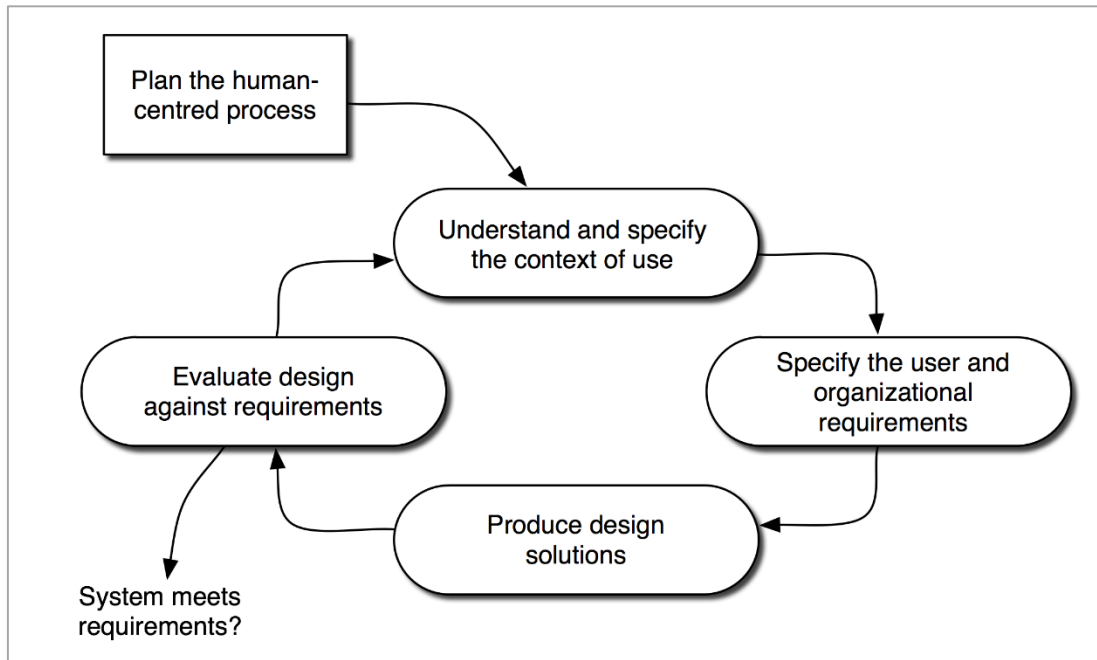


Figure 6.1: The human-centred design process (Usability Partners 2014)

<b>Human-centred design activity</b>	<b>Explanation</b>
1. Specify the context of use.	Identification of the people who will use the product, what they will use it for, and the conditions it will be used in.
2. Specify requirements.	Identification of business requirements and user goals vital for product success.
3. Create design solutions.	The building of a high-level design concept. This can be a rough concept or, at times, a complete design.
4. Evaluate designs.	This is the most important part of the process where what has been put together is evaluated to assess whether it meets user goals. Involvement with actual users is encouraged.

Once all the requirements have been met, the process can end and the final product can be released.

### 6.2.2 Distinguishing between User-Centred Design (UCD), user experience (UX) and usability

In the field of Human-Computer Interaction (HCI) challenges are experienced regarding the difference or the relationship between UX and usability (Rogers et al. 2012). As this study is based on a philosophy strongly entrenched in the HCI domain, it is important to place in context the way the adopted UCD philosophy has been interpreted in relation to the UX and usability aspects of the field.



As discussed in section 6.2, UCD is a design philosophy that can be applied to any product development process in order to ensure that the needs and limitations of potential users of the product are being taken into consideration. The philosophy outlines four activities typically performed when the UCD approach is being administered (see Table 6.1), but no precise methods for achieving these activities are prescribed (Usability Partners 2014).

This issue is resolved by Usability.gov (2012c), which outlines 13 possible methods that can be used for each step of the UCD process. Methods chosen and relevant to this study are discussed in detail in section 6.8; Table 6.2 is solely a depiction of how the 13 methods outlined can be applied across the various activities of the UCD process. When used during the UCD process, these 13 methods help to enhance the overall experience of a website (Usability.gov 2012c).

*Please note:* The UCD activity one (*specify context of use*) is not included in the table, as this is primarily catered for by the literature review in this research.

**Table 6.2:** UCD methods and the activities they cover (Usability.gov 2012c)

UCD method	Relevant UCD activity		
	Specify requirements (analyse)	Create design solutions (design)	Evaluate designs (test)
1. Card sorting.	✓	✓	✓
2. Contextual interviews.	✓		✓
3. Focus groups.	✓	✓	
4. Heuristic evaluation.	✓		✓
5. Individual interviews.	✓	✓	✓
6. Parallel design.		✓	
7. Personas.	✓		
8. Prototyping.		✓	✓
9. Online surveys.	✓	✓	✓
10. Task analysis.	✓		✓
11. Usability testing.	✓	✓	✓
12. Use cases.		✓	
13. Writing for the Web.		✓	

User experience or UX describes the overall satisfaction a user has when dealing with a system (Paluch 2006). While a number of papers in the literature only reference user experience in the context of usability and vice versa, Rubinnof (2004) suggests a definition that makes visible the

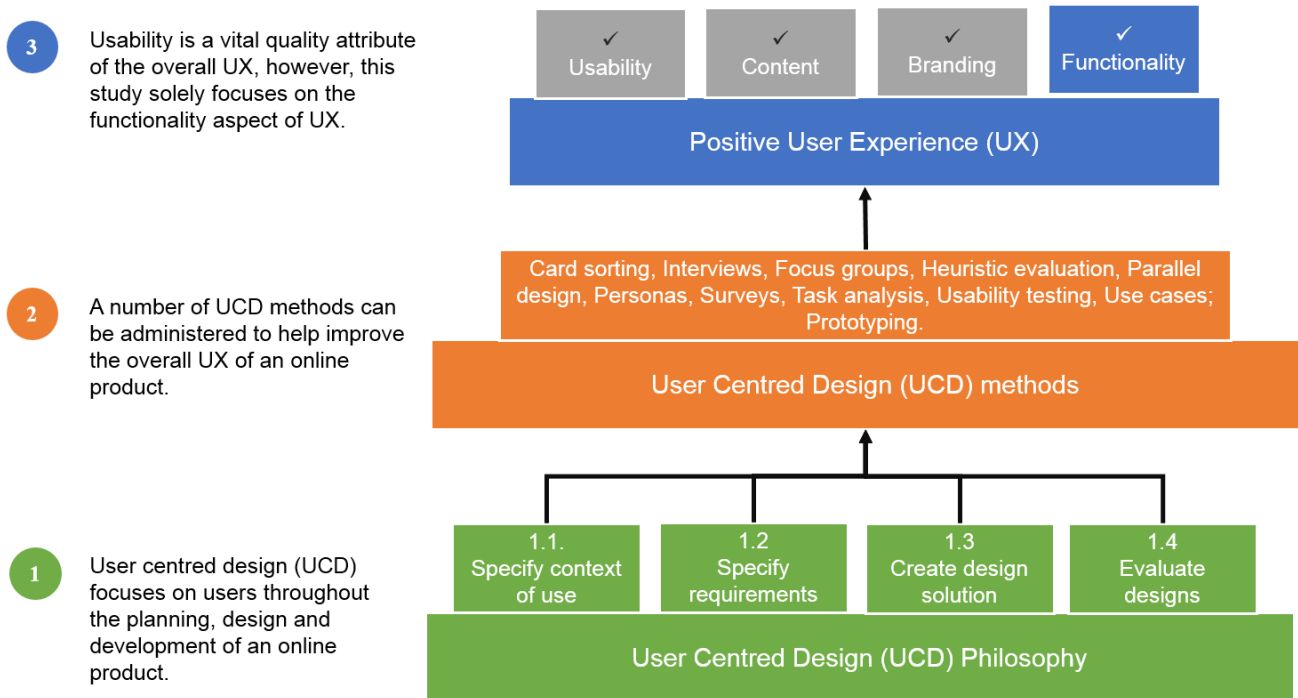
various components that contribute to a positive UX. He outlines these components as functionality, usability, content and branding as stated in section 1.1.

Rogers et al. (2012) state that, traditionally, usability has been perceived as only being concerned with meeting specific usability criteria (e.g. efficiency), and UX has been concerned with explaining the nature of the user experience (e.g. whether a user finds a product aesthetically pleasing or not). They explain that the distinction between the two notions is not clear, since usability is fundamental to the quality of the UX and, conversely, the quality of a user experience are linked with how usable a product is.

### **6.2.3 UCD, UX and usability in context of this study**

This study recognises the importance of the relationship between UX and usability, while pursuing the other identified facets of UX (functionality, content and branding) as articulated by Rubinoff (2004) in section 6.2.2. With this said, Schulze and Krömker (2010) assert that the measurement of UX on a product can be explicitly targeted to evaluate just a single component, depending on what the product goals and objectives are. Based on this statement by Schulze and Krömker (2010), this study solely focuses on the functionality component of UX within the Internet banking domain. Based on this background, the context in which the three areas (UCD, UX and usability) are approached in the study can be explained as follows:

- The researcher acknowledges that UCD is a development technique that is followed to make certain that users are part of the design process.
- There are certain methods that can be applied across the different activities of the UCD process to enhance the overall UX of interactive products (refer to Table 6.2).
- UX is multifaceted, and is made up of four components that can be measured individually depending on the product need at any given point in time.
- The traditional relationship between UX and usability is acknowledged, with the understanding that usability is a vital quality attribute of the overall UX.
- However, this study focuses only on the functionality aspect of UX within the Internet banking domain.
- Figure 6.2 captures this viewpoint.



**Figure 6.2:** Interpretation of UCD, UX and usability in context of this study

### 6.3 Research approach

There are three types of research approach that can be applied in a study. These are qualitative, quantitative and a recently emerging, mixed method approach (Creswell 2009). A qualitative study is a study that involves the collection and interpretation of qualitative or non-numerical data. A quantitative study, on the other hand, tests objective theories by examining the relationship among certain variables (Myers 2004).

Myers (2004) maintains that the usual motivation for undertaking a qualitative, as opposed to a quantitative, study comes from the observation that if there is one thing which distinguishes humans from the natural world, it is their ability to talk. This type of research therefore helps researchers understand certain groups of people, and the varying social contexts in which they live. On the other hand, Kaplan and Maxwell (2005) contend that understanding a construct from the point of view of the user and their specific social and institutional context is largely lost when textual data is quantified, since the two views are on opposing ends of the research spectrum.

Johnson, Onwuegbuzie and Turner (2007) counter by stating that once a certain construct has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation

is greatly reduced; a result mostly achieved when a mixed-method approach is utilised. These authors define a mixed-method approach as a type of research that combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis and inference techniques) in order to obtain a breadth and depth of understanding and corroboration in a study. Rossman and Wilson (1985) describe this approach as a combination of methodologies in the study of the same phenomenon, allowing the researcher to improve the accuracy of conclusions by relying on data from more than one method. In Table 6.1, three advantages for a research study, as identified by Rossman and Wilson (1985), when combining quantitative and qualitative methods are listed.

<b>Table 6.3:</b> Advantages of a mixed-method combination in a study (Rossman & Wilson 1985)
1. Combinations are used to enable confirmation or corroboration of each other through triangulation. Triangulation is an approach that uses multiple data collection and analysis methods to look for convergence on certain problem areas in a study (Wilson 2006).
2. Combinations are used to enable or to develop analysis in order to provide richer data.
3. Combinations are used to initiate new modes of thinking by attending to paradoxes that emerge from varying data sources.

In addition to selecting a philosophy that supported active user participation (see section 6.2.1), it was also important to attain theoretical background on the Generation-Y user segment, and the Internet banking platform in general. The reason for this was to formulate constructs relating to the identified gaps and opportunities in the literature, while also gathering practical and realistic input from actual Generation-Y Internet banking users. It was therefore important to select a research approach that would cater for these intricacies; hence the mixed-method research approach, with elements of both quantitative and qualitative approaches, was applied.

## 6.4 Research design

This mixed-method study was guided by the following research question: **What functionality should South African Internet banking websites provide to address the needs of Generation-Y users?** This research question gave rise to additional sub-questions:

1. Why is Internet banking important to banking institutions?
2. What characteristics of Generation-Y users influence their preferences in terms of online platforms?

3. What are the projected functionality trends on financial services websites like Internet banking?
4. What kind of functionality are South African Generation-Y users looking for on their Internet banking platforms?
5. How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?
6. What Internet banking functionality appeals to South African Generation-Y users?

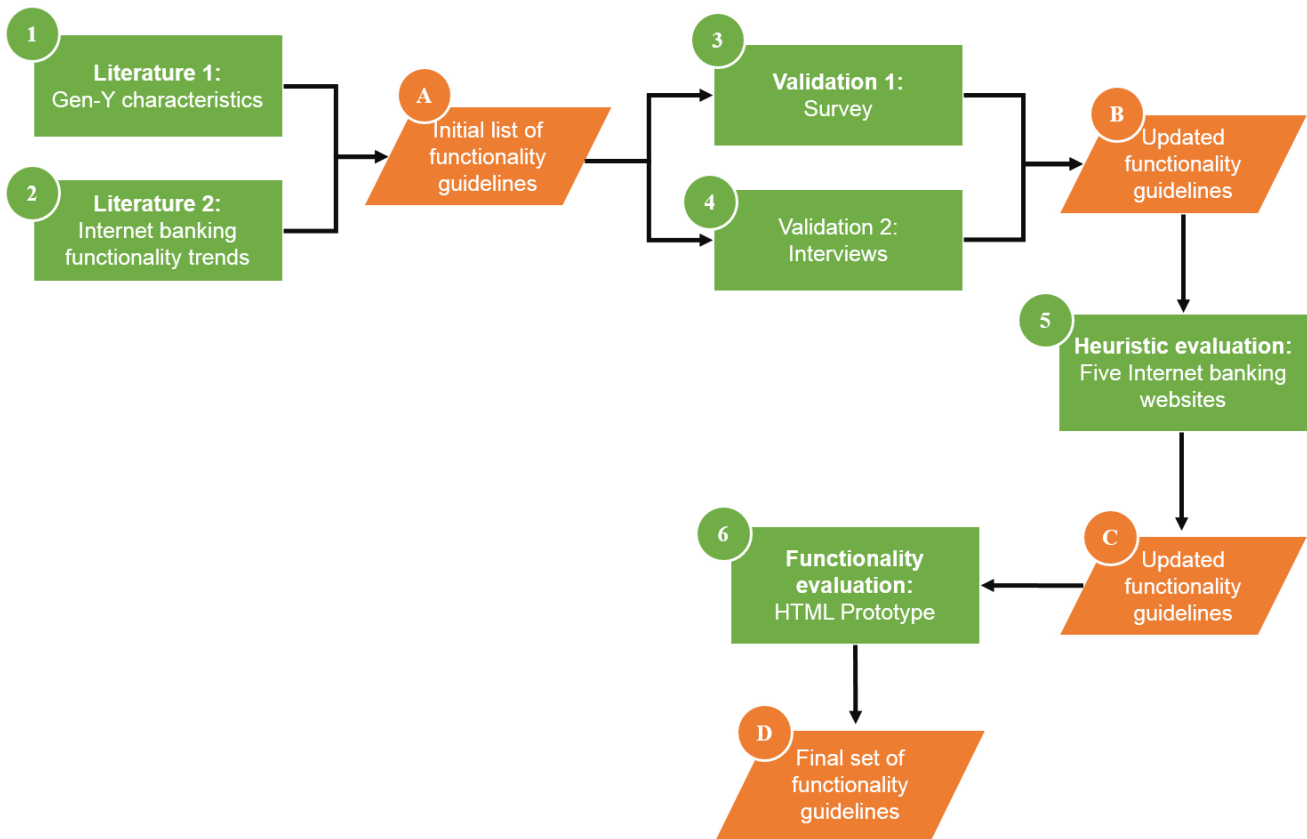
The first sub-question was introductory and merely provided a background of the strategic importance of the Internet banking platform to banking institutions. The subsequent questions were answered by compiling, contrasting and synthesising findings from a literature study, survey, interviews and a heuristic evaluation, as well as interface prototyping and validation. To follow is a detailed account of this research design process.

#### **6.4.1 Research process**

The research process flow outlining the various phases of this study is depicted in Figure 6.3. The study began with a literature review, which was conducted to investigate the characteristics that influence the online preferences of Generation-Y users. This literature review also served the purpose of fulfilling what was identified as the first step to a successful UCD process, where people who would be using the product are identified and studied in order to cater for their likely needs (see Activity 1, Table 6.1).

From this literature review, a set of Generation-Y characteristics, outlining this group's technological inclinations and preferences, was identified (refer to section 3.4.2). These findings gave a more comprehensive understanding of this user base, identifying the type of online experiences that would likely appeal to them (also see Activity 1 – Figure 6.3). Furthermore, the view that theory is an important part of a research study is further substantiated by Kaplan and Maxwell (2005):

*Theory is useful for guiding a study. Familiarity with the subject of study or with a wide range of theories and situations, for example, can help the researcher make sense of occurrences in the particular study being conducted. It can help the evaluator to not overlook important issues and help provide a set of constructs to be investigated. In this way, theory can shape research questions and focus. Theory also will guide a researcher's interpretation and focus.*



**Figure 6.3:** Research design flow: functionality for Internet banking Generation-Y users

Section 6.2.2 describes functionality as one of the four key contributors to a positive UX (together with usability, branding and content). Section 6.2.3 also emphasises the specific focus on the functionality aspect of UX in this study. In support of this, a second literature review (Activity 2 – Figure 6.3) was conducted on the forecasted functionality of online financial services such as Internet banking in order to identify specific functionality trends likely to emerge in this field. The analysis revealed seven distinct functionality trend categories (personal financial management (PFM), multi-device banking, personalisation, process automation, content presentation, human touch and social banking) as pioneering and definitive in this space. Sections 4.5 to 4.11 outline these functionality innovation categories as identified in the literature review.

With a comprehensive understanding of both Generation-Y characteristics and future functionality trends in the Internet banking domain, it was now possible to identify the similarities between the two sets of data as gathered from the literature, and assess whether the innovative functionality categories identified were aligned with the technological characteristics of Generation-Y users. This alignment proved to be true, as the identified functionality categories support the technological characteristics of Generation-Y users, accentuating that the type of functionality trends identified in

the literature could potentially be appealing to this users base. From these functionality categories, an initial list of 30 innovative Internet banking functionality guidelines for further validation was synthesised for Generation-Y users (Output A – Figure 6.3). These guidelines can be accessed in section 5.5.

UCD philosophy advocates the active involvement of users in design processes for a clear understanding of user and task requirements (Tullis & Albert 2008), as discussed in section 6.2.1 and Activity 2 of Table 6.1. Hence, a questionnaire was formulated and used during the interviews and the online survey conducted with representative Generation-Y users (Activities 3 & 4 – Figure 6.3). These were conducted so that Generation-Y users could validate the initial list of 30 functionality guidelines synthesised from the literature, and to identify new desired functionality areas not revealed by the literature. This became the first instance of combining what is typically classified as qualitative (i.e. interviews) and quantitative (i.e. survey) data gathering strategies. The results of this functionality validation exercise are listed in section 7.13.2. The strategies used to gather data in the interviews and the survey are discussed in detail in sections 6.10 and 6.11 respectively.

The initial guidelines were then updated with the input from the interviews and survey to formulate a list of functionality heuristics which was subsequently used to inspect the Internet banking websites of five banks in South Africa (Standard Bank, ABSA, FNB, Nedbank and Capitec) (see Activity 5 – Figure 6.3). This inspection, conducted by five UX experts, was intended to ascertain whether the functionality currently available on the banks' Internet banking websites met the Generation-Y functionality guidelines identified, while also seeking to uncover any existing functionality that might be deemed to be pioneering, and worthy of being part of the Internet banking platform of the future.

The process of heuristic evaluation proved to have both quantitative and qualitative characteristics, with expert evaluators requested to rate the level on which they believed the respective Internet banking websites met the functionality guidelines (quantitative data) In addition, they were required to identify and recommend additional functionality requirements not covered by the heuristics which they deemed worthy of being labelled innovative (qualitative data). The report on this evaluation is included in section 8.10, while the heuristic evaluation method is discussed in detail in section 6.12.

A set of updated Generation-Y Internet banking functionality guidelines was then synthesised from the heuristic reports put together by the expert evaluators (Output C – Figure 6.3), and visually presented in the form of a semi-functional HTML wireframe prototype (Activity 6 – Figure 6.3), further supporting the recommended UCD activity of creating design solutions that provide a high-level concept of what the final product is likely to entail (see Activity 3 of Table 6.1). The process of prototyping is discussed in detail in section 6.13.

Representative Generation-Y users were then requested to evaluate the prototype and to validate the now visually portrayed functionality guidelines. This process supported the final activity in the UCD process where the product that has been designed is evaluated to assess whether it meets the user requirements (see Activity 4 of Table 6.1). A task analysis was used to validate these guidelines. Generation-Y users were then requested to state whether they believed the Internet banking platform of the future should include the prototype-depicted functionality (quantitative data), as well as to recommend any additional functionality they believed was not covered or adequately presented in the prototype (qualitative data). This subsequently led to the final set of validated Internet banking functionality guidelines (Output D – Figure 6.3). The validation results for this phase of the study are found in section 9.5.

Overall, the research process was designed so that output from each phase of the research informed the next, in order to continuously refine and validate the data that was being gathered. Therefore, the initial list of functionality guidelines, as gathered from the literature, were refined and continuously validated throughout the different activities of the study (interviews, survey, heuristic evaluation and prototype evaluation) to provide a well-developed and thoroughly scrutinised list of functionality guidelines for the Internet banking platform (see section 10.3). Table 6.4 summarises the way in which the design process answered the research questions, and outlines which activities of the UCD philosophy were supported.



<b>Research sub-question</b>	<b>Research activity</b>	<b>How was this achieved?</b>	<b>Supported UCD activity</b>	<b>Output and location in study</b>
1. Why is Internet banking important for banking institutions?	Literature study.	A study of the existing literature aimed at giving background around why banking institutions see the Internet banking platform as a strategic imperative.	Specify the context of use (Activity 1, Table 6.1).	Five ways in which banking institutes can benefit from Internet banking (Chapter 2).
2. What characteristics of Generation-Y users influence their preferences in terms of online platforms?	Literature study.	A study of existing literature looking at technological characteristics of Generation-Y users. This was in order to obtain better insight into the type of experiences online platforms should provide so as to cater especially for them.	Specify the context of use (Activity 1, Table 6.1).	Characteristics of Generation-Y users (Chapter 3).
3. What are the projected functionality trends on financial services websites like Internet banking?	Literature study.	A study of the existing literature to identify what is projected to be functionality trends that will influence online financial services platforms like Internet banking.	Specify the context of use (Activity 1, Table 6.1).	Seven innovative functionality categories (Chapter 4).
Generation-Y characteristics and functionality trend categories alignment ( <i>Output of research sub-questions 1 and 2</i> ).	Alignment of Generation-Y characteristics to identified functionality trend categories.	Similarities between the Generation-Y characteristics and functionality trend categories identified were found in order to accentuate that the type of functionality trends gathered from the literature might potentially be accepted by the Generation-Y user base.	Specify the context of use (Activity 1, Table 6.1).	Initial list of innovative Internet banking functionality requirements aligned to Generation-Y unique characteristics (Chapter 5).
4. What kind of functionality is South African Generation-Y Internet banking users looking for?	Survey and interviews.	Validating the initial list of functionality requirements with representative Generation-Y users using a survey and one-on-one interviews. These users provided their validation input and assisted in identifying additional functionality requirements they wish to have on their future Internet banking platform that were not revealed by the literature.	Specify requirements (Activity 2, Table 6.1).	Validated functionality requirements as heuristics (Chapter 7).

Research sub-question	Research activity	How was this achieved?	Supported UCD activity	Output and location in study
5. How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?	Heuristic evaluation of five South African Internet banking websites.	Using the validated functionality requirements as heuristics in order to assess the extent to which five South African Internet banking platforms demonstrate innovation, as well as to gather currently existing functionality innovation not outlined by the literature or Generation-Y user input.	Specify requirements (Activity 2, Table 6.1)	Heuristic evaluation report and updated functionality guidelines (Chapter 8).
6. What Internet banking functionality appeals to South African Generation-Y customers?	<ul style="list-style-type: none"> <li>• Semi-functional, HTML wireframe prototype of gathered functionality requirements.</li> <li>• Task analysis for functionality evaluation of prototype.</li> </ul>	The identified functionality guidelines were combined in a low-fidelity, web-based wireframe prototype, which Generation-Y users were subsequently requested to interact with and evaluate. This was so that they could provide feedback on their acceptance of the functionality requirements identified in the study. This led to a final, validated set of Internet banking functionality guidelines.	<ul style="list-style-type: none"> <li>• Create design solutions (Activity 3, Table 6.1).</li> <li>• Evaluate designs (Activity 4, Table 6.1).</li> </ul>	Validated, visual Internet banking functionality guidelines (Chapter 9), and validated, final set of functionality guidelines (Chapter 10).

## **6.5 Ethical clearance**

Before any research activities could take place, ethical clearance was obtained from the University of South Africa (UNISA), granting permission to proceed with the research activities requiring active user participation. This clearance can be found in Appendix A1.

## **6.6 The sampling unit**

Probability sampling was used in this study. Probability sampling can be described as a particular sample that has been chosen because the researcher believes there is a high probability that the samples of respondents will be representative of the overall population being studied (Oates 2006). A stratified sampling technique was used, in terms of which the researcher divided the population being sampled into different subgroups, also known as strata, then selected the final subjects proportionally from the identified subgroup (Castillo 2009).

As Generation-Y participation was a key factor in the study, all participants were sampled from AquaOnline offices in Hyde Park, Johannesburg, South Africa. AquaOnline is a full-service digital and direct marketing agency, with a presence in both Johannesburg and Cape Town. The agency employs 200 people in total.

The average age of employees at AquaOnline is 31 years, and because this study focuses particularly on the Generation-Y segment, which falls within the age brackets of 25 to 37 years, AquaOnline employees were considered to be representative of this segment. Because of the nature of AquaOnline's business, which requires employees to have a wide knowledge of and exposure to digital technology in general, this site was best positioned to be a representative sample of the Generation-Y population.

### **6.6.1 Permission to conduct research at AquaOnline**

Before the research process could commence at the Johannesburg offices of AquaOnline, permission had to be sought from the organisation for the research activities to be recognised and authorised. Subsequently permission to perform the research was granted, and a letter from the organisation's senior management team confirming this can be found in Appendix A2.

## 6.7 Selecting data gathering methods to use

Because this study is based on the underlying philosophy of UCD (see section 6.2.1), it was vital to make certain that the data capturing methods utilised catered for the various activities within this process. Earlier, Usability.gov outlined 13 possible methods that could be utilised for each step of the UCD process (see Table 6.2). Not all 13 methods were relevant for this study, however, therefore those chosen had to adhere to and adequately meet the criteria for the data gathering phase of the study. The following criteria were used:

- **Criterion 1:** As a large focus of the research was the validation and refinement of data that had already been gathered, it was important to obtain input from as large a number of participants as possible.
- **Criterion 2:** Even though this was the case, an in-depth understanding of the reasons behind the validation feedback obtained would be vital.
- **Criterion 3:** The research also required a method that would uncover whether what is currently being offered on Internet banking platforms is meeting functionality innovation expectations, as well as identify key learning areas that could add to the functionality guidelines to be recommended at the end of the study.
- **Criterion 4:** A method had to be incorporated that supported the design aspect of the UCD process by enabling users to interact with the product derived from input obtained throughout the study.
- **Criterion 5:** Supporting the evaluation aspect of the UCD process was also key; hence a method was needed that would allow users to give feedback on the research product.

Based on these criteria, five methods were chosen from the initial 13 options outlined in Table 6.2. These methods, the UCD activity and the data gathering criterion they support are depicted in Table 6.5.

UCD method	Selection criterion supported	Relevant UCD activity		
		Specify requirements (analyse)	Create design solutions (design)	Evaluate designs (test)
1. Online surveys.	Criterion 1	✓	✓	✓
2. Individual interviews.	Criterion 2	✓	✓	✓
3. Heuristic evaluation.	Criterion 3	✓	-	✓
4. Prototyping.	Criterion 4	-	✓	✓
5. Task analysis.	Criterion 5	✓	-	✓

The first activity in the UCD process (specify context of use) is primarily focused on the familiarisation and orientation of the user, their potential goals and likely context of use. Although this is not depicted as a method in Table 6.5, the activity was achieved through a literature review that was performed at the beginning of the study (see Table 6.4). The details of each method and the procedures followed during the data gathering process are outlined in sections 6.8 to 6.13 to follow.

## 6.8 Literature review

Oates (2006) considers a literature review to have two distinct parts. The first is an exploration of the literature in order for the researcher to identify a suitable research idea and discover relevant material about a possible research topic. He describes the second part to be a phase during which the researcher gathers and presents evidence that supports the claims that new knowledge is being created. He further identifies the objectives of a literature review, two of which were key to explaining why this phase of the study was performed. These objectives are:

- Identifying key issues that may place the research topic in context, and
- Identifying theories that the researcher will test or explore by gathering data in the field.

The research focused on two distinct concepts, the Generation-Y user base and innovative functionality in the Internet banking domain. It was therefore important to explore the literature on both these concepts in order to formulate an initial list of functionality guidelines that would be explored further when Generation-Y participation was initiated.

In support of this, the literature study was divided into three distinct phases, namely:

1. Identifying the technological characteristics of Generation-Y users in order to determine the type of online experiences that appeal to them (refer section 3.4.2)
2. Identifying any projected functionality enhancements in the Internet banking domain (refer section 4.5-4.11), and
3. Aligning these projected enhancements to the technological characteristics of Generation-Y users identified in order to assess the type of Internet banking functionality that might potentially appeal to them (refer section 5.4)

The alignment of the characteristics and the functionality trends in turn led to an initial list of 30 innovative Internet banking functionality guidelines (refer section 5.5). These were later validated and further crystallised in the latter phases of the study.

Identifying the functionality trends in Internet banking, and identifying which functionality aligned with the Generation-Y characteristics identified, contextualised the type of innovation this user-base would use on the platform, in turn giving a better perspective on conditions under which the Internet banking platform would be expected to perform. All qualities supported the *specifying the context of use* phase of the UCD process.

## **6.9 The sequential explanatory strategy**

Part of the reason for using criteria for selecting relevant data gathering methods for this study (see section 6.7) was to identify methods that would facilitate the gathering of a large number of responses from Generation-Y users, while also obtaining an in-depth understanding of their reasons for the functionality trends they preferred. To achieve this, a sequential explanatory strategy was adopted.

When the collection and analysis of quantitative data is followed by the collection and analysis of qualitative data, it is referred to as a sequential explanatory strategy (Terrell 2012). The primary focus of this strategy is on explaining quantitative results by investigating and exploring some of them in detail in order to further elaborate on, or help explain, unexpected results (e.g. using follow-up interviews to better understand the results of a quantitative study) (Terrell 2012).

This strategy was implemented in this study, in terms of which an online survey was sent to the employees of AquaOnline in order for them to validate the 30 functionality guidelines identified.

This was then followed by individual participant interviews, which were aimed at identifying certain perceptions and explanations of responses that were not made apparent in the results of the online survey.

## **6.10 The online survey**

Administering an online survey represented the quantitative aspect of the sequential explanatory strategy. The idea of a survey is that the same kinds of data are gathered from a large group of participants in a standardised and systematic way (Oates 2006). An online survey fulfils the same purpose, with the main difference being that it is administered over the Internet. In this type of a survey, a structured questionnaire is usually drawn up and the research target audiences typically use web forms to enter data. The data is then stored in a database and a survey tool is used to provide an analysis of the gathered data (Usability.gov 2012d).

Wright (2005) describes three key advantages of using a survey tool. He describes the first advantage as being the ability of an Internet administered survey to provide access to groups of individuals who would have been difficult, if not impossible, to reach. The second advantage is time, as a large number of participants can be reached without the researcher having to meet with each and every one of them. Thirdly, this type of a survey can help to save money because the use of a paper format, as opposed to the use of an electronic medium format, is usually more expensive.

### **6.10.1 The survey creation process**

Thirty Internet banking functionality guidelines were identified in the literature. The online survey was intended to obtain the first set of validation input from representative Generation-Y users, relating to their perceptions of the functionality guidelines presented to them. The survey was created using SurveyMonkey (SurveyMonkey 2012), an online survey software and questionnaire tool that allows researchers to create and publish online surveys, and to view the results graphically and in real time. The survey contained four sections which participants were required to complete:

- *Section A – User profile information.* Collected details of the demographic characteristics of the participants.
- *Section B – Pre-survey input.* Gathered participants' perceptions of their current Internet banking platforms.

- *Section C – Internet banking functionality input.* Prompted participants to validate the different types of Internet banking functionality gathered from the literature.
- *Section D – Post-survey input.* Perceptions participants had of Internet banking as gathered after going through the detailed questionnaire.

A five-point Likert scale was used in order for participants to validate the different functionality categories. According to Tullis and Albert (2008), a Likert scale is a statement of a particular notion on which respondents rate their level of agreement or disagreement. The statement may be either positive or negative. Each of the five points were assigned numeric values from 1 to 5; with 1 being the lowest rating (strongly disagree), and 5 the highest rating (strongly agree). The structure of the survey can be viewed in Appendix C1.

### **6.10.2 Survey participants**

Generation-Y user characteristics and demographics as obtained from the literature review were used as a point of departure for the type of Generation-Y research participants that would be sourced for this data gathering phase of the study. According to the literature, Generation-Y users possess the following attributes:

- Born between the years 1977 and 1994, thus falling into the 18 to 37 year age bracket respectively (Noble et al. 2009).
- Technologically savvy as they have been exposed to technology since early childhood and have tendencies such as preferring portable mobile devices and having a presence on social networking websites (Djamasbi et al. 2010).
- Mostly educated and affluent (Daffue 2005).

Based on this, the participants that were targeted had to have the following demographic characteristics:

- Be between the ages 25 and 37 years. According to Muller (2010), the most Internet connections are made from the user's place of work, proving that this segment were more likely to be apprenticed and/or established professionals, and were therefore more equipped to comment on the current state of Internet banking platforms as they are likely to be using them.



- Be qualified with a university degree or higher qualification
- Be employed for two years or more
- Be computer literate, with five or more years Internet experience
- Be active Internet banking users for two or more years – this should be their primary banking channel
- Be active social media users with one or more social media accounts

This participant profile aligned well with the characteristics of AquaOnline employees, as discussed in section 6.6.

### **6.10.3 The survey procedure**

After the survey had been created online, a web link for the research survey was sent to AquaOnline staff members. Before participants could commence taking the survey, an online consent screen was shown to them, where they had to agree to voluntarily participate in the research (see Appendix C2). After agreeing to contribute in the study, participants were taken through the different sections of the survey (see section 6.10.1) where their feedback was captured. A total of 50 responses were obtained using this method. These are captured in section 7.15 of the study.

## **6.11 The interviews**

Administering individual participant interviews represented the qualitative aspect of the sequential explanatory strategy (see section 6.9). Kajornboon (2005) describes an interview as a systematic way of talking and listening to people. She goes on to describe this data gathering method as a way to collect data from individuals through conversations. In an interview, the researcher, also called the interviewer, often uses questions to collect data from the subject, or the interviewee. The interviewee's view about the topic being researched is then noted to later form part of the input for the research study (Kajornboon 2005).

McLaughlin (2006) describes four different types of interview, the first being a structured interview. He explains that this interview type is usually conducted in face-to-face format and uses a standard set of questions to obtain data that can be aggregated because identical questions have been asked of each participant. The second type, semi-structured interviews, is usually somewhat

flexible. In this type of interview a researcher will usually cover a specific set of questions, although additional questions may be asked, depending on the level of depth and understanding the researcher required.

The third interview type is unstructured. In this type neither the question nor the answer categories are predetermined. Instead, the interview is solely reliant on the social interaction between the researcher and the participant for relevant input to be gathered (Zhang & Wildemuth 2009). The fourth interview type involves having more than one interviewee at a time, and is commonly known as a group interview or focus group (McLaughlin 2006). This interview type can take the form of any of the discussed interview types (i.e. structured, semi-structured and unstructured), with the only difference being that six to nine interviewees may participate (Nielsen 1997).

The structured interview type was used for this study. In order to successfully compare the results of the interviews with the already conducted online survey results, a similar set of data was obtained. Accordingly, the same set of functionality validation questions was presented to participants during the interview process. A questionnaire aimed at extracting functionality validation feedback from these participants was constructed; this was also divided into four main sections (see section 6.10.1). A Likert scale was also used to rate the functionality guidelines identified by this process.

### **6.11.1 Interview participants**

Twelve participants took part in the interview process. As this process also took place at AquaOnline, participants that met the demographic characteristics identified in section 6.10.2 were chosen. In addition to these characteristics, the following factors were incorporated in sourcing the interview participants in order to make certain that feedback was received from a diverse range of participants:

- There was an equal representation of gender
- There was an equal percentage split between languages (33% English, 33% Afrikaans, and 33% other).
- All the participants held at least a single bank account with any of the five banks in South Africa (Standard Bank, ABSA, FNB, Nedbank and Capitec).

Table 6.6 provides a detailed breakdown of the participants' profiles.

Part. #	Gender	Age	Level of education	Home language	Years employed	Primary bank	Internet banking usage	Active social platforms
1	Male	30	Degree or diploma	English	5 years +	Standard Bank	24 months +	<1
2	Male	31	Degree or diploma	Afrikaans	5 years +	Standard Bank	24 months +	<1
3	Male	29	Degree or diploma	South Sotho	5 years +	FNB	24 months +	<1
4	Male	27	Degree or diploma	English	3-5 years	ABSA	24 months +	<1
5	Male	35	Degree or diploma	Afrikaans	5 years +	Standard Bank	24 months +	<1
6	Male	27	Degree or diploma	Zulu	5 years +	Capitec	24 months +	<1
7	Female	32	Post graduate degree	Afrikaans	5 years +	Nedbank	24 months +	1
8	Female	29	Post graduate degree	Zulu	3-5 years	ABSA	24 months +	1
9	Female	28	University degree	Zulu	3-5 years	Standard Bank	24 months +	<1
10	Female	34	Degree or diploma	English	5 years +	Nedbank	24 months +	<1
11	Female	30	Post graduate degree	Afrikaans	5 years +	ABSA	24 months +	<1
12	Female	35	Post graduate degree	English	5 years +	FNB	24 months +	<1

It is important to note that the 12 interview participants were requested not to respond to the online survey sent at the beginning of the research process. This was so that unbiased responses could be gathered from them, without any prior exposure to the questions contained in the survey. All responses by the participants were therefore unique to that particular individual. No duplicate responses were gathered. These responses are outlined in section 7.15 of the study.

### 6.11.2 Interview procedure

Twelve participants were sourced who matched the stipulated demographics. An interview schedule was then formulated, with the researcher notifying all the participants of the times and venue for the interviews. This schedule also acted as a guideline for the researcher in terms of how the interview process was to unfold (see Appendix B1). Before the beginning of each interview session, the researcher explained to the participant what the research entailed and requested that a research consent form be signed (see Appendix B2). After the form had been signed, the interview process

began, with the participant completing Sections A, B and D of the questionnaire and the researcher administering Section C. Section 6.10.1 outlines the contents the questionnaire entailed. The actual questionnaire is contained in Appendix B3.

## **6.12 The heuristic evaluation**

A heuristic evaluation is an inspection of a system based on a set of usability principles or criteria known as heuristics, in order to determine whether the system complied with those heuristics, as well as to identify potential problems in the system (Ssemugabi & De Villiers 2010). The potential problems emerge as a result of the heuristics not being adequately met on the system, or from additional problems identified by the expert evaluators.

Usability Body of Knowledge (2005) lists a number of the advantages and disadvantages of using this evaluation method. The advantages include the fact that the method is inexpensive relative to other interface evaluation methods; it is also intuitive and it is easy to motivate potential evaluators to use the method. In addition, the method does not require advance planning and provides faster turnaround time as compared to formal laboratory testing.

The disadvantages also listed by Usability Body of Knowledge (2005) include the fact that evaluators have to have prior experience in the field of usability design, a potential downfall of the method that this study has overcome (see section 6.12.1). Another disadvantage is that it is recommended that multiple evaluators perform the interface inspection, as the use of just a few evaluators usually does not uncover enough system issues. Only five UX experts were available to perform the heuristic evaluation for this study. According to a study by Nielsen (2000), five experts pick up an average of 75% of interface mishaps. Additional evaluators may therefore have been required for a more comprehensive analysis of the banks' current Internet banking platforms, but owing to time constraints and prior commitments of additional evaluators, this was not possible.

A proven set of ten heuristics (see Table 6.7) was established by Nielsen (1995). These are the most general principles for interaction design, and are rules of thumb rather than specific usability guidelines. A heuristic evaluation is, however, flexible and versatile enough to be adapted to specialised domains (Pinelle et al. 2008). Based on this, the list of functionality requirements validated by participants from the online survey and interviews was used to formulate a list of

heuristics for inspecting the Internet banking websites of five banks in South Africa (Standard Bank, FNB, ABSA, Nedbank and Capitec).

<b>Table 6.7: Ten commonly used usability heuristics for user interface design (Nielsen 1995)</b>	
Heuristic	Explanation
1. Visibility of system status.	The system should give users appropriate feedback within a reasonable time so that they can always be informed about what is happening on the interface.
2. Match between system and the real world.	The system should relate to the user in a familiar language and stay clear of all jargon. All information should appear in an order that is logical and natural.
3. User control and freedom.	An easily accessible exit function should always be visible should a user wish to reverse an unwanted state.
4. Consistency and standards.	The systems should always follow learnt platform conventions, and not change words, situations and contexts that users are accustomed to.
5. Error prevention.	Error-prone conditions should be eliminated as far as possible. Users should be provided with a confirmation message before an action is finalised.
6. Recognition rather than recall.	Minimise the users' cognitive load by always making objects, actions and options available. Users should never have to remember information from one part of the system to another.
7. Flexibility and efficiency of use.	Allow users to tailor and make more prominent frequent actions. This may speed up interaction, and caters for both the novice and experienced users.
8. Aesthetic and minimalist design.	Only relevant information necessary for the task at hand should be prioritised on the interface, as any additional information competes with vital space on the page.
9. Help users recognise, diagnose, and recover from errors.	Error messages should be communicated in plain language so that users are able to diagnose and revert to a correct action easily on the page.
10. Help and documentation.	Where relevant, the system should provide easily accessible help documentation that aids the user in easily identifying the problem in the context of the task they are completing. All help should ideally be searchable and easy to locate.

### 6.12.1 The evaluators

Five expert evaluators took part in the evaluation exercise; all of them were experienced UX professionals accustomed to the heuristic evaluation process. All evaluators also belonged to the Generation-Y customer segment, making them the relevant target audience to provide interface feedback for this research. Three out of the five evaluators also had prior professional experience in the banking industry, thus adding more depth and value to the insights obtained. Table 6.8 reveals their respective profiles.

Expert	Gender	Expert age	Number of years in UX field	UX domain expertise
Expert 1	Female	37	13 years	Telecommunications and software development.
Expert 2	Female	32	7 years	Telecommunications and retail.
Expert 3	Female	32	5 years	Banking and insurance.
Expert 4	Female	30	2 years	Telecommunications and banking.
Expert 5	Female	29	5 years	Banking, retail and gaming.

### 6.12.2 Heuristic evaluation procedure

Before any evaluation could take place, all experts were provided with consent forms for participating in the study (see Appendix D1). In order for the evaluators to familiarise themselves with the respective Internet banking websites, performance tasks were formulated by the researcher, with each task designed to allow the evaluator to explore the functionality capabilities of the respective Internet banking websites. These tasks aligned with the functionality heuristics already established and validated by the survey and interview participants. To perform the tasks, each evaluator accessed the Internet banking website for each bank. Table 6.9 shows the respective website addresses accessed. Log in details were provided separately. The evaluator performance tasks can be found in Appendix D3.

Name of bank	Internet banking website address
Standard Bank	<a href="https://www.encrypt.standardbank.co.za/ibsa/InternetBanking">https://www.encrypt.standardbank.co.za/ibsa/InternetBanking</a>
FNB	<a href="https://www.fnb.co.za/">https://www.fnb.co.za/</a>
ABSA	<a href="https://ib.absa.co.za/ib/ib.jsp">https://ib.absa.co.za/ib/ib.jsp</a>
Nedbank	<a href="https://netbank.nedsecure.co.za/">https://netbank.nedsecure.co.za/</a>
Capitec	<a href="https://direct.capitecbank.co.za/ibank/">https://direct.capitecbank.co.za/ibank/</a>

After going through the different tasks, evaluators were asked to rate, using a 5-point Likert scale, how well they perceived the Internet banking websites inspected complied with the functionality heuristics identified. The list of functionality heuristics spanned six categories, namely, Simple, Ubiquitous, Personal, Empowering, Reassuring (SUPER), and Participant generated (input from the survey and interviews) categories. These heuristics can be found in Appendix D4. After this inspection, evaluators were requested to write a report on their findings, as well as to list any functionality they deemed to be innovative that had not been covered by the heuristics provided. These can be found in section 8.5. The heuristic report completed by the evaluators can be accessed in Appendix D5.

## 6.13 Functionality validation

The functionality guidelines obtained from the findings of the online survey, the interviews and the heuristic evaluation then underwent a final phase of validation from representative Generation-Y users. The guidelines gathered thus far were therefore interpreted into user interface diagrams, commonly known in the UX field as wireframes. These wireframes were subsequently shown to representative Generation-Y participants in the form of a semi-functional HTML prototype, which they were called upon to validate.

A low-fidelity prototype is a semi-functional representation of a web product that is in the development phase (Bailey 2005), and is limited in one or more of the dimensions listed as follows:

- *Amount of functionality.* Low-fidelity prototypes usually do not include all the features of a website.
- *Interaction capabilities.* They also do not usually allow for complex mouse and keyboard interactions.
- *Aesthetic refinement.* Low-fidelity prototypes are usually very plain, with limited use of screen colour and complex graphics.

Munroe (2012) discusses the benefits of administering a prototype to obtain user input before an online product is developed. He explains that it is important to obtain early user feedback, so that iterations are incorporated into the final design before it is launched. In this instance, it was very important for this user feedback to be obtained and ultimately incorporated as part of the final functionality recommendations outlined in section 10.3. The prototype gave the Generation-Y participants a visual interpretation of the functionality guidelines that they could comprehend easily, and therefore they were able to provide adequate feedback. The prototype was constructed using a wireframing tool called Axure RP Pro 6.5 (Wireframing tool 2012). The prototype (Prototype link 2012) was web-based, and was accessible through a variety of web browsers such as Google Chrome, Internet Explorer and Firefox.

Due to space limitations, only a single example of a wireframe contained within the prototype is depicted in Figure 9.1. The complete set can be viewed on the accompanying disc and as stated earlier, accessed on the interactive HTML prototype (Prototype link 2012).

### 6.13.1 Participants: functionality validation

Ten Generation-Y participants took part in the functionality validation exercise. Similar to the interviews, their selection was based on their profiles, which were deemed to be in line with the literature definition of a typical Generation-Y user (see section 6.10.2). To ensure unbiased responses, these participants had not been previously exposed to the online survey nor the interview sessions held prior to this point. A detailed account of their profiles is depicted in Table 6.10.

Part. #	Gender	Age	Level of education	Home language	Years employed	Primary bank	Internet banking usage	Active social platforms
1	Male	30	Degree or diploma	English	3-5 years	ABSA	24 months +	<1
2	Male	31	Degree or diploma	Afrikaans	3-5 years	Nedbank	24 months +	<1
3	Male	27	Degree or diploma	Zulu	3-5 years	Standard Bank	24 months +	<1
4	Male	29	Degree or diploma	Afrikaans	3-5 years	Standard Bank	24 months +	<1
5	Male	36	Degree or diploma	Tsonga	5 years +	FNB	24 months +	<1
6	Female	35	Degree or diploma	English	5 years +	FNB	24 months +	<1
7	Female	33	Degree or diploma	Zulu	5 years +	FNB	24 months +	1
8	Female	29	Degree or diploma	Afrikaans	5 years +	Standard Bank	24 months +	1
9	Female	29	Degree or diploma	English	3-5 years	ABSA	24 months +	1
10	Female	27	Degree or diploma	Northern Sotho	3-5 years	Capitec	24 months +	<1

### 6.13.2 Procedure: functionality validation

All participants were requested to complete a participation consent form before commencing the validation phase of the study (see Appendix E1). Similar to the heuristic evaluation process, tasks representative of all the identified functionality guidelines were formulated for the participants to complete on the prototype. This was done in order to familiarise them with the different sections of the prototype and, in turn, to inform their validation decisions. This notion is supported by Usability.gov (2011), which states that in order to facilitate a user test session one needs to create a good task scenario that identifies the top tasks users try to complete when visiting a particular site. These user tasks can be found in Appendix E3.



After completing the tasks, participants were requested to rate, using a 5-point Likert scale, whether they believed the functionality on the prototype represented what they would look for in the Internet banking platform of the future. This feedback is detailed in section 9.5. The functionality validation feedback forms completed by the participants can be found in Appendix E4.

## **6.14 Data analysis and presentation of results**

The nature of the data gathered required a computerised statistical analysis in order to interpret and derive insights. The online tool, SurveyMonkey (SurveyMonkey 2012), used for administer the survey, automatically produced results in a computer-based spreadsheet processing format, Microsoft Excel 2010. The rest of the data (from the interviews, heuristic evaluation and functionality validation) was gathered using a computer-based word processing program, Microsoft Word 2010, and this was also analysed and interpreted using the computer-based spreadsheet processing program, Microsoft Excel 2010. It was important to make certain that all results were legible and easy-to-understand, hence the use of frequencies, percentages, lists, tables and graphs.

## **6.15 Demonstrating the reliability of the research**

Section 6.4 outlined the research design, alluding to the way the initial functionality requirements were formulated by means of a literature review. The first instance of user feedback validating the identified guidelines was the online survey (see section 6.10). The questionnaire used in this survey subsequently acted as a benchmark for the types of questions asked in the validation phases that followed (i.e. interviews, heuristic evaluation and functionality validation).

Owing to the nature of this research, it was important to analyse the reliability of the different functionality concepts, also known as constructs, presented in the questionnaire. According to Golafshani (2003), reliability refers to the consistency of the measurement, or the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects.

In order to determine the reliability of the different concepts in the questionnaire, a statistician was appointed and requested to analyse and provide feedback on the survey. Cronbach's alpha values were used to achieve this level of analysis. Cronbach's alpha is an effective tool for measuring the numerical coefficient of reliability, as the computation of alpha is based on the reliability of a test

relative to other tests with the same number of items and measuring the same construct of interest (Santos 1999).

The overall Cronbach’s alpha value for reliability can be interpreted as follows:

- A Cronbach’s alpha above 0.8 – good reliability
- A Cronbach’s alpha between 0.6 and 0.8 – acceptable reliability
- A Cronbach’s alpha below 0.6 – low reliability
- Other authors use another cut-off of 0.7, which is suggested by Nunnally (1978) for acceptable reliability.

Five constructs, each representing the functionality categories presented to users during the online survey (Simple, Ubiquitous, Personal, Empowering and Reassuring) were tested for reliability.

Section 7.13 outlines the reliability results. A detailed report as supplied by the statistician can be viewed in Appendix F.

### 6.15.1 Piloting questions for the different research activities

Over and above reliability testing, the different research activities underwent pre-testing before they could be given to the research participants. Table 6.11 indicates the different quality assurance measures undertaken to ensure that effective unambiguous feedback was received from all participants, across the various research activities.

Research activity	Quality assurance measure
Online survey and interviews.	<ul style="list-style-type: none"> <li>• The full version of the online questionnaire was sent to two UX specialists who provided feedback on the questions they felt were too difficult for participants to understand.</li> <li>• Recommendations were made for the way these questions could be rephrased to eliminate any possible ambiguity and confusion.</li> <li>• Once the recommendations had been implemented, the survey was sent back to them for final approval.</li> <li>• The final list of piloted questions was then used for both the online survey and the interview phases of the study.</li> </ul>
Heuristic evaluation.	<ul style="list-style-type: none"> <li>• An independent UX specialist (not one of those who participated in the heuristic evaluation, and not employed by the sampling unit [AquaOnline]) was requested to undertake the evaluation tasks on one of the banks’ Internet banking website, in order to make certain that the tasks were easy to understand.</li> </ul>

	<ul style="list-style-type: none"> <li>• The feedback provided was incorporated before the heuristic evaluation phase could commence.</li> </ul>
Wireframe functionality validation.	<ul style="list-style-type: none"> <li>• All wireframe pages were tested for legibility by two Generation-Y participants.</li> <li>• They were requested to undertake all tasks associated with the different functionality guidelines, in order to test for ambiguity.</li> <li>• The Generation-Y participants who performed this pre-testing did not take part in the functionality validation phase of the study.</li> </ul>

All questions were in English, and all respondents taking part in the study were able to communicate proficiently in English.

## 6.16 Summary

This chapter outlined the research philosophy, the approach and the design of the study. UCD, the underlying philosophy of the study in terms of which the active involvement of users is advocated in order to obtain a clear understanding of their Internet banking functionality requirements was defined. The mixed method research approach used was also introduced. In terms of this approach the study has attributes of both quantitative and qualitative research.

While outlining the reason why specific data gathering methods were used, the chapter explained the evolution of the Internet banking functionality guidelines; the core component of this study. This evolution sees these guidelines being initially gathered from the literature review, then slowly being refined where necessary during the online survey, interviews, heuristic evaluation and functionality validation phases of the study, to eventually produce a list of recommended Internet banking guidelines. Each of these data gathering methods are discussed, while support aspects of the research, such as data reliability and analysis, are also outlined.

Chapters 3, 4 and 5 acted as the foundation to the study, through a literature study which provided the initial list of functionality guidelines. Chapter 7 provides the results of the first set of user validation feedback received during the online survey and interview phases of the study.

## **Chapter 7: Research findings: Online survey and participant interviews**

### **7.1 Introduction**

The literature review led to a set of projected financial services functionality trends that are aligned with the unique characteristics of Generation-Y users, as section 5.4 explained. In order to validate the way these functionality guidelines are perceived and accepted by active Internet banking Generation-Y customers, an electronic survey was conducted and user interviews held with the employees of AquaOnline; a full-service digital and direct marketing agency many of whose employees are representatives of the Generation-Y age bracket.

An anonymous electronic survey created by SurveyMonkey (SurveyMonkey 2012), an online survey tool, was emailed to 190 employees of AquaOnline. Subsequently, fifty responses were obtained. Furthermore, twelve participants took part in the individual interview process lasting 40 minutes; each participant being representative of a typical Generation-Y profile as identified in the literature. Both the electronic survey and the interviews contained the same types of question for ease of comparison of the results. The results of both the online survey and the interviews are presented in this chapter.

Section 7.2 starts by presenting the willingness of respondents to participate in the study, while section 7.3 depicts the biographic details that outline the participant profiles. Section 7.4 discusses the perceptions participants had of the Internet banking platform before participating in the study, while section 7.5 re-examines the literature that led to the formulation of functionality guidelines being validated. Section 7.6 introduces the functionality rating scale used by the participants to assess the functionality guidelines within the five categories stipulated during the literature review (Simple, Ubiquitous, Personal, Empowerment and Reassuring).

Sections 7.7 to 7.11 outline the functionality validation feedback obtained across the five categories for both the online survey and the individual user interviews. Section 7.12 captures user perceptions of the Internet banking platform after having had gone through the functionality validation exercise.

It was also deemed important to measure the degree to which the survey and interviews with Generation-Y participants produced stable and consistent results. To achieve this, a statistical analysis, which proves the acceptable reliability of the various concepts presented to participants, is contained in section 7.13 of this chapter. Section 7.14 provides a high-level summary of the average functionality validation results for each of the five categories presented to participants. Section 7.15 then provides a detailed account of the validated functionality guidelines, where relevant, providing additional implementation guidelines as recommended by the users. Finally, section 7.16 presents a summary of the chapter.

## **7.2 Consent for participation**

As already mentioned, all research activities were performed at the Johannesburg offices of Aqua Online. At the beginning of both the interview and online survey processes, participants were made aware of a number of factors they had to take into consideration before participating in the study and before giving their consent to participate. These factors were:

- A description of the purpose of the research
- What the procedure to be followed was
- The voluntary nature of their participation
- The lack of ant benefits and compensation for their participation, and
- The risks and discomforts associated to the study.

All participants involved in both sets of data gathering methods read and understood these factors, and willingly chose to participate in the study. The consent forms for these two data gathering methods are contained in Appendixes B3 and C2 respectively.

## **7.3 Demographic details**

The literature had revealed a number of distinct characteristics and demographics of the Generation-Y segment. It was therefore important for the participants in both the online survey and the interviews to possess the key differentiation traits that make this user base prone to certain technological inclinations (see section 3.4). The literature revealed that members of the Generation-Y segment:

- Were born between the year 1977 and 1994; hence they fall into the 20 to 37 year age bracket (Noble et al. 2009)
- Are technologically savvy as they have been exposed to technology since early childhood and have tendencies such as preferring portable mobile devices and having an active presence on social networking websites (Djamasbi et al. 2010)
- Are mostly educated and affluent (Daffue 2005).

The demographic details identified included the gender and home language. Questions that were specifically targeted at ascertaining the participants' Generation-Y compliance asked for the following information:

- Age
- Highest education level
- Employment status
- Internet usage
- Internet device usage
- Social media interaction

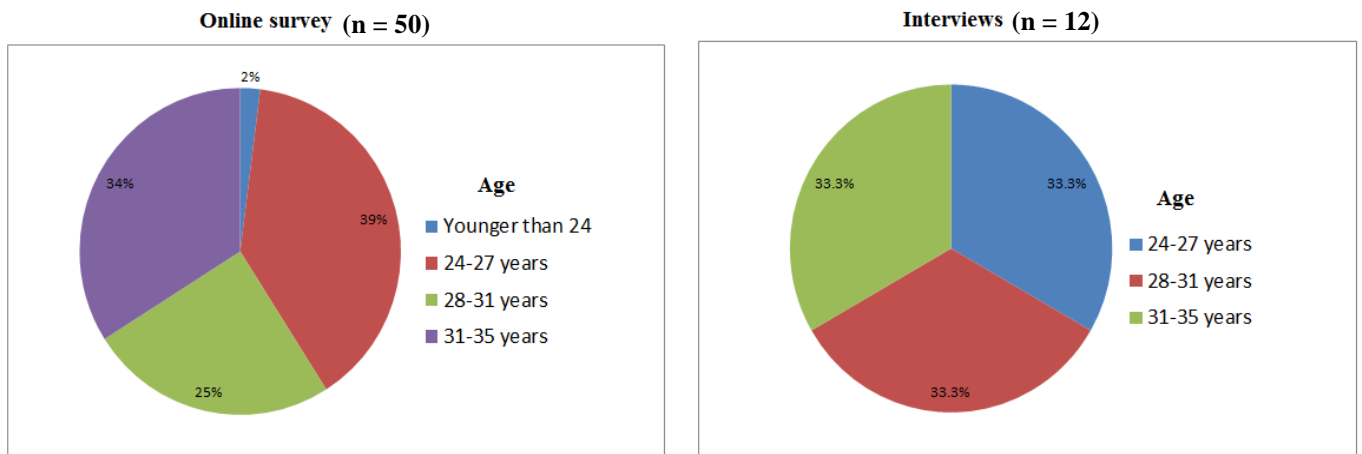
Based on this description of the Generation-Y user base, as identified in the literature, Aqua Online participants in both the survey and the interviews met these criteria, with most of them being

- Within the focus Generation-Y age bracket for this study (25–37 years)
- Equipped with higher education qualifications
- Employed
- Advanced Internet users, with five years and more Internet usage experience
- multiple platform users, accessing the Internet from more than one digital device (e.g. laptop, tablet and smartphone device simultaneously)
- Active social networking users, with most having more than one social network account.

The following sections discuss the demographic details obtained from these participants in detail.

*Age:* Fifty responses were gathered from the online survey. According to these responses, 98% of participants fell within the focus age of 24 to 37 years, with one user (2%) falling into the lower Generation-Y subset of younger than 24 years of age .

Twelve Generation-Y users took part in the interview process. Part of the interview participant sourcing process entailed making certain that there was an equal representation of age across the Generation-Y age bracket chosen (25–37 years). This was in order to get equal representation of views across the varying age subsets of the Generation-Y segment (see Table 6.6). Figure 7.1 depicts the age breakdown of both the online survey and interview participants.

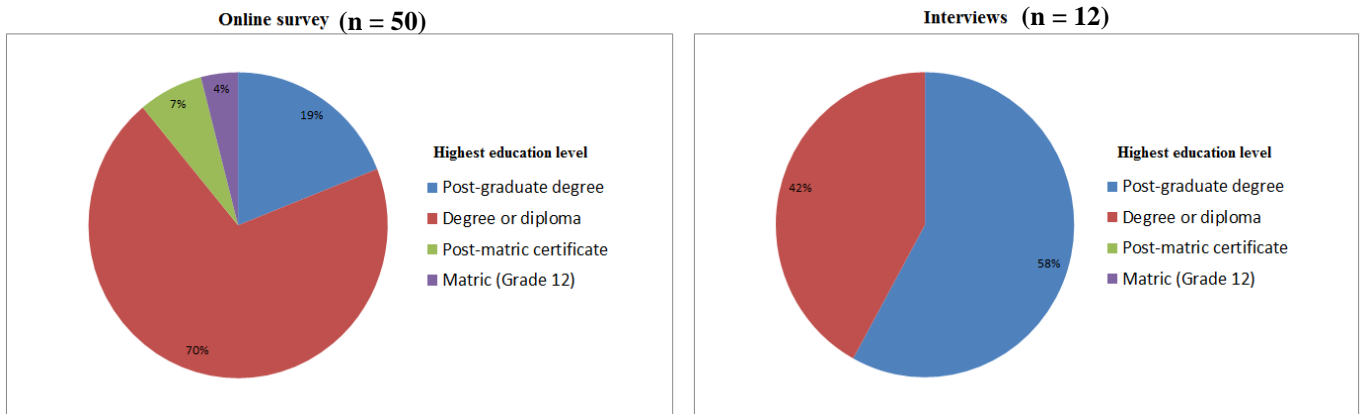


**Figure 7.1:** Online survey and interviews: participant age breakdown

*Gender:* Of the 50 questionnaire respondents, 74% were female and 26% male. Among the interview participants, the genders were equally represented.

*Home language:* Language representation among the survey respondents was more diverse, with 12% English, 2% Mtimkuluans and 75% African language speakers. There was an equal representation of home language among the interview participants, with 33% of the participants being Mtimkuluans, 33% English, and 33% other African language speakers.

*Highest education level:* 19% of the survey participants held a postgraduate degree, while 70% of them held an undergraduate degree or diploma. 7% had a post-matric certificate, while 4% had a matric (Grade 12) certificate. All interview participants held a tertiary education qualification, with 58% having a postgraduate degree and 42% an undergraduate degree or diploma. Figure 7.2 depicts the education level of both the online survey and interview participants.

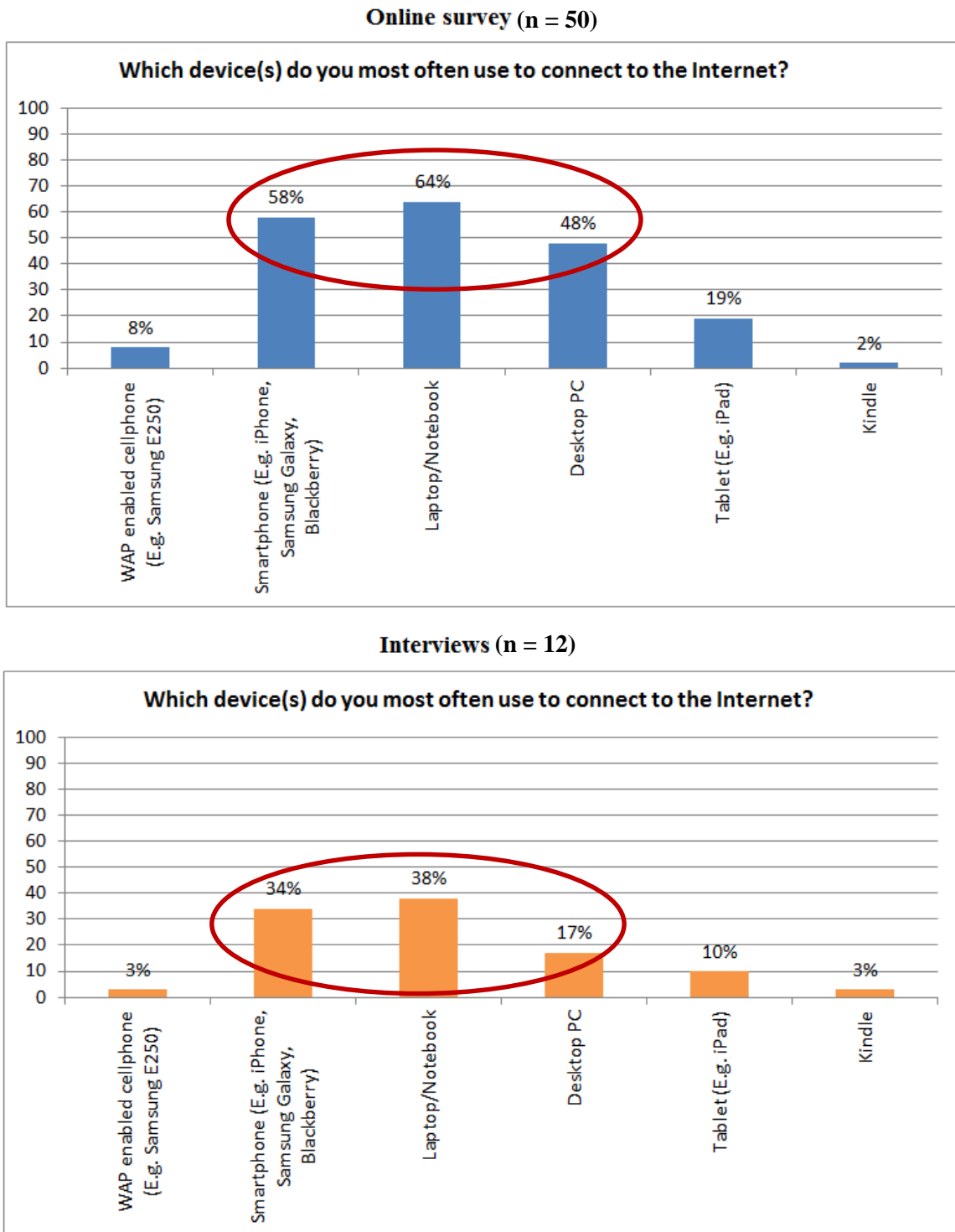


**Figure 7.2:** Online survey and interviews: education level

*Employment status and duration:* All participants of the survey were full time employees of Aqua Online. 24% of these participants had been employed for 0-2 years, 19% for 3-5 years; while most of them (57%) had been employed for more than five years. All interview participants were employed by AquaOnline. Five of them had been employed for 0-2 years and one for 3-5 years. The remaining six users had been employed for more than five years.

*Duration of Internet usage and connection devices used:* All participants (100%), in both the survey and the interviews, had been active Internet users for more than five years. What is evident in both sets of results is the prevalence of multiple device usage when accessing the Internet; users are no longer using a single device to do so. Although the notebook and desktop PC are still widely used, the need for mobility and on-the-go access is proven by the increased use of smartphone and tablet devices. This is also mentioned by Goldstuck (2012), who states that 90% of regular Internet users in South Africa access the Web on their smartphones, and that the use of tablets is growing steadily with over half a million tablet devices already available in South Africa (Mfuphi 2012). Figure 7.3 depicts the devices participants mostly use to access the Internet, as captured from the online survey and interviews.

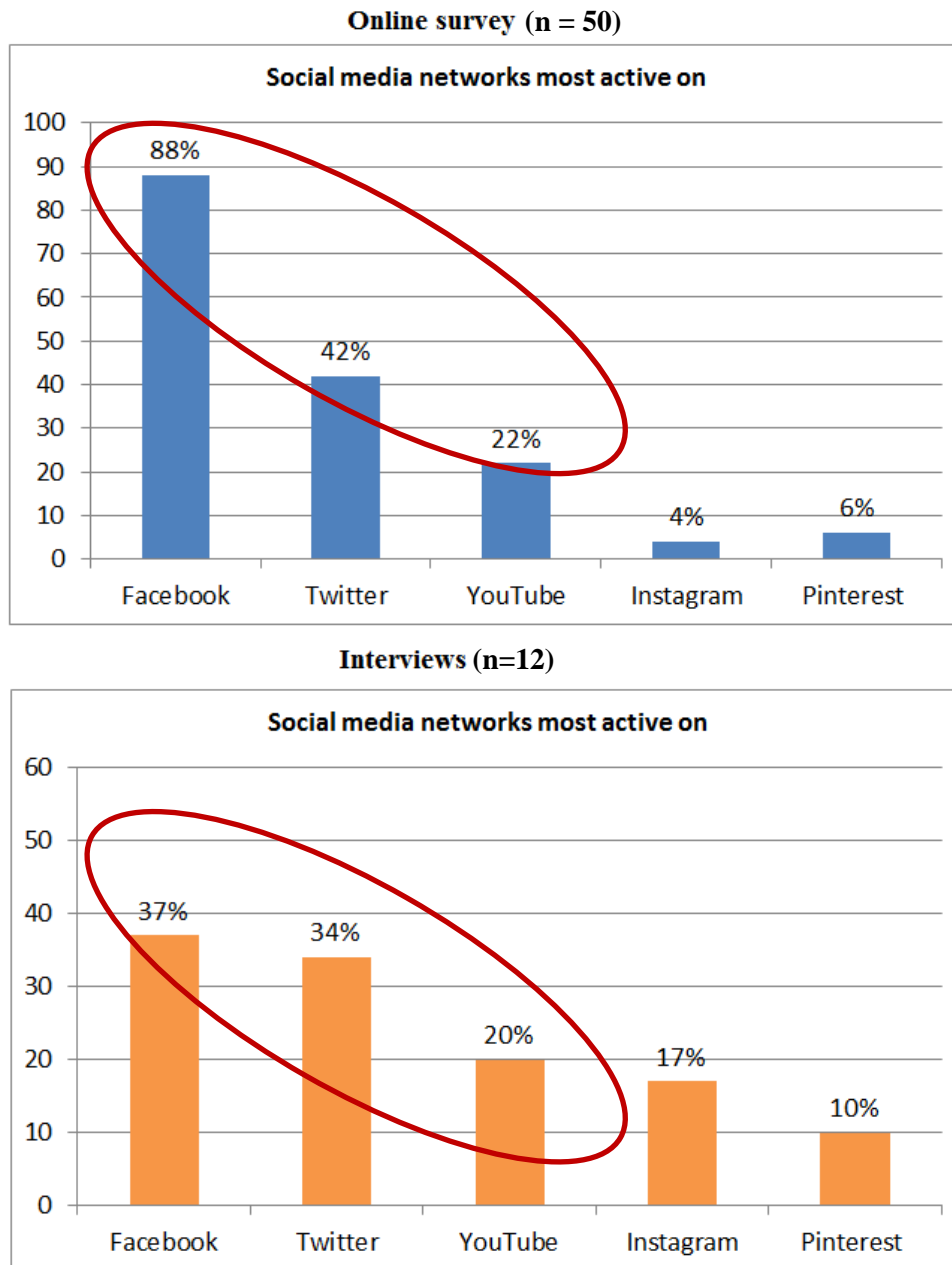




**Figure 7.3:** Online survey and interviews: Most used Internet connection devices

*Social media interaction:* Both sets of participants were active participants on social networking websites, with most of them having more than one social media account. The social networks that yielded the most involvement and interactivity from the participants are Facebook, Twitter and

YouTube, coming in at 37%, 34% and 20% respectively for the interview participants, and 88%, 42% and 22% respectively for the online survey respondents. Figure 7.4 depicts the social media networks participants are most active on, as captured from the online survey and interviews.



**Figure 7.4:** Online survey and interviews: social media networks most active on

*Please note:* The 12 interview participants were requested not to respond to the anonymous online survey sent to the rest of the employees at Aqua Online. This was so that unbiased responses could be gathered from them, without any prior exposure to the questions contained in the survey.

All responses by the participants were therefore unique to that particular individual. No duplicate responses were gathered.

## **7.4 Pre-survey input**

### **7.4.1 Overview of feedback**

Prior to validating the functionality requirements gathered from the literature, users were requested to complete a survey aimed at obtaining the views and perceptions they had of the Internet banking platforms they currently use. This survey included questions on what bank they mainly use to transact, how long they had been an Internet banking user, how often they access the Internet banking platform, what functions they mainly perform there, the likes and dislikes they have, and whether they feel their Internet banking platform meets their money management needs as modern users.

The responses from the participants revealed a diverse affiliation with banks in South Africa, meaning that the responses came from users who had been exposed to different Internet banking platforms and were therefore able to give varying input. An interesting observation here was also that most participants use more than one bank to fulfil their transactional needs. Most participants were also advanced users of the Internet banking platform, having more than two years' experience of transacting in this manner.

The act of transacting online was very important to these participants, with most of them accessing their Internet banking platform several times a week. Balance enquiries, transferring of funds and payment of accounts proved to be the key functions most users accessed the platform for. When asked about their likes and dislikes in relation to the Internet banking websites, participants provided varying input in an open-ended fashion. This input is discussed below, and encapsulates the varying views of the participants:

### **Likes of Internet banking**

- *Convenience*: Participants appreciate the time-saving capabilities that Internet banking platform has afforded them. They expressed ease of access, that is, not having to go into a

bank branch to perform basic transactions, as being a major benefit. The flexibility and privacy the platform offers them was also well received, as it allows them to access their money in the comfort of their own home and office.

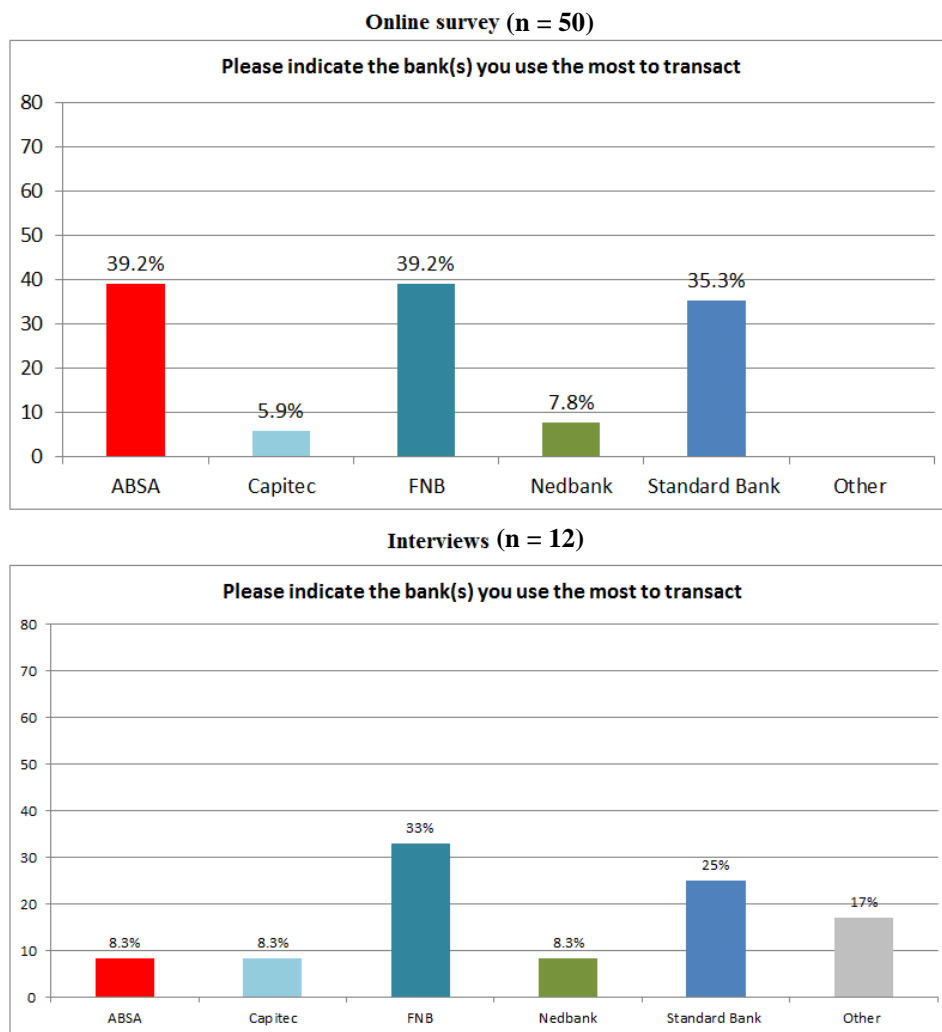
### **Dislikes of Internet banking**

- *Lack of process automation:* Participants felt that as much as Internet banking has given them convenience and privacy, there are still key processes that require them to go into a bank branch to complete. Some of these processes include changing their personal details and adjusting monthly money transfer limits. They also mentioned the waiting periods for money to reflect when transferring money from one bank to another.
- *Lack of account integration:* Participants also stated that they have multiple financial accounts with other services providers and, in some cases, more than one transactional bank account with other banks. They felt that their Internet banking platform did not provide them with a holistic view of their financial standing, as they still needed to access these individual services separately.
- *Lack of mobility:* Participants showed a strong need for on-the-go access to their money. Even though Internet banking is a much more convenient manner of transacting, as compared to going to the bank, users felt it could not be effectively viewed on a mobile device such as a smartphone. Participants recognised the importance of multi-device compatibility, which is now delivered through responsive design and app development, as mentioned in the literature discussed in section 4.6; technologies which some banks have not yet incorporated.
- *Lack of financial education:* Participants look to this platform for more than just transactional purposes; they also require hints and tips for making their money go further. They stated that in order for them to have this type of input, they have to contact an independent financial advisor; a function that they feel should be provided by this platform.
- *General technical errors:* From one time passwords (OTPs) that do not get delivered on time, to pages that take longer than expected to load, users are generally unhappy with minor system mishaps that occur.
- *Fear of fraudulent activity:* Even though this platform has been in existence for a number of years, participants still voice underlying issues of security and trust. Unauthorised access to accounts is a major concern they believe banks still need to adequately address.

All in all, most participants feel that this platform meets their basic money management needs, which is a very important function. With this said, they are also starting to see the need for this platform to play more of a role in financial education, assisting and making them aware of what they would not have conventionally known. Section 7.4.2 discusses the detailed responses given by the participants.

### 7.4.2 Primary bank used

Both sets of participants belong to a wide range of banking institutions in South Africa, and some have more than one primary bank they use for transactional purposes. These banks include ABSA, Capitec, FNB, Nedbank, Standard Bank, with the ‘other banks’ being communicated as Investec and Lloyds TSB. Figure 7.5 depicts the various banks participants used the most to transact.

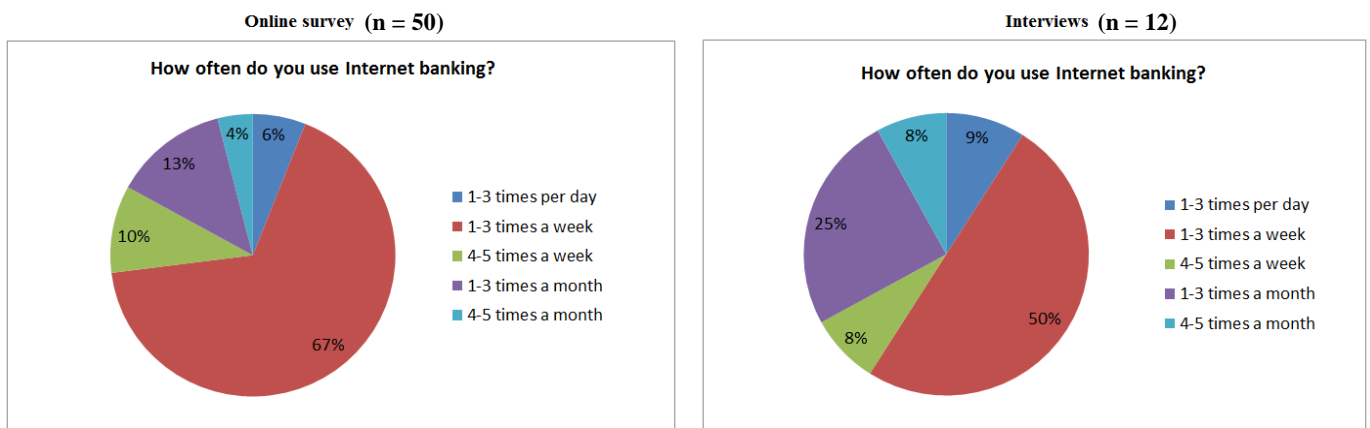


**Figure 7.5:** Online survey and interviews: Banks mainly used to transact

### 7.4.3 Internet banking usage duration and frequency

The response from the survey revealed that 64% of these participants have been accessing the platform for more than 24 months, 13% for 12-24 months, 8% for 3-12 months, and the remaining 15% for 0-3 months. 83% of interviewed users have been using Internet banking for more than 24 months, while the remaining 17% for have been using it for 12-24 months.

The survey responses revealed that 67% of the participants access their bank’s online transacting platform 1-3 times a week, while 13% do so 1-3 times a month. Ten per cent of the users login 4-5 times a week, while the remaining 6% and 4% transact 1-3 times a day times a day and 4-5 months respectively. The interviews revealed that 50% of these participants access the Internet banking platform 1-3 times a week, and this is closely followed by 25% of the users who access this 1-3 times a month. 9% of the users transact online 1-3 times a day, with the remaining 16% of users access this platform 4-5 times a week and 4-5 times a month respectively. Figure 7.6 depicts these results as captured from the online survey and interviews.



**Figure 7.6:** Online survey and interviews: Internet banking frequency of use

### 7.4.4 Internet banking functionality most used

Participants from both groups access Internet banking for multiple reasons. The primary reasons, rating highly with both groups, are balance enquiry, transferring of funds and payment of accounts.

### 7.4.5 What participants found most beneficial about their current Internet banking platform

Participants were then requested to state what their preferences relating to the Internet banking platform they currently use were. The common thread throughout the responses can be categorised as *convenience*, in terms of which participants stated that they liked the *time-saving capabilities*, *ease of access* and *privacy* that their Internet banking platform gives them. Table 7.1 lists a collection of some of the responses from the participants.

Table 7.1 Likes of Internet banking – Interview and online survey feedback	
User interviews	Online survey
<p><i>“I like the convenience, I don’t have to go into a branch.”</i></p> <p><i>“It provides me with peace of mind, knowing I can transact anywhere, anytime.”</i></p>	<p><i>“It’s quick to make payments and I can check my balance anytime.”</i></p> <p><i>“It is efficient and saves a lot of time. I can do it anywhere and at anytime.”</i></p> <p><i>“I like the fact that you can pay accounts and purchase airtime instantly without having to stand in a long queue. You can also deposit cash. It gives you control over your funds.”</i></p> <p><i>“I like that it can be accessed during any hour of the day.”</i></p> <p><i>“I love that I can do it from the comfort of my desk or home.”</i></p>

### 7.4.6 What participants dislike about their current Internet banking platform

This question was posed to participants in an open-ended format. A number of concerns were raised by the participants of both the interviews and the online survey. These responses have been categorised into six groups, namely: lack of process automation, lack of account integration, lack of mobility, lack of financial education, general technical errors, and fear of fraudulent activity. Table 7.2 provides a summary of the participants’ responses, covering these six groups of feedback.

Table 7.2 Dislikes of Internet banking; interview and online survey feedback	
User interviews	Online survey
<p><b>Lack of process automation</b></p> <p><i>“Waiting period while transferring money between banks.”</i></p> <p><i>“Can’t update beneficiary details.”</i></p>	<p><b>Lack of process automation</b></p> <p><i>“Takes too long to load beneficiaries.”</i></p> <p><i>“Not being able to make immediate payments to other banks.”</i></p>

<p><i>“Changing monthly transfer limits requires a visit to the branch.”</i></p> <p><i>“Can't increase fund transfer limit.”</i></p> <p><b><u>Lack of account integration</u></b></p> <p><i>“No innovation - Just basic banking needs.”</i></p> <p><i>“Somewhat cluttered, unable to check balances on other bank accounts and credit cards etc.”</i></p> <p><b><u>Lack of financial education</u></b></p> <p><i>“No budgeting, no customised notifications.”</i></p> <p><b><u>General technical errors</u></b></p> <p><i>“Susceptibility to internet-connection – I cannot use in areas with poor network.”</i></p> <p><b><u>Fear of fraudulent activity</u></b></p> <p><i>“I am always careful when transferring large amounts - Trust is a big factor for me.”</i></p>	<p><i>“The fact that when you do transfers to someone not using a similar bank as yours it takes three days to reflect. In that way it does not make my life easy.”</i></p> <p><i>“Can't increase my limit online.”</i></p> <p><b><u>Lack of account integration</u></b></p> <p><i>“My bank should integrate Internet banking with other municipal system for me to be able to pay municipal bills online.”</i></p> <p><b><u>Lack of mobility</u></b></p> <p><i>“My bank does not have an app, so I can't access it on my phone.”</i></p> <p><b><u>Lack of financial education</u></b></p> <p><i>“No live chatting function with my banker.”</i></p> <p><i>“It does not educate me around how I should manage my money.”</i></p> <p><b><u>General technical errors</u></b></p> <p><i>“Sometimes the OTP (one-time password) takes ages to come through.”</i></p> <p><i>“I dislike that the banks do not communicate when it is offline.”</i></p> <p><b><u>Fear of fraudulent activity</u></b></p> <p><i>“Security software does not automatically update, I need to update each month.”</i></p> <p><i>“My only concern is the security. There seems to be fraudsters who are always a step ahead.”</i></p> <p><i>“Leaking of personal and confidential information.”</i></p> <p><i>“The only disadvantage is that there might be a chance to be defrauded.”</i></p>
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#### 7.4.7 Modern users' perceptions of Internet banking

After giving their likes and dislikes, participants were asked whether they felt that their Internet banking platform meets all their money management needs as modern users. Across the board, this question yielded positive results, with 77% and 72% of interview and online survey participants



respectively expressing that they believe their basic money management needs are being met. These users, however, state that improvements to this platform would be most welcome.

Participants expressing disagreement with this question (23% interview and 28% online survey) stated that they expect their Internet banking platform to allow them to do more than just transacting; it should also offer an aggregated financial platform where they would be able to access budgeting, account monitoring and customer support services; thus learning how to improve their financial standing.

When asked to further elaborate on their answers, it was evident that participants need the Internet banking platform to perform key functions, which they believe it does. The participants perceived convenience as being one of the most important factors, and they believe current online transacting platforms already cater for this need. The participants who disagreed brought to the fore an evident need for innovation, and recognised the next level of value the platform could add to their lives. This question was presented in open-ended format. Table 7.3 gives some of the participants’ responses.

<b>Table 7.3</b> Modern users’ perceptions of Internet banking; interview and online survey responses	
<b>Does your Internet banking platform meet all your money management needs as a modern user?</b>	
<b>Yes</b>	<b>No</b>
<p><i>“It does for now, but I see it being an issue when my banking needs become more sophisticated.”</i></p> <p><i>“I always have access to my banking information without having to visit the branch.”</i></p> <p><i>“Overall, it allows me to do basic transactions, but if I want my financial needs looked after, I have to hire a financial advisor – my online bank does not do that for me.”</i></p> <p><i>“I have access to different types of accounts, either loan or investment type of facilities, so it allows me to transfer money between all this accounts to better manage my funds.”</i></p>	<p><i>“Not even close, very few people only use one bank account/card, and if you are married, it’s difficult to manage two bank accounts. I use ‘www.22seven.com’ to budget and monitor money from multiple accounts.”</i></p> <p><i>“...I have to hire a financial advisor – my online bank does not do that for me.”</i></p> <p><i>“It gives me no tools to budget and track my expenses.”</i></p> <p><i>“Would be great to have an online financial advisor.”</i></p> <p><i>“A personal budget plan functionality within Internet banking tool would be helpful.”</i></p>

## 7.5 Recap: Validation of Internet banking functionality formulation

### 7.5.1 Overview of the literature

The main aim of this study was to identify validated functionality requirements that could provide insights into the way in which the Internet banking platform of the future will look, specifically for the Generation-Y customer segment. It is for this reason that a literature review, focusing on trends and future innovations in digital financial services, was conducted in order to identify the possible functionality direction online financial services platforms such as Internet banking are likely to take in the future. This literature review was included in sections 4.5 to 4.11, and it unveiled seven categories of projected functionality, namely, personal financial management (PFM), multi-device banking, personalisation, process automation, content presentation, human touch, and social banking.

This literature review also revealed a concept that comprehensively encapsulates the seven forecasted categories. Hesse (2011) terms this direction SUPER, an acronym he uses to summarise these new developments: S – Simple, U – Ubiquitous, P – Personal, E – Empowering, and R – Reassuring. A detailed summary of this concept can be found in section 4.12.1 of this study. Table 7.4 below provides a summary of what the acronym SUPER represents.

<b>Table 7.4:</b> Summary: Direction of future financial digital services (Hesse 2011)	
<b>Simple</b>	It will be much easier for customers to achieve goals and tasks on digital financial websites, as product and services information will be presented in a manner that is easy to comprehend.
<b>Ubiquitous</b>	Customers will be able to interact seamlessly with their financial services provider through an increasing number of touch points such as mobile devices and social networks. There will be continuity and consistency across all these platforms, making users comfortable and reassured that their needs will be met regardless of the device and platform they choose to transact on.
<b>Personal</b>	The entire online experience will be relevant to unique customer needs, and will not use a one-size-fits-all approach when it comes to handling the customer’s data. The customer’s experience on the platforms will therefore be personalised according to what pre-gathered data shows they deem to be important.
<b>Empowering</b>	Customers will be able to take action by themselves, as they will be provided with an aggregated view of content from multiple sources. This aggregation will put them in control of whatever content is being presented to them on the site.
<b>Reassuring</b>	As human beings still remain the best sales and service channel for many high-value interactions, future digital services will provide human help whenever the user feels the need for it.

A literature review (please see section 3.4.2) revealed unique characteristics that are believed to influence and shape the way Generation-Y users interact with online platforms. The literature revealed this user segment to:

- Be easily bored, thus skimming through content very quickly
- Be continually connected
- Be influenced by peers
- Be expressive and creative
- Speak their own language
- Enjoy humour with an odd slant.

It was therefore important to ensure that the functionality categories identified, as well as the projected direction as defined by Hesse (2011), aligned with relevant Generation-Y characteristics as identified in the literature. See section 5.4 for the mapping and alignment of these three factors.

The SUPER acronym could therefore be used comfortably to collectively address the direction functionality future online financial services are most likely to take, and could therefore be used as an all-encompassing representation of the seven functionality categories that are inherently aligned with the Generation-Y user characteristics.

It is for this reason that SUPER was used as the main classification according to which the interview and online survey participants had to validate and corroborate the functionality as identified in the literature (see section 5.5) and which they deem necessary to include on the Internet banking platform of the future. The sections that follow reveal the participants' feedback from both the survey and the interviews.

## **7.6 Functionality rating scale used**

A five-point Likert scale was used for participants to validate the different functionality categories, as represented by SUPER. According to Tullis and Albert (2008), questions on a Likert scale involve a statement of a particular notion that respondents rate according to their level of agreement or disagreement with it. The statement may be either positive or negative.

Table 7.5 gives the statements used in the five-point Likert scale in terms of which participants were required to indicate their functionality preference or reluctance. Each of the five points were assigned numeric values, from 1 to 5; 1 being the lowest rating (Strongly disagree), and 5 being the highest rating (Strongly agree).

Scale statement	Assigned numeric value
Strongly disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly agree	5

The functionality validation ratings from the online surveys and participant interviews are discussed in the following sections. Both these set of results are depicted next to each other. As each rating statement was assigned a numeric value, as shown in Table 7.5, the total ratings for a particular functionality type were computed and then averaged in order to obtain the participants' overarching perception of that functionality category. This then determined whether the participants deemed the functionality imperative or not. The results are presented according to the SUPER categorisation (Simple, Ubiquitous, Personal, Empowering; Reassuring).

## **7.7 Internet banking functionality validation findings: Simple**

The simple attribute, as explained in Table 7.4, represents a projected direction in terms of which it is believed that functionality on digital financial services will make it easier for customers to achieve otherwise difficult goals and tasks. Based on this projection, two functionality categories, as identified in the literature, are aligned to this attribute. These are *content presentation* and *process automation*. The specific functionality trends represented by these two categories have been gathered from the literature under sections 4.8 and 4.9 respectively. These trends made up the five functionality criteria (see Table 5.7, Simplicity category) that users were requested to validate. The results of the validations are summarised in Table 7.6.

<b>Table 7.6: Simple: Functionality validation findings</b>			
<b>User feedback</b>	<b>Average interview rating</b>	<b>Average survey rating</b>	<b>Category average rating</b>
1. Automate transactions (e.g. online transfer limit) from start to finish by allowing users to complete transactions without having to request assistance from the bank, or go into a bank branch.			
Participants agreed that transactions should be automated from start to finish, without them having to physically go into a bank branch. This bears testimony to, and further substantiates, the convenience factor they had communicated as a key advantage of Internet banking (see section 7.4.6).	4.4	4.3	<b>4.4</b>
2. Offer e-signatures (electronic signatures) to replace legally binding handwritten signatures when indicating approval or finalisation of an online transaction like applying for a loan.			
When prompted about what their thoughts were concerning the use of e-signatures to replace legally binding handwritten signatures when applying for products online, a pattern of caution can be observed in the responses. Coming in at a lower average of 3.6, just below the agreement range, participants are conscious and wary of any likelihood that their financial information could be fraudulently accessed and processed. This affirms the fear of fraudulent activity they listed as a dislike in section 7.4.1. As much as participants are in favour of convenience and automation, they deem it very important to keep a certain level of security, and a physical hand written signature is seen as an important security measure. Users recommend that if this functionality were to be implemented, additional security measures such as an OTP, or a discrepancy reporting ability, would be needed in order to provide another level of authentication.	3.67	3.52	<b>3.6</b>
3. Prefilled applications or any online process that requires users to capture their personal details (E.g.: if the bank already has the user's personal details, it could automatically populate an online application form to a certain extent, rather than the user having to fill in all these details from scratch).			
Generally, a strong need for redundancy and repetition to be minimised on Internet banking platforms was articulated. Participants believe that once you have provided your bank with your personal information, this should be sourced and reused whenever relevant without them having to recapture this information. Rating an average of 4.5, just below the strongly agree range, participants welcome the idea of utilising prefill mechanisms where required.	4.42	4.54	<b>4.5</b>
4. Offer tools that assist users in simplifying difficult tasks such as applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.).			
Further supporting the communicated need for convenience, and the growing need for financial education (section 7.4.7), participants welcomed any functionality that would help them reach an informed financial decision as quickly as possible, as it is acknowledged that searching for a financial product can at times be overwhelming. Coming in at an average of 4.5, just below the strongly agree range, participants are open to tools and utility that would help simplify their lives on this platform.	4.58	4.42	<b>4.5</b>
5. Present difficult-to-understand content in innovative ways such as using videos, audio clips, online games, polls, etc.			
With a total average of 4.2, just above the agree range, participants are open to value-adding financial content being presented in more interactive and innovate ways.	4.58	3.88	<b>4.2</b>

<b>OVERALL CATEGORY AVERAGE</b>	<b>4.2</b> (Rounded off to: 'Agree with proposed functionality')
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The functionality trends validated under this attribute were rated favourably by the participants, coming in at a total average of 4.2, a little above the agreement range according to the Likert scale explained in Table 7.6. Generally, there is a strong expectation among participants that the Internet banking platform of the future would, as far as possible, automate and simplify their financial transactions and information. However, security should not be comprised in any way. Even though more convenient ways of administering transactions may be introduced, users were very definite about wanting to have confidence that their money is adequately protected.

### 7.8 Internet banking functionality validation findings: Ubiquitous (anywhere, anytime)

As explained in Table 7.4, the ubiquitous attribute represents a projected direction stating that functionality on digital financial services will enable customers to interact seamlessly with their financial service provider across a number of platforms and devices, while still having a consistent experience regardless of which platform or device they choose to transact on. Based on this projection, two functionality categories gathered from the literature aligned to this attribute; *multi-device* and *social banking*.

A number of trends that fall into these categories have been outlined; each is elaborated in detail in the literature review in sections 4.6 and 4.11. These trends helped to formulate four functionality criteria (see Table 5.7, Ubiquitous category), which participants were subsequently requested to validate. The results are summarised in Table 7.7.

<b>Table 7.7: Ubiquitous: functionality validation findings</b>			
<b>User feedback</b>	<b>Average interview rating</b>	<b>Average survey rating</b>	<b>Category average rating</b>
1. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions.			
The participants' demographic details outlined in section 7.3 reveal that they use multiple devices when accessing the Internet. This could therefore be attributed to the average rating of 4.4 that this functionality trend yielded, as	4.5	4.41	<b>4.4</b>

participants agreed there is a need to me made aware of other forms of banking they could utilise based on their context of use at any point in time.			
<b>2. Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet.</b>			
The literature (section 4.6.2) reveals that four out of five of the big banks in South Africa have developed a banking app in order for their customers to access transactional banking from the convenience of their smartphone. This is indeed a sought after need, that participants believe should be made prominent and provided a download direction for on Internet banking platforms. Coming in at an average rating of 4.6, just below the strongly agree mark, users believe they need to be provided with exposure to available banking apps on Internet banking platforms.	4.83	4.33	<b>4.6</b>
<b>3. Facilitate the accessing and requesting of account and service information on various social networking websites such as Facebook and Twitter.</b>			
Concerns were raised regarding the presence of this type of functionality on the Internet banking platform. This category saw an average rating of 2, as participants believed this platform comprised of a lot of personal and private information that should not be shared on social media platforms.	1.67	2.37	<b>2</b>
<b>4. Facilitate the sharing of certain financial information on a social networking website of their choice.</b>			
Much like accessing and requesting account and service information on social networks, participants indicated that they are also not comfortable sharing any financial information on these platforms. This is proven by an overall average of 1.9, just below the disagree rating that this trend yielded.	1.5	2.24	<b>1.9</b>
<b>OVERALL CATEGORY AVERAGE</b>			<b>3.2</b> (Rounded off to: 'Neither agree nor disagree with proposed functionality')

### 7.8.1 Follow-up question: Information to share on social media platforms

As a follow up question, participants were asked what type of financial information, accessed from an Internet banking platform they would be willing to share on social media networks, as it is acknowledged that most information on Internet banking is somewhat private. This question yielded the majority of users communicating that they would not be comfortable sharing *any* information at all on social media platforms. As this question was presented in open-ended format, feedback from both sets of participants has been summarised into the below categories, in order to encapsulate the varying feedback.

- *Reluctance to share.* Generally, participants were not enthusiastic about the idea of having any type of information been made available on social networking websites. Security and privacy concerns informed this response, as most users strongly believe the Internet banking platform holds highly confidential and personal information.
- *Sharing of generic financial information.* Users who were willing to incorporate social sharing functionality on the platform firmly communicated that the type of information made available for this purpose should be generic and not at all associated with their financial status.

Below is a view of some of the participant responses, accommodating both these categories of responses.

<b>Table 7.8</b> Type of financial information to share on social media networks– Interview and online survey responses	
<b>What type of financial information would you openly share on social networking websites?</b>	
<b>No financial information</b>	<b>Generic financial information</b>
<p><i>“I wouldn't share anything on a social networking website - too risky in terms of security”.</i></p> <p><i>“I don't think social networks are a place for banking”.</i></p> <p><i>“None. This is South Africa!”</i></p> <p><i>“The finances are private even the bank statement cannot be shared openly”.</i></p> <p><i>“I think mixing the social and banking platforms would give rise to people sharing information that they shouldn't have shared publicly. The two should remain separate”.</i></p> <p><i>“I wouldn't want to share any financial information with anyone what-so-ever. Too much room for mistakenly publishing private information”.</i></p> <p><i>“NOTHING!”</i></p>	<p><i>“Financial articles, a cool tool, maybe be able to pay my Facebook friends, but not share my account balance”.</i></p> <p><i>“Educational stuff like how to protect your PIN from Internet hackers and maybe how to pay your bills without leaving your house”.</i></p> <p><i>“For an example if you are planning to save money over a long period of time, what are the pros and cons and which product would the bank best advise one to use”.</i></p>

In summary, it can be concluded that functionality trends presented under this attribute came in at an average rating of 3.2, just above the neither agree nor disagree range. Even though this type of rating may indicate inconclusive results for the attribute as a whole, very strong perceptions are communicated when each trend is looked at individually. Generally, users welcome the idea of



being made aware of, and given immediate access to other forms of banking on their Internet banking website. There is however a very strong reluctance to share and request account and service information on social media platforms like the notion of social banking suggests.

### 7.9 Internet banking functionality validation findings: Personal

In his explanation, Hesse (2011) explains that the personal attribute represents a projected direction that will enable functionality on digital financial services to be relevant and cater for unique customer needs without being a one size fits all solution. Based on these projections, the literature revealed a functionality category that could be closely aligned to the personal attribute. This category is *personalisation*, and from it, functionality trends have been gathered in section 4.7. From these trends, five functionality criteria prevailed (see Table 5.7, Personal category), which participants were prompted to validate. Table 7.9 below summarises the results.

<b>Table 7.9: Personal: functionality validation findings</b>			
<b>User feedback</b>	<b>Average interview rating</b>	<b>Average survey rating</b>	<b>Category average rating</b>
1. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.			
Rating at an average of 3.8, just below the agreement mark, participants are keen to having personalised promotions based on what the bank deems they qualify for. In addition to banking products being marketed to them, participants also expressed an interest in the bank promoting products that are not necessarily related to banking (e.g. smartphones and tablet devices). These users believed that the bank is in touch with their broader needs, and is striving to make the different parts of their lives as efficient as possible.	3.67	3.9	<b>3.8</b>
2. Facilitate the customisation of the website in a manner that suits the user's preferences such as changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.			
The customisation functionality trend averaged at 3.6, just below the agreement mark. An interesting observation was that users were not too keen on the colour and theme customisation aspect of the interface as the trend suggests. To them the Internet banking platform needs to maintain a certain level of formality which they feel would be eliminated if the user were to change the interface design. Participants stated that they would rather be able to customise certain products like selecting their own credit or debit card image. They maintain that this would be more personal than changing the background of their transacting platform. Others suggested interface customisation such as rearranging the order of navigation items, or selecting which web parts they would like to see on a particular page as a better alternative.	3.67	3.58	<b>3.6</b>

3. Support the user by providing specific links that are based on their previous interactions and how they are most likely to interact in the future (E.g.: If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage so that the user can access them straight away).			
With an overall average of 4, an agreement rating, the notion of most accessed quick links was generally accepted by the participants, who communicated the time-saving capabilities this type of function may present.	3.75	4.17	<b>4</b>
4. Create different navigation paths for different users with or without certain products (E.g.: If a user has a home loan with the bank, a navigation link that promotes homeowner’s insurance could be provided for this user. However, should a user not have a home loan to begin with, the homeowner’s insurance navigation link should not be shown at all).			
Participants were a bit more cautious when it came to rating the creation of different navigation paths based on the types of product they may or may not have. With an average rating of 3.6, below the agreement range, participants communicated that they do not want to feel as though they are not seeing the same type of content as everyone else, because of the fear of “missing out on anything”. Although they recognise the value of having personalised sections of the site based on their unique profile, they prefer this action to be controlled by them, and not “forced on” them by the bank.	3.33	3.94	<b>3.6</b>
5. Make the tone and character more modern and relevant for the younger, more techno-savvy client.			
Generally agreeing with this trend (average rating of 4), participants communicated the importance of a bank still sounding like a bank. They stated that it is important for them that the information provided is free of jargon so that they can easily understand it; however, banks should still retain an advisory role in relation to the user, even if this is communicated in a more relaxed fashion.	3.33	3.94	<b>4</b>
<b>OVERALL CATEGORY AVERAGE</b>			<b>3.8</b> (Rounded off to: ‘Agree with proposed functionality’)

With an average rating of 3.8, that can be rounded off to the ‘agreement’ rating, the participants’ perception of these functionality trends needed to be closely assessed. Although participants generally feel this could be a functionality type that adds value, it is very important to make certain that they have full control of the personalisation aspect of the Internet platform, so that they can choose their preferences. Failure to do this may result in users feeling that they do not have a comprehensive or ‘default’ view of the site, thus leaving them wondering what they are not seeing that other users are. Although a less formal and intimidating tone is appreciated, users voiced the importance of a bank still taking an authoritative role, even if this is presented in a light-hearted manner.

## 7.10 Internet banking functionality validation findings: Empowerment

Table 7.4 explains the empowerment attribute as a projected direction that will permit functionality on financial online platforms to provide customers with an aggregated view of their financial information, in order to allow them to take action by themselves, thus managing their financial lives better.

This attribute aligned with the *personal financial management* functionality category, with specific functionality trends supporting the category in section 4.5. From this, eleven functionality criteria prevailed (see Table 5.7, Empowering category). These were then extended to participants for validation. Table 7.10 depicts the validation results.

<b>Table 7.10: Empowerment: functionality validation findings</b>			
<b>User feedback</b>	<b>Average interview rating</b>	<b>Average survey rating</b>	<b>Category average rating</b>
1. Provide users with a real-time, consolidated view of their financial life by showing them, on a single screen, all their financial accounts across the different financial services providers.			
Summary following this table details consolidated user feedback.	4.33	4.29	<b>4.3</b>
2. Estimate the value of user's assets and liabilities by providing them with a single view of their financial worth.			
Summary following this table details consolidated user feedback.	4.33	4.32	<b>4.3</b>
3. Allow users to track their spending over a period of time.			
Summary following this table details consolidated user feedback.	4.83	4.51	<b>4.7</b>
4. Assist users by categorising their spending and transactions (i.e. users can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns.			
Summary following this table details consolidated user feedback.	4.42	4.35	<b>4.4</b>
5. Assist users in creating an online budget.			
Summary following this table details consolidated user feedback.	4.4	4.31	<b>4.4</b>
6. Facilitate users in creating savings targets to assist them in reaching certain financial targets.			
Summary following this table details consolidated user feedback.	4.5	4.46	<b>4.5</b>
7. Provide alerts and notifications to assist users reach their financial goals (e.g. If a user is aiming to only spend R 1000 on entertainment per month, send them a notification when they are about to go over their limit).			
Summary following this table details consolidated user feedback.	4.5	4.42	<b>4.5</b>
8. Educate users on their financial standing and how they can improve (i.e. personalised calculators).			
Summary following this table details consolidated user feedback.	4.58	4.38	<b>4.5</b>
9. Provide savings tips that assist the user in reaching a specific goal or target			

Summary following this table details consolidated user feedback.	4.42	4.33	<b>4.4</b>
10. Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group			
Coming in at an overall average of 3.5, just below the agreement range, this functionality yielded a higher score compared to the social media information sharing rating found in Table 7.8. Although this was the case, most participants still expressed a sense of unease about the functionality. They explain that they regard Internet banking as a personal space, and although this functionality would be anonymous, they would have to get over the mental barrier of being even indirectly able to take a peek at someone else's financial standing.	3.5	3.6	<b>3.5</b>
11. Encourage users to take immediate action on a particular goal (e.g. apply for an investment account, recommend a product, etc.)			
Summary following this table details consolidated user feedback.	3.92	4.17	<b>4</b>
<b>OVERALL CATEGORY AVERAGE</b>			<b>4.6</b> (Rounded off to: 'Strongly agree with proposed functionality')

With an average rating of 4.6 that can be rounded off to the 'strongly agree' rating, participants accepted the functionality projections recommended within this attribute. Section 7.4.7 earlier revealed that some of the participants feel that this platform needs to offer more than just transactional capabilities and suggested budget and account monitoring services. The functionality outlined here therefore exposed participants to what some of them expressed as a different level of capabilities captured in comments like *"I didn't think of that"*.

With the introduction of personal financial management platforms like 22seven in South Africa (see section 4.5.4), participants communicated that the idea of aggregating one's financial details on a third party website still raises security and privacy concerns. It is for this reason that they would rather have this type of functionality on Internet banking platform of their own bank, as there is already a long-term, established feeling of trust.

With regard to anonymously benchmarking their spending patterns to those of users in the same peer group, participants still expressed a certain level of discomfort, even though the overall rating was much higher than that of incorporating social media capabilities in Table 7.7. They stated that this was still a foreign concept to them, and the idea of being able to take a 'sneak peek' into someone else's financial standing was unsettling.

## 7.11 Internet banking functionality validation findings: Reassuring

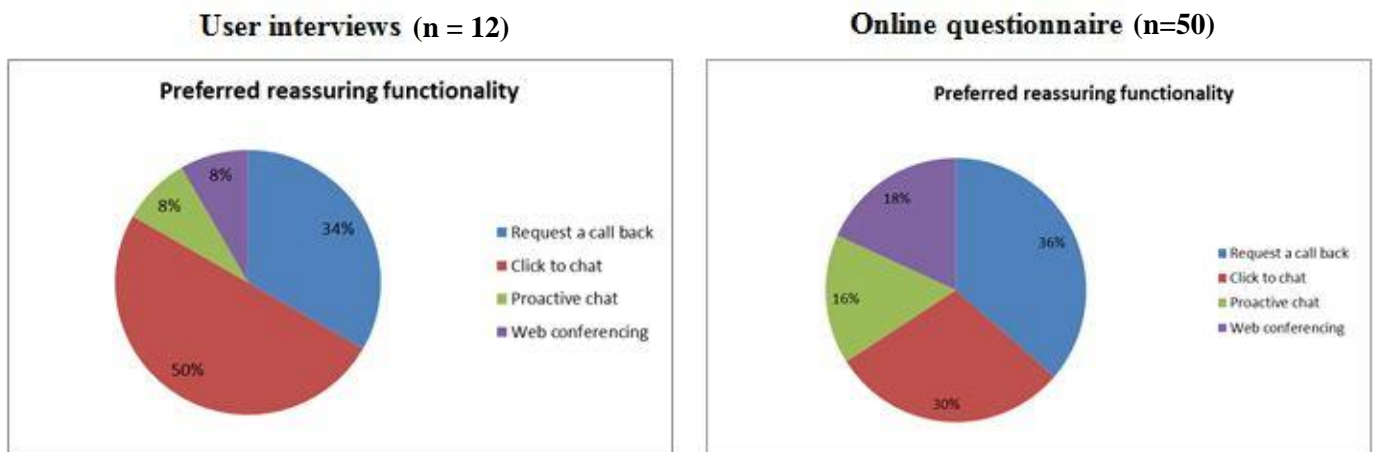
The value of human interaction, even on online platforms, remains a vital aspect of sales and service (Hesse 2011); a notion that the reassuring attribute represents in the digital financial services of the future. This attribute accurately aligned with the functionality category of *human touch* identified in the literature. Trends supporting this functionality category are outlined in section 4.10 and, from this, five functionality criteria were identified (see Table 5.7, Reassuring category) and extended to participants for validation. Table 7.11 summarises the participants' feedback.

<b>User feedback</b>	<b>Average interview rating</b>	<b>Average survey rating</b>	<b>Category average rating</b>
1. Allow users to enter their contact details into input fields on a page, and have a representative of the bank contact them (request a call back).	3.5	4.02	<b>3.8</b>
2. Allow the user to start a chat session with the bank by clicking on a link that opens a chat window on the screen (click to chat).	3.67	4.11	<b>3.9</b>
3. Trigger a chat invitation based on a set of predefined user behaviours on the page (e.g. if a user has spent more than five minutes on a page, the website will automatically open a chat window with a bank representative who can offer to the user on any question or uncertainty they may have) (proactive chat).	2.5	3.65	<b>3</b>
4. Provide chat functionality with additional video capability for the user to be able to see the representative from the bank (Web conferencing).	2.92	3.65	<b>3.2</b>
5. Allow users to receive and send personal messages to the bank.	3.25	3.63	<b>3.4</b>
<b>OVERALL CATEGORY AVERAGE</b>			<b>3.5</b> (Rounded off to: 'Agree with proposed functionality')

Generally, users welcomed the idea of having access to immediate online help while transacting, but communicated strong preferences about how they believe this should be executed. With an overall average of 3.5 that can be rounded off to the 'agreement' range, users expressed a key interest in two out of the four reassuring functionality types they were request to validate. The four functionality types presented to them were 'request a call back', 'click to chat', 'proactive chat' and 'web conferencing'.

After having been exposed to and rating the different reassuring functionality types, users were requested to indicate which of those they preferred and why. Two types of reassuring functionality rated the highest (also depicted in Figure 7.7):

1. *Click to chat* (50% rating from user interview and 30% from online survey participants)
2. *Request a call back* (34% rating from user interview and 36% from online survey participants)



**Figure 7.7:** Reassuring functionality preferred by users

Please note that allowing users to communicate with the bank by sending and receiving personal messages is a trend that is already being implemented by some local banks (section 4.10.3).

Participants were therefore not requested to indicate a preference for this particular functionality as it should be incorporated as a default feature of the Internet banking platform.

When asked to substantiate their preference in the form of an open-ended response, participants provided the following feedback which can be summarised into two main categories:

1. *Access to instant online human assistance that is not intrusive (click to chat).* Participants who expressed interest in the click-to-chat functionality were mainly attracted by the instant nature of the functionality, because they do not have to wait for correspondence from the bank. This functionality type was preferred over the Web conferencing option, as users felt that the latter to be more invasive. They expressed that as much as instant help is a key need, they do not need to see the bank operator on the other side, as this would somehow infringe

their privacy, especially considering the private nature of the Internet banking platform. They regard anonymity as being key in this regard.

2. *Assurance of contact with actual human being (request a call back).* The common thread across all participants who preferred this reassuring functionality showed that speaking to an actual human being from the bank is more reassuring compared to being assisted online. Although this functionality is not as instant as the click-to-chat, in this regard participants were reassured by the fact that there would be no chance of a system generated assistant being on the other side of the telephone line.

Table 7.12 gives an account of the actual comments from users.

<b>Table 7.12 Preferred reassuring functionality: Interview and online survey responses</b>	
<b>Please elaborate on why you prefer this type of reassuring functionality</b>	
<b>Click-to-chat</b>	<b>Request a call back</b>
<p><i>“I prefer immediate chat that is not intrusive, and can also accommodate slow connection speed (without video).”</i></p> <p><i>“Call back is delayed. If I need help I need it in real time.”</i></p> <p><i>“I can choose when I want to chat, and not have to wait for bank to call at a time that I do not know”</i>  <i>“I don’t want them to see me, it’s too private.”</i></p> <p><i>“It is not invasive, and gives me the immediate access to a banker. I don’t want to wait in order for someone to call me back.”</i></p>	<p><i>“I prefer direct human contact, and not a generated response.”</i></p> <p><i>“I would prefer a telephonic conversation with a banking professional who would be able to hear and understand the serious tone or desperation in the tone of my voice, machine can’t do this.”</i></p> <p><i>“I prefer a recordable call rather than chat/web conferencing that you cannot always save for record purposes.”</i></p> <p><i>“It’s more comforting to speak to someone personally, you are not sure if you are speaking to machine or not with other ones.”</i></p>

## 7.12 Post-survey input

After validating the projected functionality, participants were requested to complete a survey that was intended to gather the perceptions they had of their current Internet banking platform, after being exposed to the functionality concepts contained in the survey. In addition, this section also aimed to identify additional functionality trends that were missed by the literature, but deemed as innovative by Generation-Y participants.

Generally, participants were satisfied with the functionality recommendations made thus far in the study, and believed this would take the online transactional platform to another level. Although there is functionality on their current Internet banking platforms they described as ‘impressive’, they also mentioned that it was not as innovative as that which is proposed in this study.

Participating in the study also enabled the participants to formulate views on the role they believe their Internet banking platform should play over and above basic transactional capabilities. Section 7.12.1 to 7.12.4 discuss all these aspects in detail.

### **7.12.1 Additional Internet banking functionality requested by users**

Participants were asked to list additional functionality they would like to access on future Internet banking platforms. They generally felt that most innovation had been covered during the validation, but those that did give input made suggestions that could be divided into three main categories. This question was presented in open-ended format.

1. *Financial aggregation.* Participants referred to the financial aggregation website, 22seven, which has recently been launched in South Africa and stated that having a consolidated view of one’s finances on one’s Internet banking website would not only add value, but would also result in them spending more time on the platform.
2. *Education.* Other participants made reference to incorporating financial education mechanisms that not only allude to the product information they have, but also proactively recommend free financial skills (e.g. online share trading/stock investment tutorials) they can acquire online.
3. *Transactional.* Other input gathered alluded to enhancing transactional capabilities already on the platform. Participants recommended being able to edit or stop a submitted transaction, as well as being able to create different ‘pockets’ for their money under a single account. This particular participant responded: “*Almost like pockets in my jeans, so that I can allocate money in one account to different purposes. I don't want to have to open different accounts for different reasons like petty cash, savings, day to day banking etc.*”



### **7.12.2 Functionality that represents innovation on current Internet banking platforms**

Participants were then asked to list functionality on their current Internet banking platform that they believe is innovative. This was in order to identify innovation currently taking place that users believe should be the norm for future transacting platforms. This question was also presented in an open-ended format and yielded the input categorised below.

1. *Log in without using bank details.* Participants stated that it is much more convenient to log into the platform using one's selected username and password, rather than always remembering the long card number and customer selected pin.
2. *App based banking.* There is also a strong association between Internet banking and app banking. Participants regard these two services as being complementary to each other. They stated that having an extension of their transacting platform on a mobile device is a key function that all banks should always have.
3. *Changing of daily transaction limit.* Some of the participants stated that their bank allows them to change transaction limits once a day, without having to go to the bank. This is an innovation they want to see extended.
4. *Non-banking product-related cross-selling.* Participants perceived the ability of banks to strike partnerships with other organisations in order to offer banking customers savings on other products not related to banking as being innovative. Participants felt that having offers like smartphones and tablets presented to them on this platform is an innovation that should always be present.
5. *Rewards and loyalty programme.* They also stated that being offered loyalty points (e.g. FNB's e-Bucks and Nedbank's Greenbacks) that can be viewed and managed on the online transaction platform is convenient and means that they can see the value of being with the institution.
6. *Geo-located payment.* Participants also stated that the geo-payment functionality where users can make payments to anyone near them who has a compatible handset, and not necessarily belonging to the same bank, is also an innovation worth extending. This is made

possible through the use of Near Field Communication (NFC) technology. Although this is purely a smartphone phone functionality for now (offered by FNB Bank), they contended that all transactional banking related innovations should be explained on the Internet banking platform, and the platform should help users to activate it on other platforms.

### 7.12.3 Functionality rating on current Intranet banking websites

Participants were then asked, now that they were aware of the capabilities this platform could fulfil, to rate the functionality offered on their current Internet banking platform. On a rating scale of -3 to 3, with -3 being bad, and 3 being good, the average response from both groups of participants yielded a 1.08 average. This is a neutral average that suggests that a lot more improvement could be implemented on the platform. When asked to substantiate their rating, the common thread throughout all responses was that their platform caters for most of their basic transactional needs, but a lot more could be incorporated to help them gain better control over their finances.

### 7.12.4 The role of Internet banking

Participants were then asked to state what role they believe the Internet banking platform of the future should play in their financial lives. Varying responses were provided by users in an open-ended fashion, with the common thread being that of a *financial coach*. Participants expressed that the platform should help them to organise their finances better, and provide them with hints on how to get ahead financially. Table 7.13 captures some of the participants' inputs.

<b>Table 7.13</b> The role of the Internet banking platform of the future
<b>If you were to describe the role Internet banking should play in your financial life, what would this be?</b>
<i>“Advisory role by offering financial management tips.”</i>
<i>“It should assist in my financial decisions – budgeting, tracking and saving.”</i>
<i>“A manager of my financial life.”</i>
<i>“Online financial advisor in a click.”</i>
<i>“It should be a good teacher.”</i>
<i>“It should be there to guide you not only for payments, but rather more in investing money because most of people don’t invest for retirement purposes.”</i>
<i>“Financial advisory partner.”</i>

*“It should be my Financial Adviser I can access at any time.”*

*“Like a financial adviser making my life simpler, looking out for my needs, advising me on the right choices and optimising my experience.”*

*“My financial advisor & protector of my financial interests & future.”*

*“It should be my A-Z of banking. I should be able to do everything and anything I want from the website. It should allow me to set limits and goals, and then it should alert me when I’m close to them.”*

*“It should advise me on the monthly spending and how to avoid unnecessary transitional fees.”*

*“To be my (financial) PA.”*

### **7.13 Measuring the reliability of the research**

Section 6.4 details the research design of the study, and outlines how each phase of the study was designed to inform the next. Given this, the functionality guidelines presented to participants at this point in the study played an important role in setting the tone around the type of functionality that would be presented and further validated in later stages of the study (i.e. during the heuristic evaluation in Chapter 8, and functionality validation in Chapter 9).

It was therefore important to statistically validate and understand how reliable the functionality concepts or constructs formulated and presented to participants were. Reliability is the consistency of the measurement, or the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects (Golafshani 2003).

To help measure this reliability across all questions presented, a statistician was contracted to analyse this aspect of the study specifically. The statistician used Cronbach’s alpha, a tool for measuring the numerical coefficient of reliability values, to achieve the detailed level of analysis. According to Santos (1999), the overall Cronbach’s alpha value for reliability can be interpreted as follows:

- Cronbach’s alpha above 0.8 – good reliability
- Cronbach’s alpha between 0.6 and 0.8 – acceptable reliability
- Cronbach’s alpha below 0.6 – low reliability
- Other authors use another cut-off of 0.7, as suggested by Nunnally (1978), for acceptable reliability

The statistician analysed five constructs collectively; each representative of the functionality categories (i.e. Simple, Ubiquitous, Personal, Empowering and Reassuring) as presented to users during the online survey.

Although the average reliability score across all constructs averaged a Cronbach’s alpha score of 0.6897, which is within the acceptable reliability range, individual constructs from the Simple and Ubiquitous categories were in the low reliability range. The functionality guidelines within these two constructs (see Table 10.2 and Table 10.3) should therefore be applied with caution as explained in Section 10.3. Appendix F gives the detailed statistical analysis and results across all five constructs.

### 7.14 Average rating of the five functionality categories

The preceding sections focused on the Internet banking functionality validation as presented to Generation-Y users during the online survey and the interview stages of the study. A wide range of functionality insights were gathered, stipulating the thoughts users have on how the proposed functionality should be carried out on Internet banking platforms of the future.

This section provides a summary of the way the five main functionality categories (SUPER), as presented by Hesse (2011), rated during the user validation sessions; it also presents the detailed validated functionality that should be presented on the platform. Table 7.14 depicts the average rating of, as well as high level feedback on, the five main functionality categories (SUPER) presented to participants.

Table 7.14 Average ratings: functionality categories		
Functionality category	Average rating	General feedback
<b>Empowerment:</b> A projected direction that will permit functionality on financial online platforms to provide customers with an aggregated view of their financial information, in order to allow them to take action by themselves thus better managing their financial lives.	<b>4.6</b> (Rounded off to: ‘Strongly agree with proposed functionality’)	Participants most welcomed functionality projections recommended within this attribute. Section 7.4.7 earlier revealed that some of the participants felt this platform needed to offer more than just transactional capabilities; budget and account monitoring services should also be offered. Functionality outlined here therefore exposed participants to what some of them expressed as different level of capabilities; this was captured in comments like “ <i>I didn’t think of that</i> ” (refer section 7.10).

<p><b>Simple:</b> A projected direction that will enable functionality on digital financial services that will make it easier for customers to achieve otherwise difficult goals and tasks.</p>	<p><b>4.2</b> (Rounded off to: 'Agree with proposed functionality')</p>	<p>An expectation among participants is that the Internet banking platform of the future should as far as possible, automate and simplify their financial transactions and information. There should however be no compromise on security. Even though more convenient ways of administering transactions can be introduced, they still want to be reassured that their money is adequately protected (refer section 7.7).</p>
<p><b>Personal:</b> A projected direction that will enable functionality on digital financial services to be relevant and cater for unique customer needs without being a one-size-fits-all solution.</p>	<p><b>3.8</b> (Rounded off to: 'Agree with proposed functionality')</p>	<p>Although participants generally feel this could be a type of functionality that adds value, it is very important to make certain that they have full control of the personalisation aspect of the Internet platform, so that they may choose their preferences. Failure to do this may result in users feeling that they do not have a comprehensive or 'default' view of the site, thus leaving them wondering what are they not seeing that other users are (refer section 7.9).</p>
<p><b>Reassuring:</b> A category advocating that human interaction, even on online platforms, remains a vital aspect of sales and service.</p>	<p><b>3.5</b> (Rounded off to: 'Agree with proposed functionality')</p>	<p>Users welcomed the idea of having access to immediate online help while transacting, but communicated strong preferences around how they believe this should be executed. They rated the 'click to chat' and the 'request a call back' functionality as being most preferred, as these are not intrusive and add a personal touch to the conversation (refer section 7.11).</p>
<p><b>Ubiquitous:</b> A projected direction stating that functionality on digital financial services will enable customers to interact seamlessly with their financial service provider across a number of platforms and devices, while still having a consistent experience regardless of what they choose.</p>	<p><b>3.2</b> (Rounded off to: 'Neither agree nor disagree with proposed functionality')</p>	<p>Generally, users welcome the idea of being made aware of, and given immediate access to other forms of banking on their Internet banking website. There is, however, a very strong reluctance to share and request account and service information on social media platforms as the notion of social banking suggests (refer section 7.8).</p>

## 7.15 Validated Internet banking functionality guidelines

This section provides a detailed, consolidated list of the validation feedback, along with considerations to take note of when this functionality is implemented. This list also includes additional functionality recommendations made by the users. A functionality acceptance key has been used to indicate the level of satisfaction participants conveyed on each functionality type. This key is explained below, and will be used as an indicator on Tables 7.15-7.20 to follow.

**Functionality acceptance key:**

- ✓ = Accepted without specific considerations
- ✓ = Accepted with specific implementation considerations
- ✗ = Not accepted by participants

<b>Table 7.15</b> Simple: validated functionality listing			
<b>Simple (section 7.7)</b>	<b>Average rating</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Offer tools that assist users in simplifying difficult tasks, such as applying for certain products (i.e. offer step-by-step guides, product wizards, calculators, etc.).	4.5	✓	None communicated by participants.
2. Pre-fill applications or any online process that requires users to capture their personal details (e.g. if the bank already has the user’s personal details, they should automatically populate these to a certain extend on an online application form, rather than the user having to fill in all these details from scratch).	4.5	✓	None communicated by participants.
3. Automate transactions from start to finish by allowing users to complete transactions without having to request assistance from the bank, or go into a bank branch.	4.4	✓	None communicated by participants.
4. Present difficult-to-understand content in innovative ways like using videos, audio clips, online games, polls, etc.	4.2	✓	None communicated by participants.
5. Offer e-signatures to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan.	3.6	✓	To be implemented with additional security measure in on the transacting platform. This can be in any form, an OTP, or ability to report discrepancies. As much as participants are in favour of convenience and automation, they still deem it very important to keep a certain level of security, and a physical, handwritten signature is one such security measure.

<b>Ubiquitous (section 7.8)</b>	<b>Average rating</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions.	4.4	✓	None communicated by participants.
2. Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet.	4.6	✓	None communicated by participants.
3. Facilitate the accessing and requesting of account and service information on various social networking websites such as Facebook and Twitter.	2	✗	Not to be included as a functionality guideline owing to privacy and security concerns. Users are reluctant to have this functionality on their Internet banking platform.
4. Facilitate the sharing of certain financial information on a social networking website of their choice.	1.9	✗	Not to be included as functionality guideline, due to privacy and security concerns. Users are reluctant to have this functionality on their Internet banking platform.

<b>Personal (section 7.9)</b>	<b>Average rating</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Make the tone and character more modern and relevant while not compromising the somewhat serious nature of an Internet banking website.	4	✓	Implement so that content is free of jargon; however, a bank should still retain an advisory role in relation to the user, even if this is communicated in a more relaxed fashion.
2. Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (e.g. if a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage so that a user can access them straightaway).	4	✓	None communicated by participants.
3. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	3.8	✓	Also promote products that are not necessarily related to banking (e.g. smartphones and tablet devices). This communicates to users that the bank is in touch with their broader needs, and strives to make the different parts of their lives as efficient as possible.

4. Facilitate the customisation of the website in a manner that suits the user's preferences such as changing the website layout, colour and language, hiding and removing tabs, bookmarking certain sections, etc.	3.6	✓	Make all customisation optional. Users are not too keen on the colour and theme customisation aspect of the interface. They believe that the Internet banking platform needs to maintain a certain level of formality and that this would be eliminated by the drastic change in design. Rather implement interface customisation such as rearranging the order of navigation items, or selecting which Web parts to see on a particular page as a better alternative.
5. Create different navigation paths for different users with or without certain products (e.g. if a user has a home loan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a home loan to begin with, the homeowners insurance navigation link should not be shown at all).	3.6	✓	To be implemented in a manner that does not alter the default view of the interface. Participants stated that they do not want to feel as though they are not seeing the same type of content as everyone else, due to the fear of 'missing out on something'.

<b>Empowering (section 7.10)</b>	<b>Average rating</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Allow users to track their spending over a period of time.	4.7	✓	None communicated by participants.
2. Assist users in creating an online budget.	4.4	✓	None communicated by participants.
3. Facilitate users' setting of savings targets to assist them in reaching certain financial targets.	4.5	✓	None communicated by participants.
4. Provide alerts and notifications to assist users in reaching their financial goals (e.g. if a user is aiming to only spend R1000 on entertainment per month, send them a notification when they are about to go over their limit).	4.5	✓	None communicated by participants.
5. Educate users on their financial standing and how they can improve it (i.e. personalised calculators).	4.5	✓	None communicated by participants.
6. Assist users in categorising their spending and transactions (i.e. users can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in	4.4	✓	None communicated by participants.



order to track and monitor specific spending patterns.			
7. Provide savings tips that assist users in reaching a specific goal or target.	4.4	✓	None communicated by participants.
8. Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers.	4.3	✓	None communicated by participants.
9. Estimate the value of users' assets and liabilities by providing them with a view of their financial worth.	4.3	✓	None communicated by participants.
10. Encourage users to take immediate action on a particular goal (e.g. apply for an investment account, recommend a product, etc.).	4	✓	None communicated by participants.
11. Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group.	3.5	✗	Although this is rated higher than the social media banking functionality category, users expressed a sense of unease with the ability to take what they termed 'sneak peak' into other people's finance.

<b>Table 7.19</b> Reassuring: validated functionality listing			
<b>Reassuring (section 7.11)</b>	<b>Average rating</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Allow the user to start a chat session with the bank by clicking a link that opens a chat window on the screen (click to chat).	3.9	✓	None communicated by participants.
2. Allow users to give their contact details in the input fields on a page, and a have representative from the bank contact them (request a call back).	3.8	✓	None communicated by participants.
3. Allow users to receive and send personal messages to the bank.	3.4	✓	None communicated by participants.
4. Provide chat functionality with additional video capability for the user to be able to see the representative from the bank (Web conferencing).	3.2	✗	Due to the private nature of Internet banking platform, users stated that seeing an online bank assistant would feel invasive and infringe on their privacy on the platform.
5. Trigger a chat invitation based on a set of predefined user behaviours on the page (e.g. if a user has spent more than five minutes on a page, the website would then automatically open a chat window, with the bank's representative	3	✗	This functionality is perceived as intrusive by users, as they do not have control of when to invite a banking assistant to join in during their interaction on the site.

offering to assist the user with any question or uncertainty they may have) (proactive chat).			
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<b>Participant generated functionality description (sections 7.12.1–7.12.2)</b>	<b>Acceptance key</b>	<b>Specific implementation consideration(s)</b>
1. Offer financial aggregation technology that will pull in different financial data sources in order to provide users with a holistic view of their finances.	✓	Covered as part of the ‘Empowering’ functionality requirements (Functionality 1, Table 7.9).
2. Proactively offer financial education that does not necessarily allude to products that users have, but rather give a fresh view that will help users acquire financial skills.	✓	None communicated by participants.
3. Provide a mechanism whereby users are able to partition their financial account into ‘pockets’ that can be assigned to different monetary purposes.	✓	None communicated by participants.
4. Allow users to log onto Internet banking without using their bank details, such as card number and customer selected pin, but rather prompt them to create their own login information.	✓	None communicated by participants.
5. Offer an Internet banking version that is compatible with the use of mobile devices.	✓	Covered as part of the ‘Ubiquitous’ functionality requirements (Functionality 2, Table 7.7).
6. Provide users with structured so that they can change certain transactional limits without having to visit a physical bank branch.	✓	Covered as part of the ‘Simple’ functionality requirements (Functionality 1, Table 7.6).
7. Form partnerships with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate to online banking customer.	✓	None communicated by participants.
8. Create a loyalty programme where users are able to accumulate rewards for using the bank’s products. Allow users to track and use these rewards on the Internet banking platform.	✓	None communicated by participants.
9. Educate users about NFC technology, whereby they are able to make payments to anyone near them who has a compatible handset, and not necessarily belonging to the same bank.	✓	None communicated by participants.

## 7.16 Summary

The main objective of this chapter was to validate the literature-gathered Internet banking functionality guidelines with representative Generation-Y users. The chapter began by describing the profile of users who took part in the interviews and online surveys, outlining their demographics as being similar to those of Generation-Y which were identified in the literature. The chapter then exposed the ideas these users currently have of their Internet banking platform. Their input revealed that they are most happy with the basic transactional capabilities this platform offers them. Even though this is the case, it is acknowledged that the functionality on this platform could potentially be improved by providing them with the ability to manage their financial lives better.

This was further supported by the users stating that the platform should be playing the role of a *financial adviser*, which they believe it currently does not do. The chapter discovered that Internet banking is appreciated by users because of the convenience it affords them. When asked about their least favourite aspect of the platform, lack of process automation, account integration, mobility and financial education come up. Users also highlighted generic irritations like technical errors and fraudulent activity as disadvantages of this transacting platform.

The chapter then gave an overview of the functionality guidelines identified in the literature (Chapters 3 and 4), and re-examined the Generation-Y characteristics these are aligned to. The results of the functionality validation were then presented, using the five functionality categories (Simple, Ubiquitous, Personal, Empowerment; Reassuring) as presented in the literature. From these results, it was identified that Generation-Y users are keen to see the transformation of the platform into a money aggregation website, where they would be able to gain a better view of, and manage, their financial lives more efficiently.

The participants expect simplified processes and information on the platform, whilst maintaining the same level of security they know and trust. Although they welcome the idea of making the platform more customised according to their needs; this functionality should be made optional for users. They also welcome the idea of having direct human contact on the platform, with the 'click-to-chat' and 'request a call back' functionality being the most preferred. They most welcome the idea of being notified about other channels of banking; however, being able to undertake their banking on social networking websites, as the notion of social banking suggests, is unsettling for them.

Participants are looking to this platform to start offering more than just banking solutions; it should also look at other aspects of their lives. They are expecting the Internet banking website to offer financial education in general, as well as make them product offers not necessarily related to banking. They are also looking for full process automation, where they would be able to perform actions that currently require a visit to the branch.

For the participants, the Internet banking platform is an extension of other electronically based methods of banking, and thus on this platform they want to be made aware of all innovation available across a number of platforms and devices. In addition, through reward programmes they want the bank to recognise them as loyal customers in appreciation for choosing to bank with them.

In support of the outlined functionality validation results, the chapter further reported on the statistical validation performed on the five functionality categories (SUPER), outlining the average acceptable reliability rating across all categories.

This user validated set of functionality guidelines will now be treated as heuristics for the evaluation of functionality on five South African Internet banking platforms. The results of this evaluation are presented in the next chapter.

## **Chapter 8: Research findings: Heuristic evaluation of current South African Internet banking websites**

### **8.1 Introduction**

The previous chapter validated innovative Internet banking functionality guidelines as recommended by representative Generation-Y users. These guidelines were used to formulate a list of heuristics for inspecting the Internet banking websites of five South African banks (Standard Bank, FNB, ABSA, Nedbank and Capitec). This was in order to examine the extent to which the banks meet the functionality guidelines and demonstrate innovation. The heuristic evaluation was performed by five professionals in the field of User Experience (UX). This chapter presents the results of this heuristic examination as performed by the UX professionals, outlining how each website rated against the heuristics that were identified. The chapter also extracts additional functionality guidelines found on the respective Internet banking websites, not covered by the heuristics, that the expert evaluators believe contribute to the futuristic functionality of the Internet banking platform.

Section 8.2 starts by explaining what a heuristic evaluation is, while section 8.3 looks briefly at the evaluation process followed by the five evaluators. This section also provides an overview of the six functionality categories of evaluation in which the different heuristics were outlined. Section 8.4 then details the evaluation results for each functionality category. Section 8.5 discusses the evaluation report as specified by the expert evaluators, describing their rating of the overall compliance of the sites with the heuristics, as well as identifying additional futuristic functionality they deem important for future Internet banking platforms. Section 8.6 summarises the chapter and alludes to what to expect in the next.

*Please note:* As stated under assumptions (section 1.8), the heuristic evaluation was performed to test the functionality guidelines and not the banks. Although the opinions of the expert evaluators are presented, this was a snapshot in time and cannot be seen as representative of the current functionality on the banks' Internet banking websites. Furthermore, this study only focused on the presentation of functionality for a specific group of users, at a specific time, and is not a general usability evaluation or comparison of the banks.

## **8.2 What is a heuristic evaluation?**

According to Nielsen (1995), a heuristic evaluation is a method for finding usability problems so that they can be attended to as part of an iterative interface design process. The method involves having a small set of evaluators examine the interface and judge its compliance with a recognised set of heuristics. Although the well-known set of Nielsen's usability principles is usually used during a heuristic evaluation, Pinelle et al. (2008) advocate that a heuristic evaluation should be flexible and versatile enough to be adapted to specialised domains. Given this, this study makes use of the list of functionality guidelines, which are outlined in section 7.15 to inspect the Internet banking websites of Standard Bank, ABSA, FNB, Nedbank and Capitec.

## **8.3 The process of evaluation**

Five expert evaluators, all of them experienced UX professionals, took part in the evaluation process. Section 6.12.1 details their respective profiles. They were requested to sign a consent form before participating in the evaluation. This consent form is included in Appendix D1. After being provided with log-in details to each of the Internet banking websites, the five evaluators were requested to complete a set of tasks representative of the functionality guidelines for which they were scrutinising the Internet banking websites. This was intended to help familiarise them with the different sections of the sites in order for them to make an informed and thorough evaluation of whether the sites contained the proposed functionality guidelines or otherwise.

This also supports the way in which a heuristic evaluation is usually performed, with Danini (2001) further substantiating that a set of tasks needs to be developed for evaluators to carry out. This, he explains, helps to identify possible areas of difficulty on the key sections of the site that all site visitors should be able to perform efficiently. The tasks completed by the evaluators can be found in Appendix D3.

By utilising a five-point Likert scale (1 - Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree), each evaluator rated how well they believed the respective Internet banking websites complied with the functionality heuristics (see Appendix D4), finally compiling a heuristic report (see Appendix D5) for each bank, detailing their overall compliance with the heuristics, as well as outlining any newly discovered functionality deemed to be pioneering and vital for inclusion on future Internet banking platforms.

The list of functionality heuristics spans six functionality categories, five being those synthesised during the literature review (see section 5.3) and validated during the interviews and survey phases of the study (see section 7.5). These five categories are Simple, Ubiquitous, Personal, Empowering and Reassuring. A sixth category was formulated based on additional functionality guidelines proposed by participant Generation-Y users during the interviews and survey, and was therefore named the ‘Participant generated category’. Within each of these six functionality categories were the specific functionality heuristics according to which the Internet banking websites were scrutinised. A detailed account of the heuristic evaluation process can be found in section 6.12 of Chapter 6: Research and Methodology. The sections that follow depict the heuristic evaluation results for each functionality heuristic in the six identified categories, and provide a heuristic report from the evaluators on how the various banks fared.

## 8.4 Heuristic evaluation results

### 8.4.1 The Simple category

The Simple category comprised five functionality heuristics (see Table 7.15). This category represented functionality guidelines that would support the ease of use and overall promptness of the Internet banking channel. Table 8.1 depicts the average heuristic compliance rating for each bank as assessed by the expert evaluators.

<b>Table 8.1</b> Heuristic evaluation results: Simple category					
<b>Simple</b> <b>(Reference: Table 7.15)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To support the ease of use and promptness of Internet banking, does the functionality on the site ...					
1. Offer tools that assist users in simplifying difficult tasks like applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.).	4	4	2	2.5	1
2. Pre-fill applications or any online process that requires users to capture their personal details (e.g. if the bank already has the user’s personal details, online application forms should be automatically populated to a certain extent rather	1	3	2	4	4

than the user having to fill in all these details from scratch).					
3. Automate transactions from start to finish by allowing users to complete transactions without having to request assistance from the bank, or go into a branch.	3.5	5	2	4	1
4. Present difficult-to-understand content in innovative ways such as videos, audio clips, online games, polls, etc.	2	3	1	1	1
5. Offer e-signatures to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction such as applying for a loan.	1	3	1	1	1
<b>OVERALL AVERAGE RATINGS</b>	<b>2.3</b>	<b>3.6</b>	<b>1.6</b>	<b>2.5</b>	<b>1.6</b>

According to the combined averages from the five evaluators, ABSA yielded the highest value with a 3.6 compliance rating in the Simple category, a Likert score closest to the ‘I agree that the functionality contained is aligned to the heuristics’ mark. According to three out of five of the evaluators, this can be attributed to their new Internet banking platform, ABSA online, which has focused on simplifying transactions for users and acting as a central hub where all transactions can take place without having to go into a branch. For the rest of the banks, the Internet banking platform is still highly transactional, with very little innovation when it comes to fully promoting product-related content on the platform. This function is still left to the ‘logged out’ or public facing view of the website. The platform has not reached its full interaction potential, as engaging tools like calculators and wizards are excluded from the experience. Most of the banks, except Nedbank and Capitec, fail to adequately reuse the information the bank already has on the user. The pre-fill functionality is not functional, as users still need to recapture details they would expect the bank to have already.

#### 8.4.2 The Ubiquitous category

The Ubiquitous category held the least functionality heuristics with just two being accepted by users in the prior survey and interview phases of the study (see Table 7.16). This category represented functionality guidelines that would support the multi-channel and multi-device nature of the Internet banking platform, by making certain that the functions of this transacting platform are offered on the platform and device of the users’ choice. Table 8.2 below depicts the average heuristic compliance rating for each bank as assessed by the expert evaluators.



<b>Table 8.2</b> Heuristic evaluation results: Ubiquitous category					
<b>Ubiquitous (Reference: Table 7.16)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To make certain that functionality offered to the user is on any platform and on any device of their choice, does the functionality on the site ...					
1. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions.	1	1	1	4	1
2. Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet.	2	1	3.5	5	1
<b>OVERALL AVERAGE RATING</b>	<b>1.5</b>	<b>1</b>	<b>2</b>	<b>4.5</b>	<b>1</b>

According to the combined averages from the five evaluators, Nedbank yielded the highest value, with a 4.5 compliance rating in the Ubiquitous category, a Likert score closest to the ‘I strongly agree that the functionality contained is aligned to the heuristics’ mark. Nedbank is able to communicate effectively to the user about other mechanisms for transacting. Although the other banks have additional channels of banking, and even banking apps, they do not make their users aware of these capabilities on their Internet banking platforms.

### 8.4.3 The ‘Personal’ category

The ‘Personal’ category comprises five functionality criteria (see Table 7.17) that were evaluated by the experts. This category represents functionality guidelines that would support the adapting of the Internet banking platform to the unique financial needs of banking clients. Table 8.3 below depicts the results for the different banks as rated by the experts.

<b>Table 8.3</b> Heuristic evaluation results: Personal category					
<b>Personal (Reference: Table 7.17)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To support the personal nature of Internet banking where functionality provided adapts to the unique financial needs of a user, does the functionality on the site ...					
1. Make the tone and character more modern and relevant while not compromising the somewhat	3	3	4	2	4

serious nature of an Internet banking website.					
2. Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (e.g. if a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage so that the user can access them straight away).	2	2	1	1	1
3. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	2	3	4	1	1
4. Facilitate the customisation of the website in a manner that suits the user's preference such as changing the website layout, colour and language, hiding and removing tabs, bookmarking certain sections, etc.	1	5	3.5	3	1
5. Create different navigation paths for different users with or without certain products (e.g. if a user has a home loan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a home loan to begin with, the homeowners insurance navigation link should not be shown).	1	2	2	1	1
<b>OVERALL AVERAGE RATING</b>	<b>1.8</b>	<b>3</b>	<b>2.9</b>	<b>1.6</b>	<b>1.6</b>

Although FNB was rated highest in this category, yielding a 2.9 average compliance rating, the personalisation aspect across the different Internet banking websites was not strong. All of the evaluators rated FNB highly on their more personal tone when addressing customers, with three of the evaluators stating that this is the character the bank portrays in all its communications media (i.e. television, radio, magazines, etc.). The website also allows users to structure their own primary navigation, while clearly stating the products users can qualify for, based on the products they currently have. Capitec was also rated highly on the tone used on the site, with all the evaluators agreeing that the manner in which the site is presented is reflective of their brand identity: *'Simplicity is the ultimate sophistication'*.

#### 8.4.4 The Empowering category

The Empowering category represented functionality guidelines that support the value-adding capability of the Internet banking platform; where users would be able to initiate actions that help them to manage their financial lives better. Ten out of the eleven functionality heuristics in the Empowering category were accepted by the participants in the previous stage of the study (see Table 7.18). Participants had expressed discomfort about the functionality guideline of being able to view the financial performance of their peers anonymously on the Internet banking platform. Because of this communicated discomfort, this functionality guideline was not included as a heuristic and would therefore not be represented on the platform. Table 8.4 below depicts the average compliance rating for each bank in terms of the validated ten heuristics as assessed by the expert evaluators.

<b>Table 8.4</b> Heuristic evaluation results: Empowering category					
<b>Empowering (Reference: section 7.10)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To support the empowering nature of Internet banking, where the functionality provided adds value to users by enabling them to initiate action that helps them manage certain aspects of their financial lives better, does the functionality on the site ...					
1. Allow users to track their spending over a period of time.	2	1	1	5	1
2. Assist users in creating an online budget.	1	3	1	5	1
3. Facilitate users in creating savings targets to assist them in reaching certain financial targets.	1	5	1	5	1
4. Provide alerts and notifications to assist users reach their financial goal (e.g. if a user is aiming to only spend R1000 on entertainment per month, send them a notification when they are about to go over their limit).	1	4	1	4	1
5. Educate the user on their financial standing and how they can improve (i.e. personalised calculators).	1	2	1	3	1
6. Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns.	1	4	1	5	1

7. Provide savings tips that assist the user in reaching a specific goal or target.	1	1	1	1	1
8. Provide users with a real-time, consolidated view of their financial life by showing them, on a single screen, all their financial accounts across the different financial services providers.	1	4	1	5	1
9. Estimate the value of the user's assets and liabilities by providing them with a single view of their financial worth.	1	5	1	5	1
10. Encourage users to take immediate action on a particular goal (e.g. apply for an investment account, recommend a product, etc.).	3.5	5	4	4	3
<b>OVERALL AVERAGE RATING</b>	<b>1.35</b>	<b>3.4</b>	<b>1.3</b>	<b>4.2</b>	<b>1.2</b>

ABSA and Nedbank rated highly in this category, with Nedbank offering most of the functionality needs. The introduction of its new personal financial management platform allows users to link all their financial accounts and manage them from a single platform. While ABSA also provides this functionality, it is not automated, as users need to input their financial accounts manually. Although Nedbank rated highly, its financial management platform links the user to a separate window, meaning that it is not completely embedded in the Internet banking platform. However, a link on Internet banking links users to this platform.

Although the evaluators noted powerful features on this platform, the experience was disjointed because of the separate sessions the user had to go through. Having this on a single platform would have resulted in a much stronger offering from Nedbank. None of the other three banks demonstrated any of the empowering functionality criteria on their Internet banking platforms.

#### 8.4.5 The Reassuring category

The Reassuring category holds three functionality heuristics (see Table 7.19) that were evaluated by the experts. This category represented functionality guidelines that would support the ability of banking customers to obtain human help on the Internet banking platform whenever the need arose. Table 8.5 below depicts the average heuristic compliance rating for each bank as assessed by the expert evaluators.

<b>Table 8.5</b> Heuristic evaluation results: Reassuring category					
<b>Reassuring (Reference: section 7.11)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, does the functionality on the site ...					
1. Allow the user to start a chat session with the bank by clicking a link that opens a chat window on the screen (click to chat).	1	1	1	1	1
2. Allow users to fill in their contact details in input fields on a page, and a have representative from the bank to contact them (request a call back).	5	4	4	2	1
3. Allow users to receive and send personal messages to the bank.	4	5	5	4	1
<b>OVERALL AVERAGE RATING</b>	<b>3.3</b>	<b>3.3</b>	<b>3.3</b>	<b>2.7</b>	<b>1</b>

Standard Bank, ABSA and FNB all came in with a compliance rating of 3.3 for this functionality category. Across the board, some means of communication with the users is provided on the platform. However, the ability to chat directly to a bank representative is not found on any of the bank Internet websites, although Nedbank and Capitec offer users contact details so that they can contact the bank. Apart from Capitec, the ‘request a call back’ function seems to be the norm for most of the banks, with the ability to send a secure message to the bank coming across as an industry standard. ABSA and FNB have also introduced the ‘Inbox’ concept, where users are able to receive messages from the bank. Standard Bank and Nedbank do not offer this functionality.

#### **8.4.6 The Participant-generated category**

During the interviews and surveys, Generation-Y participants were requested to identify additional functionality requirements they felt should be represented on the Internet banking platform of the future (see Table 7.20). This request gave rise to six additional functionality heuristics representing a diverse range. Table 8.6 below depicts the average heuristic compliance rating for each bank as assessed by the expert evaluators.

<b>Table 8.6</b> Heuristic evaluation results: Participant-generated category					
<b>Participant generated (Reference: section 7.11)</b>	<b>Average heuristic compliance rating (1 Strong disagree, 5 Strongly agree)</b>				
	<b>Standard Bank</b>	<b>ABSA</b>	<b>FNB</b>	<b>Nedbank</b>	<b>Capitec</b>
To support additional functionality requirements deemed important by representative Generation-Y users, does the functionality on the site ...					
1. Proactively offer financial education that does not necessarily allude to products that users have, but rather gives fresh views that will help users acquire financial skills.	1	4	1	2	1
2. Provide a mechanism where users are able to separate their bank account into ‘pockets’ that can be assigned to different monetary purposes.	1	1	1	1	1
3. Allow users to log into Internet banking without using their bank details such as card number and customer selected pin, but rather prompt them to create their own login information.	1	1	5	1	1
4. Form partnerships with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate to online banking customers.	1	4	4	2	1
5. Create a loyalty programme where users are able to accumulate rewards for using the bank’s products. Allow users to track and use these rewards on the Internet banking platform.	1	5	4	2	1
6. Educate users about NFC technology, whereby they can make payments to anyone near them who has a compatible handset and not necessarily belonging to the same bank.	1	4	1	1	1
<b>OVERALL AVERAGE RATING</b>	<b>1</b>	<b>3</b>	<b>2.7</b>	<b>1.5</b>	<b>1</b>

The newly revised ABSA platform is rated the highest in this functionality range. The platform has managed to offer generic financial education that empowers users in terms of financial matters in general. Capitec and FNB, on the other hand, are the only banks that have managed to simplify the complex login process by offering users the freedom to select their own username and password. The remaining three banks take a stricter approach in terms of which a card or profile number, a

customer-selected pin and a password are entered. ABSA and FNB have also successfully managed to incorporate their loyalty programme on the platform, even though this links to a separate site altogether for FNB. ABSA has successfully managed to highlight its NFC ability on the site, and although FNB has this functionality available, it is not mentioned anywhere on its transacting platform.

## **8.5 Heuristic evaluation report**

After performing the functionality evaluation, the five evaluators were requested to compile a report detailing their findings. Among other things, this report confirmed that they had performed the inspection on all websites, and recorded the average time spent doing so. The report also included their comments and general perceptions of the functionality compliance across the different Internet banking websites inspected, while also listing any additional functionality on the sites they believed represented innovation, and that should be made available on the Internet banking platform of the future.

### **8.5.1 Time spent on the website evaluation**

All five evaluators successfully inspected the Internet banking websites of Standard Bank, ABSA, FNB, Nedbank and Capitec. As recorded in their reports, the evaluators spent an average of 4.7 hours performing the evaluation across the five websites. Exact evaluation timelines for each of them was captured as the following:

- Evaluator 1 – 5 hours
- Evaluator 2 – 5 hours
- Evaluator 3 – 3.5 hours
- Evaluator 4 – 6 hours
- Evaluator 5 – 4 hours

### **8.5.2 The overall compliance of the websites with the functionality heuristics**

Evaluators were then requested to capture their perceptions of the overall compliance of the websites with the functionality heuristics. Below is a summary of their consolidated feedback for the five Internet banking platforms evaluated.

For Standard Bank, FNB and Capitec Bank, conventional transactional capabilities (i.e. payment of beneficiaries, checking of transaction history, etc.) are still the main focus of the platforms, with ABSA and Nedbank deviating from the norm by starting to position their Internet banking websites as interactive money management platforms. These two banks have started to introduce, to a certain extent, personal financial management capabilities, and offer users generic financial education that is aimed at helping them understand various financial topics.

Account aggregation ability (i.e. consolidation of multiple financial accounts) is still manual on the ABSA site and, although it is accessible on the Nedbank Internet banking platform, users are directed to a stand-alone website to perform any further activities. The general consensus of evaluators was that these two banks did at least plant a seed of advanced financial consciousness in their users' mind. This allowed these Internet banking platforms to be positioned as more than mere platforms where basic transactions happen, but rather as partners in the financial well-being of their clients.

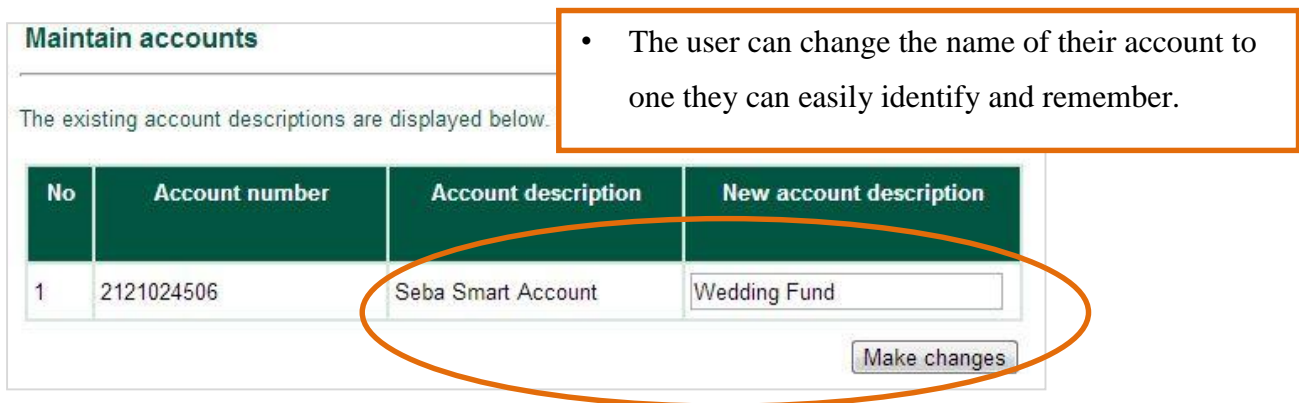
Evaluators stated that FNB is making headway on the cross selling of products on the site, making users aware of additional financial products they can subscribe to with the organisation to further enhance their financial standing. Although Nedbank and ABSA show the most potential, their platforms are not yet a seamless representation of all the functionality guidelines identified in this study.

On the basis of this, all evaluators emphasised the value and importance of this study for banking institutions wishing to target the Generation-Y customer segment. They stated that the heuristics contained in this study provide a detailed account of a wide range of functionality that can be implemented on the Internet banking platform in order to align with the needs of this user base as closely as possible. Such functionality is currently widely unavailable. This is proven by the average heuristics compliance rating of 2.2 (Likert value – disagree) across all five Internet banking websites evaluated.



### 8.5.3 Identification of innovative functionality not covered by the heuristics

Four out of the five of the expert evaluators identified an innovative functionality guideline that did not fall within the existing set of heuristics already provided. Two banks, FNB and Nedbank, offer users the ability to rename the bank accounts they have with the financial institution. Figure 8.1 shows an example of this functionality as captured from the Nedbank website.



**Maintain accounts**

The existing account descriptions are displayed below.

No	Account number	Account description	New account description
1	2121024506	Seba Smart Account	Wedding Fund

Make changes

- The user can change the name of their account to one they can easily identify and remember.

**Figure 8.1:** Identified innovative functionality: users can change a bank account name

According to the evaluators, this functionality will assist users, especially those with multiple accounts, to remember their account details, as it is very often difficult to recall an account number or even the name of a bank product if one has multiple accounts. The nature of this functionality type supports its incorporation into the Personalisation functionality category, and will be represented in the next chapter of the study.

Two more functionality types identified by the experts were already covered in the heuristics. These were:

- FNB's ability to change the order of the main navigation items (see Table 7.17, Functionality 4)
- the ability of the ABSA bank platform to provide share price information on the site (see Table 7.20, Functionality 2).

## 8.6 Summary

The main objective of this chapter was to investigate whether the functionality currently available on South African Internet banking websites (Standard Bank, ABSA, FNB, Nedbank and Capitec), met the Generation-Y functionality criteria as validated by representative Generation-Y participants in Chapter 7 of the study. This was in order to investigate the extent to which the existing Internet banking platforms demonstrate innovation. Another key goal of the website inspection was to uncover any additional functionality on these websites that might be deemed innovative for inclusion in future Internet banking platforms, and further to include these in the final list of functionality guidelines this study aims to identify.

After defining a heuristic evaluation and explaining how the validation process unfolded, the chapter outlined the evaluation results by presenting the extent to which each bank complied with the validated functionality heuristics.

The evaluation results revealed that for three of the banks (Standard Bank, FNB and Capitec), transactional capabilities (i.e. payment of beneficiaries, checking of transaction history, etc.) are still the main focus of the platforms, with ABSA and Nedbank deviating from the norm by starting to position their Internet banking websites as interactive money management platforms. These two banks have to a certain extent started to introduce personal financial management capabilities and to offer users generic financial education that is aimed at helping them understand various financial topics.

Although the account aggregation ability is still manual on the ABSA site, and on the Nedbank website exists on a separate platform accessed through Internet banking, the general consensus from the evaluators was that the websites effectively plant a seed of financial consciousness in the user's mind. Although financial aggregation capabilities were not identified on the FNB website, all evaluators believed that this bank is making headway in the cross selling of additional financial products to its customers.

Four out of five evaluators identified an additional functionality type they deemed innovative on the websites of two of the five banks (Nedbank and FNB). This functionality enables users to rename accounts that appear on their Internet banking platform, effectively making the products they have with the bank easily memorable and identifiable.

None of the five banks evaluated catered comprehensively for the needs of Generation-Y users, hence the average heuristics compliance rating of 2.2 ('Disagree with proposed functionality') across all of the five websites evaluated.

Although some of the banks are beginning to demonstrate innovation by positioning the Internet banking platform as more than just a purely transactional domain, evaluators believe this research contributes by making banking institutions aware of a wider variety of functionality that will see Internet banking websites transformed into interactive and highly valuable money management platforms that are more closely aligned to the needs of Generation-Y customers.

The chapter that follows takes into consideration the validated functionality guidelines gathered in the study thus far (amassed in section 7.13), as well as the functionality identified during the heuristic inspection (demonstrated in Figure 8.1), and presents a visual interpretation of these further validated by representative Generation-Y participants.

## **Chapter 9: Research findings: Validation of the visually interpreted functionality guidelines**

### **9.1 Introduction**

Chapters 7 and 8 presented validated functionality guidelines as recommended by Generation-Y Internet banking users (see section 7.15). In addition, the innovative functionality that Internet banking platforms in South Africa currently offer was extracted (refer to section 8.5.3). From these, a set of Internet banking functionality guidelines were formulated.

This chapter presents this validated set of guidelines in the form of user interface diagrams, commonly known in the UX field as wireframes. These wireframes were presented to ten Generation-Y Internet banking users in the form of a low-fidelity HTML prototype, accessible from a wide range of Web browsers in order for them to validate, in an interactive and visual manner, whether the functionality identified is what they require on the Internet banking platform of the future.

Section 9.2 starts by providing a definition for wireframes, and in particular explaining the context in which those used during the functionality validating phase of the study were constructed. Section 9.3 then looks at how the functionality validation exercise was implemented, describing the demographics of the participants, as well as an analysis of the tasks they performed in order to familiarise themselves with the different sections of the wireframes. Section 9.4 outlines the way in which the various wireframes were presented to the participants, and gives an example of a wireframe validated during this phase of the study. Section 9.5 presents the validation results, while section 9.6 outlines the perceptions participants had after going through the validation process. Section 9.7 presents a summary of the chapter.

### **9.2 What are wireframes?**

Glen (2007) describes wireframes as schematic presentations that define a web page's content and functionality structure in order to portray the page concept before it is designed and developed. Wireframes are usually free of design elements like graphics and colour. As the validation of functionality guidelines had taken place in previous phases of the study using participant interviews

and surveys, it was important to ensure that the final validation of the guidelines was presented in a format that would give the participants an experience that was closely aligned to a fully functional and realistic Internet banking platform. The presentation of the guidelines therefore needed to be largely interactive and visual so that accurate and authentic validation feedback would be gathered.

In order to accomplish this, a low-fidelity HTML prototype was created from the wireframes (Prototype link 2012). Bailey (2005) defines a low-fidelity prototype as a semi-functional representation of a Web product that is in the development phase, and is limited in one or more of the dimensions listed:

- *Amount of functionality.* Low-fidelity prototypes usually do not include all of a website's features
- *Interaction capabilities.* They also usually do not allow for complex mouse and keyboard interactions
- *Aesthetic refinement.* Low-fidelity prototypes are usually very plain, with a limited use of screen colour and complex graphics.

The HTML prototype is created around the Internet banking platform of a fictitious bank, called 'Techno Bank' by the researcher. Techno Bank's Internet banking platform comprised all the functionality guidelines identified and validated in the prior phases of the study, and was accessible to participant Generation-Y users through any of the commonly used Web browsers such as Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and so on. The wireframes converted to this HTML format were constructed using a wireframing tool, Axure RP Pro 6.5 (Wireframing tool 2012).

### **9.3 The functionality validation process**

The Techno Bank prototype to be evaluated could be accessed via a Web link (Prototype link 2012). The Generation-Y demographic details gathered from the literature in section 3.2 were taken into consideration when profiling the participants for this validation exercise. This is the same principle that was applied when interview and online survey participants were sourced (section 7.3). In this instance, ten individual users took part in the one and a half hour validation process.

As noted, ten participants completed the validation process. As is the norm, all participants were requested to complete a research participation consent form (see Appendix E1) before participating

in the functionality validation process. Participants were then requested to access the Techno Bank Web link (Prototype link 2012) in order to commence the validation process. According to Usability.gov (2011), in order to facilitate a user test session, one needs to create an effective task scenario that identifies the top tasks users try to complete when visiting a particular site. The task scenario needs to consist of a goal stipulating in detail what the user is meant to do, what question they are trying to find an answer to, or what information they need to complete the task. Identifying these will ensure that all problems that need to be identified in terms of key tasks on a site are uncovered effectively.

This principle was applied during the functionality validation session of the Techno Bank Internet banking prototype. The identified functionality guidelines were used as key tasks that users were requested to perform in order to validate the functionality offered by the prototype and, where relevant, propose additional functionality they felt could be incorporated to further improve the platform. These tasks, as aligned to the identified Internet banking functionality guidelines are listed in Table 9.1 and also captured in Appendix E3.

<b>Table 9.1: Goal-oriented tasks presented to Generation-Y users during the functionality validation exercise</b>
<b>Simple category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> Log into the Techno Bank Internet banking site using the login details provided.</li> <li>• <b>Task 2:</b> Divide your ‘Everyday cheque’ account into two money pockets, and increase the Electronic Transfer limit to R10 000 per month.</li> <li>• <b>Task 3:</b> View the home loan deal the bank is making you, and find out more about it.</li> <li>• <b>Task 4:</b> Open a home loan video that will explain what the particular home loan entails.</li> <li>• <b>Task 5:</b> Access a home loan calculator to see how much your instalment will be.</li> <li>• <b>Task 6:</b> Apply for the home loan.</li> <li>• <b>Task 7:</b> Investigate a loan insurance deal the bank is offering you.</li> <li>• <b>Task 8:</b> Explore a number of helpful tools to help you plan your next transaction.</li> </ul>
<b>Ubiquitous category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> Find out about the different apps the bank has and how you can download them.</li> <li>• <b>Task 2:</b> Select a specific app to download.</li> <li>• <b>Task 3:</b> Find out about alternative ways you can bank (e.g. through a branch, cellphone banking, etc.).</li> </ul>
<b>Personal category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> On the homepage of the site, investigate whether the banks offers you quick links to the transactions you perform most often.</li> <li>• <b>Task 2:</b> Change the default background of the site to one you prefer.</li> <li>• <b>Task 3:</b> Arrange navigation items to reflect the order you prefer</li> <li>• <b>Task 4:</b> Choose the different web parts you would like to see on the homepage</li> <li>• <b>Task 5:</b> View a preview of your customised site.</li> <li>• <b>Task 6:</b> Rename one of the accounts you have with Techno Bank to a name you will identify and remember easily.</li> <li>• <b>Task 7:</b> Assess whether the tone and character of the site is suitable for younger, more techno-savvy clients.</li> </ul>

<b>Empowerment category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> Access a section where you are able to have a consolidated view of and manage all your financial accounts.</li> <li>• <b>Task 2:</b> Find a section where you will gain a deeper understanding of your current financial standing.</li> <li>• <b>Task 3:</b> Find personalised hints and tips that will help you learn about reaching the perfect money balance.</li> <li>• <b>Task 4:</b> Find out about the ‘Healthy financial products’ the bank recommends you should have in order to improve your financial standing.</li> <li>• <b>Task 5:</b> Find out more about the Life Cover product Techno bank offers.</li> <li>• <b>Task 6:</b> Apply for this Life Cover product.</li> <li>• <b>Task 7:</b> Set a financial goal that will motivate you to start making better use of your finances.</li> <li>• <b>Task 8(a):</b> Look for a listed breakdown of your spending patterns.</li> <li>• <b>Task 8(b):</b> Look for a graphical breakdown of your spending patterns.</li> <li>• <b>Task 9:</b> Set up a budget that will help you keep better control of your money.</li> <li>• <b>Task 10:</b> Monitor how your spending is doing by viewing the alerts you have set.</li> <li>• <b>Task 11:</b> Track your spending progress in the ‘Hair and makeup’ category for the last 4 months.</li> </ul>
<b>Reassuring category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> Access the inbox to check any new messages.</li> <li>• <b>Task 2:</b> Send a new secure message to the bank.</li> <li>• <b>Task 3:</b> Start an online chat session with a bank representative.</li> <li>• <b>Task 4:</b> Leave your contact details and request someone from the bank to call you back.</li> </ul>
<b>Participant-generated category tasks</b>
<ul style="list-style-type: none"> <li>• <b>Task 1:</b> Find a stock market tutorial that the bank is offering to expand your financial knowledge.</li> <li>• <b>Task 2:</b> Find out how many rewards/loyalty points you have accumulated.</li> <li>• <b>Task 3:</b> Find a partner on a mobile device and read more about it.</li> <li>• <b>Task 4:</b> Purchase this mobile special offer.</li> <li>• <b>Task 5:</b> Find out more about the Geo-Payment capability and what it entails.</li> </ul>

Similar to the rating scale utilised during the interviews and online survey, a five-point Likert scale was used by participants to validate whether they believed the functionality depicted should be part of future Internet banking platforms. Each of the five points were assigned numeric values, starting from 1 to 5; 1 being the lowest rating (Strongly disagree), and 5 being the highest rating (Strongly agree). Users were then requested to rate each functionality type, from which an overall average was derived. Please refer to Appendix E4 for the functionality validation form completed by the participants and section 6.13 of the Research and Methodology chapter for a detailed account of the functionality validation process.

## **9.4 The wireframe presentation**

The wireframes were presented to the participants according to tasks encompassing all identified functionality guidelines (refer to section 9.4 and Appendix E3). These tasks were categorised into six functionality categories; Simple, Ubiquitous, Personal, Empowering, Reassuring and Participant, similar to the heuristic evaluation phase of the study (refer to sections 8.4.1–8.4.6).

The tasks were arranged in an order that would reflect a goal-oriented journey closely related to a real-life Internet banking website experience. Figure 9.1 depicts an example of a wireframe that represented a task within the Simple functionality category. Due to space limitations, only one example is provided here. A full set of wireframes can be viewed on the accompanying disc and accessed on the interactive HTML prototype (Prototype link 2012) used during this phase of the study.

### **9.4.1 Reading the wireframe**

Footnotes are provided on the wireframe as well as in the table following the schematic representation. For an explanation of each wireframe component, please refer to the footnote for that element in the table.



### 9.4.2 Wireframe example: Simple category task 2: Divide your account into two money pockets, and increase Electronic Transfer limit to R10 000 per month

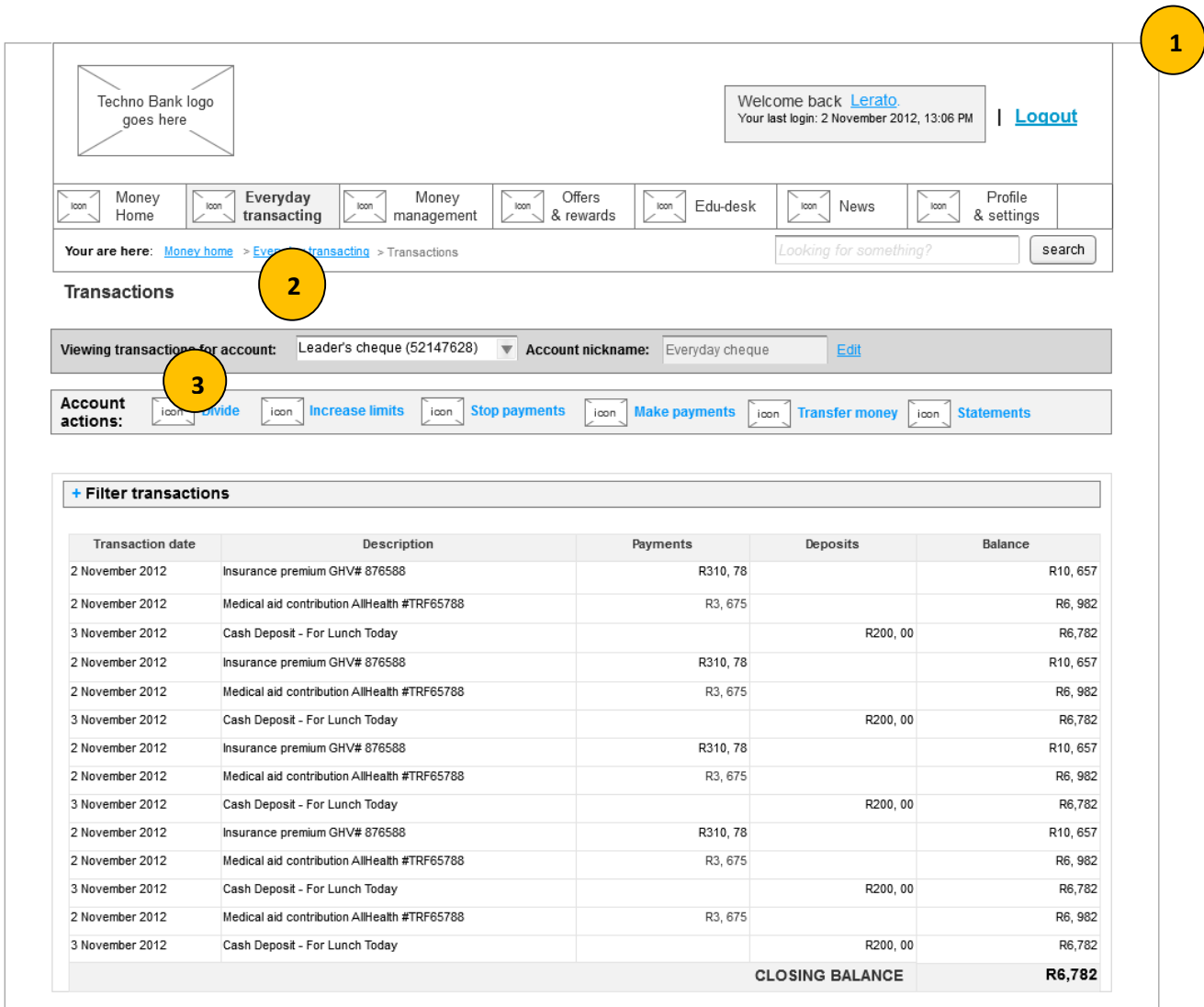


Figure 9.1: Account with Techno Bank selected: Techno Bank functionality wireframes

Account with Techno Bank selected: Techno Bank functionality wireframes	
Footnote	Description
1	Normal view of an account the user has with the bank.
2	They are presented with a list of transactions performed on the account.
3	Users are able to perform varying actions like dividing the account into money pockets and increasing general account limits like electronic fund transfer.

## 9.5 Functionality validation results

This section presents the functionality validation results as gathered from the ten Generation-Y participants who completed all the tasks on the Techno Bank wireframe prototype. As in the wireframe sections above, the results here are presented according to the six functionality categories (Simple, Ubiquitous, Personal, Empowering, Reassuring and Participant generated), each associated with the validation task completed by the participants.

Each functionality validation result is presented with an acceptance key to indicate the level of satisfaction participants conveyed. This key is explained below and will be used as an indicator on the result tables that follow.

**Functionality acceptance key:**

- ✓ = Accepted without specific considerations
- ✓ = Accepted with specific implementation considerations
- ✗ = Not accepted by participants

<b>Table 9.2: Simple: prototype functionality listing</b>			
<b>Validation task</b>	<b>Is this the functionality you would like to have? (Average rating)</b>	<b>Acceptance key</b>	<b>Implementation considerations</b>
1. Offer tools that assist users in simplifying difficult tasks such as applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.).			
<b>Simple Task 5:</b> Access a home loan calculator to see how much your instalment will be.	5	✓	Allow for a direct call-to-action to be provided even on a tool like a calculator. This can be a direct link to any ‘apply now’ page. Users stated that they would require this if they decided to take up a product at this point in the process. Immediacy is important to them.
2. Pre-fill applications or any online process that requires users to capture their personal details (e.g. if the bank already has the user’s personal details, online application forms should to a certain extent be automatically populated, rather than having the user fill in all these details from scratch).			
<b>Simple Task 6:</b> Apply for the home loan.	5	✓	

3. Automate transactions from start to finish by allowing users to complete transactions without having to request assistance from the bank or go into a branch.			
<b>Simple Task 2:</b> Divide your account into two pockets, and increase Electronic Transfer limit.	4	✓	Include another level of authentication. This could be an OTP that could be sent to the users' preferred contact method.
4. Present difficult-to-understand content in innovative ways like using videos, audio clips, online games, polls, etc.			
<b>Simple Task 4:</b> Open home loan video that will explain everything to you.	5	✓	
5. Offer e-signatures to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction such as applying for a loan.			
<b>Simple Task 6:</b> Apply for the home loan.	4	✓	Include another level of authentication. This could be an OTP that could be sent to the users' preferred contact method. Although the wireframe in this study allowed the user to notify the bank if the signature depicted was not theirs, participants still felt that an additional security layer was required. An interesting observation on this point was that six of the ten participants stated that they would feel more secure if they had captured the signature physically once at a bank branch. They felt that being able to upload this online posed a security risk.
<b>OVERALL CATEGORY AVERAGE</b>	<b>4.6</b> (Rounded off to: 'Strongly agree with proposed functionality')		

**Table 9.3: Ubiquitous: prototype functionality listing**

Validation task	Is this the functionality you would like to have? (Average rating)	Acceptance key	Implementation considerations
1. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions.			
<b>Ubiquitous task 3:</b> Find out about other ways of banking .	5	✓	
2. Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet.			
<b>Ubiquitous task 1:</b> Find where you can download a number of apps offered by the bank.	5	✓	For download on other types of device, this section would also need to link to their respective 'app stores'. A desire for third-party apps endorsed by the bank is also vital in this section. They maintained that this would give them a broader range

<b>Ubiquitous Task 2:</b> Select an app to download.			of financial health tips than just those developed by the bank.
<b>OVERALL CATEGORY AVERAGE</b>	<b>5</b> (‘Strongly agree with proposed functionality’)		

**Table 9.4:** Personal: prototype functionality listing

Validation task	Is this the functionality you would like to have? (Average rating)	Acceptance key	Implementation considerations
1. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.			
<b>Simple task 3:</b> View the home loan deal the bank is making you, and find out more about it.	5	✓	Users accepted this functionality type on the platform and stated that the bank would have to be responsible for any products it cross sells. Participants stated that the promotion should be linked to their likely needs, with the bank assessing from the aggregated section of the websites what their true needs are. They further stated that this should not be a promotion based on a ‘because we can’ principle, but should be products aimed at helping them improve their financial standing responsibly.
2. Facilitate the customisation of the website in a manner that suits the user's preferences such as changing the website layout, colour and language, hiding and removing tabs, bookmarking certain sections, etc.			
<p><b>Personal task 2:</b> Change the plain colour of the site to fruity yellow.</p> <p><b>Personal task 3:</b> Arrange navigation items to reflect the order you prefer.</p> <p><b>Personal task 4:</b> Choose the different web parts you would like to see on the homepage.</p> <p><b>Personal task 5:</b> View a preview of your customised site.</p>	4	✓	Participants stated that the customisation aspect of the site makes it a much friendlier and more approachable platform to utilise. The customisation of the colour was however met with some resistance as seven of the ten participating users felt that this makes the site lose credibility and stature. The ability to arrange different Web parts on the homepage, as well as the ability to reorder the navigation was preferred to the colour change.
3. Support the user by providing specific links based on their previous interaction and how they are most likely to interact in the future (e.g. If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage so that a user can access them straight away).			
<b>Personal task 1:</b> Investigate whether the	5	✓	

transactions you perform most are conveniently portrayed on the homepage.			
4. Create different navigation paths for different users with or without certain products (e.g. if a user has a home loan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a home loan to begin with, the homeowners insurance navigation link should not be shown at all).			
<b>Simple task 7:</b> Investigate a loan insurance offer the bank is making you.	5	✓	
5. Rename the accounts you have with the bank to an easier and memorable name (heuristic evaluator added functionality requirement – see section 8.9.3).			
<b>Personal task 6:</b> Rename one of the accounts you have with Techno Bank to a name you will identify and remember easily.	5	✓	
6. Make the tone and character more modern and relevant for the younger, more techno-savvy client.			
<b>Personal task 7:</b> Assess whether the tone and character of the site is suitable for younger, more techno-savvy clients.	5	✓	All participants stated that the wireframes had a tone that was relaxed, yet still authoritative. They explained that this would make them less intimidated by the serious issue finances.
<b>OVERALL CATEGORY AVERAGE</b>	<b>4.8</b> (Rounded off to: 'Strongly agree with proposed functionality')		

**Table 9.5:** Empowering: prototype functionality listing

Validation task	Is this the functionality you would like to have? (Average rating)	Acceptance key	Implementation considerations
1. Allow users to track their spending over a period of time.			
<b>Empowering task 11:</b> Track your spending progress in the 'Hair and makeup' category for the last four months.	5	✓	Implement ability for the user to compare more than one spending category.
2. Assist users in creating an online budget.			
<b>Empowering task 9:</b> Set up a budget that will help you keep better control of your money.	5	✓	Synchronise this budget to an app that can be conveniently accessed through a portable smart device.
3. Facilitate users in creating savings targets to assist them in reaching certain financial targets.			
<b>Empowering task 7:</b> Set a financial goal that will motivate you to start using your money better.	5	✓	

4. Provide alerts and notifications to assist users reach their financial goal (e.g. if a user is aiming to only spend R 1000 on entertainment per month, send them a notification when they are about to go over their limit).			
<b>Empowering task 10:</b> Monitor how your spending is going by viewing the alerts you had set.	5	✓	
5. Educate the user on their financial standing and how they can improve (i.e. personalised calculators).			
<b>Empowering task 2:</b> Find a section where you'll have a deeper understanding of your net worth.	5	✓	Participants expressed that they would appreciate content not necessarily related to the bank here. For instance, if there's a financial article written by someone else, this should be the positioning for it.
6. Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns.			
<b>Empowering task 8a:</b> Look for a detailed breakdown of your spending.	5	✓	
<b>Empowering task 8b:</b> Look for a detailed breakdown of your spending.			
7. Provide savings tips that assist the user in reaching a specific goal or target.			
<b>Task 3:</b> Find personalised hints and tips that will help you learn about reaching the perfect money balance.	5	✓	This was another section participants felt that the bank could incorporate external resources to help them reach their financial goals.
8. Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers.			
<b>Task 1:</b> Access section where you are able to view and manage all financial accounts.	5	✓	
9. Estimate the user's assets and liabilities value by providing them with a single view of their financial worth.			
<b>Empowering task 2:</b> Find a section where you'll have a deeper understanding of your net worth.	5	✓	
10. Encourage users to take immediate action on a particular goal (e.g. Apply for an investment account, recommend a product, etc.).			
<b>Empowering task 4:</b> Find out about the 'Healthy financial products' the bank recommends you must have.	5	✓	In line with the feedback received from users regarding cross promotion (Table 9.4.2 Functionality 1), participants felt that responsible promotion should also be applied here. They are looking for value-add promotions from the bank that will help them enhance their financial life.

<p><b>Empowering task 5:</b> Find out more about the Life Cover product Techno Bank offers.</p> <p><b>Empowering task 6:</b> Apply for this Life Cover product.</p>			
<p><b>OVERALL CATEGORY AVERAGE</b></p>	<p><b>5</b> (‘Strongly agree with proposed functionality’)</p>		

<b>Table 9.6: Reassuring: prototype functionality listing</b>			
<b>Validation task</b>	<b>Is this the functionality you would like to have? (Average rating)</b>	<b>Acceptance key</b>	<b>Implementation considerations</b>
Allow the user to start a chat session with the bank by clicking on a link that opens a chat window on the screen (click to chat).			
<b>Reassuring task 3:</b> Start an online chat session with a bank representative.	5	✓	Users stated that a document uploading functionality would be very useful during a chat session with a bank representative.
Allow users to fill their contact details in input fields on a page and a have representative from the bank to contact them (request a call back).			
<b>Reassuring task 4:</b> Request someone from the bank to call you back.	5	✓	
Allow users to receive and send personal messages to the bank.			
<b>Reassuring task 1:</b> Access the inbox to check any new messages.	5	✓	
<b>Reassuring task 2:</b> Send a new secure message to the bank.			
<p><b>OVERALL CATEGORY AVERAGE</b></p>	<p><b>5</b> (‘Strongly agree with proposed functionality’)</p>		

<b>Table 9.7: Participant-generated functionality: prototype functionality listing</b>			
<b>Validation task</b>	<b>Is this the functionality you would like to have? (Average rating)</b>	<b>Acceptance key</b>	<b>Implementation considerations</b>
1. Proactively offer financial education that does not necessarily allude to products that users have but rather gives fresh views that will help users acquire financial skills.			

<b>Participant-generated task 1:</b> Find a stock market tutorial that the bank is offering to expand your financial knowledge.	5	✓	
2. Provide a mechanism where users are able to partition their financial account into ‘pockets’ that can be assigned to different monetary purposes.			
<b>Simple Task 2:</b> Divide your account into two pockets, and increase electronic transfer limit.	5	✓	
3. Allow users to log onto Internet banking without using their bank details like card number and customer selected pin instead prompting them to create their own login information.			
<b>Simple Task 1:</b> Log onto the Internet banking site	5	✓	
4. Create a loyalty programme where users are able to accumulate rewards for using the bank’s products. Allow users to track and use these rewards on the Internet banking platform.			
<b>Participant-generated task 2:</b> Find out how many rewards/loyalty points you have accumulated.	5	✓	
5. Form partnerships with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate to online banking customers.			
<b>Participant-generated task 3:</b> Find a partner special on a mobile device and read more about it.  <b>Participant-generated task 4:</b> Purchase this mobile special offer.	5	✓	Participants stated that they would like to be able to pay for a particular product using both their rewards and money in their account, and not just one or the other. This dual payment method would be ideal for them.
6. Educate users about NFC technology, whereby they are able to make payments to anyone near them who has a compatible handset and does not necessarily belong to the same bank.			
<b>Participant-generated task 5:</b> Find out more about the Geo-Payment capability and what it entails.	5	✓	
<b>OVERALL CATEGORY AVERAGE</b>	<b>5</b> (‘Strongly agree with proposed functionality’)		



## **9.6 Post-validation questions**

After validating the prototype, general perceptions of the functionality proposed were gathered from the users. The sections that follow present an analysis of their respective responses.

### **9.6.1 Does the proposed functionality enhance or complicate the Internet banking offering?**

All ten participants were satisfied with the proposed functionality and believed it would enhance the Internet banking offering. They stated that the proposed functionality demystifies the intimidating world of finance, and would put them in the driving seat of their financial lives, with minimum interaction with a bank representative.

### **9.6.2 Please list additional functionality you would like to see on Internet banking that was not captured in the prototype**

When asked if there was any additional functionality they would like to see, they revealed that they would want to be able to pause their transacting session, as well as set their own session expiry time, as having all this functionality would mean spending more time on the platform. Participants also stated that having a document library on the site, where they would be able to store all relevant documentation related to their banking, would be a convenient feature. They would also like to be provided with multiple payment options when purchasing reward products through their Internet banking platform. These payment options should be through an account they already have with the bank, through an account they have with another bank, through their accumulated loyalty rewards, or through all methods combined

### **9.6.3 How would you rate the functionality on the prototype?**

When asked to rate the functionality on the prototype, a credible average rating of 2.9 out of 3 (-1 being bad, and 3 being good) was achieved. Participants believe that the introduction of such a transacting platform would help educate them in a personalised and relaxed manner about their money, and provide them with peace of mind in terms of having a single view of everything they own. They believe this would give them control over their finances, as well as empowering them to constantly strive for improved financial standing.

## 9.7 Summary

This chapter presented a visual interpretation of the validated Internet banking functionality, as identified from previous phases of this study, through the construction of a semi-functional Web prototype for a concept bank (Techno Bank) created by the researcher (Prototype link 2012). Ten representative Generation-Y users were requested to use and evaluate this semi-functional prototype, and to validate whether the functionality proposed meets their needs.

The prototype was formulated based on key functionality categories previously used in the study (i.e. Simple, Ubiquitous, Personal, Empowering, Reassuring and Participant generated). These ensured that the functionality guidelines falling into these categories had been catered for. Tasks representative of the various functionality guidelines were formulated, and Generation-Y participants were requested to familiarise themselves with the Techno Bank Internet banking functionality by undertaking to complete the tasks on the prototype. After performing these tasks, and using a five-point Likert scale where 1 was the lowest rating (Strongly disagree), and 5 was the highest rating (Strongly agree), participants rated their satisfaction in terms of having the functionality included on their future Internet banking platform. They also identified a number of additional functionality requirements. Screenshots of the prototype functionality and the task associated with them are shown throughout this chapter.

Overall, participants were in agreement that the functionality projected on the Techno Bank prototype is the kind they would like to have on their Internet banking platform of the future. For each functionality category, they expressed additional views that would enhance the functionality that had been stipulated. The Simple category, for instance, obtained an agreement rating of 4.6, where the participants agreed that simplifying transactions and the consumption of product-related information were important functions to have on the site. They stated that having direct access to calls to action such as ‘apply now’ was very important for them on the site. They want to be able to respond immediately when a tool or product information relevant to their needs is presented to them.

They also welcomed the idea of the bank reusing information it already has about them. Other means of communication, such as video, were also welcomed, with users stating that this is a good alternative for those who do not wish to read lengthy product details. When asked to validate the ability of users to action a transaction by using e-signatures, users were alarmed but did agree to

this type of functionality on condition that an extra layer of security (e.g. OTP) would be provided. Although this functionality innovation would introduce a lot of automation, users surprisingly stated that they would still prefer going into a branch to append a physical signature. Issues of security and trust are still a great concern, despite these users' exposure to technology from an early age.

With an agreement rating of 5 in the Ubiquitous category, all users agreed that being notified of other means of banking, as well as being able to instantly download any new apps (applications) on the site was a good feature to have. They also stated that they would like the banks' apps to be linked to their mobile app store, where they would be notified of any new developments the bank introduced. This indicated that the participants want the bank to be a part of their daily lives by being visible on the platforms they interact with on a daily basis.

The Personal category came in with a 4.8 rating. Here users stated that whatever promotion the bank extends to them should be one that will add value to their financial lives. They spoke strongly against what they termed 'irresponsible targeting', where the bank pushes promotional messages without taking a closer look at what their actual financial needs are. Generally, they welcomed the idea of being able to personalise the site by rearranging certain website elements, as well as renaming their various bank accounts. Changing the background of the site's interface to a different colour or theme was not met with as much enthusiasm, with most of the users expressing the opinion that this is one aspect of the bank that depicts its brand affinity and is familiar to its customers. Allowing users to have too much leeway with this would mean the bank letting go of a sense of trustworthiness it should always maintain. They felt that the copy and character of the site was authoritative, yet was delivered in a relaxed manner, thus assisting to humanise the entire experience on the site.

The Empowering functionality also rated a 5, with all users agreeing that having a consolidated view of their finances would help make them conscious of how they spend, and act as a catalyst to help them make better financial decisions. They welcomed the functionality that allowed them to track their spending in a particular category. Here, they stated that they would like to be able to compare multiple categories simultaneously. They also appreciated the setting up of an online budget, and expressed the need for this to be synchronised to a mobile device of their choice so that they could access it conveniently. This showed that the participants are multi-device users and expect any device they use to extend to another seamlessly and gracefully. They also appreciated the introduction of financial education particularly targeted at them. Here, they expressed the

opinion that, in order to make this even more successful, banks should consider partnering with third-party providers to make educational hints and tips on the Internet banking platform more effective.

The Reassuring functionality also came in with a 5 rating, with users appreciating the ability to chat directly with a bank representative. For this particular functionality, they expressed the need for an upload function, where they would be able to attach documentation while the online chat with the bank representative is in progress. They also welcomed the idea of being able to leave their details for the bank to contact them, as well as being able to send and receive secure messages from the bank.

The functionality requirements supplied by users during the survey and interview phase of the study also enjoyed a rating of 5. Users welcomed the introduction of generic financial information, and expressed the feeling that this indicated that the bank is concerned about their overall financial well-being. They also were keen on the ability to partition their accounts, but once again expressed that security on this feature needs to be adequate. They all welcomed the idea of being able to select their own login details, as they stated that this would be far easier than having to remember lengthy card numbers.

They were all enthusiastic about the introduction of a rewards section on the site, where they would be able to track and use their loyalty points on the Internet banking platform. When it came to purchasing a product through this rewards system, they stated that they would like the platform to provide them with a number of payment options, namely, through an account they already have with the bank, through an account they have with another banking institution, through their accumulated loyalty rewards, or through all methods combined. They were also accepting of the notification of the NFC functionality. They expressed the view that Internet banking platforms should be a central hub of such information, giving them an idea of what other banking channels have to offer.

In addition to the validated functionality guidelines, the users mentioned three functionality types they would like to access on the Internet banking platform of the future. These include being able to pause their transacting session, set their own session expiry time and have a document library in which they would be able to store all documentation related to their banking.

Generally, all functionality categories were well received by the participants. With regard to the general perceptions they have of the platform, participants stated that the proposed functionality would enhance the Internet banking platform and help them to achieve better financial standing, thus putting them in control of their financial lives. A consolidated list of finalised, thoroughly scrutinised and validated, functionality guidelines accumulated from the different stages of the study are found in the chapter that follows.

## **Chapter 10: Internet banking functionality guidelines for Generation-Y users**

### **10.1 Introduction**

The research process in this study was designed so that the output from each phase fed into the next. Firstly, the technological traits supporting Generation-Y preferences for specific online experiences were considered (see section 3.4.2). These traits were then compared, through triangulation, with seven distinct, functionality trend categories identified in the literature (see section 4.4) that were considered to be pioneering and definitive of future digital financial services including Internet banking. Combined, they provided an initial list of 30 innovative functionality guidelines (see section 5.5).

During the next four phases of the study, these initial functionality guidelines were refined and validated through the participation of both Generation-Y and expert UX professionals. Firstly, an online survey requesting representative Generation-Y users to validate the guidelines was conducted. Accordingly, these users revealed additional functionality requirements they believed should be included in Internet banking platforms. Follow up interview sessions with individual Generation-Y users were then conducted in order capture qualitative data, to complement the data gathered in the survey, as well as to further validate the functionality guidelines. The validated guidelines from both these phases can be found in section 7.15.

A heuristic evaluation by five professionals in the UX field was then conducted, utilising the validated guidelines from the survey and interviews as heuristics. In this evaluation, they inspected the Internet banking websites of five South African banks (Standard Bank, FNB, ABSA, Nedbank and Capitec) in order to assess the level on which the current platforms demonstrate functionality innovation, as well as, most importantly, to help identify additional pioneering functionality to be included in the set of guidelines to be proposed by this study (see section 8.5.3).

All the guidelines were then consolidated and presented in the form of a semi-functional HTML prototype in order for representative Generation-Y users to once again validate and, where relevant, provide input on any functionality requirements not captured in the study thus far (see section 9.5). This functionality validation exercise has led to this point of the study, where a well-developed and

thoroughly scrutinised list of Generation-Y functionality guidelines for the Internet banking platform can be presented.

Key feedback patterns from a set of representative Generation-Y users observed during the course of the study have also been consolidated. These have led to a researcher-synthesised set of ten high-level functionality implementation guidelines. These functionality implementation guidelines are supportive of the detailed Generation-Y functionality requirements.

This chapter therefore presents an abstracted set of functionality implementation guidelines in section 10.2, followed by the full set of validated functionality requirements in section 10.3. Section 10.4 summarises the chapter.

## **10.2 Internet banking functionality implementation guidelines**

Section 10.1 hints at the iterative nature of the research design process. As functionality guidelines were validated and refined throughout the various phases of the study (i.e. survey, interviews, heuristic evaluation and prototype functionality validation), specific feedback patterns were observed and noted by the researcher. A key observation was that Generation-Y users expect the Internet banking platform to execute and implement any functionality improvements in a specific manner. Noting this meant that the researcher could outline core principles that all Internet banking platform redesign efforts should ideally adhere to.

As compared to a detailed list of functionality guidelines found in section 10.3, the following core principles act as practical, quick-reference implementation guidelines that provide banking institutions with a high-level overview of the functionality principles important to this user base. When designing Internet banking functionality targeted at the Generation-Y user base, banking institutions should ideally:

- Provide a one-stop shop of financial guidance
- Target with a purpose
- Include several educational resources
- Provide cross-channel experiences
- Design with immediacy in mind
- Automate wherever possible
- Personalise and customise within limits
- Offer rewards for being loyal
- Do not neglect or relax security and privacy
- Speak casually, yet authoritatively

Each implementation guideline, its explanation and its reference point in the study are detailed in Table 10.1.

<b>Table 10.1:</b> Researcher-synthesised, Internet banking functionality implementation guidelines	
<b>Recommended, researcher-synthesised implementation guideline</b>	<b>Explanation</b>
1. Provide a one-stop shop of financial guidance.	Generation-Y users are looking for more than a transacting platform; they are in need of a financial partner that will assist in taking care of the holistic needs of their financial lives. The Internet banking platform of the future therefore needs to take the lead in providing them with a comprehensive view of their financial standing, while guiding and equipping them on how to improve their financial situation.
2. Target with a purpose.	The techno-savvy nature of this user base makes them conscious of marketing messages that are planted without adding specific value. Whatever is targeted or cross-sold to them should therefore demonstrate value and contribute to an improved financial standing. If this is not achieved, no promotion will be taken seriously. This guideline bears testimony to the personality characteristics of this user group (section 3.4.2, Table 3.3). This user base will not be happy with a one-size- fits-all approach.
3. Include several educational resources.	Where relevant, provide external, third-party educational resources not necessarily compiled by the bank. Participants explained that this would demonstrate the value the bank places on its customers' overall financial well-being.
4. Provide cross-channel experiences.	These users expect to be able to action a transaction on the Internet banking platform, and have this presented to them on another device (e.g. a smartphone) of their choice. They expect the experience to be seamless and to move from one channel to another, whether through an app, cellphone banking or other. They perceive channels secondary to Internet banking as supportive and vital for when they are on the move, or do not have much time to transact. They should therefore never feel as if that which one channel provides cannot be found and accessed on another.



5. Design with immediacy in mind.	These users are looking for quick, easy and convenient ways of consuming content and executing tasks on this platform. The use of video as an alternative to heavy text, or any other more convenient forms of consuming content should be utilised. The placement of ‘the next best action’ should be well thought out, as these users want to action as soon as something catches their eye. All tasks that could be positioned in a simpler, more convenient manner should be interpreted in this way, thus helping users achieve their goals faster and more efficiently. This guideline is supported by the identified Generation-Y characteristic showing that this segment scans content very quickly and is easily bored (section 3.4.2, Table 3.3). This user base also requires immediate assistance, accessible as and when they need it on the platform, therefore they consider convenient support mechanisms such as online chat and call me back favourably.
6. Automate wherever possible.	Reduce as far as possible the need to access a physical bank branch. These users are expecting this platform to offer capabilities that simplify and make their banking lives convenient, therefore, where certain functions can be accomplished through other channels, the bank should make certain these are prioritised and implemented.
7. Personalise and customise within limits.	These users want to be in full control of their journey on the site, with them controlling how they want to view the interface. However, when personalising according to previously learnt behaviour, do not alter the interface so that it is completely different from the default view of the site, as the users don’t want to feel as though they are ‘missing out’ on what other customers see. When it comes to customisation of the interface, allow them to modify sections that will not tamper with the overall brand identity of the bank, as this, according to them, makes the site lose its credibility. It is therefore advisable to stay away from interface customisation like changing the background colour and themes.
8. Offer rewards for being loyal.	Show users the benefits of staying with the bank, by offering them loyalty rewards. Give them the opportunity to redeem these royalty rewards on their Internet banking platform. Offer partnerships that are not necessarily related to banking (e.g. for cellphones, holidays, restaurant, etc.), and offer special deals to users. This, they believe, communicates that the bank is aware of and cares about the different aspects of their lives.
9. Do not neglect or relax security and privacy.	As functionality recommendations were made on this platform, users became more and more concerned about the security implications, hence the request for additional authentication layers (e.g. OTPs) for most of the newly introduced functionalities. Based on this, it is also important that the site’s security standards are communicated and made visible to users. Functionality that alluded to users being able to share generic information on social media platforms was not welcome at this point. It is therefore important to be conscious of the fact that these users deem their money matters to be private, and are not willing to share them despite their community driven nature (see section 3.4.2, Table 3.3).
10. Speak casually, yet authoritatively.	Adopt a tone that is friendly, yet formal when addressing this user base. They require a platform that is free of financial jargon, while being able to provide them with the financial guidance they expect from a bank.

### **10.3 Internet banking functionality guidelines for South African Generation-Y users**

Section 10.2 provided a high-level view of the functionality implementation guidelines communicated by Generation-Y users. These acted as a quick-reference guide that provided an overall idea of how banking institutions could approach a potential Internet banking redesign effort. This section presents the next level of detail, and acts primarily as a culmination point for the main objective of the study. Recommendations for Internet banking functionality guidelines, specifically aimed at South African Generation-Y users, are to be found in this section.

Tables 10.2 to 10.8 list the validated Internet banking functionality guidelines as identified and refined throughout this study. The journey began with an initial set of guidelines identified during the literature review, and saw some of the recommendations on this initial list being shunned, accepted or even further expanded on by Generation-Y users during the survey, interviews, heuristic evaluation, and the functionality validation phases of the study. The list below can therefore be interpreted as the final set of functionality recommendations proposed by the study.

The guidelines are listed according to seven categories, of which five were derived from the initial literature review phase of the study (Simple, Ubiquitous, Personal, Empowering and Reassuring – refer to section 5.5), and two derived from the feedback by users during the online survey and user interviews, Participant generated (see sections 7.12.1 and 7.12.2).

A statistical analysis of the reliability of the various constructs contained within these five functionality categories was performed. The results of this analysis revealed that the average reliability score across all constructs within the five categories averaged a Cronbach's alpha score of 0.6897, which falls within the acceptable reliability range. However, when individually measured, the Simple (Table 10.2) and Ubiquitous (Table 10.3) categories yielded low reliability scores. It is therefore important that the functionality guidelines within these two categories be applied with caution, making certain that they are further investigated in a more contextual environment, and further validated by intended users. Appendix F gives a detailed breakdown of this statistical analysis.

The last as feedback was received from the semi-functional prototype validation (Prototype validation generated – section 9.5). Where relevant, recommendations by users for the way in which additional enhancements could be incorporated in each functionality guideline are also captured.

<b>Table 10.2:</b> Simple category: Final validated list of functionality guidelines		
<b>Simple category</b>		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
1. Offer tools that assist users in simplifying difficult tasks such as applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.).	Design with immediacy in mind.	Allow for a direct call-to-action to be provided even on a tool like a calculator. This can be a direct-link to any ‘apply now’ page. Users expressed the opinion that they would require this if they decided to take up a product at this point in the process. Immediacy is important to them.
2. Pre-fill applications or any online process that requires users to capture their personal details (e.g. if the bank already has the user’s personal details, these should be automatically populated to a certain extent on an online application form, rather than having the user fill in all these details from scratch).	Automate wherever possible.	No additional recommendations were communicated by users.
3. Automate transactions from start to finish by allowing users to complete transactions without having to request assistance from the bank, or go into a branch.	Automate wherever possible.	Include another level of authentication. This could be an OTP that can be sent to the users’ preferred contact method.
4. Present difficult-to-understand content in innovative ways such as videos, audio clips, online games, polls, etc.	Design with immediacy in mind.	No additional recommendations were communicated by users.
5. Offer e-signatures to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan.	Automate wherever possible.  Do not neglect or relax on security and privacy.	Include another level of authentication. This could be an OTP that can be sent to the users’ preferred contact method.

<b>Table 10.3: Ubiquitous category: Final validated list of functionality guidelines</b>		
<b>Ubiquitous category</b>		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
1. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions.	Provide cross-channel experiences.	No additional recommendations were communicated by users.
2. Provide easy access to a banking application that users can download and use on mobile devices such as a smartphone or tablet.	Provide cross-channel experiences Include several educational resources.	For download on other types of mobile devices, this section should link to their respective 'app stores'. Provide third-party apps endorsed by the bank in this section. Users stated that this would give them a broader range of financial health tips, than just those developed by the bank.

<b>Table 10.4: Personal category: Final validated list of functionality guidelines</b>		
<b>Personal category</b>		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
1. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	Target with a purpose.	Be responsible about the product being cross sold. Participants expressed the opinion that the promotion should be linked to their likely needs, with the bank assessing from the aggregated section of the websites what their true needs are. They further stated that this should not be a promotion based on the 'because we can' principle, but should be a product aimed at helping them improve their financial standing responsibly. Also promote products that are not necessarily related to banking (e.g. smartphones and tablet devices). This communicates to the user that the bank is in touch with their broader needs, and strives to make the different parts of their lives as efficient as possible.
2. Facilitate the customisation of the website in a manner that suits the user's preferences such as changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.	Personalise and customise with limits.	Make all customisation optional. Users are not too keen on colour and theme customisation on this interface. They believe Internet banking platforms need to maintain a certain level of formality which would be eliminated by a drastic change in design. Rather implement interface customisation such as rearranging the order of navigation items, or selecting which web parts to see on a particular page.

<p>3. Support the user by providing specific links based on their previous interactions and how they are most likely to interact in the future (e.g. if a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage, so that a user can access them straight away).</p>	<p>Personalise and customise with limits.</p>	<p>No additional recommendations were communicated by users.</p>
<p>4. Create different navigation paths for different users with or without certain products (e.g. if a user has a home loan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a home loan to begin with, the homeowners insurance navigation link should not be shown).</p>	<p>Personalise and customise with limits.</p>	<p>To be implemented in a manner that does not alter the default view of the interface. Participants stated that they do not want to feel as though they are not seeing the same type of content as everyone else, due to the fear of ‘missing out on something’.</p>
<p>5. Make the tone and character more modern and relevant for the younger, more techno-savvy client.</p>	<p>Speak casually, yet authoritatively.</p>	<p>Implement so that content is free of jargon , however a bank should still retain a certain level of authority over the user, taking a lead role, even if this is communicated in a more relaxed fashion.</p>

<b>Table 10.5:</b> Empowering category: Final validated list of functionality guidelines		
<b>Empowering category</b>		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
<p>1. Allow users to track their spending over a period of time.</p>	<p>Provide a one-stop shop of financial guidance.</p>	<p>Implement ability for the user to compare more than one spending category.</p>
<p>2. Assist users in creating an online budget.</p>	<p>Provide a one-stop shop of financial guidance.</p> <p>Provide cross-channel experiences.</p>	<p>Synchronise this budget to an app that can be conveniently accessed using a portable smart device.</p>
<p>3. Facilitate users in creating savings targets to assist them in reaching certain financial targets.</p>	<p>Provide a one-stop shop of financial guidance.</p>	<p>No additional recommendations were communicated by users.</p>

<p>4. Provide alerts and notifications to assist users reach their financial goal (E.g.: If a user is aiming to only spend R 1000 on Entertainment per month, send them a notification when they are about to go over their limit).</p>	<p>Provide a one-stop shop of financial guidance.</p> <p>Provide cross-channel experiences.</p>	<p>No additional recommendations were communicated by users.</p>
<p>5. Educate the user on their financial standing and how they can improve it (i.e. personalised calculators).</p>	<p>Provide a one-stop shop of financial guidance.</p> <p>Include several educational resources.</p>	<p>Include content not necessarily related to the bank. For instance, financial articles written by external sources could be placed here.</p>
<p>6. Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like ‘groceries’, ‘entertainment’, ‘petrol’, etc.) in order to track and monitor specific spending patterns.</p>	<p>Provide a one-stop shop of financial guidance.</p>	<p>No additional recommendations were communicated by users.</p>
<p>7. Provide savings tips that assist the user in reaching a specific goal or target.</p>	<p>Provide a one-stop shop of financial guidance.</p> <p>Include several educational resources.</p>	<p>Include content not necessarily related to the bank. For instance, financial articles written by external sources could be placed here.</p>
<p>8. Provide users with a real-time, consolidated view of their financial life by showing them, on a single screen, all their financial accounts across different financial services providers.</p>	<p>Provide a one-stop shop of financial guidance.</p>	<p>No additional recommendations were communicated by users.</p>
<p>9. Estimate the value of the user’s assets and liabilities by providing them with a single view of their financial worth.</p>	<p>Provide a one-stop shop of financial guidance.</p>	<p>No additional recommendations were communicated by users.</p>
<p>10. Encourage users to take immediate action on a particular goal (e.g. apply for an investment account, recommend a product, etc.).</p>	<p>Provide a one-stop shop of financial guidance.</p> <p>Target with a purpose.</p>	<p>Be responsible about the product being cross sold Participants expressed the view that the promotion should be linked to their likely needs, with the bank assessing these needs from the aggregated section of the websites. They also stated that this type of promotion should not be based on a ‘because we can’ principle, but should be product aimed at helping them improve their financial standing responsibly.</p>

<b>Table 10.6:</b> Reassuring category: Final validated list of functionality guidelines		
Reassuring category		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
Allow the user to start a chat session with the bank by clicking a link that opens a chat window on screen (click to chat).	Design with immediacy in mind.	Incorporate a document uploading functionality that can be utilised during a chat session with a bank representative.
Allow users to fill their contact details in input fields on a page, and have a representative from the bank contact them (request a call back).	Design with immediacy in mind.	No additional recommendations were communicated by users.
Allow users to receive and send personal messages to the bank.	Design with immediacy in mind.	No additional recommendations were communicated by users.

<b>Table 10.7:</b> Participant generated category: Final validated list of functionality guidelines		
Participant-generated category		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
1. Proactively offer financial education that does not necessarily allude to products that users have, but rather gives a fresh view that will help users acquire financial skills.	Provide a one-stop shop of financial guidance.	No additional recommendations were communicated by users.
2. Provide a mechanism whereby users can partition their financial account into 'pockets' for different monetary purposes.	Automate wherever possible.	No additional recommendations were communicated by users.
3. Allow users to log on to Internet banking without using bank details such as card number and customer selected pin; rather prompt them to create their own login information.	Design with immediacy in mind.	No additional recommendations were communicated by users.
4. Create a loyalty programme where users are able to accumulate rewards for using the bank's products. Allow users to track and use these rewards on the Internet banking platform.	Offer rewards for being loyal.	No additional recommendations were communicated by users.

5. Form partnerships with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate.	Offer rewards for being loyal.	Include the ability to be able to pay for a particular product using both rewards and money in their account, and not just one or the other. This dual payment method would be ideal for them.
6. Use of NFC technology whereby payments can be made to anyone near them who has a compatible handset and who does not necessarily belong to the same bank.	Provide cross-channel experiences.	No additional recommendations were communicated by users.

**Table 10.8:** Prototype validation generated category: Final validated list of functionality guidelines

Prototype validation category		
Validated functionality guideline	High-level implementation guideline supported (see section 10.2)	Additional user recommendations
1. Incorporate a document library where the user is able to store important documents such as a copy of their ID, proof of address on the site.	Provide a one-stop shop of financial guidance.	No additional recommendations were communicated by users.
2. Include a function that will enable the pausing of an active Internet banking session in order for the user to resume browsing at a later stage in time.	Personalise and customise with limits.	No additional recommendations were communicated by users.
3. Allow the setting of own session expiry time frame.	Personalise and customise with limits.	Users explained that having this functionality would mean that they would be able to enjoy the functionality offered on this platform for extended periods of time.

## 10.4 Summary

This chapter presented the finalised, refined and validated functionality guidelines processed through the different phases of this study (surveys, interviews, heuristic evaluation and prototype evaluation). Two sets of guidelines were presented; the first being an abstracted set of ten high-level, researcher-synthesised functionality implementation principles that act as a quick reference for institutions looking at a potential Internet banking redesign effort. These were synthesised on the basis of the key feedback patterns observed by the researcher throughout the study, as they related to the overarching expectations of Generation-Y users of the Internet banking platform of the future.



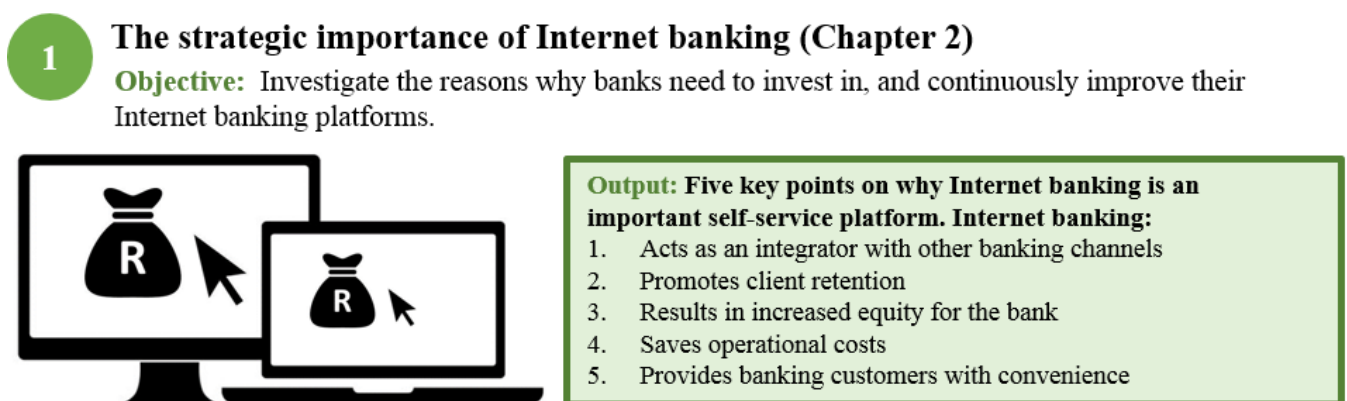
Refined and validated functionality guidelines were then listed. These are the final recommendations presented by this study and relate to the specific types of Internet banking functionality that appeal to South African Generation-Y users. Where relevant, additional comments from these users have been captured, detailing how this final list of functionality can be further enhanced by banking institutions looking to make innovative changes to the existing functionality on their Internet banking platforms. The next and final chapter outlines some of the issues encountered and discusses the achievements of this study.

# Chapter 11: Conclusions

## 11.1 Overview

This study investigated the functionality required by the Generation-Y customer segment of South African Internet banking websites. Each phase of the research process was designed so that it fed into the next, in order to formulate a validated list of specific functionality guidelines. A mixed method research design was used to achieve this, applying both quantitative and qualitative research approaches.

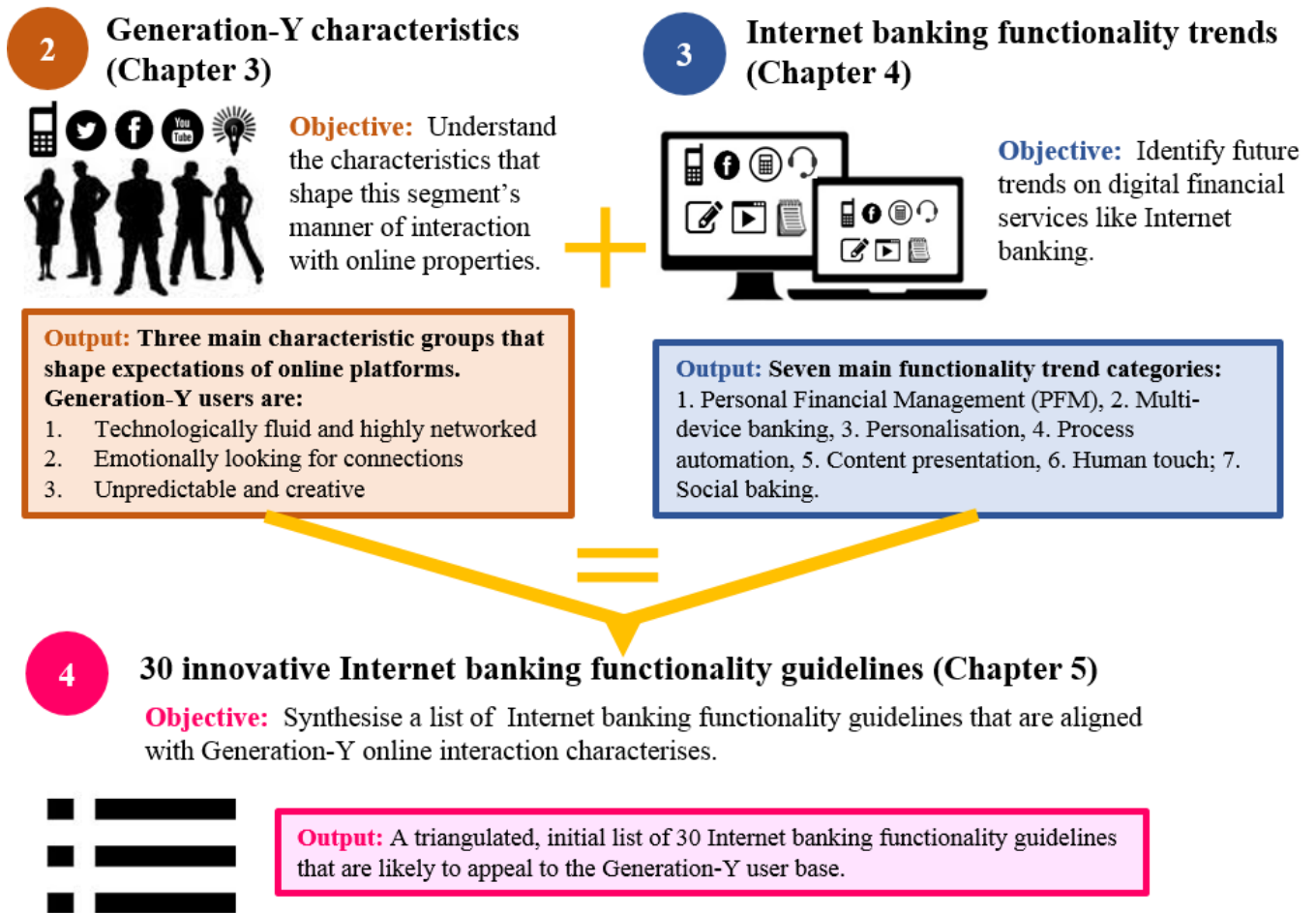
The study began by exploring the importance of Internet banking to banking institutions. This literature-based investigation outlined why it is a strategic imperative for Internet banking to show continuous evolution and improvement in adopting new technological opportunities and developments. Further discussed in section 11.3.1, Figure 11.1 depicts the five key points discovered during this literature investigation.



**Figure 11.1:** Overview of study: Chapter 2: Strategic importance of Internet banking

The study then proceeded to Chapter 3, and considered the technological characteristics supporting Generation-Y inclinations for certain online experiences (this is further discussed in section 11.3.2). Chapter 4 outlined the futuristic functionality of Internet banking platforms, where seven distinct functionality categories were identified (further discussed in section 11.3.3). Both chapters 3 and 4 were then used to synthesise an initial list of 30 innovative functionality guidelines, aligned to the likely needs of the targeted Generation-Y users. This synthesis is captured in Chapter 5 and further

discussed in section 11.3.3 as well. Figure 11.2 visualises the relationship between these three chapters of the study, and outlines their respective outputs.



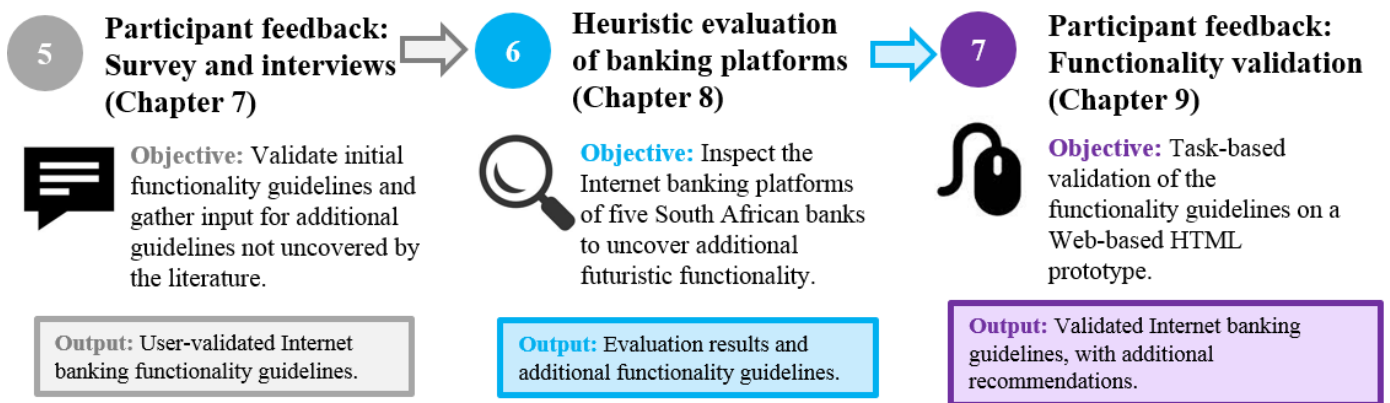
**Figure 11.2:** Overview of study: Chapters 3-5

In order to validate, and further refine the list of functionality identified from the literature, online surveys and interviews were held with representative Generation-Y users. This produced the first sample of quantitative and qualitative data that was used to affirm and further probe the users' views on the functionality requirements identified at that stage. This is captured in Chapter 7, and further outlined in 11.3.4.

Feedback from the online survey and interviews was then used to formulate a set of functionality heuristics used by five experienced evaluators in the UX field to perform a heuristic evaluation of current Internet banking websites across five South African banks (Standard Bank, ABSA, FNB, Nedbank and Capitec). This was intended to investigate the level at which current Internet banking

websites demonstrate innovation, as well as to uncover any future functionality on these platforms not yet revealed by the literature or the feedback of Generation-Y users. This is captured in Chapter 8, and further detailed in section 11.3.5.

Functionality recommendations from the literature, online survey, interviews and heuristic evaluation were then used to formulate an HTML prototype that Generation-Y users were requested to validate. This prototype provided a visual and interactive representation of the required Internet banking functionality guidelines, and demonstrated, in a realistic manner, how the Internet banking platform of the future could potentially function. This meant that Generation-Y users could give more accurate and realistic feedback on the functionality gathered throughout the different phases of the study, as the HTML prototype gave them an opportunity to engage with it. A screenshot example of a section within this prototype, as well as the feedback from Generation-Y users who validated it, can be found in Chapter 9. This is also discussed in section 11.3.6 of this chapter. Figure 11.3 visualises the relationship between the three chapters, as well as outlines their respective objectives and outputs.



**Figure 11.3:** Overview of study: Chapters 7-9

Chapter 10 acts as the main cumulative point of the study. Herein, all gathered research from the literature and feedback from the user validation is synthesised and presented as the final, recommended list of functionality guidelines suitable for South African Internet banking users. Figure 11.4 depicts the relationship between all the sections of the study. The graphic provides a high-level view of what the objectives and outputs of the different chapters were, essentially summarising this study at a single glance.

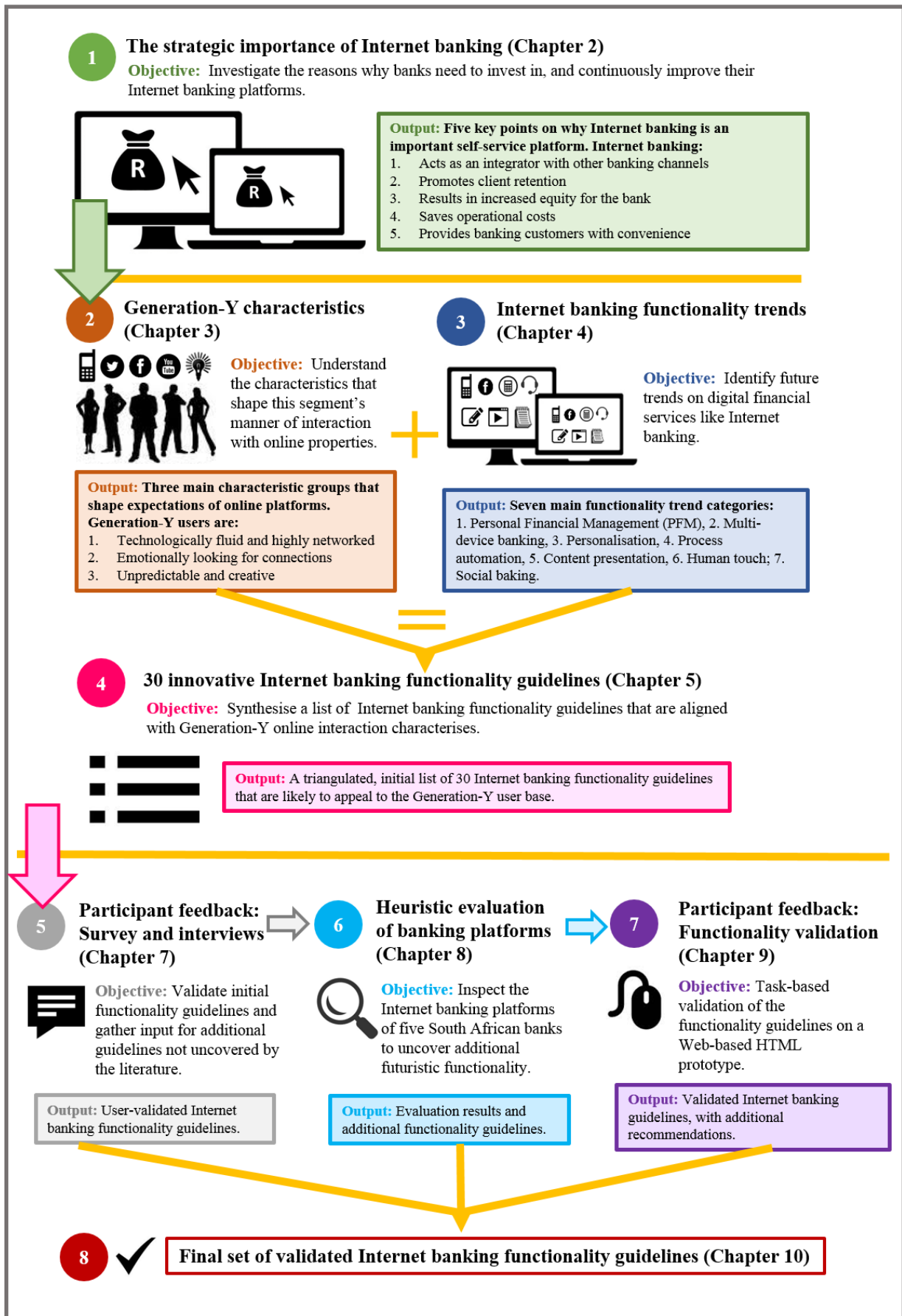


Figure 11.4: Summarised view of the study: Chapters 2-10

In this chapter, the major sections of this study are revisited. The problem statement and research questions are summarised, discussing in particular how they were addressed by the different chapters. This discussion can be found in sections 11.2 and 11.3. Section 11.4 presents the limitations of the study, while section 11.5 contextualises the research in relation to other recent studies investigating similar topics. Section 11.6 outlines the contribution that this study has made to the overall body of knowledge, while section 11.7 outlines possible areas for further research. Section 11.8 concludes the chapter by capturing the researcher's thoughts on the overall research process.

## **11.2 Revisiting the problem statement**

A preliminary literature review identified that Generation-Y users are recognised as a very important market segment (Smith 2010) and are said to be the most powerful consumer group with more disposable income than any other predecessor generation (Jang, Kim & Bonn 2011). For this reason, making certain that functionality on websites caters to their specific needs has become an important challenge for many organisations (Venkatacharya, Rice & Bezuayehu 2009). Despite the strategic value the Generation-Y segment has to the future of business, Djamasbi et al. (2010) state that there is little research to be found on this user base's Web preferences.

Accordingly, this study addressed this gap by investigating, in the South African context, Generation-Y functionality preferences, specifically for the Internet banking platform. The study examined what this functionality is and how it should be presented in order to reflect Generation-Y users' characteristics and online inclinations.

## **11.3 Responses to the research questions**

After defining the problem statement, the main research question was outlined, along with six additional sub-questions. These were to become the main focal points of the study, acting as reference points that gave structure to the overall direction of the study. The main research question was formulated as:

**What functionality should South African Internet banking websites provide in order to address the needs of Generation-Y users?**

The six supporting sub-questions were:

1. Why is Internet banking important for banking institutions?
2. What characteristics of Generation-Y users influence their expectations and preferences in terms of online platforms?
3. What are the projected functionality trends of financial services websites such as Internet banking?
4. What kind of functionality are South African Generation-Y users looking for on their Internet banking platforms?
5. How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?
6. What Internet banking functionality appeals to South African Generation-Y users?

These questions have been addressed throughout the preceding chapters, using various methods and approaches as appropriate and justified. The sections that follow reflect on the sections of this study in which the respective sub-questions were answered, as well as a summary of the response.

### **11.3.1 Answer to sub-question 1: Why is Internet banking important for banking institutions?**

In order to answer sub-question 1, a background literature review was performed. As this was at the start of the research, the main purpose of the chapter was to give the context within which the Internet banking channel is seen as a strategic imperative for banking institutions, subsequently leading to the need for this platform to keep abreast of key client needs and requirements (a directive this study was aiming to contribute to). This chapter therefore did not have a direct feed-through on the final set of functionality guidelines that would ultimately be formulated.

Research sub-question 1 was therefore primarily answered in Chapter 2 of the study, with the actual strategic importance factors outlined specifically in section 2.3. The literature revealed five distinct ways in which banking institutions could benefit from this popular self-service channel and as such, highlights its importance. Table 11.1 provides a summary of these strategic imperatives.

<b>Table 11.1: Summary: How banking institutions can benefit from the Internet banking platform</b>		
<b>Strategic imperative</b>	<b>Explanation</b>	<b>Reference in study</b>
Internet banking acts as an integrator of other banking channels (Daffue 2005).	The platform plays an important role in channel mediation, as digitally sophisticated clients are more likely to use it as a starting point of their investigation, and even make their first step of purchasing this platform.	Section 2.3.1.
The platform promotes client retention (Daffue 2005).	If used effectively, Internet banking can be used for two-way communication with customers to learn about existing and potential problems clients are experiencing before it becomes too late and too costly to recover.	Section 2.3.2.
The adoption thereof results in an increase in equity for the bank (Daffue 2005).	The platform also makes it possible to monitor the online interaction patterns of clients, and therefore makes it possible for banks to identify emerging service trends and predict prospective products and services for their clients, before they even know they need them.	Section 2.3.3.
Internet banking saves operational costs (Hernández-Murillo et al. 2010).	The implementation of the service usually means that the bank will require fewer personnel and the need for physical branches decreases.	Section 2.3.4.
The platform provides banking customers with convenience (Wu 2005).	Customers value the advantage of 24-hour access to their transacting platform, with expenditure cuts witnessed by eliminating travel to and from a branch.	Section 2.3.5.

### **11.3.2 Answer to sub-question 2: What characteristics of Generation-Y users influence their expectations and preferences in terms of online platforms?**

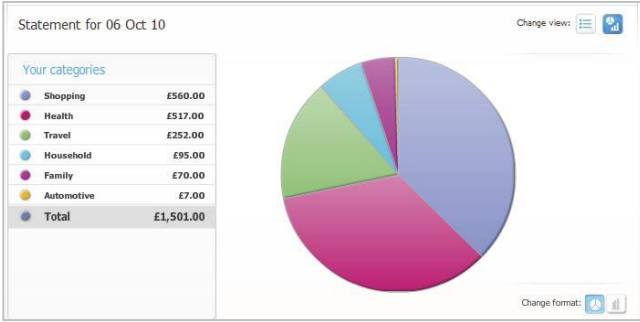


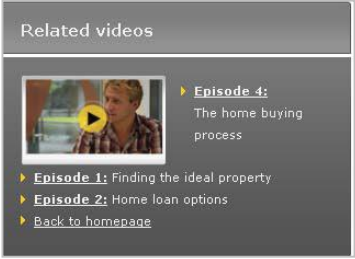
The preliminary literature review revealed a number of characteristics of the Generation-Y user segment, and also showed how important it was to align any online platform to the anticipated needs of this user base (see section 1.2.2). In order to achieve this, it was important to identify what the literature deemed to be the key traits of this user base and which affected their interaction with online products. This was primarily answered in Chapter 3 of the study. The literature study assisted in answering this question (see section 3.4.2). The technological characteristics that describe this user base are summarised in Table 11.2.






<b>Table 11.2: Summary: Technological characteristics of Generation-Y users</b>	
<b>Characteristic</b>	<b>Implications on interaction with online products (see section 3.4.2)</b>
Generation-Y users are likely to own multiple digital devices as they desire continuous connectedness (Patterson 2011).	From this, general mannerisms such as SMS language have emerged, resulting in recommendations that online platforms speak to these users in a tone they can relate to, always seeking to shorten and simplify instructions, and where possible use visual cues instead of long text (Temkin & Popoff-Walker 2007).
Generation-Y users are mostly influenced by peers and family, are continuously looking for online human connections and exchange of real experiences that makes them feel a sense of community, respect and acceptance (McCrinkle 2012).	Tools of expression that enable them to communicate with others are therefore recommended on any online platform aiming to cater for this user base.
These users expect instant gratification, and expect online processes to execute promptly.	Websites have to be designed with immediacy in mind, exposing the value of key pages and regularly updating content, whilst providing constant feedback to these users (Temkin et al. 2008).
These users are more than mere consumers of online content; they are also active creators, continuously updating online blogs and sharing generic life events.	Because of their diverse and expressive nature, they expect to be provided with high levels of personalisation and customisation where they are able to change interactions, and even products and services to reflect their individual personalities (Temkin & Popoff-Walker 2007).

**11.3.3 Answer to sub-question 3: What are the projected functionality trends of financial services websites like Internet banking?**

The next step of the study was to investigate whether any functionality projections detailing how the Internet banking platform of the future would look and function existed. The intention here was for this information to act as a benchmark from which functionality requirements could be derived before the user validation phase of the study could commence. Seven distinct functionality categories in which this innovation was likely to happen were identified. The study details these in sections 4.5 to 4.11. Explanations of what each of the seven functionality categories represent are summarised in Table 11.3.

Table 11.3: Summary: Seven innovative functionality categories	
Functionality category	Explanation
<p>Personal financial management (see section 4.5).</p>  <p>The screenshot shows a financial statement for 06 Oct 10. On the left, a table lists categories and their values: Shopping (£560.00), Health (£517.00), Travel (£252.00), Household (£95.00), Family (£70.00), and Automotive (£7.00), with a Total of £1,501.00. On the right, a pie chart visualizes these categories. The interface includes 'Change view' and 'Change format' options.</p>	<p>This alludes to transactional banking users being able to manage their money by using money aggregation technology that enables them to have a consolidated view of their financial standing, usually across a number of financial services providers. Where relevant, users are provided with personalised budgeting and money management hints and tips.</p>
<p>Multi-device banking (see section 4.6).</p>  <p>The image displays the same banking interface on three different devices: a desktop monitor, a tablet, and a smartphone. The desktop version shows a full-width layout with a large banner and multiple columns of content. The tablet and smartphone versions show a responsive design with a single column and larger touch-friendly elements.</p>	<p>Owing to the prevalence of portable mobile devices such as smartphones and tablets, banking organisations have to ensure that their online platforms can be viewed comfortably, regardless of the device being used.</p>
<p>Personalisation (see section 4.7).</p>  <p>The screenshot shows a personalised banking website. The left side features a navigation menu and a product recommendation for 'Navegador TomTom Go XL' with a price of 249 €. The right side displays a 'Préstamo Personalizado' (Personalised Loan) offer from BBVA, with the text 'El préstamo que mejor se adapta a usted.' (The loan that best suits you).</p>	<p>Future digital financial services will give users the opportunity to source their own website settings in a manner that suits their personal preferences (e.g. change of interface theme, navigation rearrangement, etc.). This platform will also adapt to the user's financial profile, and recommend relevant products, website content and functionality.</p>
<p>Content presentation (see section 4.8).</p>  <p>The screenshot shows a 'Related videos' section. It features a video player with a play button and a list of video titles: 'Episode 4: The home buying process', 'Episode 1: Finding the ideal property', 'Episode 2: Home loan options', and 'Back to homepage'.</p>	<p>It is not enough to have the right content; content also needs to be presented in more creative ways (e.g. video) that makes it easy to read and Comprehend, resulting in users quickly absorbing key details.</p>

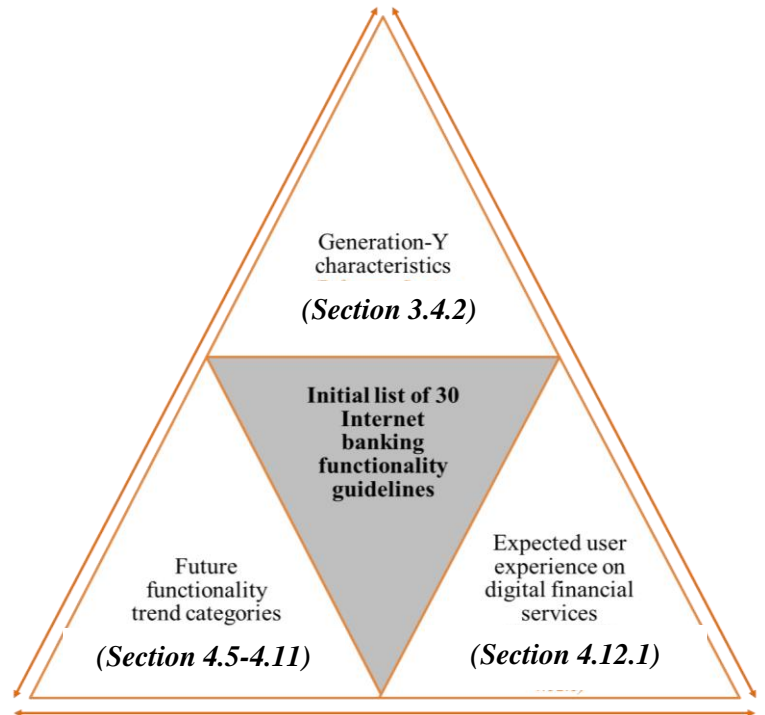
<p>Process automation (see section 4.9).</p> 	<p>This category addresses banking functionality that will enable users to perform certain transactions from start to finish, without having to access a physical branch. These transactions include the increasing of certain account limits, product applications, etc.</p>
<p>Human touch (see section 4.10).</p> 	<p>Banking technology should be balanced with human interaction, by allowing users to access human assistance from the bank whenever the need arises.</p>
<p>Social banking (see section 4.11).</p> 	<p>The digital financial services of the future will demand integration across several processes, systems, applications and channels; with social media forming part of this equation.</p>

Furthermore, section 4.12.1 revealed the projected UX on future digital financial services such as Internet banking. This may be summarised in terms of the SUPER acronym (Hesse 2011), with the meaning of the letter in the acronym being explained in Table 11.4.

<b>Table 11.4:</b> Summary: Projected user experience on future digital financial services	
<b>Acronym outline (SUPER)</b>	<b>Explanation (see section 4.12.1)</b>
Simple.	It will be much easier for customers to achieve goals and tasks on digital financial websites if products and services information is presented in a manner that is easy to comprehend.
Ubiquitous.	Customers will seamlessly interact with their financial services provider through an increasing number of touch points such as mobile devices and social networks. There will be continuity and consistency across all these platforms, making users comfortable and reassured that their needs are being met regardless of the device and platform on which they choose to transact.
Personal.	The entire online experience will be relevant to unique customer needs, and will not use a one-size-fits-all approach when it comes to handling customers' financial data.

Empowering.	Customers will be able to take action by themselves, as they will be provided with an aggregated view of their finances from multiple sources. This aggregation will put them in control of their financial lives, as they will have a single and solid point of reference for all their financial information.
Reassuring.	As human beings still remain the best sales and service channel for many high-value interactions, future digital financial services will provide human help whenever the user feels the need.

With the knowledge obtained on the Generation-Y characteristics (section 3.4.2), future functionality trend categories (section 4.5 – 4.11), and an overview of the projected innovation trends on digital financial services (SUPER) (section 4.12.1), it became possible to identify the similarities between these different sources of information from the literature, and assess whether the functionality trends and the projected UX aligned with the group of traits of Generation-Y users that was identified.



**Figure 11.5:** Triangulation in the formulation of the initial list of Internet banking functionality guidelines

In this study the triangulation between these three aspects, that is, mapping the functionality trends and UX elements to the most relevant Generation-Y technological characteristics, is represented in Figure 11.5 and outlined in Table 4.8. From this it was deduced that the projected UX and functionality categories align in multiple ways with the technological traits of Generation-Y users, accentuating that the types of functionality trends gathered from the literature could potentially be appealing to this user base. This would ultimately be what sub-question 4 aimed to validate in terms of representative Internet banking Generation-Y users.

Owing to its inherent functionality encompassing nature, the SUPER acronym was used as the main categories for grouping the seven functionality trend categories (sections 4.5–4.11). From these trend categories, an initial list of thirty specific functionality guidelines was synthesised (listed in Table 5.7). Chapter 5 of this study outlines a step-by-step synthesis of the functionality guidelines discussed above (see section 5.5).

#### **11.3.4 Answer to sub-question 4: What kind of functionality are South African Generation-Y users looking for on their Internet banking platform?**

Section 11.3.3 gives an overview of how the initial set of 30 functionality guidelines was formulated. These guidelines were solely based on the literature, therefore it was important to get validation from representative Generation-Y users in order to refine, remove and also add functionality guidelines not yet uncovered by the literature. This research sub-question has therefore been primarily answered in Chapter 7, where the results of an online survey and face-to-face interviews with Generation-Y participants are presented.

Fifty responses were gathered from the survey, while 12 Generation-Y users took part in individual interviews. The research took place at a digital and direct marketing agency in Johannesburg, South Africa, AquaOnline, as the employees are closely aligned to the desired Generation-Y demographic targeted by this study. The results of this phase of the study can be found section 7.15. A summary of the participants' feedback follows.

A five-point Likert scale was used according to which participants were requested to rate the various guidelines identified in the literature and, where relevant, to substantiate their rating. The questionnaire design allowed for both qualitative (participants' substantiation of functionality rating and their additional functionality recommendations) and quantitative data (participants' functionality acceptance rating) capture, thus providing a holistic understanding of the importance participants placed on the different functionality guidelines presented to them. The online survey and interviews exposed the perceptions participants currently have of their Internet banking platforms, with their input revealing that most are happy with the basic transactional capabilities this platform offers (i.e. paying beneficiaries, buying airtime, inter-account transfers, etc.). Despite this they acknowledged that the functionality on this platform could be improved by providing them with the ability to manage their financial matters better.

This was further supported by the participants' view that this platform should be playing the role of a 'financial adviser', which it currently does not do. When asked to validate the functionality guidelines presented within the various categories (i.e. Simple, Ubiquitous, Personal, Empowering; Reassuring), it was found that Generation-Y users are looking for full process automation, whereby they can perform actions online that currently require a branch visit (e.g. increasing transactional limits). However, they are wary of security problems the introduction of functions like electronic

signatures may introduce, and strongly communicated the need for additional layers of security such as One Time Passwords should such functionality be incorporated into the platform. This input yielded an acceptance rating of 4.2, a Likert score closest to the ‘agree with proposed functionality’ mark for all functionality listed in the *Simple* category.

Participants agreed with the idea of being notified about other banking channels (e.g. via a mobile app) however, being able to undertake their banking on social networking websites as the notion of social banking suggests was unsettling for them. The functionality listed in the *Ubiquitous* category therefore yielded an acceptance rating of 3.2, a Likert score closest to the ‘neither agree, nor disagree with proposed functionality’ mark.

Although they supported the idea of customising the platform according to their needs (e.g. change of interface colour, navigation rearrangement, etc.), participants felt that what users are permitted to modify on the platform interface should be closely monitored, as this could interfere with the overall branding of the organisation; a component of the interface they believe is key in depicting the stature and credibility of the bank. An inclination towards personalisation rather than customisation was observed, where they preferred the bank to make targeted promotions based on products they do not currently have, rather than allowing them to change the background colour of their transacting interface. The *Personal* category therefore returned a 3.8 acceptance rating, a Likert score closest to the ‘agree with proposed functionality’ mark.

Participants were also keen to see the transformation of the Internet banking platform into a money aggregation website, where they would be able to obtain a better view of and manage their finances more efficiently. They want to be able to set and monitor savings targets, put spending alerts in place, budget online and track their spending on certain categories like groceries, entertainment, fuel, airtime etc. The Empowerment category averaged at a 4.6 acceptance rating, a Likert score closest to the ‘strongly agree with proposed functionality’ mark.

Participants also supported the idea of having direct human contact on the platform, with the click-to-chat and request-a-call-back functions being the most preferred. The Reassuring category yielded a 3.8 acceptance rating, a Likert score closest to the ‘agree with proposed functionality’ mark.

When asked to identify additional functionality not listed in the guidelines, Generation- Y users mentioned that they want to be able to access the Internet banking platform more easily by being

able to choose their own username and passwords and not having to memorise lengthy card and profile numbers. They are looking at this platform to start offering more than just banking solutions; it should start addressing other aspects of their lives (e.g. what a healthy combination of financial products is, and where the users are falling short). They are expecting this platform to offer financial education not necessarily related to their existing product set (e.g. share trading tutorials, investment tips, etc.), as well as make product offers not necessarily related to banking (e.g. discounted holidays, sales on certain makes of mobile devices, etc.).

For them the Internet banking platform is an extension of other electronically based ways of transacting, thus they want to extend their transactions on a mobile device of their choice easily (e.g. on a smartphone or tablet), while on the move, without the experience being limited. Overall, Generation-Y participants require their online transacting platform to be a one-stop shop that has their overall financial well-being at the core of the offering, while also slowly starting to creatively integrate other parts of their lives.






### **11.3.5 Answer to sub-question 5: How does the functionality currently available on South African Internet banking platforms support Generation-Y functionality expectations?**

Internet banking platforms are not a new phenomenon and have been around for almost two decades (Wu 2005). Based on this, it was important to scrutinise existing Internet banking platforms to investigate the level at which they are innovative and, importantly, to uncover any additional functionality worthy of being included on the Internet banking platform of the future. In order to achieve this, a heuristic evaluation had to be implemented. This question is answered in Chapter 8 of the study.

The functionality guidelines validated and also further recommended by participants during the online survey and interviews were used to formulate a list of heuristics that was used to inspect the Internet banking websites of Standard Bank, ABSA, FNB, Nedbank, and Capitec Bank; five large banking institutions in South Africa.

Five evaluators, all of them experienced UX professionals trained in the heuristic evaluation approach, took part in the evaluation. Each evaluator compiled a heuristic report on their findings, stipulating how they rated each of the Internet banking websites against the functionality guidelines

gathered thus far. Section 8.5 details the findings. An overview of these results is provided in Table 11.5.

<b>Table 11.5: Summary – Heuristic evaluation results: five South African banks</b>	
<b>Bank</b>	<b>Heuristic report (see section 8.5)</b>
 <b>Standard Bank</b>	Transactional capabilities are still the main focus of the Internet banking platforms for Standard and Capitec banks. Core Internet banking functions such as account payments, inter-account transfers, bank statement depiction, etc. are still the key functions, with more innovative functionality such as personal financial management not being represented.
 <b>CAPITEC BANK</b>	
 <b>ABSA</b>	ABSA and Nedbank have deviated from the norm by beginning to position their Internet banking websites as interactive money management platforms. These two banks have started to introduce, to a certain extent, PFM capabilities, and offer users generic financial education that is aimed at helping them understand various financial topics.
 <b>NEDBANK</b>	The account aggregation ability (i.e. a consolidation across multiple accounts) is still manual on the ABSA site and is situated on a platform outside Internet banking for Nedbank. However, the general consensus from evaluators was that these two banks did at least plant a seed of advanced financial consciousness in their users' mind, which allows the websites to be positioned not only as a platform where basic transactions happen, but also as 'partners in their financial well-being'.
 <b>FNB</b> First National Bank	FNB is making headway in the cross selling of products on the website. Evaluators identified an additional functionality type they deemed original on the websites of this bank, as well as Nedbank. This functionality enables users to rename accounts that appear on their transacting homepage, effectively making products they have with the bank easily memorable and identifiable.

None of the five banks evaluated satisfactorily gave evidence of all the recommended functionality guidelines in a manner that could comprehensively cater for the identified needs of Generation-Y users.

*Please note:* As previously mentioned; the heuristic evaluation was performed to test the functionality guidelines and not the banks. Although the opinions of the expert evaluators are presented, this was a snapshot in time and cannot be seen as representative of the current functionality on the banks' Internet banking websites. Furthermore, this study focused only on the presentation of functionality for a specific group of users, at a specific time, and is not a general usability evaluation or comparison of the banks.



### 11.3.6 Answer to sub-question 6: What Internet banking functionality appeals to South African Generation-Y users?

Functionality guidelines initially gathered from the literature had now undergone three phases of validation and refinement; the online survey, user interviews and heuristic evaluation. In order for representative Generation-Y users to provide final input on the type of Internet banking functionality they desired, wireframes depicting the gathered functionality guidelines were constructed. These were then rendered in a partly interactive prototype, accessible via the Web for the research participants to access easily (Prototype-link 2012). Chapter 9 primarily answers this sub-question.

Generation-Y users were requested to access this prototype, and assess their satisfaction with the functionality proposed on their actual Internet banking platforms. Participants were given tasks representative of all the identified functionality guidelines to ensure they were familiar with the different sections of the prototype, thus enabling them to provide informed functionality validation feedback.

As with the functionality validation process during the interviews, participants in this process also demonstrated their level of agreement or disagreement with the prototype functionality by scoring it on a five-point Likert rating scale.

For each functionality category a functionality acceptance rating was captured, with participants further elaborating on certain aspects of the proposed functionality. Their input for each functionality category is summarised in Table 11.6. The detailed results are represented in section 9.5 of the study. Overall, participants reached a consensus that the functionality projected on the prototype is the kind they would like to have on their Internet banking platform of the future.

<b>Table 11.6:</b> Summary: HTML Prototype functionality validation feedback
<b>Simple – Acceptance rating 4.6: Strongly agree with proposed functionality</b>
<ul style="list-style-type: none"> <li>• Participants agreed that simplifying transactions and the consumption of product-related information were important functions to have on an Internet banking site.</li> <li>• They stated that having direct access on the site to calls-to-action such as ‘apply now’ was very important for them. They expect to action their needs immediately when a tool or product presented is of interest to them.</li> <li>• They also supported the idea of the bank reusing personal information (i.e. their full name, identity number, income and address details) it already has about them to help them complete certain online processes (e.g. applying for a new product) quicker.</li> </ul>

<ul style="list-style-type: none"> <li>• Other communication media such as video were also supported, with users stating that this is an effective alternative for those who do not wish to read lengthy product details.</li> <li>• When asked to validate the ability for users to action a transaction using an e-signature, users were concerned and agreed only on condition that an extra layer of security (such as an OTP) be provided. Although this functionality innovation would further automate transactions, users surprisingly expressed the view that they would still prefer going into a branch to append a physical signature. Issues of security and trust remain a concern despite these users' early exposure to technology.</li> </ul>
<p><b>Ubiquitous (Acceptance rating 5: Strongly agree with proposed functionality)</b></p>
<ul style="list-style-type: none"> <li>• All users agreed that being notified of other methods of banking, as well as being able to download any new apps on the site instantly was a useful feature.</li> <li>• They also stated that they would like the bank apps to be linked to their mobile app store, where they would be notified of any new apps the bank is introducing.</li> <li>• All participants agreed on excluding social media integration from the platform. They contended that this should not be incorporated, even in more subtle ways like the sharing of an interesting educational articles posted by the bank in the education section of the prototype.</li> </ul>
<p><b>Personal (Acceptance rating 4.8: Strongly agree with proposed functionality):</b></p>
<ul style="list-style-type: none"> <li>• Users noted that any promotion the bank offers to them should add value to their financial lives.</li> <li>• They spoke strongly against what they termed 'irresponsible targeting', where the bank pushes promotion messages without taking a closer look at what their actual financial needs are.</li> <li>• Generally, they supported the idea of being able to customise the site by rearranging certain interface elements, as well as renaming their different bank accounts.</li> <li>• Changing the background of the site's interface to a different colour or theme was, however, met with scepticism, with most of the users expressing the feeling that this is the one aspect of the bank that depicts its credibility, and therefore allowing users to have too much leeway with this would mean the bank letting go of a sense of trustworthiness usually represented by its brand identity.</li> </ul>
<p><b>Empowering (Acceptance rating 5: Strongly agree with proposed functionality)</b></p>
<ul style="list-style-type: none"> <li>• All users agreed that having a consolidated view of their finances would help make them conscious of how they spend, and act as a catalyst in making better financial decisions.</li> <li>• They supported the functionality that allows them to track their spending within a particular category (e.g. hair and makeup, groceries, fuel, etc.).</li> <li>• They stated that they would like to compare multiple categories simultaneously.</li> <li>• They also appreciated the setting up of an online budget and, accordingly, expressed the need for this function to be synchronised to a mobile device of their choice so that they could access it conveniently when they are away from a laptop or desktop computer.</li> </ul>
<p><b>Reassuring (Acceptance rating 5: Strongly agree with proposed functionality)</b></p>
<ul style="list-style-type: none"> <li>• Users appreciated the ability to chat directly with a bank representative.</li> <li>• For this particular functionality they expressed the need to have an upload function with which they could attach documentation while the online chat with the bank representative is taking place.</li> <li>• They supported the idea of being able to leave their details for the bank to contact them, as well as sending and receiving secure messages to and from the bank.</li> </ul>

The prototype validation phase of the study was the last instance of participant feedback before the formulation of the final set of functionality guidelines. As previously mentioned, the research process in this study was designed so that the output from each phase informed and influenced the next. Therefore, the individual answers to the six research sub-questions (see section 11.3) as presented in Chapters 3-9, have contributed to progressively refining and further developing these guidelines. This refinement has in turn led to the final set of recommended Internet banking

functionality guidelines suitable for South African Generation-Y users as presented in section 10.3; outlining in essence, the core of this study, and in turn answering the main research question:

**What functionality should South African Internet banking websites provide in order to address the needs of Generation-Y customers?**

#### **11.4 Limitations of the study**

A number of anticipated limitations were identified at the beginning of the study. These are presented in section 1.7. However, a number of limitations were also encountered during the course of the research; and these are captured below.

1. Only 50 responses were captured using the online survey tool, SurveyMonkey (SurveyMonkey 2012), out of a sampling unit that consisted of a total number of 190 potential research participants. Unfortunately, not all questions were answered by all 50 participants. As a result, the functionality validation results may not be a complete reflection of all 50 participants' views.
2. The literature study on Generation-Y needs did not differentiate biographical characteristics such as socioeconomic status and education within the age group. This limitation may need to be addressed in future research on Generation-Y characteristics.
3. Owing to time constraints and professional commitments, only five UX experts were available to perform the heuristic evaluation on the five South African banks selected. According to a study by Nielsen (2000), five experts pick up an average of 75% of interface mishaps. Additional evaluators may therefore have been required for a more comprehensive analysis of the banks' current Internet banking platforms.
4. A reliability analysis of the various constructs contained within the five main functionality categories (Simple, Ubiquitous, Personal, Empowering; Reassuring) in this study was performed. The average results of the entire analysis yielded a Cronbach's alpha score of 0.6897 (acceptable reliability), however, the Simple (Table 10.2) and Ubiquitous (Table 10.3) categories resulted in low reliability scores. Additional investigation and validation may therefore be required before the guidelines in these two categories are applied.
5. This study revealed a dire need for broader, structured research into Internet banking functionality needs, and this is reflected in the paucity of research papers on this topic.

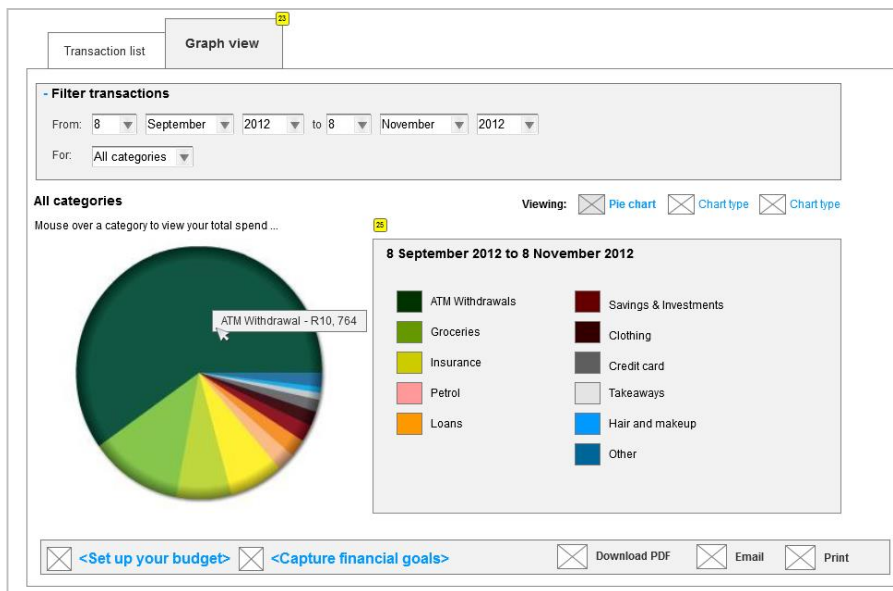
## 11.5 Contextualisation of the study

It was important to contextualise this study against the body of extant knowledge and take cognisance of research that has been conducted while this study was underway. In order to achieve this, the researcher has revisited the literature for a high-level review of any relevant material related to the core focus of this research paper, and the following developments are noted.

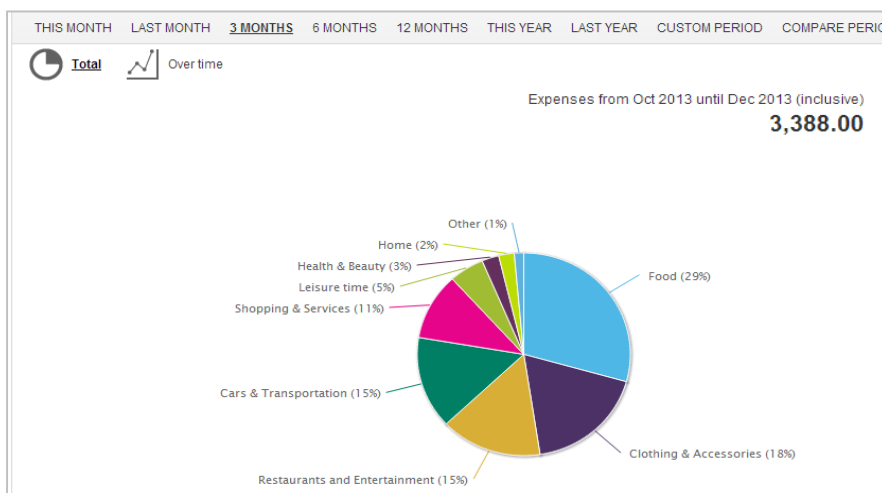
Simon (2013) has published a study that was aimed at gathering insight into what type of bank Generation-X (1966–1976) and Generation-Y (1977–1994) consumers would create if they could define their own ‘bank of the future’. This United States-based study was particularly relevant as it also extracted, to a certain extent, a functionality wish-list from its research participants. Table 11.7 outlines this research from Simon (2013), and maps these back to findings obtained by this research.

<b>High-level findings of Simon (2013)</b>	<b>Findings of this research</b>
The research revealed that what was required most by the participants was a platform that could guide them through their different life-stages, from earning money to saving it, investing it, inheriting it and enjoying it. What was most evident was that these participants craved the peace of mind that comes when someone they trust is guiding them and helping them watch over their finances.	Table 7.13 in this paper reveals similar thought patterns from Generation-Y users interviewed and surveyed in this research. Strong views were voiced, articulating the fact that these clients expect the Internet banking platform to play a role of a financial adviser, making their lives simpler, looking out for their needs, as well as advising them on the correct financial choices for their unique life-stage. The supporting functionality guidelines for this are found in Table 10.5 of this document.
Consumers also wanted to experience the type of bank where they felt they ‘belonged,’ a bank that had the knowledge and advice that was relevant to their unique lifestage. They were seeking a bank that would educate them on how to best protect their assets and use them in a way that best forecasted their financial standing in the future.	Section 7.12.1 of the study revealed that representative Generation-Y users made reference to incorporating financial education mechanisms that not only allude to the product information they have, but also proactively recommend free financial skills (e.g. online share trading/stock investment tutorials) they can acquire online. The supporting functionality guidelines for this are found in Table 10.7, Functionality guideline 1.
Participants placed importance on having a guide that could help them formulate a sound budget and a workable plan for uncertain financial circumstances in the future.	The need for tools to better control and manage one’s financial position was also a strong point raised in this study. The supporting functionality guidelines for this are found in Table 10.5, Functionality guideline 2.
Lastly, participants also communicated the need for a rewards programme for being loyal clients of the bank.	This particular need is also captured in Table 10.7, Functionality guideline 4.

The concept of PFM, identified as a key functionality guideline in section 4.5 of this study, is also slowly entering the South African financial services landscape. This is proven by the November 2013 launch of Momentum’s Financial Wellness platform (Financial Wellness 2013). Momentum (Momentum 2013) is a South African insurance services provider, and its Financial Wellness Platform offers both its clients and non-clients an opportunity to access budgeting tools and financial education guides, and gives a consolidated view of their finances across a number of financial services providers when they register on the Momentum website (Momentum 2013). All these functions are also recommendations put forward by this research initiative (see Table 10.5). To demonstrate this, Figure 11.6 depicts the similarities in the ‘expense breakdown’ functionality type, available on both the Financial Wellness platform and the HTML prototype formulated in this study.



**Expense breakdown example:**  
This study’s HTML Prototype (Prototype link 2012).



**Expense breakdown example:**  
Momentum’s Financial Wellness platform (Financial Wellness 2013).

**Figure 11.6:** This study’s HTML prototype and Momentum’s Financial Wellness platform.

Furthermore, a number of virtual banks, aimed solely at providing consumers with financial management capabilities, without the presence of a physical branch have also emerged in recent years since the commencement of this study. Simple bank (Simple bank 2013) and Moven bank (Moven bank 2013) offer customers conventional bank products (e.g. cheque and credit cards), with the ability to manage these purely from a digital perspective. The brick-and-mortar model is not adhered to by either of these institutions. The need to minimise visits to the bank branch was also a strong need communicated in this study (see Table 7.6, Feedback category 1, and Table 10.1, Guideline 6), and although the South African landscape may not be in a position to completely eradicate the physical branch, Simple (Simple bank 2013) and Moven (Moven bank 2013) may be a good indication of where the future is headed.

Locally, Payments Afrika (Payments Afrika 2013) has released the 2013 results of an Internet banking satisfaction survey conducted by a research company Columinate (Columinate 2013a). These results reveal that the Internet banking landscape in South Africa has in the last year seen an increase in the number of Internet banking customers accessing this platform on their smartphones and tablet devices. This figure has risen to 17% in the year 2013 for tablet devices, as compared to only 10% in the year 2012, and 54%, as compared to 42% in 2012, for smartphone access. Figure 11.7 depicts these figures.



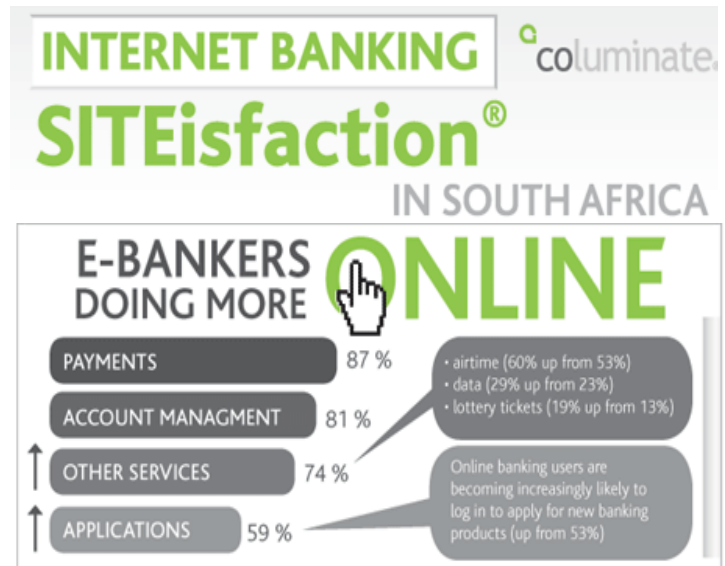
**Figure 11.7:** The rise of mobile banking in South Africa (Columinate 2013b)

The functionality trends outlined in this study also made mention of this likelihood, by stating the important need for multi-device banking in order to make certain that the UX is optimal, regardless of the device an Internet banking user chooses for access (see section 4.6). Furthermore, Generation-Y users who participated in this study expressed the need for a seamless banking experience from one channel to another, further substantiating that this already growing trend is likely to progress even further (see Table 9.3 – functionality component 1 for more details).

Furthermore, published research findings reveal that more South African Internet banking users are starting to make use of more of the available Internet banking features, such as applying for additional banking products such as loans and overdrafts. Figure 11.8 depicts these findings from the research (Columinate 2013b).

This is also a projection outlined by this study. Generation-Y users who participated in this study also mentioned that marketing messages used to cross or upsell products to them on the Internet platform should be of value and designed to meet their likely needs (see Table 9.4 – functionality component 1 for more details).

A case study investigating Internet banking user behaviour in India recommends design guidelines for this transacting platform,



**Figure 11.8:** South African Electronic/Internet bankers do more online (Columinate 2013b)

also encountered by this research in the South African context. This study by Iyengar and Belvalkar (2010) states that Internet banking is no longer just as a convenience channel, but a platform that needs to provide service, simplicity and security. They further elaborate on their design recommendations by explaining what each entails. Table 11.8 outlines these recommendations and maps them to the section in this study articulating similar design principles.



<b>Internet banking design guidelines (Iyengar &amp; Belvalkar 2010)</b>	<b>Similar functionality implementation guideline in this study (Table 10.1)</b>
<b>Service</b>	
Participants in their study identified a need for more services that are primarily accessed at branch level to be made available online. They requested better and faster customer support such as online chat, as well as a more innovative and intuitive interface.	<ul style="list-style-type: none"> <li>• Guideline 5: Design with immediacy in mind.</li> <li>• Guideline 6: Automate wherever possible.</li> </ul>
<b>Simplicity</b>	
Participants requested better link label clarity suggestive of the actions required on the page. They communicated a need for better navigation, with relevant information placed in the correct context aligned to their respective needs.	<ul style="list-style-type: none"> <li>• Guideline 2: Target with purpose.</li> <li>• Guideline 5: Design with immediacy in mind.</li> </ul>

<b>Security</b>	
Participants conveyed concerns about the security of their banking information that need to be addressed. They believe that they should not encounter unnecessary technical glitches, and have additional security gateways put into place.	<ul style="list-style-type: none"> <li>Guideline 9: Do not neglect or relax security and privacy.</li> </ul>


Overall, this high-level contextualisation demonstrates the relevance of this study in relation to what is happening in the world of financial, self-service technology in general. It can be confidently said that the functionality guidelines identified by this study, not only align with international best-practice, but are also pre-emptive of the type of innovation still to take place in the financial institutions within the South African landscape.

### 11.6 Contributions of the study

A South African study identified the lack of advanced functionality on Internet banking websites as being a problem (Green & Van Belle 2002), but none of these addressed the problem of providing Internet banking functionality for the Generation-Y customer segment. The different phases of this study leading to the finalised list of functionality guidelines, therefore played an important role in contributing to a body of knowledge that currently does not exist in the South African context. Table 11.9 outlines the different research outputs and specifies the contribution(s) each of these made.

<b>Research output</b>	<b>Contribution to the study</b>
Gen-Y characteristics 	Provides deeper insight into the unique characteristics of the Generation-Y segment. These characteristics can also be used to obtain an understanding of these users for any other Web interface effort not necessarily related to banking. The same set of attributes could also be used to describe the Generation-Y user base outside South Africa (Smith 2010).
Online survey, interviews, heuristic evaluation and prototype functionality validation 	Contributed to the holistic understanding of this user groups' needs, behaviours and expectations based on insights that have been verified by triangulating the findings from different data gathering methods.



<p>Validated list of Internet banking guidelines for Generation-Y users</p> 	<p>Provided practical, user-centred functionality guidelines that can result in the immediate alignment of Internet banking functionality to Generation-Y users' needs; a novel approach to Internet banking research, not yet attempted by any of the banks investigated. These guidelines can also be used as a benchmark for online banking platforms outside the South African context, as research used to formulate the guidelines included both local and global best practices (as outlined in Chapter 4).</p>
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## 11.7 Areas for further research

Besides the questions answered and the insights gathered, this study also raised important research questions to be further investigated.

1. *Validation of the functionality guidelines with the broader Internet banking audience.* More research is needed to take the Generation-Y functionality requirements formulated in this study and investigate whether they would also be suitable to Internet banking clients both younger and older than the 24 to 37 year target age group of this study.
2. *Comprehensive approach to improving the UX of Internet banking platforms.* As the study focused on the functionality aspect of UX, additional research is necessary to investigate other aspects of UX (e.g. usability, branding and content) for a thorough overhaul of the Internet banking platform as part of the quest for a holistically improved experience on this domain.
3. *Social banking and Generation-Y users.* Social banking is a growing trend where users are able to perform their banking on a social media platform (section 4.11). In this particular study this trend was not well received by users, and therefore did not make the final recommended functionality guidelines. Further research is required to investigate the acceptance model for this functionality trend, especially among Generation-Y users who are described as being social beings who are influenced by their peers.
4. *The impact of financial aggregation technology and personal financial management on client privacy.* Another growing trend is the introduction of PFM platforms (section 4.5) which allows a financial service provider to monitor the client's financial habits and, accordingly, advise and/or discourage certain money management behaviour. An investigation is required regarding perceptions of this technology, in order to ascertain whether or not this technology interferes with the clients' right to privacy.

## 11.8 Reflection

Reflective thinking is part of the critical thinking process whereby an analysis of what has just happened takes place (Koszalka 2013). According to Tishman (1999), there are three types of reflective thinking: metacognition, consolidative reflection and active connection making. Table 11.10 explains these types.

<b>Type of reflective thinking</b>	<b>Explanation</b>
Metacognition.	A critical self-reflection on one's own learning process.
Consolidative reflection.	A reflection on the big messages and understandings of the learning experience.
Active connection making.	The active seeking of connections between newly acquired information and existing knowledge.

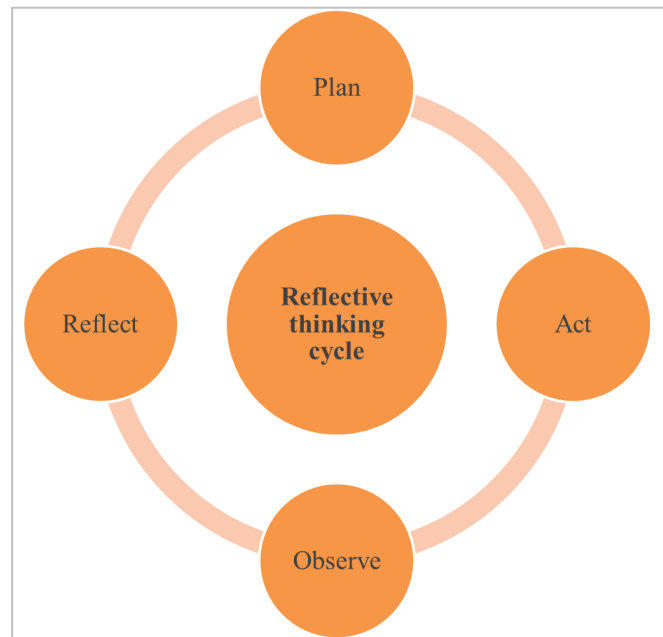
The reflective thinking cycle is made up of four steps, namely, planning, acting, observing and reflecting (Reading University 2013). Figure 11.9 depicts this cycle. The three initial steps of this cycle (i.e. planning, acting and observing) provide an accurate summary of what the researcher has done thus far in this study. As the study draws to a conclusion, the last step of the cycle, reflection, is inevitable; in particular, the consolidative reflection type as explained in Table 11.10 earlier. This section of the document therefore provides a view into the researcher's 'big messages' and learning as gathered and observed throughout this study.

Being a professional in the Information Technology industry has always exposed the researcher to the endless possibilities that technology brings to various industries that provide essential day-to-day services to ordinary individuals.

Technology has, however, been particularly radical in the latter years, with the introduction of platforms such as social media and interaction devices that have changed the communication between peers and organisations as we knew it. The issue on the researcher's mind at this point relates to the realisation of how far this change has extended and where industries such as banking, which are so entrenched in the daily running of our lives, have adapted to this change; hence the focus of the study.

Literature research in general exposed the researcher to a world of technological advancements that had not yet materialised in the day-to-day interaction with banking institutions, and what was even more interesting was that Generation-Y banking clients were ready and eager for this change.

Interaction with this client base brought to the fore the different dynamics that the boom in technological advancements has brought about in the last few decades, evident in the way this ‘younger generation’ thinks, behaves and engages.



**Figure 11.9:** The Reflecting thinking cycle (Reading University 2013)

The identification of the characteristics and online engagement expectations of this generation in particular, later formulated as a list of guidelines, are a strong artefact of this study, as these guidelines can be used to guide digital channel interactions for other industries as well; a truly powerful notion.

Over and above formulating a list of functionality guidelines, this research demonstrates the world of possibility that lies ahead for South African banking institutions in terms of making a positive impact on a very important aspect of their customers’ lives – their money. The research proved that when active user involvement is obtained, it is possible to formulate online solutions that truly meet their likely needs, thus bridging the gap between what organisations believe their clients are looking for and what clients will actually use and, most importantly, enjoy. That is the ultimate goal; because every user deserves a good experience.

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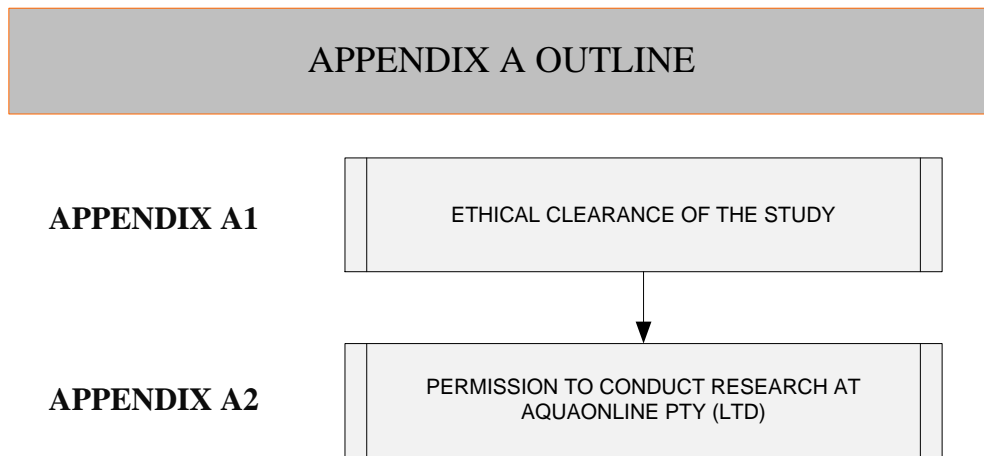
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## Appendix A: Ethical clearance and general research permission



## Appendix A1: Ethical clearance for the study



Ms S Afrika (Student No. 46502769)  
School of Computing (Student)  
UNISA  
Pretoria

2012-09-07

### TO WHOM IT MAY CONCERN

**Permission to conduct MTech research project**

**Ref: 035/SA/2012**

The request for ethical approval for your MTech:IT project entitled: "What functionality should South African Internet banking websites provide in order to address the needs of Generation-Y users?" refers.

The College of Science, Engineering and Technology's (CSET) Research and Ethics Committee (CREC) has considered the relevant parts of the studies relating to the abovementioned research project and research methodology and is pleased to inform you that ethical clearance is granted for your study as set out in your proposal and application for ethical clearance.

Therefore, involved parties may also consider ethics approval as granted. However, the permission granted must not be misconstrued as constituting an instruction from the CSET Executive or the CSET CREC that sampled interviewees (if applicable) are compelled to take part in the research project. All interviewees retain their individual right to decide whether to participate or not.

We trust that the research will be undertaken in a manner that is respectful of the rights and integrity of those who volunteer to participate, as stipulated in the UNISA Research Ethics policy. The policy can be found at the following URL:

[http://cm.unisa.ac.za/contents/departments/res\\_policies/docs/ResearchEthicsPolicy\\_apprvCounc\\_21Sept07.pdf](http://cm.unisa.ac.za/contents/departments/res_policies/docs/ResearchEthicsPolicy_apprvCounc_21Sept07.pdf)

Please note that if you subsequently do a follow-up study that requires the use of a different research instrument, you will have to submit an addendum to this application, explaining the purpose of the follow-up study and attach the new instrument along with a comprehensive information document and consent form.

Yours sincerely

A handwritten signature in black ink, appearing to read "H H Lotriet".

**Prof HH Lotriet**

Chair: School of Computing Ethics Sub-Committee



University of South Africa  
College of Science, Engineering and Technology  
Preller Street, Muckleneuk Ridge, City of Tshwane  
PO Box 392 UNISA 0003 South Africa  
Telephone + 27 12 429 6122 Facsimile + 27 12 429 6848  
[www.unisa.ac.za/cset](http://www.unisa.ac.za/cset)

## Appendix A2: Permission to conduct research at AquaOnline PTY (Ltd)

Aqua Online (Pty) Ltd  
1 Summit Road  
2<sup>nd</sup> Floor Hutton Court  
Hyde Park  
2196  
27 July 2012

College Research and Ethics committee  
University of South Africa (UNISA)  
Preller Street, Muckleneuk Ridge  
Pretoria  
0003

To whom it may concern

**RE: PERMISSION TO PERFORM RESEARCH**

This is to confirm that Aqua Online (PTY) Ltd has granted Sebatso Afrika (46502769), an employee of the organisation, and a student at the University, permission to perform research in the organisation's premises.

Aqua Online (PTY) Ltd understands and approves of the research activities that will be carried out by this employee, in order to meet the requirements for the Master of Technology: Information Technology Degree.

**Head of Strategy (Line Manager)**

Full name:   
Signature:   
Date:

**Head of Human Resources**

Full name:   
Signature:   
Date:



2<sup>nd</sup> floor hutton court, 1 summit road, hyde park  
p.o. box 742, parklands, 2121, south africa  
t +27 11 750 7300 • f +27 11 750 7301  
www.aquaonline.com

Aqua Online (Pty) Ltd Registration Number: 2007/005388/07  
Directors: B Shahrin, P Morodi, F Lamb, Z Votin, L Swart, P Chedaille



## **Appendix B: Interviews - Internet banking functionality validation with representative Generation-Y users**

### APPENDIX B OUTLINE

**APPENDIX B1**

INTERVIEW SCHEDULE



**APPENDIX B2**

RESEARCH PARTICIPANT CONSENT FORM



**APPENDIX B3**

PARTICIPANT QUESTIONNAIRE

## Appendix B1: Interview schedule

### 1. Participant time-plan

Participant Generation-Y age bracket	Participant sequence	Interview date & time	Interview venue
24-27 years	Participant 1	10 August 2012 08:00 – 08:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 2	10 August 2012 13:00 – 13:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 3	10 August 2012 15:00 – 15:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 4	10 August 2012 17:00 – 17:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
28-30 years	Participant 5	13 August 2012 08:00 – 08:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 6	13 August 2012 13:00 – 13:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 7	13 August 2012 15:00 – 15:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 8	13 August 2012 17:00 – 17:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
31-35 years	Participant 9	14 August 2012 08:00 – 08:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 10	14 August 2012 13:00 – 13:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 11	14 August 2012 15:00 – 15:40	Chill Room, AquaOnline, Hyde Park, Johannesburg
	Participant 12	14 August 2012 17:00 – 17:40	Chill Room, AquaOnline, Hyde Park, Johannesburg

### 2. Interview process

#### 2.1 Opening

##### A. Establish Rapport

- Thank you [Name of participant] for taking time out of your schedule and participating in this research

##### B. State purpose

- I am conducting this research for my Master of Technology Degree at the University of South Africa (UNISA). It is aimed at gathering your input regarding the type of functionality Internet banking websites should provide to their younger, more techno-savvy customers.

### **C. State time and procedure**

- This session will take 40 minutes. I will be asking you a number of questions related to Internet banking functionality, and I need you to provide me with the answer you deem fit
- The questions are divided four sections:
  - **Section A**
    - Covers biographic details that gather certain characteristics about you, the participant
  - **Section B**
    - A pre-survey that gathers certain perceptions you have of Internet banking
  - **Section C**
    - Has questions prompting you to rate different types of Internet banking functionality
  - **Section D**
    - Is the last section, and gathers certain perceptions you have of Internet banking after going through the above sections with me, and will ask you of any more functionality you feel should be included in this platform
- You will need to complete Sections A and B by yourself. I will be asking the questions under Section C and D, where you need to provide me with your preferred response

## **2.2 Body**

### **A. Prompt to read and sign research consent form**

- Before we proceed, I need you to please go through the research consent form. This, in addition to what we've already discussed, is to make sure you understand what the research is about and all the surrounding conditions for your participation. Once you've read and understood everything, please provide your signature at the bottom of the page. We will then begin.
- [Give participant consent form]

### **B. Prompt to complete Sections A and B**

- Now we are ready to begin. Please take the next 7 minutes completing Sections A and B for me. You can mark your choice with an "X" in the box provided. Please note that some questions require a single response, while others may require multiple responses, so please answer as you see appropriate.
- [Give participant Sections A and B of survey]

### C. Administer Sections C and D of survey

- [Participant completes Sections A and B]. Thank you. We will now go through Sections C and D.
- Explain how Section C works
  - This section lists Internet banking functionality categories identified in a literature study. I will be taking you through what these categories are. After going through each category, I need you to indicate, through a rating of 1 to 5, how strongly you agree or disagree with having that type of functionality on your Internet banking website. The rating scale is as follows:
    - 1 – Strongly agree
    - 2 – Somewhat agree
    - 3 – Neither agree nor disagree
    - 4 – Agree
    - 5 – Strongly agree
  - [Start Section C]
- Start Section D
  - [Participant completes Section C]. Thank you. We are now in the last section of this interview.
  - We are no longer using a rating scale, as in the previous section. Please answer the following questions as you see fit.
  - [Ask Section D questions]

### 2.3 Closing

- [Participant completes Section D]. We are at the end of our interview. I appreciate your time and input. As previously stated, all input gathered from you will be treated confidentially. Thank you, and enjoy the rest of your [day/afternoon/evening]

## **Appendix B2: Interviews – Research participant consent form**

### **Research Information and Consent Form**

#### **Internet banking functionality for Generation-Y users**

##### **Introduction**

This is to get consent for your participation in the research conducted by Sebatatso Mtimkulu. The research is for a Master of Technology Degree I am currently undertaking with the University of South Africa (UNISA), under the supervision of Professor Judy van Biljon (Email: [Vbiljja@unisa.ac.za](mailto:Vbiljja@unisa.ac.za), Telephone: (012) 429 6873) and Mr Toby van Dyk (Email: [Vdyktj@unisa.ac.za](mailto:Vdyktj@unisa.ac.za), Telephone: 012 429 6676)

##### **Purpose of research**

This study is aimed at gathering your views regarding the type of functionality Internet banking websites should provide to their younger, more techno-savvy, Generation-Y customers.

##### **Procedure**

The survey will require approximately 40 minutes of your time. It is divided into 4 sections (Sections A to D), each aimed at gathering specific information about you and the type of Internet banking functionality you desire. You will be required to complete Sections A and B by yourself using an “X” to indicate your answer. Section C and D will be administered by the researcher in an interview fashion, where you will also be required to indicate an answer you feel is most appropriate.

##### **Confidentiality**

The input you provide will be treated confidentially and only used towards the completion of the afore-mentioned qualification. All data will be used in summary form without reference to any individual.

##### **Participation**

Participation in this research study is voluntary, and you have the right to, at any time, withdraw or refuse to participate. The purpose of the study will be explained in the survey.

##### **Benefits and compensation**

There aren't any direct benefits for your participation. All findings will be used for the completion of the academic qualification mentioned. No compensation will be provided to anyone partaking in this research.

### **Risks and discomforts**

There are no risks or discomfort associated with your participation. All answers from you and other participants will be analysed collectively. Individual answers will therefore not be linked to any names, positions and companies of participants.

### **Participant consent**

I have read and understood all the above. I willingly choose to participate in this study.

**Full name (optional)** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

## Appendix B3: Interviews – Participant survey

<b>SURVEY: BACKGROUND</b>	
<p>My name is Sebatatso Mtimkulu, and I am conducting this research for my Master of Technology Degree at the University of South Africa (UNISA). It is aimed at gathering your input regarding the type of functionality Internet banking websites should provide to their younger, more techno-savvy customers. In order to collect representative data, I would like you to please complete this survey that should take approximately 40 minutes.</p>	
<b>SURVEY: INSTRUCTIONS</b>	
<p>The survey is divided into the following four sections:</p>	
	<b>WHAT IS COVERED</b>
<b>SECTION A</b>	Biographic details that gather certain characteristics about you, the participant
<b>SECTION B</b>	Pre-survey input that gathers certain perceptions you have of Internet banking
<b>SECTION C</b>	Survey prompting you to rate different types of Internet banking functionality gathered from the literature
<b>SECTION D</b>	Post-survey input that gathers certain perceptions you have of Internet banking after going through the detailed survey
<ol style="list-style-type: none"> <li>1. Please go through the sections and where relevant:                             <ol style="list-style-type: none"> <li>1.1 Mark your choice with an “X” in the box provided</li> <li>1.2 Use the rating system provided in the section to indicate your preference in the box provided</li> </ol> </li> <li>2. Please note that some questions require a single response, while others may require multiple responses</li> <li>3. The input you provide will be treated confidentially and only used towards the completion of the afore- mentioned qualification</li> </ol>	
<p><b>Thank you, your co-operation is highly appreciated.</b></p>	

<b>SECTION A: USER PROFILE INFORMATION</b>																				
<p>1. Please indicate your age</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 33%; text-align: center; padding: 5px;">24-27</td> <td style="width: 33%; text-align: center; padding: 5px;">28-30</td> <td style="width: 33%; text-align: center; padding: 5px;">31-35</td> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>							24-27	28-30	31-35											
24-27	28-30	31-35																		
<p>2. Please indicate your gender</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 50%; text-align: center; padding: 5px;">Male</td> <td style="width: 50%; text-align: center; padding: 5px;">Female</td> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table>							Male	Female												
Male	Female																			
<p>3. Please indicate your home language</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 14.28%; text-align: center; padding: 5px;">Mtimkuluan s</td> <td style="width: 14.28%; text-align: center; padding: 5px;">English</td> <td style="width: 14.28%; text-align: center; padding: 5px;">Northern Sotho</td> <td style="width: 14.28%; text-align: center; padding: 5px;">Southern Sotho</td> <td style="width: 14.28%; text-align: center; padding: 5px;">Tswana</td> <td style="width: 14.28%; text-align: center; padding: 5px;">Zulu</td> <td style="width: 14.28%; text-align: center; padding: 5px;">Other</td> </tr> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </table> <p style="margin-top: 10px;">If other, please specify: _____</p>							Mtimkuluan s	English	Northern Sotho	Southern Sotho	Tswana	Zulu	Other							
Mtimkuluan s	English	Northern Sotho	Southern Sotho	Tswana	Zulu	Other														
<p>4. Please indicate your highest education level</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 70%; padding: 5px;">Post graduate degree</td> <td style="width: 30%;"></td> </tr> <tr> <td style="padding: 5px;">Degree or diploma</td> <td></td> </tr> <tr> <td style="padding: 5px;">Post-matric certificate</td> <td></td> </tr> <tr> <td style="padding: 5px;">Grade 12 (Matric)</td> <td></td> </tr> <tr> <td style="padding: 5px;">Other</td> <td></td> </tr> </table> <p style="margin-top: 10px;">If other, please specify: _____</p>							Post graduate degree		Degree or diploma		Post-matric certificate		Grade 12 (Matric)		Other					
Post graduate degree																				
Degree or diploma																				
Post-matric certificate																				
Grade 12 (Matric)																				
Other																				





8. How long have you been an Internet banking user?

0-3 months	3-12 months	12-24 months	24 months +

9. Please indicate the social networking websites you are most active on

Facebook	Twitter	YouTube	Instagram	Pinterest	Other(s)

If other(s), please specify: \_\_\_\_\_

**SECTION B: PRE-SURVEY INPUT**

1. Please indicate the bank(s) you use the most to transact. If other(s), please specify.

Bank name	Usage frequency		
	Most frequent		Not as frequent
	←—————→		
	1	2	3
ABSA			
Capitec			
FNB			
Nedbank			
Standard Bank			
Other(s)			

2. How often do you use Internet banking? (Please circle)

	times per: day / week / month / year
--	--------------------------------------

3. What function(s) do you mostly perform on Internet banking?

Balance enquiry	
Transferring of funds	
Payment of accounts	
Purchasing of pre-paid airtime	
Accessing statements	
Other(s)	

If other (s), please specify:

---

4. What are your likes and dislikes regarding Internet banking?

Likes	
Dislikes	

5. Would you say your Internet banking platform meets all your money management needs as a modern user?

Yes	No

5.1 Please elaborate further on your answer above


**SECTION C: INTERNET BANKING FUNCTIONALITY INPUT**

This section lists functionality categories identified by the researcher in a literature study. Please read the statements below, and next to each functionality type, put a rating in the box which indicates how strongly you agree or disagree with having that type of functionality on your Internet banking platform. The rating system is as below:

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5

**1. SIMPLICITY**

To support the ease of use and promptness of Internet banking, functionality provided should:

	Functionality criteria	Rating				
1.1	Automate transactions (e.g. Online transfer limit) from start to finish by allowing users to complete transactions without having to request for assistance from the bank, or go into a bank branch	Strongly disagree			Strongly agree	
		1	2	3	4	5

1.2	Offer e-Signatures (Electronic Signatures) to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan	Strongly disagree					Strongly agree
		1	2	3	4	5	
1.3	Pre-fill applications or any online process that requires users to capture their personal details (Example: if the bank already has the user's personal details, they should automatically populate these to a certain extent on an online application form, rather than the user having to fill in all these details from scratch)	Strongly disagree					Strongly agree
		1	2	3	4	5	
1.4	Offer tools that assist users in simplifying difficult tasks like applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.)	Strongly disagree					Strongly agree
		1	2	3	4	5	
1.5	Present difficult-to-understand content (e.g. New product benefits) in innovative ways like using videos, audio clips, online games, polls, etc.	Strongly disagree					Strongly agree
		1	2	3	4	5	
<b>2. UBIQUITOUS</b>							
To make certain that functionality offered to the user is on any platform, and on any device of their choice, Internet banking platforms should:							
	<b>Functionality criteria</b>	<b>Rating</b>					
2.1	Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions	Strongly disagree					Strongly agree
		1	2	3	4	5	
2.2	Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet	Strongly disagree					Strongly agree
		1	2	3	4	5	
2.3	Facilitate the accessing and requesting of account and service information on various social networking websites such as Facebook and Twitter	Strongly disagree					Strongly agree
		1	2	3	4	5	
2.4	Facilitate the sharing of certain financial information on a social networking website of their choice	Strongly disagree					Strongly agree
		1	2	3	4	5	

2.4.1 If you Agree (Rating 4), or Strongly agree (Rating 5) with functionality in 2.4, please elaborate on the type of financial information you would openly share on a social networking website


**3. PERSONALISATION**

To support the personal nature of Internet banking, where functionality provided adapts to the unique financial needs of a user, Internet banking platforms should:

	Functionality criteria	Rating				
3.1	Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	Strongly disagree		Strongly agree		
		1	2	3	4	5
3.2	Facilitate the customisation of the website in a manner that befits the user’s preference like changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.	Strongly disagree		Strongly agree		
		1	2	3	4	5
3.3	Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (Example: If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage, so that a user can access them straight away).	Strongly disagree		Strongly agree		
		1	2	3	4	5
3.4	Create different navigation paths for different users with or without certain products (Example: If a user user has a homeloan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a homeloan to begin with, the homeowners insurance navigation link should not be shown at all).	Strongly disagree		Strongly agree		
		1	2	3	4	5

3.5	Make the tone and character more modern and relevant to younger, more techno-savvy clients	Strongly disagree			Strongly agree	
		1	2	3	4	5
<p><b>4. EMPOWERMENT</b></p> <p>To support the empowering nature of Internet banking, where functionality provided adds value to users by enabling them to initiate action that helps them better manage certain aspects of their financial lives, Internet banking platforms should:</p>						
<b>Functionality criteria</b>		<b>Rating</b>				
4.1	Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.2	Estimate the user's assets and liabilities value by providing them a with a single view of their financial worth	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.3	Allow users to track their spending over a period of time	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.4	Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.5	Assist users in creating an online budget	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.6	Facilitate users in creating savings targets to assist them in reaching certain financial targets	Strongly disagree			Strongly agree	
		1	2	3	4	5
4.7	Provide alerts and notifications to assist users reach their financial goal (Example: If a user is aiming to only spend R 1000 on entertainment per month, send them a notification when they are about to go over their target).	Strongly disagree			Strongly agree	
		1	2	3	4	5

4.8	Educate the user on their financial standing and how they can improve (i.e. personalised calculators)	Strongly disagree		Strongly agree		
		1	2	3	4	5
4.9	Provide savings tips that assist the user in reaching a specific goal or target	Strongly disagree		Strongly agree		
		1	2	3	4	5
4.10	Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group	Strongly disagree		Strongly agree		
		1	2	3	4	5
4.11	Encourage users to take immediate action on a particular goal (e.g. Apply for an investment account, recommend a product, etc.)	Strongly disagree		Strongly agree		
		1	2	3	4	5
<b>5. REASSURANCE</b>						
To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, Internet banking platforms should:						
	<b>Functionality criteria</b>	<b>Rating</b>				
5.1	Allow users to fill in their contact details into input fields on a page, and have a representative from the bank to contact them (Request a call back)	Strongly disagree		Strongly agree		
		1	2	3	4	5
5.2	Allow the user to start a chat session with the bank, by clicking a link that opens a chat window on the screen (Click to chat)	Strongly disagree		Strongly agree		
		1	2	3	4	5
5.3	Trigger a chat invitation based on a set of predefined user behaviour on the page (Example: if a user has spent more than five minutes on a page, the website would then automatically open a chat window, with the bank's representative offering to assist the user with any question or uncertainty they may have) (Proactive chat)	Strongly disagree		Strongly agree		
		1	2	3	4	5
5.4	Provide chat functionality with additional video capability for the user to be able to see the representative from the bank (Web conferencing)	Strongly disagree		Strongly agree		
		1	2	3	4	5
5.5	Allow users to receive and send secure messages to the bank	Strongly disagree		Strongly agree		
		1	2	3	4	5



5.6 From the above listed types of reassuring functionality, below, please indicate which one you prefer

Request a call back	
Click to chat	
Proactive chat	
Web conferencing	

5.6.1 Please elaborate why you prefer this type of reassuring functionality


**SECTION D: POST SURVEY INPUT**

1. Please list additional innovative functionality you feel should be present on an Internet banking website that was not covered in this survey


2. Please list functionality on your current Internet banking website you feel represents innovation?


3. How would you rate your current Internet banking functionality, when you compare it to the functionality listed in this survey?

	Bad		Average		Good	
	-3	-2	-1	1	2	3
My current Internet banking functionality						

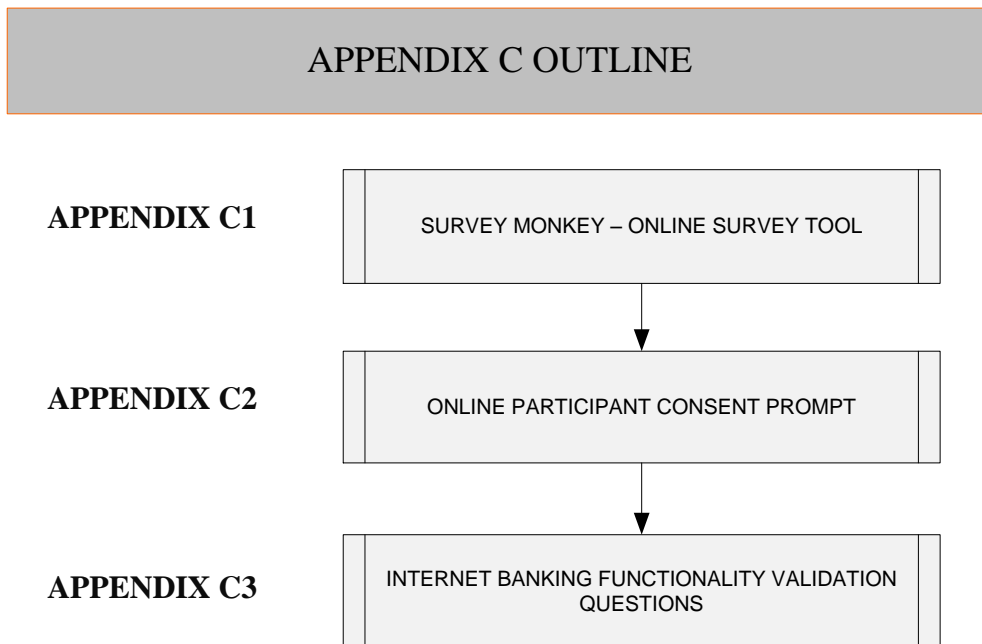
3.1 Please elaborate on your rating above


4. If you were to describe the role Internet banking should play in your financial life, what would this be?


**Thank you very much for your co-operation. Your input is greatly appreciated.**

## **Appendix C: Survey - Internet banking functionality validation with representative Generation-Y users**

The same questions as those in the interviews (Appendix B4) were posed to users in an online survey tool, SurveyMonkey. This section gives a view of these questions on this tool.



## Appendix C1: Online survey tool: Survey Monkey

An anonymous online survey was created using SurveyMonkey (SurveyMonkey 2012), for employees of AquaOnline (PTY) Ltd to complete. SurveyMonkey is an online survey software & survey tool that allows researchers to create and publish online surveys and view results graphically and in real time.

The screenshot shows the SurveyMonkey website homepage. At the top, there is a navigation bar with the SurveyMonkey logo, a 'Sign In' button, and a 'Help' button. Below the navigation bar, there are links for 'Home', 'How It Works', 'Examples', 'Survey Services', and 'Plans & Pricing'. The main content area features a large banner with the headline 'Create Surveys. Get Answers.' and a 'Start Today' section. The banner includes three steps: 'Design' (Build your own surveys or choose from our templates), 'Collect' (Choose how to distribute and start collecting responses), and 'Analyse' (Use our powerful analytical tools for intelligent insights). The 'Start Today' section offers 'Pro Sign Up' (Unlimited Surveys & Responses) and 'Sign Up FREE' (Just the Basics). Below the banner, there are five categories: Market Research, Education, Customer Satisfaction, Non Profit, and Human Resources. Two promotional boxes are present: 'Need to Reach a Targeted Audience?' (Looking for the right people to fill out your survey? Meet SurveyMonkey Audience, home to millions of qualified respondents ready to take your surveys and give you the feedback you need to make better decisions. Learn more) and 'Surveys Made Easy' (SurveyMonkey is the world's most popular online survey tool. It's easier than ever to send free surveys, polls, questionnaires, customer feedback and market research. Plus get access to survey questions and professional templates). Below these boxes, there is a section for 'Join Our 12+ Million Customers' featuring logos for Facebook, Audi, Philips, XM, and Samsung. To the right, there is a 'Stay Connected' section with social media links for Facebook (Like 60k), RSS (+1 855), and Twitter (Tweet 4,538). The footer contains 'Follow Us' links for Facebook, Twitter, LinkedIn, and Our Blog; 'Help' links for FAQs & Tutorials and Contact Support; 'About Us' links for Management Team, Board of Directors, Partners, Newsroom, Contact Us, Jobs, and Sitemap; 'Policies' links for Terms of Use, Privacy Policy, Anti-Spam Policy, Security Statement, and Email Opt-Out; a list of languages (Dansk, Deutsch, English, Español, Français, 한국어, Italiano, Nederlands, 日本語, Norsk, Português, Русский, Suomi, Svenska, 中文(繁體)); and a copyright notice for 1999-2012 SurveyMonkey. At the bottom right, there are several accreditation logos: TRUSTe, BBB ACCREDITED BUSINESS, a disability icon, McAfee SECURE TESTED DAILY 26-NOV, and Norton SECURED.

## Appendix C2: Online participant consent prompt

Participants of the online survey were also provided a consent prompt which required them to agree to freely partaking in the study before entering the full survey.

Internet banking functionality validation 1. BACKGROUND AND CONSENT

9%

**INTRODUCTION:**

I am conducting this research for my Master of Technology Degree at the University of South Africa (UNISA), under the supervision of Professor Judy van Bijljon (Email: Vbijljon@unisa.ac.za, Telephone: (012) 429 6873) and Mr Toby van Dyk (Email: Vdyktj@unisa.ac.za, Telephone: 012 429 6676. The research is aimed at gathering your input regarding the type of functionality Internet banking websites should provide to their younger, more techno-savvy customers.

In order to collect representative data, I would like you to please complete this questionnaire that should take approximately 40 minutes.

**PROCEDURE:**

This questionnaire is divided into 4 Sections; (Sections A, B, C and D). Please go through the sections and provide a response you deem appropriate.

**PARTICIPATION:**

Your participation in this research study is voluntary, and you have the right to, at any time, withdraw or refuse to participate.

**BENEFITS AND COMPENSATION:**

There aren't any direct benefits for your participation. All findings will be used for the completion of the academic qualification mentioned. No compensation will be provided to anyone partaking in this research.

**RISKS AND DISCOMFORTS:**

There are no risks or discomfort associated with your participation. All answers from you and other participants are anonymous, and will be analysed collectively. Individual answers will therefore not be linked to any names, positions and companies of participants.

Please note that some questions require a single response, while others may require multiple responses.

Thank you.  
Seba Afrika  
076 429 7783  
sebatsoa@aquonline.com

**Please agree to this in order to enter the Questionnaire.**

**\*1. I understand the purpose of this research, and the above terms. I willingly choose to participate in this study.**

Yes, I willingly choose to participate.

Next

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## Appendix C3: Survey: Internet banking functionality validation questions

### Section A: User profile information

Internet banking functionality validation 2. SECTION A: USER PROFILE INFORMATION

This section gathers certain characteristics about you, the participant. It will take approximately 5 minutes to complete.

18%

**2. Which category below includes your age?**

Younger than 24  
 24-27  
 28-30  
 31-35  
 36+

**3. Please indicate your gender**

Female  
 Male

**4. What is your home language? (Please choose only one.)**

Other (please specify)

**5. What is the highest level of education you have completed?**

Post-graduate degree  
 Degree or Diploma  
 Post-Matric Certificate  
 Matric (Grade 12)  
Other (please specify)

**6. Which of the following categories best describes your employment status?**

Employed  
 Self-Employed  
 Unemployed

**7. How long have you been employed / self-employed for?**

0-2 years  
 3-5 years  
 5 years+

**8. Which of the following devices do you most often use to connect to the Internet?**

WAP enabled cellphone (E.g. Samsung E250)  
 Smartphone (e.g. iPhone, Blackberry, Lumia, etc)  
 Laptop/Notebook  
 Desktop PC  
 Tablet (E.g. iPad, Galaxy tab, etc)  
 Kindle  
Other (please specify)

**9. How long have you been an Internet user?**

0-2 years  
 3-5 years  
 5 years+

**10. How long have you been an Internet banking user?**

0-3 months  
 3-12 months  
 12-24 months  
 24 months+

**11. Please indicate the social networking websites you are most active on**

Facebook  
 Twitter  
 YouTube  
 Instagram  
 Pinterest  
Other (please specify)

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## Section B: Pre-survey input

Internet banking functionality validation 3. SECTION B: PRE-SURVEY INPUT 27%

This section gathers certain perceptions you have of Internet banking. It will take approximately 5 minutes to complete.

**12. Please indicate the bank(s) you use the most to transact**

ABSA  
 Capitec  
 FNB  
 Nedbank  
 Standard Bank

Other (please specify)

**13. How often do you use Internet banking?**

	Per day	Per week	Per month	Per year
1-3 times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-5 times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5-10 times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More than 10 times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. What function(s) do you mostly perform on Internet banking?**

Balance enquiry  
 Transferring of funds  
 Payment of accounts  
 Purchasing of pre-paid airtime  
 Accessing statements

Other (please specify)

**15. What are your likes and dislikes regarding Internet banking?**

**16. Would you say your Internet banking platform meets all your money management needs as a modern user?**

Yes  
 No

**17. Please elaborate further on your previous answer**

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## Section C: Internet banking functionality input

Internet banking functionality validation 5. FUNCTIONALITY CATEGORY 1: SIMPLICITY

45%

To support the ease of use and promptness of Internet banking, functionality provided should ...

**18. Automate transactions (e.g. Online transfer limit) from start to finish by allowing users to complete transactions without having to request for assistance from the bank, or go into a bank branch**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**19. Offer e-Signatures (Electronic Signatures) to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**20. Pre-fill applications or any online process that requires users to capture their personal details (Example: if the bank already has the user's personal details, they should automatically populate these to a certain extent on an online application form, rather than the user having to fill in all these details from scratch)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**21. Offer tools that assist users in simplifying difficult tasks like applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**22. Present difficult-to-understand content in innovative ways like using videos, audio clips, online games, polls, etc.**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

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Internet banking functionality validation 6. FUNCTIONALITY CATEGORY 2: UBIQUITOUS

55%

To make certain that functionality offered to the user is on any platform, and on any device of their choice, Internet banking platforms should ...

**23. Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**24. Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**25. Facilitate the accessing and requesting of account and service information on various social networking websites such as Facebook and Twitter**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**26. Facilitate the sharing of certain financial information on a social networking website of their choice**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**27. Please elaborate on the type of financial information you would openly share on a social networking website**

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**Internet banking functionality validation 7. FUNCTIONALITY CATEGORY 3: PERSONALISATION**

64%

To support the personal nature of Internet banking, where functionality provided adapts to the unique financial needs of a user, Internet banking platforms should...

**28. Offer targeted promotions to users whose previous behaviour may imply interest in a particular product**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**29. Facilitate the customisation of the website in a manner that befits the user's preference like changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**30. Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (Example: If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage, so that a user can access them straight away)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**31. Create different navigation paths for different users with or without certain products (Example: If a user user has a homeloan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a homeloan to begin with, the homeowners insurance navigation link should not be shown at all)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**32. Make the tone and character more modern and relevant to younger, more techno-savvy clients**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

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**Internet banking functionality validation 8. FUNCTIONALITY CATEGORY 4: EMPOWERMENT**

73%

To support the empowering nature of Internet banking, where functionality provided adds value to users by enabling them to initiate action that helps them better manage certain aspects of their financial lives, Internet banking platforms should...

**33. Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**34. Estimate the user's assets and liabilities value by providing them with a single view of their financial worth**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**35. Allow users to track their spending over a period of time**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**36. Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like 'groceries', 'entertainment', 'petrol', etc.) in order to track and monitor specific spending patterns**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**37. Assist users in creating an online budget**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**38. Facilitate users in creating savings targets to assist them in reaching certain financial targets**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**39. Provide alerts and notifications to assist users reach their financial goal (Example: If a user is aiming to only spend R 1000 on Entertainment per month, send them a notification when they are about to go over their target)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**40. Educate the user on their financial standing and how they can improve (i.e. personalised calculators)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**41. Provide savings tips that assist the user in reaching a specific goal or target**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**42. Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**43. Encourage users to take immediate action on a particular goal (e.g. Apply for an investment account, recommend a product, etc.)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

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**Internet banking functionality validation 9. FUNCTIONALITY CATEGORY 5: REASSURANCE**

82%

To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, Internet banking platforms should...

**44. Allow users to fill in their contact details into input fields on a page, and a have representative from the bank to contact them (Request a call back)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**45. Allow the user to start a chat session with the bank, by clicking a link that opens a chat window on the screen (Click to chat)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**46. Trigger a chat invitation based on a set of predefined user behaviour on the page (Example: if a user has spent more than five minutes on a page, the website would then automatically open a chat window, with the bank's representative offering to assist the user with any question or uncertainty they may have) (Proactive chat)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**47. Provide a chat functionality with additional video capability for the user to be able to see the representative from the bank (Web conferencing)**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**48. Allow users to receive and send secure messages to the bank**

Strongly disagree      Somewhat disagree      Neither agree nor disagree      Agree      Strongly agree

**49. From the listed types of reassuring functionality, please indicate which one you prefer**

- Request a call back
- Click to chat
- Proactive chat
- Web conferencing

**50. Please elaborate why you prefer this type of reassuring functionality**

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## Section D: Post survey input

Internet banking functionality validation 10. SECTION D: POST SURVEY INPUT

91%

This section gathers certain perceptions you have of Internet banking after going through the detailed questionnaire. It will take approximately 5 minutes to complete.

**51. Please list additional innovative functionality you feel should be present on an Internet banking website that was not covered in this survey**

**52. Please list functionality on your current Internet banking website you feel represents innovation?**

**53. How would you rate your current Internet banking functionality, when you compare it to the functionality listed in this questionnaire?**

-3 (Bad)      -2      -1      1      2      3 (Good)

**54. Please elaborate on your rating above**

**55. If you were to describe the role Internet banking should play in your financial life, what would this be?**

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Internet banking functionality validation 11. THANK YOU

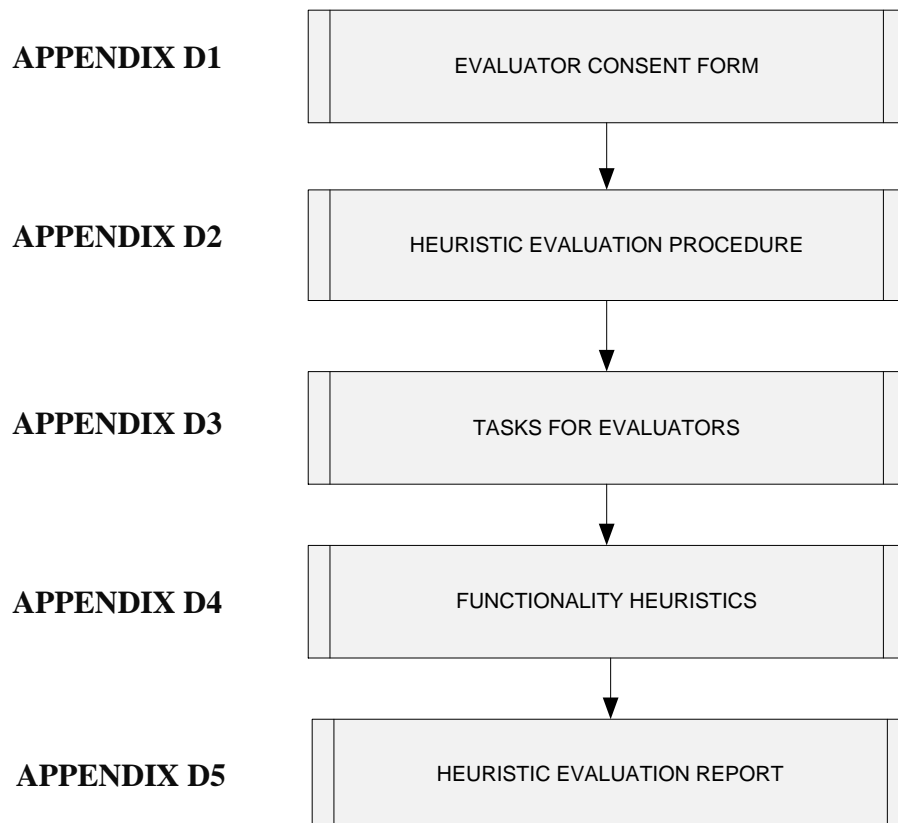
100%

This is the end of the questionnaire. Thank you very much for your participation. Your input is greatly appreciated.

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## Appendix D: Heuristic evaluation of five South African Internet banking websites

### APPENDIX D OUTLINE



## **Appendix D1: Evaluator consent form**

### **Heuristic Information and Consent Form**

#### **Internet banking functionality for Generation-Y users**

##### **Introduction**

This is to get consent for your participation in the research conducted by Sebatatso Mtimkulu. The research is for a Master of Technology Degree I am currently undertaking with the University of South Africa (UNISA), under the supervision of Professor Judy van Biljon (Email: [Vbiljja@unisa.ac.za](mailto:Vbiljja@unisa.ac.za), Telephone: (012) 429 6873) and Mr Toby van Dyk (Email: [Vdyktj@unisa.ac.za](mailto:Vdyktj@unisa.ac.za), Telephone: 012 429 6676)

##### **Background of study**

This study is aimed at gathering the type of functionality Internet banking websites of the future should provide to their Generation-Y customers. A literature study, interviews as well as an online survey have already been performed, and from this a set of projected Internet banking functionality guidelines have already been gathered.

##### **Purpose of heuristic evaluation**

A heuristic evaluation is therefore necessary on the Internet banking websites of 5 banks in South Africa (Standard Bank, ABSA, FNB, Nedbank and Capitec), for you the evaluator, to assist in identifying whether the sites meet the stipulated future functionality requirements or not. This is also in order for you to assist in identifying functionality that you believe represents innovation on this platform, not yet uncovered by the literature and user input. Please note that functionality does not refer to standard transactional functions like checking an account balance, paying a beneficiary, etc., as it is recognised that these are key purposes the Internet banking platform should always perform. The focus is therefore on functionality that represents innovation, and that has the potential to take the Internet banking platform to another level of interaction with users.

##### **Confidentiality**

The input you provide will be treated confidentially and only used towards the completion of the afore-mentioned qualification. All data will be used in summary form without reference to any individual.

## **Participation**

Participation in this research study is voluntary, and you have the right to, at any time, withdraw or refuse to participate.

## **Benefits and compensation**

There aren't any direct benefits for your participation. All findings will be used for the completion of the academic qualification mentioned. No compensation will be provided to anyone partaking in this research.

## **Risks and discomforts**

There are no risks or discomfort associated with your participation. All answers from you and other evaluators will be analysed collectively. Individual answers will therefore not be linked to any names, positions and companies of participants.

## **Participant consent**

I have read and understood all the above. I willingly choose to participate in this study.

**Full name (optional)** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

## Appendix D2: Heuristic evaluation procedure

### 1. Introduction

In the sections that follow, projected Internet banking functionality synthesised from both the literature and participant input is presented. Please use these functionality guidelines as heuristics, in order to evaluate whether the five South African Internet banking websites listed below, comply with these or not. You are also requested to assist in identifying functionality that you believe represents innovation on these platforms, not covered by the heuristics. Below are the steps you are requested to follow to assist in accomplishing this.

### 2. Procedure

You are requested to please do the following:

2.1 Log into the secure Internet banking sections of the banking websites listed in the table below.

The login details for each bank are provided separately.

Banking website	Secure transacting URL
Standard Bank	<a href="https://www12.encrypt.standardbank.co.za/ibsa/InternetBanking">https://www12.encrypt.standardbank.co.za/ibsa/InternetBanking</a>
FNB	<a href="https://www.fnb.co.za/">https://www.fnb.co.za/</a>
ABSA	<a href="https://ib.absa.co.za/ib/ib.jsp">https://ib.absa.co.za/ib/ib.jsp</a>
Nedbank	<a href="https://netbank.nedsecure.co.za/">https://netbank.nedsecure.co.za/</a>
Capitec Bank	<a href="https://direct.capitecbank.co.za/ibank/">https://direct.capitecbank.co.za/ibank/</a>

2.2 Familiarise yourself with the different sections of the sites by performing the tasks provided in the *Heuristic\_Evaluation\_Tasks.docx* document

2.3 After performing these tasks, please do the following for each bank evaluated:

- Access the *Functionality\_Heuristics.docx* document for each bank, and rate how well you believe the site meets the heuristics stipulated
- Describe in detail additional innovation and/or problem you encountered for a particular heuristic
- Specify these in a separate line and reference the number in the first column of the heuristic table

2.4 After evaluating the site with the provided heuristics, write a report with your findings. In this report, stipulate the following:

- How long the review took you
- Functionality on the site, not necessarily covered in the heuristics, you felt represented innovation, and should therefore be reflected on the Internet banking platform of the future
- Any other comments and recommendations you may have

2.5 After completing the above, please email your heuristic ratings and report to:

[sebatatsoa@aquaonline.com](mailto:sebatatsoa@aquaonline.com)

**Thank you very much for your co-operation. Your input is greatly appreciated.**



## **Appendix D3: Website familiarisation tasks for evaluators**

### **1. Introduction**

The tasks outlined below are according to the heuristic categories as formulated from the literature and the participant input in the prior stages of this study. Kindly familiarise yourself with the Internet banking websites of the above mentioned five banks, by performing each of the tasks listed below.

### **2. Simplicity tasks**

- 2.1 Task 1: Log into the Internet banking site using the login details provided
- 2.2 Task 2: Divide your account into two money pockets, and increase Electronic Transfer limit to R10 000 per month
- 2.3 Task 3: Investigate whether there are any product(s) the bank is recommending to you, and find out more about them
- 2.4 Task 4: When you find this product, investigate whether there are interactive ways used (e.g. video), to explain to you what it entails
- 2.5 Task 5: Investigate whether there is a tool (e.g. a calculator), that assists you in making a purchasing decision on this product
- 2.6 Task 6: Investigate whether you can apply for the product online
- 2.7 Task 7: Investigate whether the bank is able to make you product offers based on the products you currently have
- 2.8 Task 8: Find a number of helpful tools (e.g. calculators, product wizards, etc.) that help you plan for your next transactions

### **3. Ubiquitous (anywhere, anytime) tasks**

- 3.1 Task 1: Find out about the different apps the bank has and how you can download them
- 3.2 Task 2: Select a specific app to download
- 3.3 Task 3: Find out if the bank notifies you of alternative ways you can bank with them (E.g. through a branch, cellphone banking, etc.)

#### **4. Personal tasks**

- 4.1 Task 1: On the homepage of the site, investigate whether the banks offers you quick links of the transactions you like to perform most
- 4.2 Task 2: Explore whether the interface of the site permits any form of customisation like changing of background colour, navigation rearrangement, etc.
- 4.3 Task 3: Assess whether the tone and character of the site is suitable for younger, techno savvy clients

#### **5. Empowerment tasks**

- 5.1 Task 1: Investigate whether the bank allows you to have a consolidated view of accounts you have with other financial institutions
- 5.2 Task 2: Link accounts you have with other financial services providers into the Internet banking platform you are currently on
- 5.3 Task 3: Find a section on the site where the bank educates you about your current financial standing and how to improve it
- 5.4 Task 4: Look for any products the bank is encouraging you to take in order to improve your financial standing, and apply for this product
- 5.5 Task 5: You want to track how you are spending your money. View all your financial transactions, and see if you can identify the different spending categories you have expended the most in
- 5.6 Task 6: Set a financial goal, and investigate whether the bank provides you with hints and tips to reach this goal
- 5.7 Task 7: Set up a budget on the site
- 5.8 Task 8: Set up an alert for the bank to help you keep to the budget you have just captured

#### **6. Reassuring tasks**

- 6.1 Task 1: Investigate whether the bank offers you the ability to send and receive secure messages
- 6.2 Task 2: Find an online chat functionality, where you are able to have an instant conversation between you and a bank representative
- 6.3 Task 3: Leave your contact details and request someone from the bank to call you back

## **7. Participant generated tasks**

- 7.1 Task 1: Find any educational material on the site, where the banks provides you with information to teach you about the financial world at large
- 7.2 Task 2: Investigate whether there's any loyalty program offered by the bank, and how much rewards/points you have accumulated
- 7.3 Task 3: Find out whether the bank offers you any specials (e.g. smartphone and tablet devices) not necessarily related to banking, just for being a client of theirs
- 7.4 Task 4: Investigate whether you are able to use the rewards/points you have accumulated in order to purchase a product special on the site
- 7.5 Task 5: Investigate whether the bank educates you about Near Field Technology like Geo-Payments where you are able to send money to anyone with a compatible smart device, in close proximity to you

### Appendix D4: Functionality heuristics

Please evaluate whether the available functionality on the Internet banking platform adheres to the functionality heuristics listed in this section. Also describe in detail additional innovation and/or problem you encountered for a particular heuristic. Specify these in a separate line and reference the number in the first column of the heuristic table.

Please select (x) the name of the bank this heuristic evaluation is for:				
Standard Bank	ABSA	FNB	Nedbank	Capitec Bank

	Functionality heuristic	Adherence rating				
<b>1</b>	<b>Simplicity:</b> To support the ease of use and promptness of Internet banking, does the functionality on the site:					
1.1	Automate transactions (e.g. Online transfer limit) from start to finish by allowing users to complete transactions without having to request for assistance from the bank, or go into a bank branch	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.2	Offer e-Signatures (Electronic Signatures) to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.3	Pre-fill applications or any online process that requires users to capture their personal details (Example: if the bank already has the user’s personal details, they should automatically populate these to a certain extend on an online application form, rather than the user having to fill in all these details from scratch)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.4	Offer tools that assist users in simplifying difficult tasks like applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.)	Strongly disagree		Strongly Agree		
		1	2	3	4	5

1.5	Present difficult-to-understand content (e.g. New product benefits) in innovative ways like using videos, audio clips, online games, polls, etc.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
2	<b>Ubiquitous:</b> To make certain that functionality offered to the user is on any platform, and on any device of their choice, does the functionality on the site:					
2.1	Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions	Strongly disagree		Strongly Agree		
		1	2	3	4	5
2.2	Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3	<b>Personal:</b> To support the personal nature of Internet banking, where functionality provided adapts to the unique financial needs of a user, does the functionality on the site:					
3.1	Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.2	Facilitate the customisation of the website in a manner that befits the user's preference like changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.3	Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (Example: If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage, so that a user can access them straight away).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.4	Create different navigation paths for different users with or without certain products (Example: If a user user has a homeloan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a homeloan to begin with, the homeowners insurance navigation link should not be shown at all).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.5	Make the tone and character more modern and relevant to the younger, techno-savvy clients	Strongly disagree		Strongly Agree		
		1	2	3	4	5

<b>4</b>	<b>Empowering:</b> To support the empowering nature of Internet banking, where functionality provided adds value to users by enabling them to initiate action that helps them better manage certain aspects of their financial lives, does the functionality on the site:					
4.1	Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.2	Estimate the user’s assets and liabilities value by providing them a with a single view of their financial worth	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.3	Allow users to track their spending over a period of time	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.4	Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like ‘groceries’, ‘entertainment’, ‘petrol’, etc.) in order to track and monitor specific spending patterns	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.5	Assist users in creating an online budget	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.6	Facilitate users in creating savings targets to assist them in reaching certain financial targets	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.7	Provide alerts and notifications to assist users reach their financial goal (Example: If a user is aiming to only spend R 1000 on Entertainment per month, send them a notification when they are about to go over their target)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.8	Educate the user on their financial standing and how they can improve (i.e. personalised calculators)	Strongly disagree		Strongly Agree		
		1	2	3	4	5

4.9	Provide savings tips that assist the user in reaching a specific goal or target	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.10	Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.11	Encourage users to take immediate action on a particular goal (e.g. Apply for an investment account, recommend a product, etc.)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
<b>5</b>	<b>Reassuring:</b> To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, does the functionality on the site:					
5.1	Allow users to fill in their contact details into input fields on a page, and have a representative from the bank to contact them (Request a call back)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
5.2	Allow the user to start a chat session with the bank, by clicking a link that opens a chat window on the screen (Click to chat).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
5.3	Allow users to receive and send secure messages to the bank.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
<b>6</b>	<b>Participant generated functionality guidelines:</b> To support additional functionality requirements deemed important by representative Generation-Y users, does the functionality on the site:					
6.1	Proactively offer financial education that does not necessarily relate to products that users have, but rather fresh views that will help users acquire more financial management skills (E.g. An online stock broking and share trading course)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.2	Provide a mechanism where users are able to partition their financial account into “pockets” that can be assigned to	Strongly disagree		Strongly Agree		

	different monetary purposes like savings, petty cash, everyday use, without having to open different accounts	1	2	3	4	5
6.3	Allow users to log into Internet banking without using their bank details like card number and customer selected pin, but rather prompt them to create their own login information	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.4	Showcase partnerships formed with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate to customers on the Internet banking platform.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.5	Create a loyalty program where users are able to accumulate rewards for using the bank’s products. Allow users to track and use these rewards from the Internet banking platform	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.6	Explain to users about geo-payments, a technology that allows them to make payments to anyone with a smart device and within close proximity to them.	Strongly disagree		Strongly Agree		
		1	2	3	4	5

**Additional heuristic comments**

1. Below, please elaborate on any additional problems and/or recommendations you might have; referencing the number of the heuristic in the first column of the table.

Number i.e. 3.2	Comments



## Appendix D5: Heuristic evaluation report

This is to give feedback on the heuristic evaluation performed across the five South African Internet banking websites.

### 1. Evaluator details (Optional)

Name of evaluator (Optional): \_\_\_\_\_

Number of years in industry (Optional): \_\_\_\_\_

### 2. Evaluation feedback

Please indicate in hours how long the review process took you: \_\_\_\_\_

Please indicate the websites you have completed the heuristic review for (use a cross X)

Standard Bank	ABSA	FNB	Nedbank	Capitec Bank

2.1 How would you describe the sites' overall compliance with the stipulated heuristics?

<b>Standard Bank</b>

<b>ABSA</b>

<b>FNB</b>

<b>Nedbank</b>

<b>Capitec bank</b>

### **3. Identification of innovative functionality**

3.1 Is there any functionality you came across on the sites, not covered by the heuristics, that you feel represents innovation? Please list this below, and elaborate briefly on your choice.

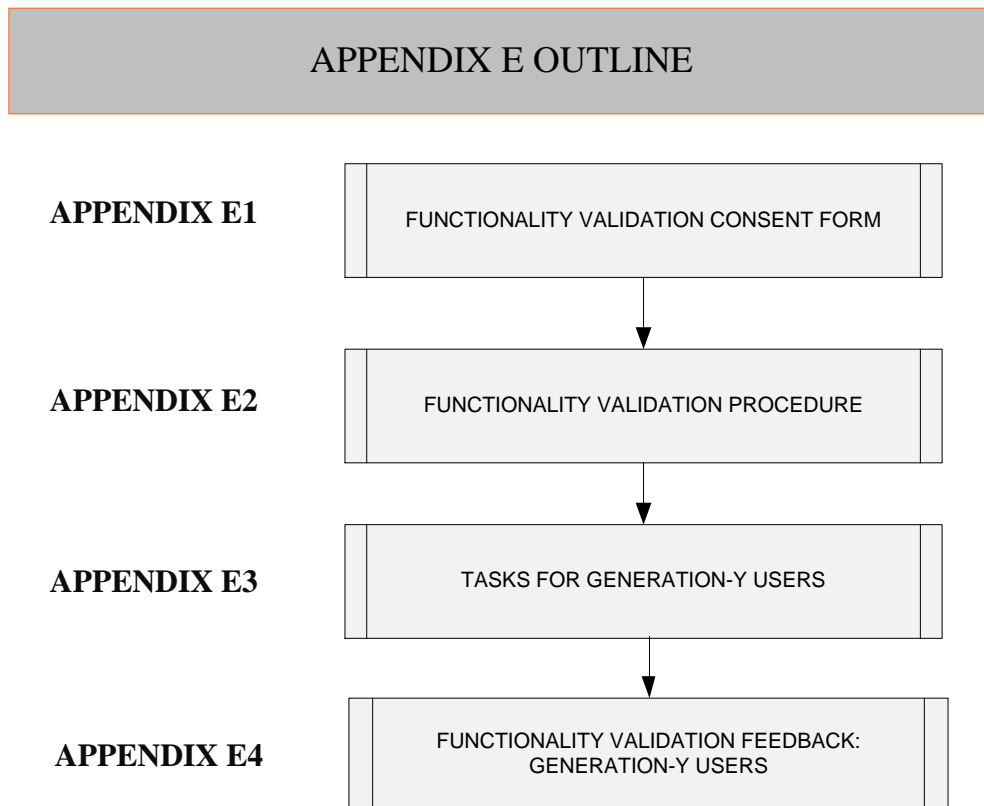
<b>Name of bank website</b>	<b>Functionality innovation</b>	<b>Elaboration</b>

#### **4. Additional input**

4.1 Please provide any additional input not asked in this report

**Thank you very much for your co-operation. Your input is greatly appreciated.**

## Appendix E: Wireframe prototype functionality validation



## **Appendix E1: Functionality validation consent form**

### **Functionality validation consent form**

#### **Internet banking functionality for Generation-Y users**

##### **Introduction**

This is to get consent for your participation in the research conducted by Sebatatso Mtimkulu. The research is for a Master of Technology Degree I am currently undertaking with the University of South Africa (UNISA), under the supervision of Professor Judy van Biljon (Email: [Vbiljja@unisa.ac.za](mailto:Vbiljja@unisa.ac.za), Telephone: (012) 429 6873) and Mr Toby van Dyk (Email: [Vdyktj@unisa.ac.za](mailto:Vdyktj@unisa.ac.za), Telephone: 012 429 6676)

##### **Background of study**

This study is aimed at gathering the type of functionality Internet banking websites of the future should provide to you, their Generation-Y customers. Prior work has already been performed on this study (i.e. a literature study, user interviews, online surveys; heuristic evaluation) and from this a set of projected Internet banking functionality guidelines have already been gathered.

##### **Purpose of functionality validation**

From all this prior work, a semi-functional web-based prototype, depicting what the research has revealed to be “Internet banking functionality of the future” has been put together. What is requested from you is to help validate whether you believe this prototype adequately captures this functionality as gathered from prior research work, as well as help in identifying additional functionality innovation you feel needs to be included on the Internet banking platform of the future. This process will take approximately 1.5 hours of your time.

##### **Confidentiality**

The input you provide will be treated confidentially and only used towards the completion of the afore-mentioned qualification. All data will be used in summary form without reference to any individual participant.

## **Participation**

Participation in this research study is voluntary, and you have the right to, at any time, withdraw or refuse to participate.

## **Benefits and compensation**

There aren't any direct benefits for your participation. All findings will be used for the completion of the academic qualification mentioned. No compensation will be provided to anyone partaking in this research.

## **Risks and discomforts**

There are no risks or discomfort associated with your participation. All answers from you and other evaluators will be analysed collectively. Individual answers will therefore not be linked to any names, positions and companies of participants.

## **Participant consent**

I have read and understood all the above. I willingly choose to participate in this study.

**Full name (optional)** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

## Appendix E2: Functionality validation procedure

### 1. Introduction

In the sections that follow, projected Internet banking functionality synthesised from prior stages of this study are outlined. Please use these functionality guidelines in order to validate whether the functionality on the constructed prototype adequately captures these. Below are the steps you are requested to follow to assist in accomplishing this.

### 2. Procedure

You are requested to please do the following:

#### 2.1 Access the functionality prototype for “Techno Bank”

- Open the following website address on your web-browser  
<http://share.axure.com/BRQ8Y6/>
- Please note: Techno Bank is the name of a fictitious bank created by the researcher. This is so that the context of your validation becomes as closely aligned to a real-life interaction with an Internet banking website as possible.

#### 2.2 Please log into the Internet banking website of Techno Bank:

- Username: Lerato
- Password: October2012
- *Please note:* You are able to access the “logged in” section of the prototype without necessarily entering these details, but please do so, as this serves a purpose further down in the evaluation process.

#### 2.3 Once you’ve logged in:

- Take about 5-10 minutes familiarising yourself with the different sections of the prototype.

#### 2.4 Once you’ve completed your orientation:

- Perform the tasks provided in the *Generation\_Y\_Functionality\_Tasks.docx* document. These tasks were formulated to help you explore the full functionality capabilities of the Techno Bank Internet banking platform. Please remember that the prototype is presented in the form of wireframes. This means that some links may

not be active, and some actions you may not be able to complete to a full extent. What is required is that you take note of the type of functionality being catered for on the prototype, even though it is not fully functional.

#### 2.5 After completing the tasks:

- You will be asked to give your feedback on a separate survey that the researcher will be taking you through.

**Thank you very much for your co-operation. Your input is greatly appreciated.**



## **Appendix E3: Tasks for Generation-Y users**

### **1. Introduction**

Please access the Techno Bank prototype on: <http://share.axure.com/BRQ8Y6/> , and on this prototype, perform the tasks within the functionality categories that follow.

### **2. Simplicity tasks**

- 2.1 Task 1: Log into the Techno Bank Internet banking site using the login details provided
- 2.2 Task 2: Divide your “Everyday cheque” account into two money pockets, and increase the Electronic Transfer limit to R10 000 per month
- 2.3 Task 3: View the homeloan deal the bank is making you, and find out more about it
- 2.4 Task 4: Open a homeloan video that will explain what the particular homeloan entails
- 2.5 Task 5: Access a homeloan calculator to see how much your instalment will be
- 2.6 Task 6: Apply for the homeloan
- 2.7 Task 7: Investigate a loan insurance deal the bank is making you
- 2.8 Task 8: Explore a number of helpful tools to help you plan for your next transaction

### **3. Ubiquitous tasks**

- 3.1 Task 1: Find out about the different apps the bank has and how you can download them
- 3.2 Task 2: Select a specific app to download
- 3.3 Task 3: Find out about alternative ways you can bank (e.g. through a branch, cellphone banking, etc.)

### **4. Personal tasks**

- 4.1 Task 1: On the homepage of the site, investigate whether the banks offers you quick links of the transactions you like to perform most
- 4.2 Task 2: Change the default background of the site to the one most preferred by you
- 4.3 Task 3: Arrange navigation items to reflect the order you prefer
- 4.4 Task 4: Choose the different web parts you would like to see on the homepage
- 4.5 Task 5: View a preview of your customised site
- 4.6 Task 6: Rename one of the accounts you have with Techno Bank to a name you will easily identify and remember

4.7 Task 7: Assess whether the tone and character of the site is suitable for younger, more techno savvy clients

## **5. Empowerment tasks**

5.1 Task 1: Access a section where you are able to have a consolidated view of, and manage all you financial accounts

5.2 Task 2: Find a section where you'll have a deeper understanding of your current financial standing

5.3 Task 3: Find personalised hints and tips that will help you learn about reaching the perfect money balance

5.4 Task 4: Find out about the "Healthy financial products" the bank recommends you must have in order to improve your financial standing

5.5 Task 5: Find out more about the Life Cover product Techno bank offers

5.6 Task 6: Apply for this Life Cover product

5.7 Task 7: Set a financial goal that will motivate you to start making better use of your finances

5.8 Task 8(a): Look for a listed breakdown of your spending pattern

5.8.1 Task 8(b): Look for a graphical breakdown of your spending pattern

5.9 Task 9: Set up a budget that will help you keep better control of your money

5.10 Task 10: Monitor how your spending is doing by viewing the alerts you have set

5.11 Task 11: Track your spending progress in the "Hair and makeup" category for the last 4 months

## **6. Reassuring tasks**

6.1 Task 1: Access the inbox to check any new messages

6.2 Task 2: Send a new secure message to the bank

6.3 Task 3: Start an online-chat session with a bank representative

6.4 Task 4: Leave your contact details and request someone from the bank to call you back

## **7. Participant generated tasks**

- 7.1 Task 1: Find a stock market tutorial that the bank is offering to expand your financial knowledge
- 7.2 Task 2: Find out how many rewards/loyalty points you have accumulated
- 7.3 Task 3: Find a partner on a mobile device and read more about it
- 7.4 Task 4: Purchase this mobile special offer
- 7.5 Task 5: Find out more about the Geo-Payment capability and what it entails

## Appendix E4: Functionality validation form: Generation-Y users

### 1. Prototype functionality validation

After going through the different tasks on the prototype, please indicate whether you believe the Techno Bank Internet banking platform adequately caters for the functionality requirements gathered throughout this study. Your input regarding any additional functionality requirements you have will also be captured in this section.

	Functionality	Adherence rating				
<b>1</b>	<b>Simplicity:</b> To support the ease of use and promptness of Internet banking, does the functionality on the Techno Bank prototype:					
1.1	Automate transactions (e.g. Online transfer limit) from start to finish by allowing users to complete transactions without having to request for assistance from the bank, or go into a bank branch	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.2	Offer e-Signatures (Electronic Signatures) to replace legally binding handwritten signatures to indicate approval or finalisation of an online transaction like applying for a loan	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.3	Pre-fill applications or any online process that requires users to capture their personal details (Example: if the bank already has the user's personal details, they should automatically populate these to a certain extent on an online application form, rather than the user having to fill in all these details from scratch)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.4	Offer tools that assist users in simplifying difficult tasks like applying for a certain product (i.e. offer step-by-step guides, product wizards, calculators, etc.)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
1.5	Present difficult-to-understand content (e.g. New product benefits) in innovative ways like using videos, audio clips, online games, polls, etc.	Strongly disagree		Strongly Agree		
		1	2	3	4	5

<b>2</b>	<b>Ubiquitous:</b> To make certain that functionality offered to the user is on any platform, and on any device of their choice, does the functionality on the Techno Bank prototype:					
2.1	Make users aware of other banking channels (i.e. cellphone banking, branch, banking app, etc.) they can access in order to perform their transactions	Strongly disagree		Strongly Agree		
		1	2	3	4	5
2.2	Provide easy access to a banking application that users can download and use on other mobile devices such as a smartphone or tablet	Strongly disagree		Strongly Agree		
		1	2	3	4	5
<b>3</b>	<b>Personal:</b> To support the personal nature of Internet banking, where functionality provided adapts to the unique financial needs of a user, does the functionality on the Techno Bank prototype:					
3.1	Offer targeted promotions to users whose previous behaviour may imply interest in a particular product.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.2	Facilitate the customisation of the website in a manner that befits the user's preference like changing the website layout, colour, language, hiding and removing tabs, bookmarking certain sections, etc.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.3	Support the user by providing specific links that are based on their previous interaction and how they are most likely to interact in the future (Example: If a user always purchases airtime and always sends a secure message to the bank, these quick links should be made more prominent on the homepage, so that a user can access them straight away).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.4	Create different navigation paths for different users with or without certain products (Example: If a user user has a homeloan with the bank, a navigation link that promotes homeowners insurance can be provided for this user. However, should a user not have a homeloan to begin with, the homeowners insurance navigation link should not be shown at all).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
3.5	Make the tone and character more modern and relevant to the younger, techno-savvy clients	Strongly disagree		Strongly Agree		
		1	2	3	4	5

<b>4</b>	<b>Empowering:</b> To support the empowering nature of Internet banking, where functionality provided adds value to users by enabling them to initiate action that helps them better manage certain aspects of their financial lives, does the functionality on the Techno Bank prototype:					
4.1	Provide users with a real-time, consolidated view of their financial life, by showing them, on a single screen, all their financial accounts across the different financial services providers	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.2	Estimate the user’s assets and liabilities value by providing them a with a single view of their financial worth	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.3	Allow users to track their spending over a period of time	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.4	Assist users in categorising their spending and transactions (i.e. the user can group their spending into relevant categories like ‘groceries’, ‘entertainment’, ‘petrol’, etc.) in order to track and monitor specific spending patterns	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.5	Assist users in creating an online budget	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.6	Facilitate users in creating savings targets to assist them in reaching certain financial targets	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.7	Provide alerts and notifications to assist users reach their financial goal (Example: If a user is aiming to only spend R 1000 on Entertainment per month, send them a notification when they are about to go over their target)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.8	Educate the user on their financial standing and how they can improve (i.e. personalised calculators)	Strongly disagree		Strongly Agree		
		1	2	3	4	5

4.9	Provide savings tips that assist the user in reaching a specific goal or target	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.10	Allow users to anonymously benchmark their income and spending patterns with other users in a similar peer group	Strongly disagree		Strongly Agree		
		1	2	3	4	5
4.11	Encourage users to take immediate action on a particular goal (e.g. Apply for an investment account, recommend a product, etc.)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
<b>5</b>	<b>Reassuring:</b> To support the reassuring nature of Internet banking, where functionality provided offers human help whenever the user feels the need, does the functionality on the Techno Bank prototype:					
5.1	Allow users to fill in their contact details into input fields on a page, and have a representative from the bank to contact them (Request a call back)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
5.2	Allow the user to start a chat session with the bank, by clicking a link that opens a chat window on the screen (Click to chat).	Strongly disagree		Strongly Agree		
		1	2	3	4	5
5.3	Allow users to receive and send secure messages to the bank.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
<b>6</b>	<b>Participant generated functionality guidelines:</b> To support additional functionality requirements deemed important by representative Generation-Y users, does the functionality on the Techno Bank prototype:					
6.1	Proactively offer financial education that does not necessarily relate to products that users have, but rather fresh views that will help users acquire more financial management skills (E.g. An online stock broking and share trading course)	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.2	Provide a mechanism where users are able to partition their financial account into “pockets” that can be assigned to	Strongly disagree		Strongly Agree		
		1	2	3	4	5

	different monetary purposes like savings, petty cash, everyday use, without having to open different accounts					
6.3	Allow users to log into Internet banking without using their bank details like card number and customer selected pin, but rather prompt them to create their own login information	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.4	Showcase partnerships formed with other organisations that are not necessarily linked to banking, and sell their products and services at a reduced rate to customers on the Internet banking platform.	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.5	Create a loyalty program where users are able to accumulate rewards for using the bank’s products. Allow users to track and use these rewards from the Internet banking platform	Strongly disagree		Strongly Agree		
		1	2	3	4	5
6.6	Explain to users about geo-payments, a technology that allows them to make payments to anyone with a smart device and within close proximity to them.	Strongly disagree		Strongly Agree		
		1	2	3	4	5

**2. Post validation questions**

2.1 Would you say the functionality on the Techno Bank prototype enhances or complicates the Internet banking offering? Please indicate your answer with an (X).

Enhances	
Complicates	

2.2 Please elaborate on your answer above



2.3 Please list additional functionality, not captured in the prototype, you would like see on the Internet banking platform of the future.

2.4 How would you rate the functionality you have interacted with on the prototype?

	Bad		Average		Good	
Functionality on prototype	-3	-2	-1	1	2	3

2.5 Please elaborate on your rating above

**Thank you very much for your participation. Your input and time is greatly appreciated.**

## Appendix F: Statistical analysis results – Reliability of research constructs

### 1. Responses per construct

Simple										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 1.1	0.00%	0	4.00%	2	10.00%	5	38.00%	19	48.00%	24
Q 1.2	4.00%	2	18.00%	9	26.00%	13	26.00%	13	26.00%	13
Q 1.3	0.00%	0	0.00%	0	2.00%	1	42.00%	21	56.00%	28
Q 1.4	0.00%	0	0.00%	0	4.17%	2	50.00%	24	45.83%	22
Q 1.5	4.17%	2	8.33%	4	14.58%	7	41.67%	20	31.25%	15

Ubiquitous										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 2.1	0.00%	0	2.04%	1	6.12%	3	40.82%	20	51.02%	25
Q 2.2	2.04%	1	2.04%	1	2.04%	1	48.98%	24	44.90%	22
Q 2.3	34.69%	17	20.41%	10	22.45%	11	18.37%	9	4.08%	2
Q 2.4	0.00%	0	14.58%	7	18.75%	9	41.67%	20	25.00%	12

Personal										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 3.1	4.17%	2	10.42%	5	22.92%	11	43.75%	21	18.75%	9
Q 3.2	0.00%	0	4.17%	2	14.58%	7	43.75%	21	37.50%	18
Q 3.3	2.08%	1	6.25%	3	20.83%	10	37.50%	18	33.33%	16
Q 3.4	2.08%	1	6.25%	3	16.67%	8	41.67%	20	33.33%	16

Personal										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 3.5	0.00%	0	0.00%	0	17.02%	8	38.30%	18	44.68%	21

Empowering										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 4.1	0.00%	0	2.13%	1	12.77%	6	36.17%	17	48.94%	23
Q 4.2	0.00%	0	0.00%	0	4.26%	2	42.55%	20	53.19%	25
Q 4.3	0.00%	0	6.25%	3	2.08%	1	41.67%	20	50.00%	24
Q 4.4	0.00%	0	6.25%	3	8.33%	4	35.42%	17	50.00%	24
Q 4.5	0.00%	0	0.00%	0	8.33%	4	35.42%	17	56.25%	27
Q 4.6	0.00%	0	4.17%	2	6.25%	3	33.33%	16	56.25%	27
Q 4.7	2.13%	1	2.13%	1	6.38%	3	31.91%	15	57.45%	27
Q 4.8	2.13%	1	2.13%	1	4.26%	2	40.43%	19	51.06%	24
Q 4.9	8.51%	4	8.51%	4	25.53%	12	29.79%	14	27.66%	13
Q 4.10	2.08%	1	0.00%	0	6.25%	3	62.50%	30	29.17%	14
Q 4.11	0.00%	0	4.35%	2	17.39%	8	54.35%	25	23.91%	11

Reassuring										
	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	% of Total	N	% of Total	N	% of Total	N	% of Total	N	% of Total	N
Q 5.1	0.00%	0	6.52%	3	13.04%	6	45.65%	21	34.78%	16
Q 5.2	6.52%	3	6.52%	3	21.74%	10	39.13%	18	26.09%	12
Q 5.3	2.17%	1	15.22%	7	26.09%	12	32.61%	15	23.91%	11
Q 5.4	10.87%	5	4.35%	2	19.57%	9	39.13%	18	26.09%	12
Q 5.5	10.87%	5	6.52%	3	19.57%	9	34.78%	16	28.26%	13

## 2. Reliability scores

### Multivariate

#### Correlations

	Q 1.1	Q 1.2	Q 1.3	Q 1.4	Q 1.5
Q 1.1	1.0000	0.3222	0.4573	0.2506	0.3235
Q 1.2	0.3222	1.0000	0.1260	-0.0551	0.2212
Q 1.3	0.4573	0.1260	1.0000	0.2060	0.2254
Q 1.4	0.2506	-0.0551	0.2060	1.0000	0.2186
Q 1.5	0.3235	0.2212	0.2254	0.2186	1.0000

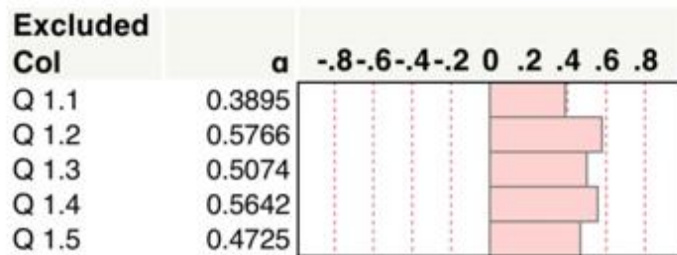
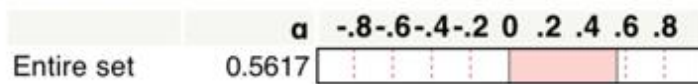
There are 2 missing values. The correlations are estimated by REML method.

#### Univariate Simple Statistics

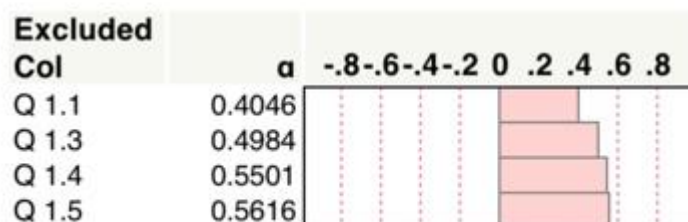
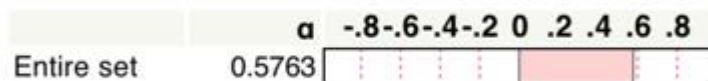
Column	N	DF	Mean	Std Dev	Sum	Minimum	Maximum
Q 1.1	50	49.00	4.3000	0.8144	215.000	2.0000	5.0000
Q 1.2	50	49.00	3.5200	1.1822	176.000	1.0000	5.0000
Q 1.3	50	49.00	4.5400	0.5425	227.000	3.0000	5.0000
Q 1.4	48	47.00	4.4167	0.5774	212.000	3.0000	5.0000
Q 1.5	48	47.00	3.8750	1.0842	186.000	1.0000	5.0000

Note: Statistics were calculated for each column independently without regard for missing values in other columns.

#### Cronbach's $\alpha$



#### Cronbach's $\alpha$



### Multivariate

#### Correlations

	Q 2.1	Q 2.2	Q 2.3	Q 2.4
Q 2.1	1.0000	0.3127	0.2277	-0.0825
Q 2.2	0.3127	1.0000	0.1479	0.0455
Q 2.3	0.2277	0.1479	1.0000	0.0611
Q 2.4	-0.0825	0.0455	0.0611	1.0000

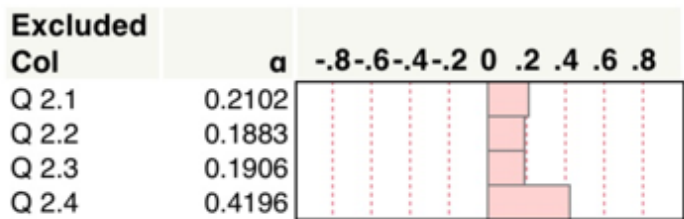
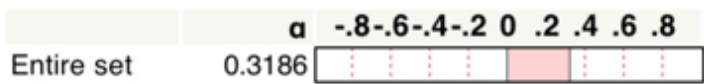
There are 1 missing values. The correlations are estimated by REML method.

#### Univariate Simple Statistics

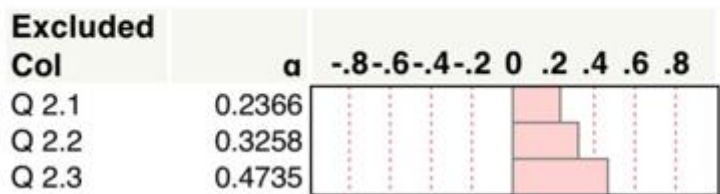
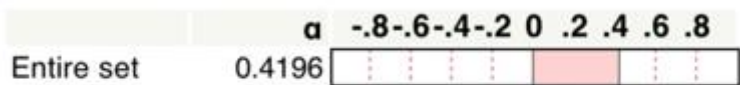
Column	N	DF	Mean	Std Dev	Sum	Minimum	Maximum
Q 2.1	49	48.00	4.4082	0.7047	216.000	2.0000	5.0000
Q 2.2	49	48.00	4.3265	0.8007	212.000	1.0000	5.0000
Q 2.3	49	48.00	2.3673	1.2532	116.000	1.0000	5.0000
Q 2.4	48	47.00	3.7708	0.9944	181.000	2.0000	5.0000

Note: Statistics were calculated for each column independently without regard for missing values in other columns.

#### Cronbach's $\alpha$



#### Cronbach's $\alpha$



### Multivariate

#### Correlations

	Q 3.1	Q 3.2	Q 3.3	Q 3.4	Q 3.5
Q 3.1	1.0000	0.4107	0.4466	0.4087	-0.0103
Q 3.2	0.4107	1.0000	0.4765	0.3994	0.2700
Q 3.3	0.4466	0.4765	1.0000	0.4781	0.3330
Q 3.4	0.4087	0.3994	0.4781	1.0000	0.4799
Q 3.5	-0.0103	0.2700	0.3330	0.4799	1.0000

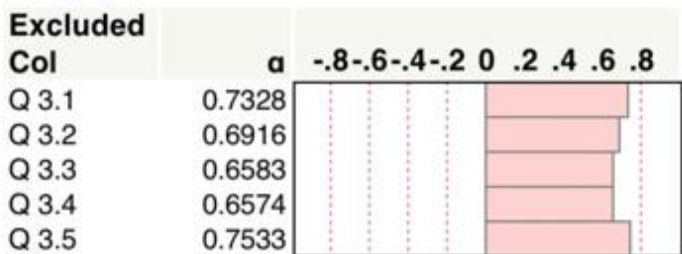
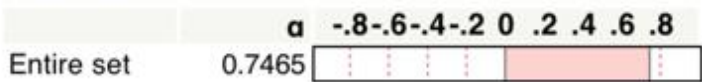
There are 1 missing values. The correlations are estimated by REML method.

#### Univariate Simple Statistics

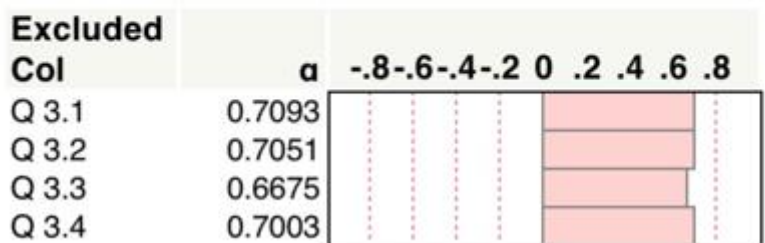
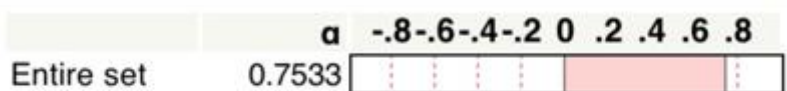
Column	N	DF	Mean	Std Dev	Sum	Minimum	Maximum
Q 3.1	48	47.00	3.6250	1.0442	174.000	1.0000	5.0000
Q 3.2	48	47.00	4.1458	0.8249	199.000	2.0000	5.0000
Q 3.3	48	47.00	3.9375	0.9980	189.000	1.0000	5.0000
Q 3.4	48	47.00	3.9792	0.9783	191.000	1.0000	5.0000
Q 3.5	47	46.00	4.2766	0.7431	201.000	3.0000	5.0000

Note: Statistics were calculated for each column independently without regard for missing values in other columns.

#### Cronbach's $\alpha$



#### Cronbach's $\alpha$



**Multivariate**

**Correlations**

	Q 4.1	Q 4.2	Q 4.3	Q 4.4	Q 4.5	Q 4.6	Q 4.7	Q 4.8	Q 4.9	Q 4.10	Q 4.11
Q 4.1	1.0000	0.5305	0.3245	0.1678	0.1551	0.2641	-0.0362	0.0189	0.2566	0.2066	0.1723
Q 4.2	0.5305	1.0000	0.5861	0.5549	0.6094	0.5204	0.6049	0.4219	0.2778	0.3900	0.3521
Q 4.3	0.3245	0.5861	1.0000	0.8407	0.7177	0.4591	0.4280	0.2466	0.4230	0.1869	0.3974
Q 4.4	0.1678	0.5549	0.8407	1.0000	0.7948	0.5259	0.6280	0.4049	0.4089	0.2912	0.3998
Q 4.5	0.1551	0.6094	0.7177	0.7948	1.0000	0.6332	0.5946	0.5764	0.5654	0.4129	0.4132
Q 4.6	0.2641	0.5204	0.4591	0.5259	0.6332	1.0000	0.6481	0.5708	0.5031	0.4682	0.4791
Q 4.7	-0.0362	0.6049	0.4280	0.6280	0.5946	0.6481	1.0000	0.7365	0.2936	0.4328	0.3725
Q 4.8	0.0189	0.4219	0.2466	0.4049	0.5764	0.5708	0.7365	1.0000	0.4699	0.5661	0.4052
Q 4.9	0.2566	0.2778	0.4230	0.4089	0.5654	0.5031	0.2936	0.4699	1.0000	0.5864	0.5855
Q 4.10	0.2066	0.3900	0.1869	0.2912	0.4129	0.4682	0.4328	0.5661	0.5864	1.0000	0.3249
Q 4.11	0.1723	0.3521	0.3974	0.3998	0.4132	0.4791	0.3725	0.4052	0.5855	0.3249	1.0000

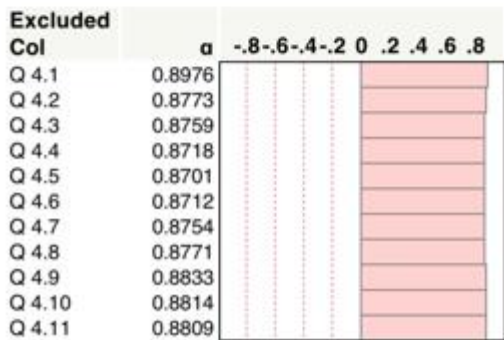
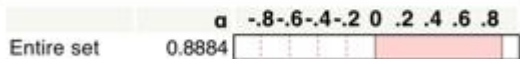
There are 6 missing values. The correlations are estimated by Pairwise method.

**Univariate Simple Statistics**

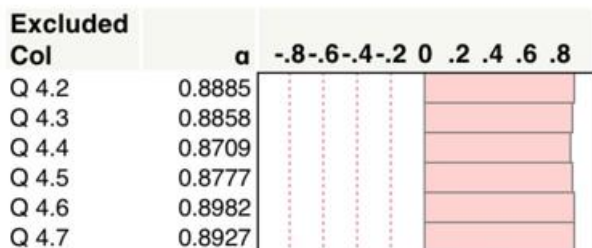
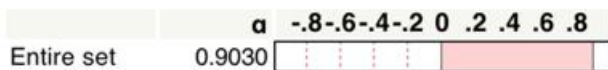
Column	N	DF	Mean	Std Dev	Sum	Minimum	Maximum
Q 4.1	47	46.00	4.3191	0.7831	203.000	2.0000	5.0000
Q 4.2	47	46.00	4.4894	0.5850	211.000	3.0000	5.0000
Q 4.3	48	47.00	4.3542	0.8119	209.000	2.0000	5.0000
Q 4.4	48	47.00	4.2917	0.8742	206.000	2.0000	5.0000
Q 4.5	48	47.00	4.4792	0.6520	215.000	3.0000	5.0000
Q 4.6	48	47.00	4.4167	0.7945	212.000	2.0000	5.0000
Q 4.7	47	46.00	4.4043	0.8762	207.000	1.0000	5.0000
Q 4.8	47	46.00	4.3617	0.8451	205.000	1.0000	5.0000
Q 4.9	47	46.00	3.5957	1.2276	169.000	1.0000	5.0000
Q 4.10	48	47.00	4.1667	0.7244	200.000	1.0000	5.0000
Q 4.11	46	45.00	3.9783	0.7743	183.000	2.0000	5.0000

Note: Statistics were calculated for each column independently without regard for missing values in other columns.

**Cronbach's  $\alpha$**



**Cronbach's  $\alpha$**



### Multivariate

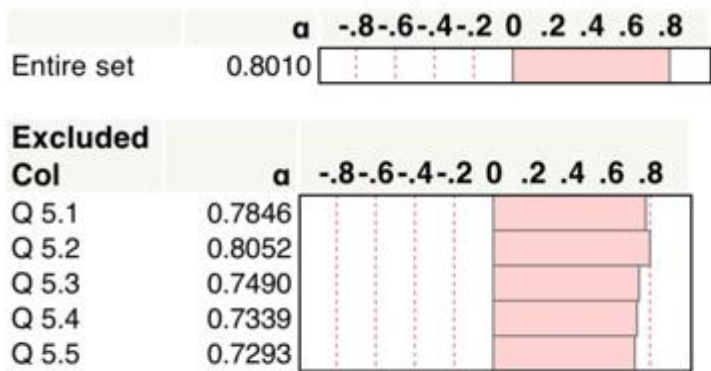
Correlations					
	Q 5.1	Q 5.2	Q 5.3	Q 5.4	Q 5.5
Q 5.1	1.0000	0.5494	0.4161	0.3416	0.3331
Q 5.2	0.5494	1.0000	0.5974	0.1833	0.1889
Q 5.3	0.4161	0.5974	1.0000	0.4276	0.4729
Q 5.4	0.3416	0.1833	0.4276	1.0000	0.9652
Q 5.5	0.3331	0.1889	0.4729	0.9652	1.0000

### Univariate Simple Statistics

Column	N	DF	Mean	Std Dev	Sum	Minimum	Maximum
Q 5.1	46	45.00	4.0870	0.8648	188.000	2.0000	5.0000
Q 5.2	46	45.00	3.7174	1.1287	171.000	1.0000	5.0000
Q 5.3	46	45.00	3.6087	1.0848	166.000	1.0000	5.0000
Q 5.4	46	45.00	3.6522	1.2332	168.000	1.0000	5.0000
Q 5.5	46	45.00	3.6304	1.2712	167.000	1.0000	5.0000

Note: Statistics were calculated for each column independently without regard for missing values in other columns.

### Cronbach's $\alpha$



### 3. Overall reliability report

- Acceptable reliability – Cronbach’s Alpha: 0.6897



## **APPENDIX G - PUBLISHED INTERACT 2013 ARTCILE BASED ON THIS STUDY**

Mtimkulu, S., van Biljon, J. & van Dyk, T. 2013. Designing for the functionality South African Internet banking websites should provide to address the needs of Generation-Y users. *INTERACT Designing for Diversity Conference 2013*, Cape Town, South Africa, 2–6 September, pp. 366–383.