

**Use of mobile-based social media technologies for academic purposes in Federal  
University Lafia, North Central Nigeria**

by

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# DECLARATION

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Use of mobile-based social media technologies for academic purpose in Federal University

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I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



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## **ABSTRACT**

This qualitative study explored the use of mobile-based social media technologies in the library services at the Federal University Lafia, North Central Nigeria. The purpose was to understand the academic information-seeking behaviour of the student library users while using mobile-based social media and other mobile-based technologies. A further purpose was to identify some of the barriers the students encountered when seeking information. Meyer's (2016) information behaviour model provided the conceptual framework for the study. For this reason, the literature review and the empirical data were structured according to the six major information behaviour components identified in the model. These are information, user, context, technology, information needs, and information activities. Meyer's model recognises technology as an important enabler of information behaviour. After clarifying these concepts, the discussion explored mobile technologies and mobile applications to acquire an understanding of these technologies and applications and the way in which they could be employed by a library to enhance its services. After that, the literature review focused on the way in which mobile technologies and social media are employed by users (especially students) to seek information that is supportive of their information needs. In this discussion, the influence the interplay between context and the users' cognitive, affective and sensorimotor structures have on the users' information needs and seeking behaviour was explored. The study used a descriptive qualitative phenomenology research design to gain insight into participating students' experiences using mobile-based social media technologies as a phenomenon. A total of 21 undergraduate students who were in their second to fourth year of study were interviewed using semi-structured interviews. The findings revealed that the use of mobile-based social media in information-seeking is affected by the participants' cognitive and affective structures which shaped their attitudes towards information sources and the way in which they use them. In addition, certain personal and environmental barriers seem to affect the participants' information-seeking activities. In order to get access to information that would satisfy their information needs, the participants relied on online social media groups. The use of Meyer's information behaviour model enabled an understanding of the reasons why students use mobile technologies and social media when seeking academic information and the means they employ to deal with their academic task-related information needs when they lack the necessary knowledge and skills to seek information in the library. This

understanding enabled the researcher to graphically illustrate the participating students' information-seeking behaviour while using mobile technologies and social media. Some recommendations could also be made to improve the library's services. These include the aggressive promotion of library services and information resources to users with frequently conducted user surveys. Such surveys would support the library management in keeping abreast with their users' information needs and would guide the development of a reliable environment that is conducive to users' information-seeking activities which are focused on satisfying their information needs.

**Keywords:** mobile technologies, mobile devices, mobile applications, social media, information needs, information-seeking behaviour, descriptive phenomenology, user, information barriers

## **OPSOMMING**

Hierdie kwalitatiewe studie het die gebruik van mobielgebaseerde sosialemediategnologieë in die biblioteekdienste by die Federal University Lafia, in Noord-Sentrale Nigerië, ondersoek. Die doel was om 'n begrip te vorm van die akademiese-inligting-soek-gedrag van studentegebruikers van biblioteekdienste terwyl hulle mobielgebaseerde sosiale media en ander mobielgebaseerde tegnologieë gebruik. Die navorsing het ook ten doel gehad om struikelblokke te identifiseer wat die studente teëgekomp het in hul soeke na inligting. Meyer se inligtingsgedragmodel (2016) het as konseptuele raamwerk vir die studie gedien. Om hierdie rede is die literatuuroorsig en die empiriese data gestruktureer volgens die ses hoofkomponente van inligtingsgedrag wat in die model geïdentifiseer is: inligting, gebruiker, konteks, tegnologie, inligtingsbehoefte en inligtingsaktiwiteit. Meyer se model erken tegnologie as 'n belangrike instaatsteller van inligtingsgedrag. Nadat hierdie konsepte verduidelik is, is mobiele tegnologieë en mobiele toepassings ondersoek om 'n begrip te vorm van hierdie tegnologieë, die toepassing daarvan en die manier waarop dit deur 'n biblioteek ingespan kan word om sy dienste te verbeter. Ná die bespreking het die literatuuroorsig gefokus op die manier waarop gebruikers (veral studente) mobiele tegnologieë en sosiale media gebruik om inligting te soek wat hul inligtingsbehoefte ondersteun. Die invloed van die wisselwerking tussen konteks en die gebruikers se kognitiewe, affektiewe en sensorimotorstrukture op gebruikers se inligtingsbehoefte en inligtingsoekgedrag, is ook bestudeer. Die studie het 'n beskrywende, kwalitatiewe fenomenologie-navorsingsontwerp gebruik om insig te verkry oor deelnemende studente se ervarings wanneer mobielgebaseerde sosialemediategnologieë as 'n fenomeen gebruik word. Halfgestruktureerde onderhoude is met altesaam 21 voorgraadse studente in hul tweede tot vierde studiejaar gevoer. Die bevindinge het getoon dat die gebruik van mobielgebaseerde sosiale media in inligtingsoektogte beïnvloed word deur die deelnemers se kognitiewe en affektiewe strukture, wat hul ingesteldheid teenoor inligtingsbronne en die manier waarop hulle dit gebruik, bepaal het. Dit wil ook voorkom of sekere persoonlike en omgewingstruikelblokke die deelnemers se inligtingsoek-aktiwiteit affekteer. Om toegang te verkry tot inligting wat in hul inligtingsbehoefte sal voorsien, het die deelnemers op aanlyn sosialemediagroep staatgemaak. Meyer se inligtingsgedragmodel het die navorser

gehelp om die redes te verstaan waarom studente mobiele tegnologieë en sosiale media gebruik wanneer hulle akademiese inligting soek, asook die hulpbronne wat hulle inspan om hul akademiese taakverwante inligtingsbehoefte te vervul wanneer hulle nie oor die nodige kennis en vaardighede beskik om inligting deur die biblioteek te soek nie. Hierdie begrip het die navorser gehelp om die deelnemende studente se inligtingsoekgedrag terwyl hulle mobiele tegnologieë en sosiale media gebruik, grafies te illustreer. Aanbevelings is gedoen om die biblioteek se dienste te verbeter. Dit sluit aggressiewe bemerking van biblioteekdienste en inligtingshulpbronne aan gebruikers met gereelde gebruikersopnames in. Sodanige opnames sal die biblioteekbestuur help om op hoogte te bly van hul gebruikers se inligtingsbehoefte en sal rigting gee vir die ontwikkeling van 'n betroubare omgewing van bevorderlik is vir gebruikers se inligtingsoekaktiwiteite wat toegespits is op die bevrediging van hul inligtingsbehoefte.

**Sleutelwoorde:** mobiele tegnologieë, mobiele apparate, mobiele toepassings, sosiale media, inligtingsbehoefte, inligtingsoekgedrag, beskrywende fenomenologie, gebruiker, biblioteekdiens, inligtingstruikelblokke

## **INGQIKITHI YOCWANINGO**

Lolu cwaningo olumayelana nokungamaqiniso luhlole ukusetshenziswa kobuchwepheshe bezinkundla zokuxhumana obuncike kumathuluzi okuhambekayo nawo ophikweni lomtapo wolwazi eFederal University Lafia, eNorth Central Nigeria. Inhloso bekuwukuthola ukuqonda kokuziphatha kwabafundi abasebenzisa umtapo wolwazi uma befuna ulwazi lwezemfundo ngenkathi besebenzisa ubuchwepheshe bokuxhumana obuncike kumathuluzi okuhambekayo nawo nobunye ubuchwepheshe obuncike kumathuluzi okuhambekayo nawo. Enye inhloso bekuwuhlonza ezinye izithiyi abafundi abahlangabezane nazo ngenkathi befuna ulwazi. Imodeli kaMeyer (2016) yokuziphatha uma kufunwa ulwazi ihlinzeke uhlakamqondo locwaningo. Ngenxa yalokhu, ukuhlolwa kwemibhalo ekhona neminingwane efakazela ucwaningo kwahlelwa ngokwezigaba eziyisithupha ezimqoka maqondana nokuziphatha uma kufunwa ulwazi nezihlonzwa kule modeli: ulwazi, umsebenzisi, umongo, ubuchwepheshe, izidingo zolwazi nemisebenzi yolwazi. Imodeli kaMeyer ibona ubuchwepheshe njengento eyenza lula ukuziphatha uma kufunwa ulwazi. Ngemva kokucacisa le miqondo, ubuchwepheshe bamathuluzi okuhambekayo nawo kanye nezinhlelo ezisetshenziswa ngamathuluzi okuhambekayo nawo kwahlolwa ukuze kutholakale ukuqonda lobu buchwepheshe, ukusetshenziswa kwabo nendlela obungasetshenziswa ngayo ngumtapo wolwazi ukuthuthukisa imisebenzi yawo. Ngemva kwengxoxo, ukuhlolwa kwemibhalo ekhona kugxile endleleni abasebenzisi (ikakhulukazi izitshudeni) abasebenzise ngayo ubuchwepheshe bamathuluzi okuhambekayo nawo nezinkundla zokuxhumana ukufuna ulwazi olusekela izidingo zabo zolwazi. Ithonya lokusebenzisana komongo kanye nezakhiwo zokuqonda, imizwa, nezinzwa namakhono okunyakazisa izitho zomzimba kwabasebenzisi, eliba ezidingweni zolwazi zabasebenzisi kanye nokuziphatha kwabo uma befuna ulwazi nakho kwahlolwa. Ucwaningo lusebenzise indlela yokucwaninga echazayo ebheka izenzakalo ukuze kutholakale ukuqonda mayelanana nokwenzekayo kubafundi abayingxenye yocwaningo kusetshenziswa ubuchwepheshe bezinkundla zokuxhumana obuncike emathuluzini okuhambekayo nawo njengesenzeko. Zingama-21 izitshudeni ezenza iziqu eziyisisekelo ezisonyakeni wazo wesibili kuya kowesine ezabuzwa imibuzo kusetshenziswa izinkulumongxoxo ezihleleke ngokungaphelele. Okutholakele kuveze ukuthi ukusetshenziswa kwezinkundla zokuxhumana okuncike emathuluzini okuhambekayo nawo ekufuneni ulwazi kuyatheleleka yizinhlela zabasebenzisi zokuqonda nokuzwela, okwenza benze ngendlela abenza ngayo

ekubhekaneni nemithombo yolwazi nendlela abayisebenzisa ngayo. Phezu kwalokho, kunezinye izithiyo ezidalwa ngabantu noma isimo sendawo okubonakala sengathi zinomthelela kokwenziwa ngababambiqhaza uma befuna ulwazi. Ukuze kufinyeleleke olwazini oluzogculisa izidingo zabo zolwazi, ababambiqhaza bebethembele emaqoqweni ezinkundla zokuxhumana ngobuchwepheshe bekhompuyutha. Imodeli kaMeyer yokuziphatha uma kufunwa ulwazi isize umcwaningi ekuqondeni izizathu zokuthi kungani izitshudeni zisebenzisa ubuchwepheshe bamathuluzi okuhambekayo nawo nezinkundla zokuxhumana uma zifuna ulwazi lwezemfundo nezindlela ezisetshenziswayo ukubhekana nezidingo zolwazi oluhlobene nemisebenzi yezemfundo uma zingenalo ulwazi namakhono okufuna ulwazi kumtapo wolwazi. Lokhu kuqonda kusize umcwaningi ekuvezeni ngokucacile ukuziphatha kwezitshudeni ezazibambe iqhaza uma zifuna ulwazi zisebenzisa ubuchwepheshe bamathuluzi okuhambekayo nawo nezinkundla zokuxhumana. Kwenziwa izincomo ezithile ukwenza ngcono usizo olutholakala emtapweni wolwazi. Lokhu kubandakanya ukukhuthazwa kwemisebenzi ehlinzekwa wumtapo wolwazi ngendlela eqinile nemithombo yolwazi kubasebenzisi ngokwenza izinhlobo eziqondiswe kubasebenzisi. Izinhlobo ezinjengalezi zingasiza abaphathi bomtapo wolwazi ekuzigcineni bazi kabanzi ngezidingo zolwazi zabasebenzisi futhi zingasiza ekucabeni indlela eyakha isimo sendawo esikahle kulokho okwenziwa ngabasebenzisi ukufuna ulwazi okugxile ekugculiseni izidingo zabo zolwazi.

**Amagama asemqoka:** ubuchwepheshe bamathuluzi okuhambekayo nawo, amathuluzi okuhambekayo nawo , okusetshenziswa ngamathuluzi okuhambekayo nawo, izinkundla zokuxhumana, izidingo zolwazi, indlela yokuziphatha uma kufunwa ulwazi, indlela echazayo ebheka izenzakalo, umsebenzisi, imisebenzi ehlinzekwa umtapo wolwazi, izithiyo zolwazi



## **DEDICATION**

I dedicate this study to the Almighty God for using me as a vessel to perfect His will, and to all the women who struggle to get educated – know that, as Pastor Paul Enenche said, “Behind every bend, the road still goes on.” With faith and determination, you will get to your destination.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

AC	alternating current
APA	American Psychological Association
app	application
CPD	Continuing Professional Development
DC	direct current
EM waves	electromagnetic waves
e-resource	electronic resource
FULafia	Federal University Lafia
GPRS	general packet radio service
GPS	Global Positioning System
HTC	High Tech Computer Corporation
ICT	information communication technology
ITU	International Telecommunication Union
IOS	iPhone operating system
LG	Lucky–Goldstar
MMS	Multimedia Messaging Service
MTN	Mobile Telephone Network
OPAC	online public access catalogue
QR code	quick response code
QWERTY	standard layout on English-language typewriters and keyboards
RAM	random-access memory
RIM	Research in Motion
ROM	read-only memory
SIM	subscriber identification module
SMS	Short Message Service
TMA	Theatre and Media Arts
UNDP	United Nations Development Programme
Unisa	University of South Africa
UIR	Unisa Institutional Repository
VCA	Visual and Creative Arts

Wi-Fi	Wireless Fidelity
WPS Office	Writer, Presentation and Spreadsheets Office (formerly Kingsoft Office)
3G	third generation
4G	fourth generation
419	term that is used for scammers and that derives from the section of Nigerian law that deals with con artistry and fraud

## TABLE OF CONTENTS

ABSTRACT .....	iii
<b>OPSOMMING</b> .....	v
<b>INGQIKITHI YOCWANINGO</b> .....	vii
DEDICATION.....	ix
ACKNOWLEDGEMENTS .....	x
LIST OF ABBREVIATIONS AND ACRONYMS .....	xii
TABLE OF CONTENTS .....	xiv
LIST OF FIGURES.....	xxi
LIST OF TABLES.....	xxii
LIST OF APPENDICES.....	xxiii
CHAPTER ONE.....	1
GENERAL INTRODUCTION TO THE STUDY .....	1
1.1 INTRODUCTION.....	1
1.2 CONTEXTUAL BACKGROUND OF THE STUDY.....	5
1.3 RESEARCH PROBLEM.....	6
1.3.1 Research Objectives.....	7
1.3.2 Research Questions .....	8
1.4 LITERATURE REVIEW.....	8
1.4.3 Mobile- based social media library users use.....	10
1.5 IMPORTANCE OF THE STUDY.....	11
1.6 METHODOLOGY .....	11
1.6.1 Ethical Considerations.....	12
1.6.2 Delimitations of the Study .....	12
1.7 KEY CONCEPTS .....	13
1.7.1 Facebook.....	13
1.7.2 Information.....	13
1.7.3 Information Barriers .....	13
1.7.4 Information Behaviour .....	14
1.7.5 Information Needs.....	14
1.7.6 Information-Seeking Behaviour.....	14
1.7.7 Information Use .....	14
1.7.8 Instant Messaging Services.....	15

1.7.9	Library services.....	15
1.7.10	Mobile Applications .....	15
1.7.11	Mobile Device .....	16
1.7.12	Mobile Technologies.....	16
1.7.13	Social Media.....	16
1.7.14	Telegram.....	16
1.7.15	Twitter.....	17
1.7.16	WhatsApp .....	17
1.8	OUTLINE OF CHAPTERS.....	17
	Chapter 1: General Introduction to the Study .....	17
	Chapter 2: Conceptualising information behaviour .....	17
	Chapter 3: Mobile-Based Social Media Technologies.....	18
	Chapter 4: Social Media.....	18
	Chapter 5: Research Methodology.....	18
	Chapter 6: Research Findings from the Data Analysis .....	19
	Chapter 7: Discussion .....	19
	Chapter 8: Conclusions, Limitations and Recommendations.....	19
	CHAPTER TWO .....	20
	CONCEPTUALISING INFORMATION BEHAVIOUR.....	20
2.1	INTRODUCTION.....	20
2.2	BACKGROUND.....	20
2.3	INFORMATION BEHAVIOUR .....	21
2.4	INFORMATION.....	22
2.5	CONTEXT .....	23
2.5.1	Academic Context .....	24
2.5.2	Environmental Context .....	25
2.5.3	Social Media-Based Networks or Groups.....	25
2.6	INFORMATION USERS.....	26
2.6.1	Cognitive Structures.....	26
2.6.2	Affective Structures.....	27
2.6.3	Sensorimotor Structures.....	28
2.6.4	Interplay between Mental Structures.....	28
2.7	INFORMATION NEEDS.....	29
2.8	INFORMATION TECHNOLOGIES.....	31
2.9	INFORMATION ACTIVITIES.....	31
2.9.1	Information Seeking.....	32

2.9.1.1	Lack of information seeking skills .....	33
2.9.2	Information Searching .....	38
2.9.3	Information Use .....	39
2.9.4	Information Sharing.....	40
2.10	REFLECTION .....	41
2.11	MEYER’S BUILDING BLOCKS INFORMATION BEHAVIOUR MODEL.....	42
2.12	LIBRARY USER INFORMATION BEHAVIOUR.....	44
2.13	CONCLUSION.....	44
	CHAPTER THREE.....	46
	MOBILE-BASED SOCIAL MEDIA TECHNOLOGIES .....	46
3.1	INTRODUCTION.....	46
3.2	BACKGROUND.....	46
3.3	MOBILE TECHNOLOGIES.....	47
3.4	MOBILE DEVICES.....	49
3.4.1	Screen Size .....	51
3.4.2	Keyboard/Data Entry .....	51
3.4.3	Screen Resolution.....	52
3.4.4	Memory .....	52
3.4.5	Battery Durability .....	52
3.4.6	Electromagnetic Waves.....	53
3.5	MOBILE APPLICATIONS .....	54
3.5.1	Educational Mobile Applications .....	56
3.5.2	Library Mobile Applications.....	56
3.6	ADVANTAGES AND DISADVANTAGES OF MOBILE TECHNOLOGIES .....	58
3.6.1	Advantages of Mobile Technologies .....	59
3.6.2	Disadvantages of Mobile Technologies .....	64
3.7	REFLECTION .....	69
3.8	CONCLUSION.....	70
	CHAPTER FOUR .....	72
	SOCIAL MEDIA .....	72
4.1	INTRODUCTION.....	72
4.2	BACKGROUND.....	72
4.3	SOCIAL MEDIA AND TYPES OF SOCIAL MEDIA .....	72
4.4	BLOGS.....	74
4.4.1	Microblogs .....	77
4.4.2	Video Blogs (Vlogs) .....	77



4.5	SOCIAL NETWORKING SITES.....	78
4.5.1	Facebook.....	79
4.5.2	WeChat.....	80
4.5.3	Instagram.....	81
4.5.4	WhatsApp.....	82
4.5.5	Twitter.....	82
4.5.6	LinkedIn.....	83
4.5.7	ResearchGate.....	84
4.5.8	Telegram.....	84
4.6	WIKIS.....	85
4.7	ADVANTAGES AND DISADVANTAGES OF SOCIAL MEDIA USE.....	85
4.7.1	Advantages.....	86
4.7.2	Disadvantages.....	87
4.8	BARRIERS TO THE USE OF SOCIAL MEDIA.....	89
4.8.1	Personal Barriers.....	89
4.8.2	Environmental Barriers.....	90
4.9	REFLECTION.....	92
4.10	CONCLUSION.....	94
	CHAPTER FIVE.....	95
	RESEARCH METHODOLOGY.....	95
5.1	INTRODUCTION.....	95
5.2	BACKGROUND.....	95
5.3	QUALITATIVE RESEARCH.....	97
5.4	RESEARCH DESIGN.....	98
5.4.1	Advantages of Phenomenology.....	100
5.5	DATA COLLECTION.....	103
5.5.1	Consent.....	103
5.5.2	Research Population.....	104
5.5.3	Sampling.....	105
5.5.4	Interviews.....	108
5.5.5	Reliability.....	113
5.6.6	Validity.....	113
5.5.7	Rigour.....	116
5.6	DATA ANALYSIS.....	117
5.7	CONCLUSION.....	119
	CHAPTER SIX.....	121

RESEARCH FINDINGS FROM THE DATA ANALYSIS.....	121
6.1 INTRODUCTION.....	121
6.2 FACTORS THAT INFLUENCE STUDENTS' INFORMATION BEHAVIOUR WHEN USING MOBILE TECHNOLOGIES.....	121
6.2.1 Privacy.....	122
6.2.2 Google.....	122
6.2.3 Flexibility.....	123
6.2.4 Affordability.....	124
6.2.5 Mobile Memory.....	125
6.2.6 Learning Enhancement.....	125
6.2.7 Mobile Applications.....	126
6.2.8 Users' Preferences.....	128
6.3. SOCIAL MEDIA USE.....	133
6.3.1 WhatsApp.....	135
6.3.2 Facebook.....	135
6.3.3 YouTube.....	136
6.3.4 Instagram.....	137
6.3.5 Telegram.....	138
6.3.6 Twitter.....	138
6.3.7 Wikipedia.....	138
6.3.8 Summative Notes.....	139
6.4 INFLUENCE OF AVAILABLE MOBILE TECHNOLOGIES ON INFORMATION BEHAVIOUR.....	140
6.4.1 Participants Information Needs.....	140
6.4.2 Information Activities.....	141
6.5 INFORMATION BARRIERS TO INFORMATION-SEEKING ACTIVITIES.....	145
6.5.1 Personal Barriers.....	145
6.5.2 Environmental Barriers.....	148
6.5.3 Summative Notes.....	151
6.6 PARTICIPANTS' SUGGESTIONS TO IMPROVE THE USE OF SOCIAL MEDIA TECHNOLOGIES.....	151
6.6.1 Teaching Information Literacy Skills.....	151
6.6.2 Functional Website.....	152
6.6.3 Suggested Social Media for Library Services.....	152
6.6.4 Building Trust.....	153
6.6.5 Summative Note.....	153
6.7 CONCLUSION.....	154

CHAPTER SEVEN.....	155
DISCUSSION.....	155
7.1 INTRODUCTION.....	155
7.2 BACKGROUND.....	155
7.3 INFORMATION SOURCES AND RESOURCES.....	155
7.4 USERS.....	156
7.4.1 Cognitive Structure.....	157
7.4.2 Affective Structure.....	158
7.4.3 Sensorimotor Structure.....	159
7.5 CONTEXT.....	160
7.6 TECHNOLOGY.....	163
7.6.1 Mobile Technologies and Mobile Devices.....	164
7.6.2 Characteristics of Mobile Technologies.....	165
7.6.3 Social Media.....	169
7.7 INFORMATION NEEDS.....	172
7.8 INFORMATION ACTIVITIES.....	174
7.9 BARRIERS TO INFORMATION SEEKING ON SOCIAL MEDIA.....	177
7.10 PARTICIPANTS' INFORMATION BEHAVIOUR.....	179
7.11 CONCLUSION.....	183
CHAPTER EIGHT.....	184
CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS.....	184
8.1 INTRODUCTION.....	184
8.2 CONCLUSIONS TO THE RESEARCH QUESTIONS.....	184
8.2.1 Research Question One: What are the User-related Factors that Influence the Students' Information Needs and Seeking Behaviour while Using Mobile Technologies for Information? And how do these factors influence students' information behaviour when using mobile technologies?.....	185
8.2.3 Research Question Three: In what Way does the Availability of Mobile-based Social Media Technologies Affect the Students' Information Behaviour?.....	191
8.2.4 Research Question Four: What are the Contextual Information Barriers that Affect the Information-seeking Activities of Users who Use Mobile-based Social Media in the Library at the Federal University of Lafia, North Central Nigeria?.....	193
8.2.5 Concluding Answer to the Overall Research Question.....	195
8.3 LIMITATIONS OF THIS STUDY.....	196
8.3.1 Literature Review.....	196
8.3.2 Empirical Limitations.....	197
8.4 RECOMMENDATIONS.....	197

8.4.1	Information Literacy .....	197
8.4.2	Functional Websites with Embedded Social Media Links.....	198
8.4.3	Access to Digital Instructional Materials .....	199
8.4.4	Suggested Social Media for Library Service by Participants.....	199
8.4.5	Student–Library Social Network.....	199
8.4.6	Staff Training.....	200
8.4.7	Building Trust .....	200
8.5	FUTURE RESEARCH .....	200
8.6	VALUE OF THE STUDY .....	201
8.7	SUMMARY AND FINAL COMMENTS.....	202
	BIBLIOGRAPHY .....	203
	APPENDIX A.....	265
	RESEARCH ETHICAL CLEARANCE LETTER .....	265
	APPENDIX B.....	268
	PERMISSION LETTER TO CONDUCT RESEARCH AT THE FEDERAL UNIVERSITY OF LAVIA, NIGERIA.....	268
	APPENDIX C .....	269
	PARTICIPANT CONSENT FORM.....	269
	APPENDIX D .....	270
	INTERVIEW SCHEDULE .....	270

## LIST OF FIGURES

<b>FIGURE</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
Figure 2.1	Representation of Meyer's building block of information model	43
Figure 3.1	Central role of mobile technologies	69
Figure 4.1	Role of social media technologies	93
Figure 7.1	Students' mobile technology-based information behaviour	182

## LIST OF TABLES

<b>TABLE</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
5.1	Research population	105
5.2	Participant's profiles	108
6.1	Types of social media application used by participating students	134

## LIST OF APPENDICES

<b>APPENDIX</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
Appendix A	Research ethical clearance letter	233
Appendix B	Permission letter to conduct research at the at the Federal University of Lafia, Nigeria	236
Appendix C	Participant consent form	237
Appendix D	Interview schedule	238

## CHAPTER ONE

### GENERAL INTRODUCTION TO THE STUDY

#### 1.1 INTRODUCTION

The success of any academic library depends on its ability to provide the information and services that are required for learning, teaching and research. Therefore, academic libraries are embracing emerging technologies to meet their users' high expectations that keep changing owing to the technological advances (Ponelis 2013:232; Shafawi & Hassan 2018:4).

Mobile technologies and social media are some of the emerging technologies that have shown to not only improve and enhance learning but also to promote social interaction among users (Roebuck, Siha & Bell 2013:2). This view is supported by the findings of Bakare's (2018:192) study which showed that indicated social media technologies are useful in library service delivery. Social media are Internet-based, use Web 2.0 technologies and rely on the Internet or mobile technologies to function. In this regard, social media applications (apps) allow users to create and exchange ideas in the form of messages, pictures or videos (Sahu 2016). There are various types of social media. The most commonly used social media apps include microblogging, social bookmarking, wikis and social networking sites.

In turn, the concept "mobile technologies" refers to the use of both wireless and wired network technologies which enhance access to all types of data via mobile devices and apps (Ilako 2016:6; Macwan 2017; Sivakumar 2014:49). As Damilola, Okesanya, Abiodun and Kusoro (2019) observed, mobile technologies, due to the convenience they offer, enables a borderless information and communication flow in every field. Furthermore, the use of mobile devices is enhanced by mobile apps which function as software that extracts information from websites to the device (Caniano & Catalano 2014:299; Kang 2014:361; Ventola 2014:357). Mobile apps can be categorised. Examples of social media categories include education, finances, health, and entertainment application. All the mobile apps serve to enhance users' information searching, use and sharing experiences.



In education, mobile technologies enable users in low-income resource-constrained environments such as developing countries in which access to computers and the Internet is limited (World Bank 2012:5). In this regard, mobile technologies are synonymous with easy access and the availability of information. Owing to the pervasiveness and growing popularity of mobile technologies among users, libraries are now increasingly employing these technologies to share and disseminate information (Mullins 2017; Potnis, Regenstreif-Harms & Cortez 2016). For example, the library of the University of South Africa (Unisa) provides users with mobile access to full-text databases, the library's catalogue and user accounts. The library of the University of Oxford also provides mobile access to its online catalogue, maps, contacts, news, and travel information podcasts (Bodleian Libraries 2009). Libraries in developing countries such as India use mobile phones to reach large numbers of users (Verma & Verma 2014:32). Libraries can send short message service (SMS) notifications such as due dates and renewal reminders by using mobile technologies (Kumar 2014:472). In this way, mobile technologies add value to the quality of library services. Also, a large number of library users own mobile devices but not computers (Iwhiwhu, Ruteyan & Eghwubare 2010). Therefore, the employment of mobile technologies to enhance library services has the potential to improve and facilitate students' learning (Akpokodje & Lawal 2014:34).

Although libraries and librarians are aware of the use and application of emerging technologies such as mobile devices and social media apps to enhance their services, the commitment in the practical application and sustainability is absent. Universities and colleges around the world have successfully integrated mobile technologies into their libraries and information services. For example, the libraries of Athabasca University, the University of Alberta, universities in Canada, the American University, Boston College, Duke University, and Texas Christian University offer mobile interfaces which support the use of mobile apps and services (Shrivastav 2015:2). As observed by Makori (2012:32), it seems as if most universities in Africa are not taking advantage of this opportunity, as they are yet to convert their services to online

services. In Nigeria, several university libraries are yet to fully apply the use of technologies in their services (Quadri & Idowu 2016:2). This could be because African university libraries mostly use manual systems (Akeriwa, Penzhorn & Holmner 2015:2). The manual systems result in slow service delivery and tend to frustrate users.

Kumar (2014:477) found that the respondents in his study were very interested in connecting with their libraries through mobile devices. However, the use and application of technologies in library services have not fully taken roots in North Central Nigeria. In addition, the same is not happening in most university libraries in some parts of Africa. Investigating the students' use of mobile-based social media and library services at the Federal University of Lafia (FULafia), North Central Nigeria, will provide insight into their use of technology. Such an insight would support libraries in identifying mobile-based services that are most suitable for use in libraries to render similar services to those available in the developed world. However, the universities in North Central Nigeria (including the FULafia) are challenged in embracing and exploiting the potential emerging technologies have in ensuring better access to relevant information.

In general, the use of mobile-based social media creates an easy flow of information. This could be attributed to the fact that the use of social media on mobile devices makes it possible for users to access information from anywhere (including remote locations) as opposed to using desktop computers (Blackman & Manda 2011). However, this is not necessarily always the case. For example, although the FULafia emphasises the use of technology in learning and research, the library services are to a large extent still manual. The library launched some online presence via social media. However, the users' responses are not completely positive. This might be because of a lack of the promotion of the library services, marketing the new library services, awareness on the part of the users, and the necessary skills to use the technologies, or even barriers to social media information.

Interestingly, the library of the Federal University Lokoja has an active and functional website with an embedded YouTube channel which gives a virtual tour of the library's facilities and services to orientate new users and visitors. Such innovation can attract library users on social media.

Furthermore, social media can play an important role in mobilising people, establishing human networks, and forming opinions through updates of information (Yamamichi 2011), thereby creating a community of people who share common goals and ideologies. Libraries can imbibe this value by creating a community of users with common information needs or interests to share information and knowledge through social media on library websites. However, as Young and Rossman (2015:3) observed, libraries generally use social media for promotional and marketing purposes. This is opposed to the creation of online communities of users with shared values which could be employed to enhance users' engagement with learning material and to increase their interactive learning (Roebuck *et al* 2013). Unfortunately, most of the existing literature on the use of social media in libraries seem to discuss the use libraries make of social media to enhance their services from libraries or librarians' perspectives. There are relatively few studies reporting on the use of social media from a user perspective. In the researcher's view, such studies could produce accurate data of users' information behaviour upon which libraries and librarians can base informed decisions on the selection of suitable social media for use in their library services.

To this end, the purpose of this qualitative study is to examine the use made of mobile-based social media technologies by library users at the FULafia. The aim of the study is to identify the social media that users prefer to use for information-seeking purposes, with the hope of uncovering the information barriers they face especially with regard to the sociocultural barriers they might encounter. The knowledge gained from this study could guide the library administrators and librarians when selecting the most appropriate mobile-based social media for their library services.

## **1.2 CONTEXTUAL BACKGROUND OF THE STUDY**

University libraries form an integral part of their parent institutions. The history of university libraries in Nigeria dates to pre-independence. The first university that was established in Nigeria is the University of Nigeria, Nsukka. This university was established in 1960. Over the years, the Federal Government established more universities in different geopolitical zones to cater for the educational needs of its people. Each of these universities has libraries catering for the information needs of their communities (Ifijeh, Adebayo, Asaolu & Michael-Onuoha 2016). Presently, there are about 40 federal universities in Nigeria, with seven universities located in the North Central region, namely the Federal University of Agriculture Makurdi, the FULafia, the University of Jos, the University of Abuja, the Federal University of Technology Minna, the Federal University, Lokoja, and the University of Ilorin. The North Central states of Nigeria are prone to ethnic conflict, which causes educational backwardness in the region (Omeje, Egwa & Adikwu 2016). The study carried out by Adamu and Nwachukwu (2016:56) revealed that university libraries in the North Central region face various challenges that can be attributed to the partial or non-computerisation of library services. Most of the university libraries in the region, even though having access to emerging technologies, mainly operate manually. These include the libraries of the FULafia, University of Abuja, and Federal University of Agriculture Makurdi. This may be attributed to partial automation where only certain units of the libraries function digitally while other units are still being operated manually.

Just as other developing nations, the North Central region has a large student population with few academic institutions and poor technological infrastructure (Osaga 2011). For instance, FULafia has a population of 3000 students and 1,198 staff (which include IT personnel as well) as of 2017/2018 session. The IT staff see to the running of information technologies within the institution as well as training for the university community. Yet there are lapses in terms of the students use of technologies. As a result, most library users do not take the time to use some of the social media apps that are being introduced into the libraries. This might be because the users are not aware of, familiar with or comfortable when using the available social media.

Access to the Internet remains a constant issue in a developing country such as Nigeria (Ukonu, Wogu & Obayi 2012:5). Absence of knowledge of the use of social media and the acceptance thereof worsen the situation. Shafawi and Hassan (2018:5) observed that users are seemingly unaware of their library's presence on social media. They reckoned that this could be because library staff are unable to create an awareness among their users on the use of social media. Agyekum, Arthur and Trivedi (2016:8) and Chigwada, Chiparausha and Musarurwa (2016) believed that this could challenge the use of social media to enhance service delivery in libraries.

University libraries in the North Central region of Nigeria, especially the library of the FULafia, can convert their reference and users' services to online-based services using mobile-based social media technologies. This would enable the libraries in this region to support their users by making information available to them at their fingertips at little or no cost to the library. The majority of the library users at the FULafia do not possess personal computers, but they do own mobile devices which provide them with Internet access, and which allow them to download and install different mobile apps. They are also able to send emails. The downloaded mobile apps afford them the ability to search, share or make use of information. The library of the FULafia has tried putting channels and information resources in place that would ensure easy access to information. The resources the library has put in place include an active library webpage, electronic library, and social media pages on Twitter and Facebook. However, it seems as if the users are not using these resources and information channels. In order to ensure that the available resources are used, libraries need to understand their users' information behaviour while using mobile technologies and social media apps. Also, libraries need to identify and understand the information barriers their users are likely to face while using these technologies. It is from this perspective that the study was undertaken.

### **1.3 RESEARCH PROBLEM**

Academic library users increasingly show a preference for mobile technologies to get access to information sources (Verma & Verma 2014). However, for this to happen, library services need to be automated and use mobile technology interfaces.

Furthermore, the professional competency of library professionals needs to be developed (Akeriwa, Penzhorn & Holmner 2015; Mishra 2008; Owiny, Mehta & Maretzki 2014:242). In order to do so, academic librarians need to establish their users' preferred mobile-based social media technologies to ensure that they provide a service on a mobile platform that is accepted by their users. In doing so, the users' information behaviour and also the barriers to information they face while using the technologies needs to be understood. In view of the potential use the library of the FULafia can make of mobile-based social media to enhance their services, the proposed study will investigate the use users of the library of the FULafia, North Central Nigeria, make of mobile devices and social media technologies to access library services in order to seek information that would satisfy their academic-related information needs.

The core question for the study is formulated as follows:

What use do users of the library in Federal University of Lafia, North Central Nigeria, make of mobile-based social media technologies to access the library's services to seek information that would satisfy their academic-related information needs?

### **1.3.1 Research Objectives**

The overall objective of this research is to understand library users' information behaviour pertaining to their use of mobile-based social media technologies within the context of a university library in a developing country. The following are the specific objectives:

- 1) acquire a better understanding of the factors that influence students' information behaviour using mobile technologies for information;
- 2) identify the types of social media technology FULafia student library users use to ensure that the library uses the same technologies for information service delivery and dissemination purposes;
- 3) understand the influence that the availability of mobile-based social media technologies has on users' information behaviour; and

- 4) determine the potential information barriers that prohibit information-seeking activities on mobile-based social media technologies by library users of FULafia, North Central Nigeria, to seek information in the library.

### **1.3.2 Research Questions**

To achieve the objectives of the study, the following questions need to be dealt with:

1. What are the user-related factors that affect students' information needs and seeking behaviour while using mobile technologies for information? And how do these factors influence students' information behaviour when using mobile technologies?
2. What types of mobile-based social media technologies do library users use for information seeking?
3. In what way does the availability of mobile-based social media technologies affect the students' information behaviour?
4. What are the contextual information barriers that affect the information-seeking activities of users who use mobile-based social media at the FULafia, North Central Nigeria?

## **1.4 LITERATURE REVIEW**

For a better understanding of the concepts involved in the use of mobile-based social media technologies in library services, the literature review was subdivided into three chapters. The first literature review chapter (i.e. Chapter 2) conceptualised information behaviour to acquire an understanding of what information behaviour entails. The building blocks or components that were identified by Meyer (2016) in her information behaviour model were used in this discussion. The other two literature review chapters explored the most important findings pertaining to users' information behaviour in relation to their use of mobile technologies, mobile devices and mobile apps as well as social media to seek, access and use library services. The databases searched for the literature review included Unisa's Institutional Repository (UIR), library e-resources, e-journals, ResearchGate, Academia.edu, the University of Pretoria repository and Google Scholar. The search terms that were used include mobile

technologies, social media, library services, information behaviour, information-seeking using mobile technologies, mobile-based social media, information search and information barriers. Due to the dynamic nature of mobile technologies and social media, the official cut-off date for the literature review was June 2019. The following paragraphs focus on some of the report findings that support the researcher in identifying the existing knowledge gap during the proposal stage of the study.

#### **1.4.1 Availability of mobile based social media technologies**

The availability of mobile based social media helps with the conversion of physical spaces like libraries to boundless spaces that could support users with instant communication and getting access to information resources in the library (Agyekum, Arthur & Trivedi, 2016). Hence, the convenience with which users can now seek and search for information, could act as a motivation to seek information in an online environment (Connaway & Randall 2013: 43, 44). In this regard, Onwuchekwa (2015), suggested the development of social media policies order to guide library staff who work with social media. Such policies could facilitate communication via social media and support librarians in reaching out to their users (Akporhonor & Olise, 2015).

Furthermore, using mobile-based social media technologies improves user creativity, collaboration and information sharing (Roebuck, Kennesaw & Bell, 2013:14). However, despite the positive influence of mobile technologies on information behaviour, Ebiye's (2015) study showed that the majority of users are not making use of mobile technologies to access information from the library or its resources.

#### **1.4.2 Information Behaviour using mobile technologies.**

In accordance with Wilson's (1999) definition of information (which is discussed in Chapter 2), the information behaviour of users who use mobile technologies encompasses all their information activities that are related to their information needs. This could be seeking, searching using, transferring or sharing information. In order to understanding the information behaviour of users who use mobile technologies,



Bowler, Julien and Haddon (2018:325) conducted a secondary data analysis study of qualitative studies focusing on the information seeking behaviour of youth. Their study revealed that internet speed, instant information access, quick Google search and mobile device portability with affordance serve as strong motivators to seek information whilst using mobile technologies.

Ebiye (2015) found a high level of mobile technology use among medical students. These students downloaded medical apps, electronic textbooks, internet browsing and social networking applications. The downloading and use of these sources and resources were possible because of a fast internet browsing speed, easy information access and time saving. Signifying mobile technologies have the potential to influence users' information behaviour.

Similarly, other features of mobile technologies which include the ability to use information while on the move, the ability to communicate via different message formats and be connected keep users interested and attached mobile technologies (Liu 2015:1&2). Unfortunately, some information activities on mobile technologies can have a negative effect on users. For example, Liqat (2018:106) observed distractions which could affect learning concentration like include browsing, chatting with other users outside the class, information sharing. In turn, Bowler et al. (2015:325) noted exposure to threat online, absence of adequate skills for information search using mobile technologies and security risks.

#### **1.4.3 Mobile- based social media library users use**

The appropriate selection of social media type for information use depends on the library users' knowledge and skills of specific social media (Kelly & Glazer 2014; Khan & Bhatti 2012; Mullins 2017:15). This is because the ability to identify the types of social media in use by library users can give an understanding of suitable social media needed for library information delivery.

Findings by Shafawi and Hassan (2018:13) indicated YouTube, Facebook, and Twitter as the most popularly used social media types among their respondents. Also, Buruga

(2016:63) found that Facebook (90.9%), WhatsApp (72.7%), Facebook Messenger, (55.7%), Twitter (38.6%) YouTube (31.8%) were the top social media being used by information users. In turn, Chigwada, et al. (2016) found Facebook, Twitter, WhatsApp and YouTube to be most used types of social media by their respondents. With the nature of mobile information technologies and social media in mind, as well as the potential these technologies have in enhancing information service delivery, librarians need to acquire an understanding of how their users utilise these technologies. They also need to understand which technologies are used and get to understand the barriers users experience when utilising mobile technologies and social media when they seek information.

### **1.5 IMPORTANCE OF THE STUDY**

The theoretical importance of this descriptive phenomenological study lies in the fact that this might be the first study using Meyer's model to explore the use of mobile-based social media technologies to seek and use information that support students' information needs.

At a practical level, the findings from this study will add to the wealth of literature on users' information behaviour using mobile technologies in academic libraries in a developing country. Socially, the findings could help facilitate better service delivery to library clients. The study could also aid information technology entrepreneurs economically while developing social media platforms intended for use in libraries.

The researcher is a reference librarian and an instructor. Her experience as a digital librarian enabled her to interact with many undergraduate students, to observe their attachment to their mobile devices, and to determine the way in which they seek information in the library and their approach to seeking assistance from the librarians.

### **1.6 METHODOLOGY**

The nature of this study required a qualitative approach as it tried to acquire an understanding of the students' information behaviour while using mobile-based social media technologies. The study is a descriptive phenomenological study which falls

within the interpretivist/constructivist research paradigm. A total number of 21 participants were selected through purposive and snowball sampling methods. Data was collected using a face-to-face semi-structured interview with consent from the participants. The data were transcribed and analysed by the researcher herself using descriptive phenomenological guidelines by Butler-Kisber (2018:64) involving a five-way process using identified themes.

### **1.6.1 Ethical Considerations**

The study followed the ethical considerations as laid out by the Unisa policy on research ethics. The study was ethically cleared by Unisa and permission to conduct the study was also sought from the FULafia. The ethical clearance certificate and the permissions letter appear in Appendices A and B.

In order to comply with the requirements of the Unisa policy on ethics, the participants were asked to sign the prescribed consent form. A copy of the consent form appears in Appendix C.

### **1.6.2 Delimitations of the Study**

Most information behaviour studies merely focus on one or two fundamental information behaviour components (Meyer 2016). The problem under investigation in this study pertained to the information seeking behaviour of students whilst using social media. Therefore, although the researcher used Meyer's model to guide her study, she only explored the information seeking behaviour of students registered at FULafia' whilst using specific technologies, namely mobile devices, and social media. With this in mind, information activities such as use, and transfer were not addressed.

It was not possible to conduct phenomenological interviews with all the registered library users at all the federal universities in North Central Nigeria owing to the large population. Since, a phenomenological research design requires a small number of participants, the study was limited to undergraduate students who are registered at

the FULafia, North Central Nigeria, and who use mobile devices to seek, access and use information. The study only involved library users of the FULafia, North Central Nigeria. Lastly, the study only investigated the students' information-seeking behaviour while using their mobile devices and mobile apps. Their information behaviour while using the computers that are available in the library was not investigated.

## **1.7 KEY CONCEPTS**

The purpose of this section is to define the key concepts of the study.

### **1.7.1 Facebook**

Facebook is an online social network site that allows friends to connect, communicate and share information with each other on private or public networks (De Villiers 2010:173; Tiryakioglu & Erzurum 2011:141).

### **1.7.2 Information**

Information has been a hard term to define with different researchers referring to it differently. Madden (2000:344) referred to information as stored knowledge or data which can be transferred by a sender to a recipient in a form of a message. In this present study, information is defined as processed data or knowledge needed by users to accomplish certain tasks within a context.

### **1.7.3 Information Barriers**

“Information barriers are physical or immaterial” “obstacles hindering, delaying or preventing access to information” (Savolainen 2015a:613; Swigon 2011:465). There are different barriers to information, however, the present study focuses on personal information barriers, interpersonal information barriers and environmental information barriers. These barriers can influence user information behaviour depending on the user context. In this study, information barriers are defined as the personal, interpersonal or environmental barriers that influence the flow of information to the intended user while using mobile-based social media technologies.

#### **1.7.4 Information Behaviour**

The concept “information behaviour” is the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking, and information use (Wilson 2000:49). It can also be the activities users engage in when finding information to meet their information needs by searching, using or transferring that information (Wilson 1999:249). Information behaviour in the present study refers to users’ interaction with information from the point of the realisation of their need for information to the use or transfer of information.

#### **1.7.5 Information Needs**

An “information need”, as defined by Kuhlthau (1993:161), is the gap between the knowledge a user has about a problem and what the user needs to know in order to solve a problem. In this study, an “information need” is defined as the mental realisation of more knowledge needed to effect positive change to the users’ situation.

#### **1.7.6 Information-Seeking Behaviour**

“Information-seeking behaviour”, as defined by Wilson (2000), is “the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or library), or with computer-based systems (such as the World Wide Web).” In terms of student users, their information-seeking behaviour is geared towards accomplishing academic tasks. For this purpose, the participating students seek information from both formal and informal sources which they can conveniently access while using their mobile devices and relevant apps downloaded onto their devices.

#### **1.7.7 Information Use**

“Information Use Behaviour consists of the physical and mental acts involved in incorporating the information found into the person's existing knowledge base. It may

involve, therefore, physical acts such as marking sections in a text to note their importance or significance, as well as mental acts that involve, for example, comparison of new information with existing knowledge. Information use can also be said to be the way people handle information when collecting, searching, accessing and communicating information” (Meyer 2003:110). For the purpose of this study, information use is the conscious effort of handling available information for certain purposes.

### **1.7.8 Instant Messaging Services**

Instant messaging refers to a form of online synchronous communication that allows real-time communication between two or more people simultaneously (Neo & Skoric 2009:627). It involves sending brief typed messages over the Internet using a computer or mobile device (Lauricella & Kay 2013).

### **1.7.9 Library services**

Library services are “resources and activities provided by libraries to address information needs of users and include circulation services, reference services, online information services, inter library loans, and information literacy skills training” (IGI-Global 2020a). Library services can also be referred to as the assistance or facilities made available by the library to its users. These services could be either direct or indirect to the user and through communication technologies (International Federation of Library Associations 2001:26). Every library aims at giving its users access to different materials with services extending beyond the physical services at the library.

### **1.7.10 Mobile Applications**

A mobile app is software specially designed for mobile devices and which provides similar services found in computers (Techopedia 2017). Mobile apps can extract or access information from specific data resources or websites without necessarily opening the browser (Caniano & Catalano 2014:299; Mishra, Jha & Umre 2017:27). Examples of mobile apps include communication apps (e.g. Telegram or WhatsApp), educational apps (e.g. dictionary), and entertainment apps (e.g. YouTube).

### **1.7.11 Mobile Device**

A mobile device is a handheld or portable computing device capable of accessing 3G and 4G networks with a display touch screen, and that has an operating system that can run various apps (Carnegie CDP 2014). Mobile devices can access information from remote sources in a very short time (Kumbhar & Pawar 2014).

### **1.7.12 Mobile Technologies**

Mobile technologies refer to cellular communication using transmitters to facilitate transmission of text, voice, video or multimedia data from any location regardless of the time through a spectrum of radio frequencies (Ilako 2016:6; Macwan 2017:1). In this regard, mobile technologies are digital tools that work on electronic computing devices capable of cellular communication and that can access remote data and information (IGI-Global 2017).

### **1.7.13 Social Media**

Social media is a “group of Internet-based applications build on the ideologies and technological foundations of Web 2.0 and allow the creation and exchange of user generated content” (Yadav, Joshi & Rahman 2015:337). The media used for this purpose include microblogging, social networking, social bookmarking, social curation and wikis (Raghavendra & Jagadish 2014:151). In the context of information behaviour, the use of social media can refer to the means of interactions among people in which they create, share and exchange information and ideas in virtual communities and networks (Selvi 2013).

### **1.7.14 Telegram**

Telegram is a popular social network that enables messaging and sharing of information in different formats (Heidar & Kaviani 2016:67; Xodabande 2017). It also enhances collaboration making it very useful in an academic environment (Mahdiun, Salimi & Raeisy 2020:2428).

### **1.7.15 Twitter**

Twitter is a microblog that uses text, with information shared in the form of tweets and retweets. Information can be searched using hashtags (Yilmaz, Aygün & Tanrikulu 2017:254). In this study, “Twitter” is referred to as a social networking site with a microblogging app which allows the use of a maximum of 280-character messages.

### **1.7.16 WhatsApp**

WhatsApp is an instant messaging app that works across multiple mobile platforms, that allows users to exchange information for free using Internet data, and that use different information formats (Gon & Rawekar 2017:19; Pagore & Patil 2000, Sayan 2016:88-89).

## **1.8 OUTLINE OF CHAPTERS**

The outline of the different chapters that make up this thesis is given below.

### **Chapter 1: General Introduction to the Study**

This chapter gives a general introduction to the study, the background, the nature of the problem and the need to carry out the study. In this chapter, the research objectives and research questions are set out, which provide an indication of the focus of the literature review, the research methodology. The conceptual and working definitions are provided for the most important terms used in the study.

### **Chapter 2: Conceptualising information behaviour**

The discussion in Chapter 2 attempts to conceptualise information behaviour. For this purpose, the information behaviour concepts (components) identified in Meyer’s (2016) information behaviour model are explored. The purpose of this discussion is to acquire an understanding of what these components entail. In this discussion, cognisance is taken of the way in which the interaction between the different information behaviour components influences users’ behaviour in relation to information while using mobile-based social media technologies.



### **Chapter 3: Mobile-Based Social Media Technologies**

Technology is a component in Meyer's (2016) model. In order to acquire an understanding of the way in which mobile technologies influence information behaviour, Chapter 3 explores mobile technologies, mobile devices, mobile apps and the types of mobile technology used in libraries. The differences between these technologies are clarified and the advantages and disadvantages of each technology are highlighted. In this discussion, the focus is on the potential way in which the use of these technologies could influence users' information behaviour.

### **Chapter 4: Social Media**

Social media are important information and communication tools. The different social media that are available for use on mobile devices are explored in this chapter. The chapter also focuses on the various types of social media that are available for use in both an academic and a library environment. The collective features of each of the social media, their potential and the way in which they are being used, especially in libraries, are also discussed. The chapter also covers both the advantages and disadvantages of social media.

### **Chapter 5: Research Methodology**

Research methodology involves giving details of every systematic step taken in the course of a study. To this regard, this qualitative study was based on the interpretivist and constructionist philosophical paradigm. The reason why the paradigm was chosen is discussed, and the research approach, the research design, as well as data collection tools are reported. The steps taken to ensure reliability, validity or trustworthiness and other important concepts are given. The data analysis is also detailed from the beginning to the end.

## **Chapter 6: Research Findings from the Data Analysis**

In this chapter, the findings from the collected data are presented using themes that emerged from questions asked during the interviews which were based on the study's objectives. This includes the participants' experiences using mobile-based social media technologies in relation to their information behaviour within different contexts, descriptions of the challenges they faced, the social media types they used, their preferences, accessibility to information on social media, and the barriers to information they experienced while using mobile social media.

## **Chapter 7: Discussion**

The findings from the study are dealt with by using important information components identified from Meyer's (2016) information behaviour model. These components include information, the information users in the study, the context within which their information needs arise as well as the elements of this context. The elements of this context include the university library, the homes of the information users, and human information sources the users rely on such as their colleagues both in their academic environment and online. The participants' information-seeking activities include the use of mobile technologies which serve as the central enabler of each of their information activities.

## **Chapter 8: Conclusions, Limitations and Recommendations**

With respect to the findings of the study, this chapter answers the research questions and discusses the conclusion of the study. The limitations of the study are identified. In conclusion, recommendations for improving the FULafia's library services and suggestions for further research are made.

## CHAPTER TWO

### CONCEPTUALISING INFORMATION BEHAVIOUR

#### 2.1 INTRODUCTION

Information plays a vital role in human existence and is used to solve life's daily challenges (Moodley 2013:1). Presently, several mobile apps are used to provide information online (Chaputula & Mutula 2018:271). As a result, an abundance of information is readily available. In order to provide a relevant information service, information service providers need to understand their users. Such an understanding is acquired through information behaviour studies. The purpose of this chapter is to conceptualise information behaviour in order to eventually understand the way in which mobile-based social media technologies influence users' information behaviour. The discussion will be guided by Meyer's (2016) model of information behaviour. With this in mind, this discussion will attempt to clarify the following concepts: information behaviour, the context in which information behaviour manifests, information users, information needs, information technologies and information activities.

#### 2.2 BACKGROUND

Social media serve as a powerful and effective information sharing tool that does not require much effort (Kasimani & Kasilingam 2018; Shafawi & Hassan 2018:3). Using social media on a mobile device makes the mobile device a more powerful tool because mobile search for information is faster than having to visit a library as it provides the user with easy access to the information and less time is spent searching for the needed information (Lee & Song 2015:154). This could be the reason why libraries worldwide are embracing the use of social media technologies to render more effective and accessible services to their users (Akeriwa, Penzhorn & Holmner 2015; Shafawi & Hassan 2018:4).

Social media function as an information platform that librarians could use to reach out to their users who might not consider library resources to satisfy their information needs (Canty 2012:4). Therefore, libraries are using mobile-based social media to support their users by making relevant information available to them. In turn, library users increasingly make use of new and ever-changing information technologies such as the apps that become available on their mobile devices, for example social media

technologies. They then use these technologies as their primary sources of information (Fakoya-Michael 2017:1; Lee & Song 2015:153; Salisbury & Griffis 2014:592). In this regard, the use of mobile social media technologies has been influencing users' information-seeking behaviour (MacWhinnie 2003:241). The implication of this is that librarians need to keep abreast with their users' information needs and related information behaviour to provide suitable and sustainable services. In order to do this, an understanding of what information behaviour entails is required. Therefore, the concept "information behaviour" needs to be defined.

### **2.3 INFORMATION BEHAVIOUR**

Various definitions for information behaviour exist. The reason Meyer (2016) gives for this is that information behaviour is multifaceted and different researchers view information behaviour differently. Information behaviour, as defined by Wilson (2000), is "the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and information use." Wilson's (2000) definition includes both purposive and leisure information activities. In turn, Pettigrew, Fidel and Bruce (2001:44) view information behaviour as the way in which people need, seek and use information in different contexts. Their view is supported by Garbutt's (2014) observation that information behaviour is influenced by the situation (i.e. a context) in which users find themselves and the way in which that situation influences their information activities.

Steinerová and Šušol (2005:139) opined that information behaviour "comprises both information processing by humans and interactions with information sources and technological systems". This definition stresses human's interaction with information sources and technological systems (e.g. library catalogues, databases, and other information systems that are available online, also via mobile technologies). This implies that information behaviour studies should consider the user as well as the technological system which provides access to the information when attempting to understand the way in which information sources and technology influence users' information behaviour.

In her model, Meyer (2018:25) describes information behaviour in terms of the interaction between users' mental processes and other core components which she believes should be included in an information behaviour framework. The information behaviour components she identified include information, context, person (i.e. the user), information needs, technology and information activities. According to Meyer, each component includes a variety of different elements. Furthermore, Meyer (2016) noted an awareness in information behaviour research of the impact information technology has on information behaviour even when its contributions have not been well recognised by information behaviour researchers. For the benefit of the present study, information behaviour will be termed as users' interaction with information from the point of the realisation of the need for information to the use or transfer of information. The following components in Meyer's model will be discussed: information; the user (person), context, information need, technology, and information activities.

## **2.4 INFORMATION**

Information can be defined as processed or retrieved data for educational, enlightening or decision-making purposes (Osiobe 1988:94). Information can also be referred to as organised or classified data, which have some meaningful values to the receiver (Tutorials point 2020). This means that information, which is presented as organised data, is presented in such a way that the receiver thereof is able to make sense out of it and identify the presented data as being information. In turn, Madden (2000:344) views information as being stored knowledge or data which can be transferred by a sender to a recipient in the form of a message.

Data are seen as uninterpreted facts which, when sorted and organised gain value and become meaningful (Alexander 2002:61). For instance, a list of names or numbers does not make any sense, but when categorised as the names of students (and their student numbers) who are registered students in a certain department at an institution such as Unisa, the names and numbers become meaningful and valuable. The list of

names and numbers then represents processed data or information. This then explains why Meyer (2016) views information as being an input resource which is required to ensure task completion or to solve problems. For the purpose of this study, information will be defined as processed data or knowledge needed by users to accomplish certain tasks within a context.

## **2.5 CONTEXT**

Context is a difficult concept to define and, based on her literature review, Courtright (2007:276) refers to context as being problematic. One of the reasons for the difficulty when defining this concept can be attributed to the fact that different researchers have used different terminologies to describe context (Courtright 2007:276; Du Preez 2015:28). The terms that were identified by Du Preez (2015:28) and Courtright (2007:276) include setting, frame of reference, environment, information world, information ground, framework of meaning, systems or interpretation, and information use environment. Courtright (2007:290) also described context as a dynamic construct that influences the information actors (i.e. users) and they in turn influence context.

As a component of a definition of information behaviour, context includes a number of elements which in turn could act as boundaries of a context and subsequently be viewed as a context itself (Du Preez 2015:30–31). Time and space are examples of such elements. This could be why Garbutt (2014:7) posits that time and space provide the context within which information behaviour occurs and shapes information activities such as information seeking and sharing. In this regard, time and space either facilitate or constrain information behaviour.

Some examples of context cited by Sonnenwald (1999:3) include academia, family life, or clubs. Starasts (2015) noted that context includes the situation, conditions and structures surrounding an event. This view is supported by Courtright (2007:276) who noted that situations are dynamic environments that can exist within a context. Information seeking can take place in whatever context information actors (users) find themselves (Agarwal, Xu & Poo 2011:2). In addition, as observed by Niedzwiedzka

(2003), every information need is influenced by the context in which the users find themselves, the role played by the users as well as the environment in which the information is needed and used.

Different studies carried out by Agarwal (2018:30) and Savolainen (2016a:54) observed that users could find themselves in different contexts and the different contexts simultaneously influence their information behaviour. This may also depend on the user's participation in a context with regard to the situation or task on ground (Agarwal 2018:30). Important contexts in this study include the academic context, the environmental context, and social networks.

### **2.5.1 Academic Context**

Higher institutions of learning can function as a context in which information can be produced, organised and distributed under certain conditions (Lievrouw 2001). The academic context sets certain requirements to the students. In this context the students need to complete tasks in a specific time frame that are intended to enhance their learning (Ndumbaro 2016:204). The academic library is within this context. This is because academic libraries serve as a contextual element that influences users' information activities. The library provides access to information the student users need for task completion and often provides a space in which students can study. In this regard, the library functions as an environment within the academic context which supports learning. When the library does not provide up-to-date information resources or timeous access to the required information, this can serve as a barrier to information, thereby influencing the users' decisions not to use the library's information resources for assigned tasks.

Savolainen (2012) identified more elements of context. The elements he identified include tasks, situation in action, and dialogue. Both Savolainen (2012) and Courtright (2007:283) noted that tasks as an element of context can influence information-seeking activities in whatever settings users find themselves.

### **2.5.2 Environmental Context**

The environmental context refers to the physical space or surroundings around an information user which can be organisational, sociocultural, physio-psychological and technological (Agarwal *et al* 2011:5; Boundless 2020; Miller 2014:64). As a context, the environment in which the user is located determines the user's information need and directs the user's related information-seeking activities (Miller 2014:65). This implies the environment the user is located in can give rise to information needs, direct the users' information-seeking strategies, and determine the sources the required information is sourced from.

The home environment serves as a ground for social interaction and related information activities, and in this regard, plays a vital role in users' information behaviour (Albert 2010:247; Courtright 2007:278). The home environment also serves as a space for family life which Sonnenwald (1999:3) identified as an example of a context. The family, as every other context or environment information users find themselves in, shapes and influences the users' information behaviour (Agarwal 2018:30). The family serve as a context for human development in which individuals (users) learn to be socialised and understand their norms and cultural beliefs (Begun 2019). In addition, opportunities and constraints users are exposed to in a physical family environment can affect their behaviour (Begun 2019). To this end, the family norms and beliefs pertaining to the use of technologies such as social media can affect the individual user's information-seeking activities.

### **2.5.3 Social Media-Based Networks or Groups**

In the same way, social networks (e.g. groups that were created on social media) could also function as a context by providing an avenue for users to seek and share information. For instance, as observed by Sonnenwald (1999:5), social networks offer a lens that facilitates the identification of information and may help the user to determine the information resources that are available in the group that would satisfy the individual user's information needs.



In the current study, some library users do not live on campus but far away from the library. In this regard, their contexts include a different set of contextual elements or boundaries that shape or influence their information activities than those users who reside on campus. These elements include their physical environments such as their homes and the available information technologies such as mobile-based social media which could be used to seek and get access to the information they require.

## **2.6 INFORMATION USERS**

An information user can be an individual, a group of people or a community (Reddy, Krishnamurthy & Asundi 2018:84). A user can also be a person that actively looks for information and uses the information after locating it (Prasad 2000:7). Prabha (2013:310) defines “user” in relation to the use the individual makes of a library’s information resources, services and products of information systems. Meyer (2016) identified the information user as a core component of an information behaviour definition. Meyer (2016) noted that the user component (or personal component as she referred to it) comprises three mental structures that influence the individual user’s information behaviour. These mental structures are the user’s cognitive, affective and sensorimotor structures.

### **2.6.1 Cognitive Structures**

Cognitive structures are mental processes that enable users to process, understand or make sense of information (AlleyDog.com 2020a; Garner 2007). Cherry (2019), a cognitive psychologist, identified a number of cognitive processes. These include thinking, knowing, remembering, judging and problem-solving. To this regard, as observed by Meyer (2016), the ability to reason and think, to recognise a lack of information or to make a selection from existing knowledge sources are attributes of cognitive structures. This then explains why AlleyDog.com (2020a) maintains that users’ cognitive structures support them in organising information for learning and recollection.

### 2.6.2 Affective Structures

A user's affective structures, according to McLeod (2018), a psychologist, involve the user's feelings, emotions or attitudes towards something. Some examples of feelings that affect information behaviour which were identified by Nahl (2001) and Meyer (2016) include excitement, frustration, uncertainty, preference and choices. In terms of the use of information, these emotions or feelings can influence users' information-seeking activities or their attitudes towards an information source.

#### a. Uncertainty

This is a situation in which something is not known or something that is not known and certain. Adams (2010:69) observed uncertainty as a state of doubt in human experience. Adams (2010:69) further noted that researchers view uncertainty as a cognitive element that can give rise to an affective feeling of anxiety or lack of confidence. This could be because feelings of uncertainty originate in cognitive structures such as a lack of knowledge or experience. Feelings of uncertainty can motivate a user to seek information to overcome an information need. It is generally placed under affective structures.

#### b. Frustration

In psychology, frustration is defined as "a state of heightened aggression, where desire for gratification is still very active, or to a state of emotion where there is a more passive recognition of a wish having not been fulfilled" (Sanderson 2014:36). It can also be "the emotional state that a person experiences when needs, wants and desires are not readily available or are not attainable" (AlleyDog.com 2020b). The *Oxford language dictionary online* (2020, sv "frustration") concurs with this psychology definition and defines frustration as the "feeling of being upset or annoyed as a result of being unable to change or achieve something".

#### c. Excitement

This is a feeling of great enthusiasm and eagerness (*Oxford language dictionary online* 2020, sv "excitement"). The *APA dictionary of psychology* (2020, sv "excitement")

defines excitement as an “emotional state marked by enthusiasm, eagerness or anticipation, and general arousal”. The feeling of excitement in a user about a topic or task can create an eagerness to seek information. A user that is very excited about a topic will be motivated towards searching for the topic, but the sensorimotor structures must become active to drive the information seeking.

### **2.6.3 Sensorimotor Structures**

Sensorimotor, according to the *Merriam-Webster dictionary* (2020), refers to the functioning of both the sensory and motor aspect of the body. Meyer (2016) refers to the sensorimotor functions primarily as the ability to set action into motion. This means that the sensorimotor has to do with the physical action taken to ensure what is desired is accomplished. The sensorimotor function is triggered by both cognitive and affective structures.

### **2.6.4 Interplay between Mental Structures**

The interplay or interaction between the three mental structures (cognitive, affective and sensorimotor structures) supports the user when identifying and making meaning out of incoming messages. This enables the information user to decide whether the obtained information is adequate to execute a task (Walls, Okumus & Wang 2011:568) or whether additional information needs to be sought. Whereas the cognitive structure deals with the mental sense of judgement, the affective structure deals with the user’s emotions, feelings, moods and attitude which can motivate or discourage the user from undertaking certain actions (Savolainen 2015b; Walls *et al* 2011:568). In turn, the sensorimotor structure motivates the user to take the required actions.

It was with this in mind that Meyer (2016) could maintain that the three mental structures work together when enabling an information user to function effectively in an information environment. For example, when users are given an essay to write, they will first check to see if they understand the assignment or need more explanation or information as they must be sure that they have enough information to successfully complete the task. Their mental and physical activities are prompted by their

motivation to successfully complete the task. Motivators that could influence the users' information-seeking activities could be a desire to earn a higher score or fear of failure. The users' use of mobile technologies are influenced by the users' cognitive skills and experience in using the mobile device to seek information.

## **2.7 INFORMATION NEEDS**

The concept "information need" is a misunderstood and complex concept and different definitions by different authors have been put forward (Cole 2011:1). One such definition is the definition by Kuhlthau (1993:161). She defines an information need as a gap between the knowledge a user has about a problem and what the user needs to know about the way in which to solve the problem. According to Wilson (1981; 1997:552), an information need cannot be observed as it mainly occurs in the mind. He further explains that a need is a subjective experience that occurs only in the mind of the person in need and, consequently, is not directly observable to an observer. Case (2012:86) supports this view in his explanation of an information need. According to him, when an information need arises, users are driven "into action to satisfy the need through different motivators which include vague feeling of unease, a sense of having a gap in knowledge or anxiety about a situation". Therefore, an information need naturally invokes action to satisfy such need (Jadhav 2017:1).

According to Howlader and Islam (2019:1), the identification of an information need is a cognitive process which begins with a problem and a demand to solve it. Taylor (1968:182) subdivided the cognitive process of an information need into four stages. He explains that when an information need arises, the user experiences an unconscious need for information. Taylor (1968:182) refers to this unconscious need as a visceral need for information. He further explains that as a result of the users' need to seek answers, a visceral need for information changes to a conscious need which in turn moves to a formalised need. This is the stage when the user talks to a librarian or conducts a search in a retrieval system. The last stage that was identified by Taylor (1968:182) is the compromised need.

There are different reasons why users experience an information need (Case 2002:71). The reasons Case (2002) identified are as follows:

- information needs are focused on reducing users' uncertainty when their level of knowledge is inadequate to deal with the information problem they experience. Consulting information is one way of reducing uncertainty;
- an information need can arise when there is a need to make sense of a situation, then looking for a meaning becomes pertinent; and
- activities in the human mind can lead to the recognition of an information need.

In this study, an information need is defined as the mental realisation of a need for more information to effect positive change to the situation in which users find themselves.

The information needs individual users have could be different and information needs are often related to the users' work roles and the tasks requiring completion (Kuruppu 1999:53). In addition to the identified contextual elements (i.e. work roles and tasks) that prompt information needs, Savolainen (2012) identified the situation in action and dialogue as contexts in which information needs arise. Situation in action involves the condition in which an information need arises. Take for instance a user who is in the process of learning the way in which to grow flowers and who realises that there is a lack of knowledge of soil types. This will prompt the user to search for information on suitable soils for growing flowers. In similar manner, dialogue can also trigger or bring about information. In the course of exchange of information or communication between users, there is a likelihood of the realisation of the gap in information which is bound to prompt information needs.

To this extent, it is necessary for libraries to understand their users' information needs and the way in which they seek information from various sources including the way in which the use of mobile technologies affects their information needs (El-Maamiry 2017).

## **2.8 INFORMATION TECHNOLOGIES**

Information technologies can be referred to as the combination of telecommunication technologies, computing, broadcasting and consumer electronics (Grauer 2001). Human communication keeps changing owing to the advancement in mobile technologies and social media (Lin 2016:1071). The ways in which users seek and use information are increasingly evolving because mobile technologies with social media technologies have become the centre of information activities especially in higher institutes of learning (Liu 2015; Misbah & Qinjian 2016; Skiba 2014). Users rely on mobile social media technologies as their main medium of accessing information (Lee & Song 2015:153). The ability of mobile technologies to produce fast search results might be the explanation behind users' attention changing from retrieving information from the library (Bowler, Julien & Haddon 2018:325; Bukhari, Hamid, Ravana & Ijab 2018:298; Misbah & Qinjian 2016; Walsh 2012). However, not all users possess the necessary skills or motivation that is required to operate these technologies (Nahl 2001). Therefore, a lack of skills can affect the users' information-seeking behaviour. The technology-related characteristics that have the potential to influence users' information-seeking behaviour is discussed in more detail in Chapters 3 and 4.

## **2.9 INFORMATION ACTIVITIES**

Information activities are those events that occur between the identification of an information need and when the information is used or transferred (Kundu 2017:395; Niedzwiedzka 2003). In this regard, Wilson (2000) included active and passive information seeking and use in his list of information activities. Bates (2005:6) noted that a large part of human knowledge comes from passive or undirected information seeking or awareness. Also, an awareness of information can influence information activities (Asemi & Riyahiniya 2007). Garbutt (2014) and Steinerová and Šušol (2005) also identified information sharing and information processing as important information activities requiring consideration. In his nested model of the information seeking and searching research areas, Wilson (1999:263) viewed information searching as a subset of information-seeking behaviour with the user's interaction with or without

intermediary and information systems. For the purposes of the current study, the following discussions will focus on information seeking, searching, use and sharing.

### **2.9.1 Information Seeking**

Information-seeking behaviour can be referred to as a conscious effort to obtain information as a result of a perceived need for information. Information seeking can be seen as the action undertaken by users to find information once they have defined their information needs (Oladunjoye, Omiunu & Yomi-Owojori 2018; Veena (2016:220). Therefore, the information-seeking process starts with a decision taken by the user to search for or locate information from various sources until that need is satisfied or time runs out (Case 2002:5). The need might partially be satisfied or fail to be satisfied. When this happens, the user needs to repeat the search process (Wilson 1999:251). The user makes use of formal or informal information sources to satisfy that need. (Bukhari *et al* 2018; Case 2002:5; Wilson 2000:49).

Aside from users' ability to identify a need for information, which leads to information seeking, the process can also be triggered when users are confronted with a given task (Cole, Hendarhewa, Belkin & Shah. 2015:2). Depending on the users' ability to interpret their information needs and their level of knowledge about the task, they will be able to successfully perform or execute the task using satisfactory actions (Järvelin & Wilson 2003). On the other hand, tasks undertaken by users can generate information needs which in turn lead to information seeking (Leckie, Pettigrew & Sylvain 1996:180). The type of task taken by users affects their information-seeking behaviour during the search (Cole *et al* 2015:2). In an academic setting, users' information-seeking behaviour normally depends on identifying and selecting information relevant to learning (Singh, Kumar & Khanchandani 2015:2). In this context, information seeking takes place online (using mobile technologies), which is referred to by Esew, Makarfi, Goshie and Jimada (2014:11) as an active method of acquiring information from the web.

Not all information-seeking activities are purposive; sometimes users stumble across the relevant information. Erdelez (2000:363) refers to the stumbling across relevant

information as information encountering or the accidental discovery of information. As she explains, information encountering refers to a memorable experience of an unexpected discovery of useful or interesting information. In turn, Agarwal (2015), Bawden (2011:2–3) and Forster and Ford (2003) use the term “serendipity” or “serendipitous discovery of information” when they discuss information encountering. Maloney and Conrad (2016:1) also prefer to refer to it as serendipity (or unplanned discovery of information) when they discuss information encountering. It can occur during passive information seeking or come up during an active search for another need unconnected to the encountered information.

Users encounter certain barriers which affect their information-seeking activities. A “barrier”, according to *Oxford learner’s dictionaries* (2020, sv “barrier”), can be something that prevents or make things impossible. In terms of information, barriers could be anything that prevents, hinders, delays or stops the flow of information to the intended user (Savolainen 2016a:52; Swigon 2011:475). The information barriers can arise within the same context as an information need and can negatively affect the information need and resulting information activities (Swigon 2011:476).

Some of the barriers which have the potential to affect information seeking include:

- lack of information-seeking skills (Shafique & Mahmood 2016);
- interpersonal barriers (Swigon 2011; Wang & Shah 2016);
- personal barriers (Swigon 2011:476);
- environmental and physical barriers (Kapur 2018; Swigon 2011:476);
- financial barriers (Gruzova 2019);
- trustworthiness of information (Leckie, Pettigrew & Sylvain 1996);
- information resource barriers (Swigon 2011:476); and
- internal and external barriers (Savolainen 2016a:52).

The discussion below focuses on the above mentioned barriers.

#### 2.9.1.1 Lack of information seeking skills

Users need information skills to enable them in identifying suitable information that can meet their information needs (Thani 2011:1). Unfortunately, many users,



especially undergraduate students, do not have the required information skills and therefore seem to find it difficult to locate the right or relevant information that would meet their various information needs (Okoh & Ijiekhuamhen 2014:70). Some of the skills they lack that were identified by Cole, Macfarlane and Buchanan (2016) include an inability to formulate identify keywords and formulate a search strategy or to evaluate information sources. Ugwunna and Onyekweodiri (2017:161) are of the view that users who have acquired good information searching skills are better equipped to seek and use information from which ever information source.

#### 2.9.1.2 Trustworthiness of Information

Trustworthiness, as observed by Hertzum, Andersen, Andersen, and Hansen (2002:576) involves being discrete, reliable, competent, integrity or empathy. In information seeking, trustworthiness has been observed to be very crucial to user information seeking (Hsu 2014:5). This is because, placing a trust on a source by users translate to the users having confidence on the ability of it to generate reliable knowledge (Hertzum et al 2002:576). As Hertzum et al. (2002: 576) explain, users tend to trust information that is accessible to them and which they perceive to trustworthy in terms of the quality of the information formerly used from the same source. This could be because users can easily access such information and therefore become dependent on that resource (Nicholas et al. 2014:33). Kyikne and Berget (2019) give another reason for why the perceived trustworthiness of an information source is an important indicator of the use that is made thereof. According to them, locating or identifying trustworthy information can be time consuming as the internet is filled with lots of both reliable and unreliable information and most users lack the patience or time to sieve through the information.

#### 2.9.1.3 Financial barriers

Financial barriers are budgetary constraints which could result in insufficient internet access, low connectivity, less skilled staff as well as less computer terminals in organisations (Al-Suqri & Lillard (2011:88). Therefore, users who have a low income or the minimum resources available are challenged when they need to access information from the internet and this affects their information seeking behaviour. The challenges they experience contribute to a lack confidence when they seek for

information online (McCloud et al. 2016:1053). All of which translate to difficulties in information seeking activities.

#### 2.9.1.4 Information resource barriers

Information resource barriers are barriers that arise from a difficult, uncomfortable or user-unfriendly resource interface that makes it hard for user to access information readily from an information source (Swigon (2011:477). The findings in Mehra and Bilal's (2008) study found that unfriendly user interfaces, difficult library technologies, and the difficulties users experience whilst identifying relevant discipline databases in the library acted as barriers to information. Other barriers that were reported on by Ogba (2015:8) included inconvenient library rules, absence of information resources, poor arrangement of resources, difficult retrieval tools as well as inadequate seating arrangements in the library (Ogba 2015:8).

#### 2.9.1.5 Personal barriers

Personal characteristics or traits influence information users' information-seeking behaviour. As shown in section 2.6, this is because the decision to undertake an information-seeking activity is determined by the user's cognitive skills and experience as well as certain feelings derived from the users' mental structures and their motivation (a sensorimotor element). As Wilson (1999:253) explains, the same personal traits can either obstruct (i.e. act as a barrier) or help in information seeking. Savolainen (2016a:52) identified the cognitive and affective barriers users experience as being internal barriers that can arise in the person (user). Internal barriers are affective and cognitive barriers.

- Affective barriers. As shown in section 2.6.2, the affective barriers deal with the users' emotions. When the user experiences negative emotions, for example, a negative experience of using information sources or systems, an information barrier occurs. Trust is an example of an affective barrier. As Thagard (2018) explains, trust is an emotional feeling of confidence or dependence on

something. Trust takes a vital role in users' willingness to use an information source (Huvila 2013). This means that if users distrust an information source, they are most likely not to use it.

- Cognitive barriers. As shown in section 2.6.1, users' cognitive structures deal with the mental processes that enable them to understand or make sense of information. When the users are unable to understand or make sense of the information, their cognitive mental processes act as a barrier to information. To this end, the users' inability to conduct an information search and also the users' lack of awareness regarding appropriate information sources could also act as barriers to their information seeking (Savolainen 2016a:52). Furthermore, as Shuhidan, Yahaya, Hashim, Shuhidan and Abd Hakim (2019:20) observed, several users are unable to make adequate use of information resources. According to these authors, these instances are the result of inadequate information searching skills coupled with the lack of knowledge or awareness about the available relevant information sources.

Therefore, individuals' cognitive and affective structures could influence their information seeking negatively.

#### 2.9.1.6 Interpersonal barriers

In Wilson's 1999 information model, he identified interpersonal or role-related relationships as intervening variables that affect information-seeking behaviour. This could be because users depend on other people for information (Wang & Shah 2016). Although people could be good sources of information, they can also act as barriers to information seeking. As Bronstein (2010), Barrett (2005:326) and Kaye (1995:17) observed, people easily seek for information from informal sources rather than using formal information sources or resources. Examples of information sources are people they perceive as being knowledgeable. This especially pertains to information seeking in terms of work-related tasks or problem-solving. However, this involves a sort of interaction process and when there is a breach in the interaction, it becomes a barrier because the user is then unable to get the required information. For example, Swigon

(2011:476) referred to interpersonal information barriers as an absence of help from people in positions to offer information as primary and secondary sources of information.

Furthermore, negative emotions can arise while engaging with another person physically, by phone or using an online medium. The negative emotions the user experiences then become an information barrier (Savolainen 2016b). This is because negative emotions can lead to users' aversion to using the information source or resource because they feel inferior or are afraid of being considered unknowledgeable. This is especially the case when the users experience negative feelings about using the library and they are afraid of asking a librarian for support.

#### 2.9.1.7 Environmental barriers

The environment, according to Wilson (1997:560), serves as the immediate situation in which information seeking takes place. However, different elements in the environment give rise to information-seeking barriers. The environmental barriers that appear in Wilson's (1981) information behaviour model include the work environment, the sociocultural environment which Savolainen (2016a:54) referred to as man-made constructs originating from social norms and cultural values, the politico-economic environment, and the physical environment. Within each of these contexts, elements such as time, location, culture and an environment uncondusive to both physical and online information seeking can lead to a disruption in information-seeking activities. Other sociocultural barriers that were identified by Niedzwiedzka (2003) include legislation, financial constraints, organisational structures, information culture, information technology, information sources, type of organisation, and organisational culture.

In terms of information seeking, students as information users are faced with common barriers when it comes to the use of mobile-based social media technologies. This especially happens in the location in which students seek information. Examples of the environmental barriers students encounter include their academic environment,

their living quarters, their socio-economic situations and the people they mingle with (Pankomera & Van Greunen 2019).

### **2.9.2 Information Searching**

Information searching is viewed by Wilson (2000:49) as the “micro level” of behaviour employed by the searcher when interacting with information systems of all kinds. Xie (2010:1) defined information searching as the purposive finding of relevant information by users in their interactions with information retrieval systems. In other words, an information search pertains to the information users’ involvement with information systems or technologies. This involvement requires users to apply their physical and mental skills to locate the needed or relevant information.

The mental skills that are required includes the ability to formulate a search query while considering what information is needed (i.e. what to search for), the way in which to search using specific key terms and having the envisioned information needed at the end of the search (Cole 2011:2). Such a search strategy may include the use of keywords, the use of Boolean operators and truncation to refine the search (Spezi 2016). Therefore, as Xie (2010:3) pointed out, the employed search strategies require different moves or manoeuvres before arriving at the right point. Identifying the best search terms to use in an information search, could be problematic as Duncan and Holtslander (2012:24) discovered in their study.

Information users also rely on mobile technologies to search for information that would satisfy their information needs (Wu, Zhu & Ran 2016:104; Kassab & Yuan 2013). For this purpose, they submit their search query to a mobile browser (Church, Smyth, Cotter & Bradley 2007:2). However, Church *et al* (2007:30–31) found that only 6% of their participants really searched for information on their mobile devices. The other 94% simply browsed for information. The implication of these findings is that only a few searches were undertaken while using mobile search engines. Church *et al* (2007:30-31) concluded that the limited text input on the mobile phone may have attributed to fewer searches being undertaken on a mobile search engine. In addition,

they suggested that searching relevant information on mobile search engines to be more difficult than on the web.

Information users in the course of searching for information online engage with other users by receiving and transferring information using social media globally (Appel, Grewal, Hadi & Stephen 2020:79; Kumpel, Karnowski & Keyling 2015:6). This is because social media enable information seeking in different information formats and present recent information while being interactive and entertaining (Hamid, Bukhari, Ravana & Norman 2016:645).

### **2.9.3 Information Use**

Various definitions for “information use” exist. However, as Kari (2010) discovered, this concept can be described from various points of view or perspectives. For example, Wilson (2000:50) defines information use from a physical and mental perspective. According to his definition, information use behaviour pertains to “the physical and mental acts involved in combining the information found into the person’s existing knowledge base.” This process may include mental acts such as comparing the new information with existing knowledge. Therefore, information use can include the way in which users make use of the information they acquired (Tenopir 2003:14).

In turn, Meyer (2003:110) understands information use as “the manner in which people handle information when collecting, searching, accessing and communicating information.” Although Meyer’s (2003) definition also views information use behaviour from a physical and a mental perspective, her definition also provides for the information behaviour activities that are involved when a user uses information, for example, the handling and communicating of information.

Users’ use of information is affected by their ability to locate the right information (Thindwa, Chawinga & Dube 2019:3) or their failure to identify the right keywords to use in their search (Duncan & Holtlander 2012). In this study, information use is the conscious effort of handling available information for certain purposes.

#### **2.9.4 Information Sharing**

The concept “information sharing” can be defined from various perspectives. Two perspectives are pertinent to this study, namely, the technological perspective and the information behaviour perspective. From a technological perspective, Techopedia (2018) defines “information sharing” as the exchange of data between people, organisations and technologies. In organisations, information sharing is known as the exchange of information or provision of access to information between employees in or outside the organisation to enable efficient decision-making (Mohammed, Maroof, Thamer & Huda 2015:49). In information science, Sonnenwald (2006) defined information sharing as “a set of activities by which information is provided to others, either proactively or upon request, such that information has an impact on another person”. Sonnenwald’s (2006) definition implies that information sharing does not stop at the mere distribution of information but is expected to make or have a positive effect on the person at the receiving end by changing their preconceived perception of a phenomenon. Information sharing is also said to be a “voluntary act of making information available to others” (Davenport & Prusak 1995:5).

With the information holder consciously and willingly transferring valued information to others, information sharing can be through a telephonic conversation, message chat on a smartphone or even through the exchange of emails (Case 2012:128). Case’s (2012) explanation is supported by Almeahadi, Hepworth and Maynard (2016) when they maintain that the exchange of information can occur in both physical and online settings. Also, information sharing could take the form of consultation with others (Talja 2002:1).

The use of information technologies such as the Internet, computer and mobile technologies created more paths for social interactions and convenience to share information (Mills, Knezek & Khaddage 2014:326; Sung, Chang & Liu 2016:253). Information technologies allow people to share information especially when they have the same interests or goals, for example, in workplaces or classrooms. This leads to

collaboration among individuals. A good example of information sharing is researchers with a common research interest who collaborate on social media platforms such as ResearchGate, Mendeley and Academia.edu. The researchers not only share information on the latest research findings on these platforms, but also discuss research-related ideas. In addition, after seeking and using information, users share the information they find useful with other users (Mohammed & Norman 2017). This happens when collaborators proactively recommend or forward information to their colleagues (Sonnenwald & Pierce 2000:468). Therefore, information sharing does not necessarily involve information seeking (Talja & Hansen 2006:128).

Furthermore, the process of information sharing involves both the giver and the receiver of information (Savolainen 2017). In this regard, information sharing as an information activity involves human communication (Savolainen 2017). This is because the information sharing process involves the transfer between the sender and the receiver. This explains why Allen (1977) views information sharing as a two-way communication process. Information sharing can also be one-way communication when the process only involves the transfer of information to the receiver (Haythornthwaite 2010).

Information sharing is made easy by social media among users on the same platform. This is because social media has features that enable and promote sharing among users of all types of information (Deng, Lin, Liu, Chen & Li 2017; Salehan, Kashipaz & Xu 2013:1).

## **2.10 REFLECTION**

Information behaviour seems to go beyond the information processes and activities users engage in while trying to make meaning out of whatever situation or context the users find themselves in. It encompasses discussion about the user, the different information contexts of users, their information needs and the information activities they embark on to satisfy their information needs. In this process, technology acts as an enabler of information behaviour as users use technology to seek, share, transfer



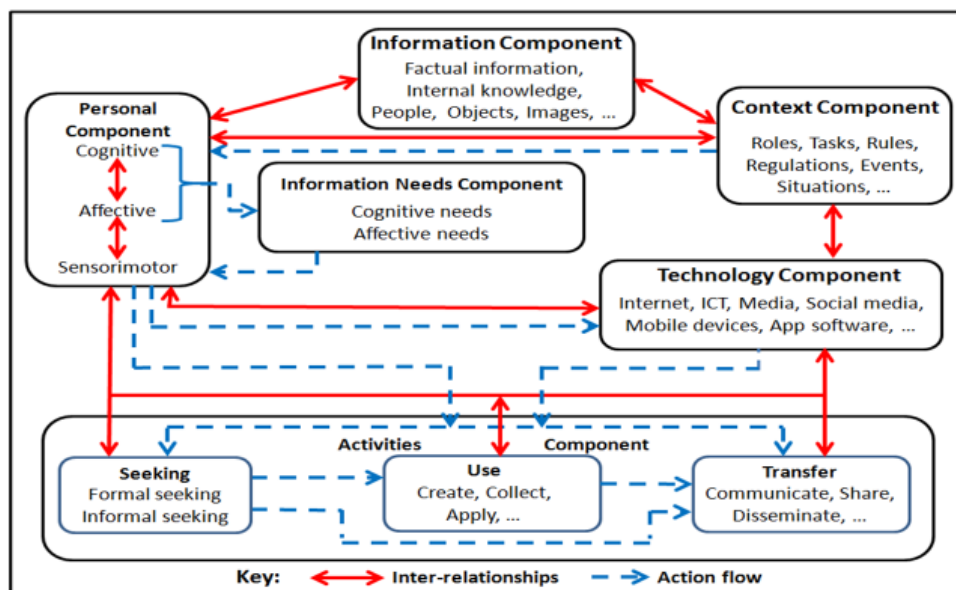
and use information. But, factors such as the users' knowledge and skills to use technology and the availability of technology can influence both users' information needs and their resultant information activities. This explains why different studies over the years have tried recommending explanations and models to conceptualise information behaviour. However, the study resonated better with Meyer's (2016) building blocks of information behaviour and looks at information behaviour from that perspective.

## **2.11 MEYER'S BUILDING BLOCKS INFORMATION BEHAVIOUR MODEL**

Models, according to Bates (2005:2), are good in the description and prediction stages of understanding a phenomenon. Many models have been developed to describe information behaviour, however, most of them focus on information seeking only. These include the models developed by Ellis (1989; 1993), Dervin (1983), Kuhlthau (1991) and Wilson (1997). The present study employed Meyer's (2016) building blocks of information behaviour model (see Figure 2.1). The reason why this model was chosen is because the model includes technology as one of its major components. Technology serves as a focal point for the present study as one of the objectives of the study is to explore users' information behaviour while using mobile-based social media technologies.

Starting with an analysis of Wilson's seminal definition for information behaviour, Meyer (2016) identified certain key components of an information behaviour model. As shown in section 2.1, the components she identified include information, user, context, technology, information needs, and information activities. In her model, Meyer graphically illustrates the interrelationship between these different components to show the way in which this interrelationship influences users' information behaviour.

Furthermore, Meyer (2016) illustrates the way in which technology acts as an enabler of information behaviour. In this regard, the model gives insight into the convenience technology (mobile technologies in this instance) offers the user when participating in various information activities.



**Figure 2.1. Representation of Meyer's building blocks of information model (Meyer 2016)**

The model clearly illustrates the information-seeking process which starts when the user realises a need for information to successfully complete a task. In this process, the user uses the information or transfers it. Technology plays a great part in this whole process. However, the users' ability to make the right use of the technology can serve as a barrier to their use of the technology if they lack the required skills.

On the other hand, the user's knowledge of the way in which to effectively use technology can yield positive information searches, which, after usage, can equally be transferred or shared with other users who might find the shared information useful. In this regard, the available mobile technologies in the situation the users find themselves in can serve as an enabler to information. Liu (2015:1) posits that the use of mobile technologies is increasingly influencing the way users seek and use information. As Meyer (2016) observed, this could be attributed to the ease of use, speed and convenience, cost-saving opportunities, and less time and effort.

The use of mobile apps such as social media makes information sharing possible and can be used by users among themselves to solve given school tasks. The technological component as noted by Meyer (2016) can enhance the flow of information. Depending on the users' competence and ability to comply with the requirements set by technology, technology could change their preferences and use behaviour.

## **2.12 LIBRARY USER INFORMATION BEHAVIOUR**

Since Meyer's model is a general model, the model will need to be adapted in order to move the focus to the role that mobile-based information technologies play in the information behaviour of students. In addition to showing the relationship between the user and the context in which an information need arises, such a model should provide for the different contexts in which students' information needs arise. This is because, as shown in section 2.4, students find themselves in multiple contexts; the academic context of which the academic library forms a part and their sociocultural context which involves their family lives. Each of these contexts sets different requirements for their information needs, and in this regard, influences their information behaviour.

As shown in Meyer's (2016) model, technology serves as an enabler to information activities which include information seeking, searching, use and transfer. Browne et al. (2017:2) confirms this view when they observe that technology can be a critical means of facilitating human behaviour. However, unlike Meyer's technological component that covers both older technologies and manual mechanisms, the technology component of the required model should mainly provide for the mobile technologies students use to seek, share and use information. The technologies include mobile devices, Internet connections, and mobile apps with respect to social media.

## **2.13 CONCLUSION**

This chapter conceptualised information behaviour to acquire an understanding of what the concept entails. It discussed some of the components of information

behaviour that were identified in Meyer's model. Components such as information, information user, context, information need and information activities with regard to mobile technologies were therefore discussed. Although one of the objectives of the study is to consider users' information behaviour while using mobile technologies, this aspect was not dealt with in this chapter. This will be the focus of Chapter 3.

## CHAPTER THREE

### MOBILE-BASED SOCIAL MEDIA TECHNOLOGIES

#### 3.1 INTRODUCTION

The use of mobile-based technologies in libraries is on the increase in both the developed and developing countries. The purpose of this chapter is to review the literature on mobile technologies, mobile devices, and mobile apps with consideration of the way in which these are employed to disseminate, share, seek and use information.

#### 3.2 BACKGROUND

Mobile technologies have changed the way individuals communicate and interact with technology (Potgieter 2015:1; Vassilakaki, Moniarou-Papaconstatinou & Garoufallou 2016:1). This is because people are now able to be in constant touch with one another (Yan 2018:7). In addition, mobile technologies provide an avenue for creativity, sharing, collaboration and problem-solving (Nikou & Economides 2017:57; Sung *et al* 2016:253). Mobile technologies have evolved from simple to active means of communication which support and facilitate remote access to information. They also enable users to provide immediate and personal feedback (Kumbhar & Pawar 2014:2). However, the use of mobile technologies is facilitated by the affordability and flexibility of mobile devices (Mugo, Njagi & Chemwei 2017:98; Mutisya & Kiai 2016:129). This is coupled with the use of mobile apps which are downloaded on the devices (Harrison, Flood & Duce 2013:10; Potgieter 2015:1). Depending on the device and the apps, mobile devices fulfil different roles. These include services or access to specific information.

Mobile devices possess certain capabilities which make them unique and which have led to an increase in ownership (Baig, GholamHusseini & Connolly 2014:23; Free, Phillips, Watson, Galli, Felix, Edwards, Patel & Haines 2013:2). Such capabilities include advanced computing powers, portability, touchscreen graphical user interfaces, wireless communication, and instant feedback (Negi 2014:15; Pact

2014:17; Sung *et al* 2016:252). These attributes make the use of mobile devices relevant in different organisations.

In education, mobile devices offer a great way of providing access to information to learners. This is because of the integration of multiple technological functions in a single device (Elogie 2015:1). In addition, mobile devices are very popular owing to the freedom, convenience and flexibility they offer to both teachers and learners (Mugo *et al* 2017:98). A further important characteristic is the ability of mobile devices to transmit knowledge at any time (Ligi & Raja 2017:2).

Academic libraries are using mobile devices to provide the services that are needed by their mobile users (Hung & ChanLin 2015:260). Libraries achieve this by reaching out to all their users through their use of available mobile technologies as alternative means that users could employ to access information from any location (Elahi & Islam 2014:3). However, libraries need to understand the way in which their users make use of the mobile devices to offer relevant mobile services to them (Bilodeau 2017:8). University libraries in North Central Nigeria are also not left behind. Although some federal university libraries offer mobile services, others are still in the process of providing mobile services. Understanding what motivates library users to use mobile technologies will greatly enhance librarians' endeavours to support their selection of mobile technologies that are focused on the provision of relevant library services. The following discussion will be focused on clarifying the concept "mobile devices".

### **3.3 MOBILE TECHNOLOGIES**

Mobile technologies include cellular communication which uses radio transmitters that employ a spectrum of radio frequencies (i.e. electromagnetic waves) to facilitate transmission (Macwan 2017:1). The transmission could be text, voice, video or multimedia from any location regardless of the time the mobile devices are used (Ilako 2016:6). Mobile technologies involve the use of wireless and wired network technologies to facilitate access to all forms of data and information using mobile devices and other required apps. The essence of the mobile technologies is the

facilitation of information access and instant communication using mobile devices. The technologies have greatly reduced information gaps as information can be created and shared even from remote places using wireless technologies (Zambrano & Seward 2012:11).

Presently, the application of wireless technologies to fifth generation mobile technologies is transforming the Internet in order to interconnect humans and objects to create smart environments (Botta, De Donato, Persico & Pescapé 2016:686). This advancement has brought about different types of connectivity which range from near field communication (NFC) that improves the effectiveness in identifying products to tracking technologies such as the global positioning system (GPS) which is a location and navigational application tool (Wihidayat & Ardi 2018:1). The GPS tool uses wireless communication on mobile devices to estimate the distance between two points. The wireless connectivity technologies that are available on mobile devices include Bluetooth technologies which enable the transfer of documents or files from one device to another (Macwan 2017:1). Other available mobile technologies include general packet radio services (GPRS) and wireless fidelity (Wi-Fi).

This advancement in wireless mobile technologies enhances real-time information access, making it possible for users to make and receive video calls or even engage in video conferencing from their mobile devices (Macwan 2017:1; Sung *et al* 2016:265). Mobile devices such as smartphones and tablets are being used to offer services such as SMSs, alert services, and instant messaging or multimedia message services (MMSs) using free apps or web-based apps (Kumbhar & Pawar 2014:3; Vassilakaki *et al* 2016:1).

Reports by the International Telecommunication Union (ITU) showed that cellular mobile connections now exceed the world population, that is 7.7 billion cellular mobile connections to a world population of 7.6 billion people (ITU 2017:21). Furthermore, the economic growth is associated with an increase in the cellular mobile growth (Stork, Calandro & Gillwald 2013:9). In reality, this means that the high level of connectivity is

expected to bring development in living conditions, education, health, and entrepreneurship. This is all because of easier communication and information access.

At the workplace, the easy flow of information to people through mobile technologies leads to an improvement in work productivity (Pekler 2017:1). In governance, mobile technologies can enhance service delivery through dialogue with stakeholders and the governing authority (UNDP 2012:24). In academia, mobile technologies are providing both instructional, learning and communication tools via mobile devices (Kim-Soon, Ibrahim, Ahmad & Sirisa 2015:2047). Students can connect to live lectures and also download study material from remote locations using mobile technologies as long as they are connected (Vassilakaki *et al* 2016:1).

In libraries, connecting to relevant resources is now within the reach of users owing to the advancement in mobile technologies (Roy & Kumar 2017:168). Instant library services are given to users from the comfort of their homes via mobile devices with the aid of mobile technologies using relevant mobile apps (Kumbhar & Pawar 2014:3). Mobile apps make information readily available on mobile devices (Roy 2017).

### **3.4 MOBILE DEVICES**

Mobile devices are advanced wireless computing devices that are capable of connecting with other mobile devices over radio networks. In this regard, users are able to access Internet-based resources without the constraints of location or time (Murphy, Farley & Koronios 2013:1; Ok & Ratliffe 2017:2; Tingir, Cavlazoglu, Caliskan, Koklu & Intepe-Tingir 2017). In turn, Finley (2017:4) described mobile devices as portable devices capable of connecting to a mobile network. Examples of mobile devices include smartphones, tablets, e-readers, netbooks and personal digital assistants (Bartholomew 2016:44).

Mobile devices run on different kinds of operating system or software platform ranging from Research in Motion (RIM) for Blackberry, the iPhone operating system (IOS)



which was developed by Apple, Android, Symbian, Linux or Microsoft Windows. The device manufacturer determines the operating system that is used (Alwraikat 2017; Fojtik 2014:342; Ventola 2014:356). Notable manufacturers include Apple, Samsung, Microsoft, Nokia, LG, Motorola mobility, HTC, Gionee, Huawei, Lenovo, Amazon's Kindle, Barnes, and Noble Nooks (Buruga 2016:27; GSM Arena 2020).

Just as there are different manufacturers for mobile devices, there are also different mobile platforms. Hence, each mobile platform has different capacities, capabilities, types, operating systems or technologies. Every mobile device's technology is determined by its developers (Buruga 2016:26). For example, some will use 3G and others will use 4G technologies. Most of the technologies are pre-installed, although others can be added through carrier plans (Negi 2014:14). Examples of some of the pre-installed technologies include high resolution cameras, full-keyboard access (the QWERTY keyboard system), Wi-Fi, multiple connectivity options, GPS, receivers' games, microphones, and storage facilities (Alwraikat 2017:1; Bastawrous & Armstrong 2013:130; Pact 2014:17; Souppaya & Scarfone 2013:11).

The common functions of mobile devices include increasing access to communication through the synchronisation of emails, social media apps and other apps which are downloadable via app stores. These technologies allow users to make calls, play games, use the device as an e-reader, receive and send SMSs and MMSs (Souppaya & Scarfone 2013:14; Thompson, Mazer & Grady 2015:3). Mobile devices are usually touch-screen devices, but some devices have mini keyboards (Tingir *et al* 2017:1).

Despite the numerous functions offered by mobile devices, certain issues have been identified that users experience when using their devices. These include screen size, memory, screen resolution, and electromagnetic waves.

### **3.4.1 Screen Size**

The size of a mobile screen makes it difficult for users to access certain websites or file formats (Boruff & Storie 2014:1). The smallness of most mobile device screens limits the way in which users are able to interact with the screens. Therefore, the screen size could make it difficult for users to navigate or search the web (Harrison *et al* 2013:10; Mi, Wu, Qiu, Zhang, Wu & Li 2016:74; Nikou & Economides 2017:58). Also, reading for long periods on the mobile screen causes eye strain (Buruga 2016:39). Budiu (2015) and Bhutkar, Karande and Dhore (2009:4) opined that mobile screens accommodate fewer content, and in this regard, less information with just one window open at a time. This is unlike the desktop computer which allows the user to open multiple windows. However, using mobile-friendly websites can take care of this challenge as they can easily interface with mobile devices (Ocran 2017:28).

Given the difficulties associated with the small screens of mobile devices, the screen size of a mobile device can motivate or discourage a user when searching or accessing information to complete a task. Budiu (2015) supported this view by noting that a limited screen size amounts to limited information from the mobile device therefore causing an interference with information access on the mobile when the user undertakes a task. In their findings, Raptis, Tselios, Kjeldskov and Skov (2013) reported that “there is a significant effect of mobile device screen size on efficiency in information seeking activities”. According to Lee and Song (2015:159), the limitations of the mobile screen size has been reported to discourage users, making them prefer computers over mobile devices for their information searching activities. Unfortunately, devices with a larger screen also come with some disadvantages such as a short battery life and the discomfort when holding the device with one hand.

### **3.4.2 Keyboard/Data Entry**

It is tricky typing on a mobile device’s touch screen QWERTY keyboard (Budiu 2015). This is because the virtual keyboard makes it rather slow and awkward to type, making it difficult to enter data as the characters are small (Wihidayat & Ardi 2018:2). This is especially the case when there is a need to use special characters and symbols (Bhutkar *et al*/2009:5). As a result, typing on a touch screen’s QWERTY keyboard can

lead to constant errors. Users must periodically pay attention to both the keyboard and the screen when they are typing to avoid mistakes. This can make the whole task time-consuming and exhausting. Hence users prefer to use computers rather than a mobile device as tasks are easier accomplished typing on computer keyboards as compared to mobile device touch screens (Burford & Park 2014:634).

### **3.4.3 Screen Resolution**

The smallness of the screen affects the screen's resolution. Bartholomew (2016:50) observed that many mistakes are being made on mobile devices due to poor screen resolution. This is because users tend to select functions they do not need or delete the ones they need by omission. Image quality on mobile devices tends to be poor compared to computers due to the reduction in the devices' screen resolution (Harrison *et al* 2013:2). The findings from Ho, Lin, Yuan and Chen's (2016:10) study revealed that information users get stressed and discouraged when they need to access information from small screens.

### **3.4.4 Memory**

Memory plays an important role in the use of mobile devices as a device's memory determines the way in which the apps function (Kim, Agrawal & Ungureanu 2012:1). Mobile device memory comprises random-access memory (RAM), read-only memory (ROM) and extended memory (Villas-Boas 2018; Windsor 2018). The RAM ensures that all apps on the phone and the phone itself work well and fast by serving as a temporary storage for the operating system and for the apps (Kayande & Shrawankar 2012). The ROM serves as storage for data. Memory size in a mobile device affects information access because low memory limits information that can be retrieved thereby affecting users' information seeking (Kumbhar & Pawar 2014; Spezi 2016). This means, the lower the device's memory, the slower the apps as well as web browsing (Kim *et al* 2012:2).

### **3.4.5 Battery Durability**

Some mobile devices' batteries are able to store power for longer periods. Users find this ability beneficial. To this end, the battery lifespan of a mobile device is used to

market the device (Villas-Boas 2018). Michael (2020) notes that mobile batteries have become larger in the bid to improve the device's energy lifespan. However, as a result of the different mobile apps (i.e. software programs) that are regularly functioning on mobile devices, the devices lose battery power which affects the functioning of the devices (Baek, Go, Lee & Cha 2017; Khan, Khusro, Ali & Ud Din 2016:63). This is because users' information activities while using a mobile device consume a lot of battery energy. As a result, this affects information-seeking activities especially in areas with low network signals, which also greatly affect battery life (Colon 2013).

#### **3.4.6 Electromagnetic Waves**

TechTarget (2018) explains that, in electronics, the network signal used in mobile technologies is an electric current or an electromagnetic field used to convey data from one place to another. The simplest form of signal is a direct current (DC) that is switched on and off; this is the principle by which the early telegraph worked. More complex signals consist of an alternating current (AC) or electromagnetic carrier that contains one or more data streams (TechTarget 2018). Therefore, the electromagnetic waves (EM waves) that are created in this manner are the result of vibrations between an electric field and a magnetic field (The Economic Times (2020a).

Oh, Byun, Lee, Choe and Hong (2018:1) and Ameen (2014:1) have paralleled the increased use of mobile devices to electromagnetic fields, which, according to them, negatively affect the brain and endocrine system of the human body. This could explain why Farnam (2016:1199) found that electromagnetic waves emanating from mobile devices negatively affect the human brain and give rise to headaches, insomnia and dizziness. As a result, heavy usage of mobile devices, especially at night, can lead to poor sleeping patterns (Shrestha 2017:29). However, exposure to electromagnetic waves can be controlled by avoiding long calls when using wireless mobile technologies (Ameen 2014:5). Studies in neurological research have suggested that exposure to electromagnetic waves can affect users' cognitive functioning when carrying out tasks by shortening their reaction time (Hossmann & Hermann 2003:52). Cognitive functioning happens to be one of the elements in the personal component of Meyer's (2016) information behaviour model that help users to

understand incoming information and match it with the existing information. In this regard, affected cognitive functioning could therefore also influence the individual users' information-seeking behaviour.

### **3.5 MOBILE APPLICATIONS**

The advancement in mobile wireless technologies and the increasing quality, capability and ownership of mobile devices have led to the popularity of mobile apps (Jemni & Khribi 2017:2; Wai, Ng, Chiu, Ho & Lo 2018:35; Xu, Kang, Song & Clarke 2015:1). Mobile apps are on the rise and fast taking over the use of the web (Malik, Suresh & Sharma 2017:106). Although mobile apps are not designed to replace desktop apps or take the place of websites, they help users to achieve specific tasks on their mobile devices (Ventola 2014:257). To this end, they are defined as software programs developed to run on a mobile device or a computer to accomplish a certain function (Kang 2014:361; Ventola 2014:257). These software programs or packages can be installed and executed on a mobile device (Yan, Dong, Niemi & Yu 2013:638). Mobile apps are normally small with designated functions of accessing or extracting information from specific resources or websites without necessarily opening the web browser (Caniano & Catalano 2014:299; Mishra *et al* 2017:3).

The ability of mobile apps to extract information from websites enable such information to be used later even in the absence of an Internet connection (Inukollu, Keshamoni, Kang & Inukollu 2014:2). This ability makes mobile apps flexible and capable of delivering real-time information to the users (Vinnik 2017:18). Furthermore, mobile apps offer a great way to communicate, collaborate, and transact business or services by organisations (Habib, Ateeq & Bajwa 2013:1; Silvius & Silvius 2015:6). However, for all these to be possible, contents are adjusted to the mobile small screen (Da Rossa & Lamas 2013:6). In addition, mobile apps can turn mobile devices into digital content creation platforms (Hopkins, Hare, Donaghey & Abbott 2015:18).

Platforms from which mobile apps can be downloaded are commonly called app stores with each manufacturer having a store for their mobile brand. The available app stores

include Google Play Store for Androids, Apple Appstore and iTunes for iPad, iPhone and iPod, Blackberry App World for Blackberry devices, Windows Phone World for Nokia, Samsung App store phones for Samsung brands, and Amazon App Stores for the Kindle e-reader (Lee & Raghu 2014:3; Wong 2012:7). These app stores are usually pre-installed on the devices with a strong built-in visibility and promotional features (Wong 2012:7). Mobile apps are of different types with different purposes.

Mobile apps, as observed by Mishra *et al* (2017:29), are classified into native, web and hybrid apps. According to them, native apps are specifically developed for mobile operating systems and support user interfaces and interactions in different operating environments. The web apps on the other hand, are mobile versions of websites developed to look and function like the native apps when in real sense they are not the same as native apps. The web apps are created to deliver web-based apps on mobile devices. (Jobe 2013:28). A good example of a web app is a social media website such as Facebook (Mishra *et al* 2017:29).

Mobile apps are also classified according to their functions. Zarpou, Vlachopoulou, and Patsioura (2011:137) observed that mobile apps are classified under entertainment, communications, transactions and information. In turn, Islam, Islam and Mazumder (2010:72) categorised them into communications, games, multimedia, productivity, travel and utilities. There are also medical apps (Ebiye 2015). However, for the purpose of this study, mobile apps will be classified as information apps, communication apps, entertainment and lifestyle apps, service or utilitarian apps, educational apps and library apps.

Information apps can be apps that provide weather information, bus schedules, flights, maps, etc. Communication apps here include instant messaging, email and social networking services such as WhatsApp, WeChat, LinkedIn, Twitter, Facebook, and Slide share. Entertainment and lifestyle apps include games (e.g. Angry birds, Subway surfers, Candy Crush). Examples of movie and leisure apps are Talking Tom, Netflix, Amazon Prime Video, and Spotify. Examples of service or utilitarian apps include

mobile banking apps, medical healthcare apps, fitness apps, insurance apps, transportation apps (e.g. Uber and Taxify), charity apps, and shopping apps.

### **3.5.1 Educational Mobile Applications**

There are a number of mobile apps in learning and teaching with a wide range of tools which can be downloaded to users' mobile devices. Some of the mobile apps that can be used in education include Dropbox, Google drive, YouTube, Facebook, WhatsApp, and dictionary apps (Wai *et al* 2018:8). Ganapathy, Shuib and Azizan (2016:129) also identified the MyGraTe app for grammar practice. According to Zydney and Warner (2016:6), MapHitTrack uses GPS to enable students to record field notes and observations, and the ThinknLearn app is used for content management and knowledge sharing. All these apps and several others facilitate and enhance learning. This can be through simulation in which students are engaged with augmented reality, or through gamification, which is the use of games in learning aimed at increasing students' motivation and engagement (Pechenkina, Laurence, Oates, Eldridge & Hunter 2017:1).

### **3.5.2 Library Mobile Applications**

The popularity of mobile apps among users has made it easier for librarians to adopt mobile apps as they now are able to connect with their users via mobile apps (Andrakatti & Mulla 2017:7; Canuel & Crichton 2015:3). Several libraries have developed mobile apps which can be downloaded from either IOS or Google Play (Arzola & Havelka 2015:71). For example, the libraries of Unisa and the University of Pretoria have mobile library apps. This is because library mobile apps make the downloading of information sources easier for users who use their devices to seek and search for information wherever they find themselves (Chang 2013:478). Furthermore, the apps can potentially enable users to access the online public access catalogue (OPAC), library e-resources, multimedia learning materials and other channels (Mishra *et al* 2017:29). Most library apps, such as social media apps, can be classified as web apps as they are created to deliver a mobile version of a website (Jobe 2013:28). For the purpose of this study only a few library apps will be discussed as Chapter 4 focuses on the use of social media in libraries.

### 3.5.2.1 LibAnyWhere

This is a web version of a mobile OPAC that allows users to access information from the library ranging from catalogues, library announcements and interactions with the reference librarian (Mishra *et al* 2017:30; Wong 2013:8). The app works on both IOS and Android platforms and can be downloaded for free.

### 3.5.2.2 Boopsie for libraries

Boopsie is a platform-as-service provider that works with integrated library systems and links online catalogues making information searches easy and fast on mobile devices (Arzola & Havelka 2015:71). The library of the University of Pretoria uses the Boopsie app.

### 3.5.2.3 LibriVox

This app belongs to a public domain that makes audio books available and downloadable on mobile devices (Nagarkar 2013:3).

### 3.5.2.4 QR codes

QR codes are very popular apps that are used in libraries. QR codes are matrix barcodes and are sometimes referred to as 2d codes, 2d barcodes, or mobile codes (Ashford 2010). The information contained in a QR code is encoded in two dimensions and can be read by most mobile devices provided the app has been installed (Liu & Briggs 2015:136).

### 3.5.2.5 BookMyne

This is a mobile OPAC which enables users to search the catalogue, reserve materials, access library accounts etc. It works with Apple's IOS platform (Wong 2013:7).



### 3.5.2.6 EasyBib

This is a free intuitive information literacy platform that provides citation, note-taking, and research tools (UC Merced Library 2020). This mobile app enables users to create bibliographies and to format their bibliographies according to different citation styles such as MLA, APA, Chicago and Harvard (Mishra *et al* 2017:30). The app works on both IOS and Android platforms). Furthermore, users can add citations for books by simply scanning the books' barcodes with their mobile devices' built-in cameras (Mishra *et al* 2017:30).

### 3.5.2.7 Endnote

This is a reference management tool that allows the importing of references from a search engine database to create a library of reference files (Menon 2019).

### 3.5.2.8 Reference manager mobile applications

This app enables users to record and use bibliographic citations by importing citations from relevant databases, formatting the citations for dissertations and assisting users in organising bibliographies. Some notable examples include Zotero, RefWorks, Mendeley and Redcube (Mishra *et al* 2017:30).

Mobile apps in many ways help users by making information more accessible. This saves time and avoids the hassle of going to the library's main website. In this regard, mobile apps bring information closer to the users. However, mobile apps have limitations as not all information is normally captured on the apps owing to mobile screen limitations as well as the mobile format which differs from that on the web.

## 3.6 ADVANTAGES AND DISADVANTAGES OF MOBILE TECHNOLOGIES

From an information behaviour perspective, Wilson (1981:4) observes that technologies (including mobile technologies) serve as formal systems (online) or as

information systems that can be used for information seeking. Potnis (2015:94) opined that the combination of human interaction with technologies in relation to seeking, searching, processing, retrieving and using information falls within the domain of information behaviour.

Mobile technologies play a vital role in that they enable the maintenance of borderless and uninterrupted communication (Miakotko 2017:2). However, there are both advantages and disadvantages attached to the use of mobile technologies.

### **3.6.1 Advantages of Mobile Technologies**

Various advantages are attached to the use of mobile technologies. The identified advantages can be grouped into the following categories:

#### *a. Time saving*

Sonnenwald and Livonen (1999:436) viewed time as a non-spatial continuum in which actions and events occur. In information behaviour the time frame in which information is sought and used is very important irrespective of whether the time frame is an episode (short period), an interval (longer period with a beginning and an end) or an eon (continuous period). This is because time determines the kind of data collected and also the outcome of a research project.

In information seeking, the time factor can serve as a constraint on users who have limited time available for information seeking. Time as a factor affecting information seeking can amount to the users consulting only a few information sources in their information search (Savolainen 2006:116). However, users with time on their hands can afford to consult as much information sources as they want.

Users save time when they use mobile technologies to search for information as searching for information on these devices can be fast and timely (Ligi & Raja 2017:3). Users can conveniently get in contact with clients, family or friends in a timely manner

from wherever they are (Saxena &Yadav 2013:1). For example, time zones ceased to exist with mobile technologies, as they bridge the gap through communication, making it possible for appointment interviews to be conducted from different points across the globe without the user being physically present (Traxler 2011:3).

In medicine, for example, mobile technologies save time by providing immediate access to patients' documentation and information thereby enhancing patient care through improved information management (Guo, Watts & Wharrad 2015:75). As a result, Bhutkar *et al* (2009) maintain that physicians' timely access to critical information can make the difference between "life and death". Mobile technologies are good for time management as they provide users with information via their mobile devices (Kim & Kim 2017:30; Ventola 2014:2).

The availability of library mobile services makes it possible for users to browse through their mobile devices to get to know and access the resources available in libraries (Verma & Verma 2014:34). When users use their mobile devices to search for material in the library, they save time. In addition to saving time when searching for information, users can save time walking to the library to search for books on shelves by conducting a mobile search on their devices (Saxena & Yadav 2013:8).

#### *b. Information sharing*

As shown in section 2.9.4, Sonnenwald (2006) views information sharing as the provision of information by an individual to another either proactively or upon request, such that the information has an impact on another person's image of the world. In other words, as explained by Perez and Torres (2017:134) and Rafaeli and Raban (2005:63), information sharing involves the exchange of acquired information through interpersonal communication using different channels, both formal and informal. Since the present study is focused on mobile technologies as channels of communication, the focus in this discussion is on the role mobile technologies play in information sharing.

The combination of mobile devices, apps and wireless networks creates powerful platforms for knowledge and information sharing (Pitichat 2013:6). Mutisya and Kiai (2016:130) observed that mobile technologies enable workers in organisations to download apps that enhance their communication in the organisation, thereby creating a platform for sharing vital information that is relevant to their work. In education, new knowledge is created and shared by students who are connected through their use of mobile platforms that are available on mobile technologies (Ally & Prieto-Blázquez 2014:146).

As all information behaviour activities, information sharing is influenced by the interplay between the various information behaviour components such as context, the user's characteristics and the information that is needed (Meyer 2009; Sonnenwald 2006). This is because information sharing serves as an activity in which ideas, opinions, facts and documents are transferred from one individual to another (Savolainen 2017). This implies that in information sharing, one person is giving information, with another receiving the shared information. The information sharing process then ensures effective information dissemination. However, information sharing can also be one way (Sonnenwald 2006). Information sharing becomes one way when it only involves giving without receiving or getting feedback from the receiver.

### *c. Ease of access*

The concept "ease of access" pertains to the ability to have, to use, to get or to reach something without experiencing difficulties. In an information behaviour perspective, ease of access implies the freedom or the ability to identify, obtain and make use of information effortlessly (Mathabela 2018:61).

Communication and information access are much easier when using mobile technologies. This is because mobile technologies facilitate the connection with other users from different locations in the world, even from the remotest locations through network connections (Konrath 2014:4). Therefore, mobile technology users can have

a continuous and easy flow of information (Butryn & Machura 2014; Elahi & Islam 2014).

In education, mobile technologies can enable innovative learning methods (Sung *et al* 2016:253; Walsh 2015:253). This is because real time and instant access to information with feedback stimulate learning among users (Sung, Chang & Liu 2016:253).

In libraries, mobile technologies enable communication between users and librarians, and in this regard, enable users to access information resources. However, Ocran (2017:17) observed that users regard mobile technologies as digital information content creators rather than as a medium of accessing digital information.

#### *d. Flexibility*

Flexibility, according to the *Oxford dictionary online* (2019, sv “flexibility”), is “the quality of bending easily without breaking”. In addition, Bucki and Pesqueux (2000:62) defined flexibility as the ability “to adapt in a reversible manner to an existing situation”. Mobile technologies have brought flexibility to everyday lives in terms of conducting business, marketing, work, study and learning, making hospital appointments, and family. This is through the ability to facilitate communication to the right individuals at the right time breaking formal boundaries (Crawford 2014).

The flexibility of mobile technologies allows users to, in their work environment for example, get access to information from anywhere. This ability then allows them to carry out their work tasks and to share information from anywhere (Pauleen, Campbell, Harmer & Intezari 2015:3; Sireteanu 2009:5). However, this advantage of mobile technologies tends to interfere with users’ personal lives, and in this regard, can increase users’ stress unless the users are able to balance their work and other responsibilities (Ladner, Rogers & Middleton 2012:5). In addition, the availability of mobile Internet access does not guarantee usage because there are individuals who

lack the necessary skills and knowledge to use the mobile technologies (Pauleen *et al* 2015:2).

In studying and learning (education), the readiness and availability of mobile technologies mean that students should be able to access study materials from wherever they are because of the freedom and opportunities mobile technologies offer to learning, provided the students are connected (Ligi & Raja 2017:4). However, Ali (2018:104) noted that the ability to simultaneously conduct different activities while using mobile technologies can distract students and therefore have a negative effect on their mental processing.

*e. Affordability*

Affordability, according to the *Cambridge dictionary online* (2020, sv “affordability”), is “the state of being cheap enough for people to be able to buy”. The low cost of mobile devices and mobile data means a good number of users can purchase mobile devices and have access to the Internet (Arokiasamy 2017:52; Bahia & Suardi 2019:16). Therefore, the affordability and convenience of accessing the Internet from a mobile device makes it easier for users to engage in information activities. (Ocran 2017:1). This view is supported by Malinga (2018) who noted that a large number of mobile devices are in use for accessing electronic information which she attributed to the modest cost of mobile devices. The affordability of mobile devices has enhanced mass ownership among users (Mayisela 2013:1). However, the findings from Rodriguez’s (2018:18) study pointed out that some students still find the price of mobile devices unaffordable. In this regard, these students find it difficult to participate in mobile learning activities.

*f. Learning enhancement*

The interactive features of mobile devices enhance learning as they allow learners to engage in different activities with their teachers (Adegbija & Bola 2014:353). Some of these features, which include portability and connectivity, enable a direct link between learners, and in this regard, create an avenue for collaboration (Hussain & Adeeb

2009:49). In addition, learners can learn at their own pace. They can access learning material or learning-related information resources via their mobile devices which enable them to create content and to share with others even from remote areas (Hussain & Adeeb 2009:51–52, 54; Sivakumar 2014:49). Thus, mobile technologies are capable of breaking learning boundaries and allow for learning beyond classroom walls (Ferreira, Moreira, Pereira & Durao 2015:4601). For example, assignments can be carried out and submitted from anywhere while using a mobile device. Also, mobile technologies empower students by enabling them to be creative, to improve their communication through mobile apps and to boost their confidence through the freedom the mobile technologies offer them (Garcia-Martinez, Fernández-Batanero, Sanchiz & Luque de la Rosa 2019).

### **3.6.2 Disadvantages of Mobile Technologies**

In as much as there are numerous advantages to the use of mobile technologies, different disadvantages have also been observed with the use thereof. Below are some of the identified disadvantages.

#### *a. Addiction*

In the mental health literature, Horvarth, Misra, Epner and Cooper (2019) define addiction as the “repeated involvement with a substance or activity, despite the substantial harm it now causes, because the involvement was (and may continue to be) pleasurable and/or valuable”. When applied to the use of mobile apps, addiction can be viewed as users’ constant need to check online communications and making calls longer than normal (Abu-Shanab & Haddad 2015:53). Huang and Su (2018) observed that a number of users, especially teenagers, are addicted to the use of mobile Internet. In the organisation behaviour literature, Pitichat (2013:3) observed that the frequent use of mobile devices in formal meetings or social gatherings creates feelings of disrespect or of being antisocial. In this regard, mobile device addiction can create emotional, physical, social and psychological risks (Miakotko 2017:23). This view is supported by the observations of Farnam (2016:1200) and Abu-Shanab and Haddad (2015:53) that some users tend to become anxious when their mobiles are away from them or turned off. This could explain why De Wet, Koekemoer and Nel

(2016:9) found that some users go to the length of having their devices always with them because they are afraid of being without their devices

*b. Privacy*

Privacy, according to the *Cambridge dictionary online* (2020, sv "privacy"), is a person's right to keep their personal matters secret. Mobile device owners risk having their privacy violated as a result of innovation policies. This is because information collected by an app might be shared with other apps installed on a phone without the user's approval. Kotz, Gunter, Kumar and Weiner (2016:7) believe this is especially the case in the Android market which has a higher percentage of users. Alsaleh, Alomar and Alarifi (2017) maintain that hackers always target smartphones owing to the amount of sensitive information individuals store on their phones. The hackers use malicious software for this purpose and somehow get users to download the software.

Most users tend to store vital information on their devices without necessarily securing access to the device (Curran, Maynes & Harkin 2015:2). This poses a greater risk if it falls into the wrong hands as their privacy will be jeopardised and they equally risk the loss of their identities. The reasons Farnam (2016:1204) gave for this phenomenon is that stored passwords could be used to access both banking details and sensitive databases. Many users, in exchange for installing and having access to an online service or app, end up handing their rights over to their activities which are being used by online companies to make a profit (Fife & Orjuela 2012:2). To this end, mobile technology users are exposed to online threats and privacy infringements. In order to avoid these privacy issues, Farnam (2016:1204) advises users to safeguard their devices with strong passwords and to keep sensitive information away from their devices. In turn, Curran *et al* (2015:8) advised users to install appropriate apps that can wipe their devices' memory or disable the device when the device is stolen or lost.

In terms of library services, users checking out books from the library might do so from an unsecured network leading to the exposure of their data and resulting in identity theft (Hamad, Farajat & Hamarsha 2018:444). A study conducted by Demergazzi,



Pastore, Bassani, Arosio and Lonati (2020:10) on the information needs and information-seeking behaviour of Italian neurologists, showed that the physicians avoid using unsecured information sources and rather use authoritative sources. They reckon that these neurologists' policy to use authoritative sources only could make a difference in libraries if their users are trained to identify and use only secured sites and networks for their information activities.

#### *c. Network signals*

Poor network signals can affect access to and the retrieval of information. In this regard, poor network signals act as barriers to communication (Kumar 2014:472). Mobile devices sometimes have limited network or bandwidth capabilities which could be a challenge. Although wireless networks can take care of the challenge, not all mobile devices support new networks such as 4G networks (Singh, Gaffar, Thomas & Renville 2016:4).

From the engineering literature, Orblom (2015:16, 51) observed that network performance affects users' information behaviour as the speed of network connectivity determines the amount of data or access to information. Low connectivity means a drop in data access; hence it negatively affects users who are likely to not continue their information activities. Sharma and Madhusudhan's (2017:293) study confirmed this observation. They found that users are greatly affected by poor network coverage and see it as huge barrier to the use of mobile devices to access information from mobile Internet.

#### *d. Health hazard*

A health hazard is a "condition of a premises, a substance, thing, plant or animal other than man, or a solid, liquid, gas or combination of any of them, that has or that is likely to have an adverse effect on the health of any person" (Southwestern Public Health 2019). According to the Southwestern Public Health (2019), this means any form of activity involving the use of mobile technologies. This is because the use of mobile devices could have a negative effect on users' health and could therefore be regarded

as a health hazard. One example of the way in which a mobile device can be a health hazard is the use of mobile devices to text messages. Texting messages on mobile devices can cause musculoskeletal disorders of the neck, upper torso and the back (Miakotko 2017:3; Shrestha 2017:29). In their study, Stalin, Abraham, Kanimozhy, Prasad, Singh and Purty (2016:3) observed that the overuse of mobile devices was responsible for finger pains, earache, headache, fatigue and eye strain. Furthermore, although not yet proven, it is suggested that exposure to the emission or radiofrequencies from mobile devices could also cause cancer (Miakotlo 2017:4).

*e. Distraction*

The *Cambridge dictionary online* (2019, sv “distraction”) defined distraction as something that prevents someone from giving their attention to something else. In terms of the use of mobile technologies, users can lose concentration from whatever major activity they are participating in through distraction from their mobile devices. Mobile devices can, when used while on the road, be a source of distraction for pedestrians, causing fatalities when crossing the road (Lennon, Williamson, King, Lewis & Haque 2016). This is because users get carried away while using their mobile devices when crossing the road, taking a wrong turn or crossing the road slowly.

There is an increase in road accidents that are related to drivers using their mobile devices while driving (Naeem 2014). As Miakotko (2017:11) observed, drivers get distracted and pay less attention to the road or road signs when they text, read messages or even select music on their mobile phones. Also, pedestrians tend to forget about their environment when using their mobile devices and walk straight into oncoming cars (Nakamura 2014:69).

Mobile technologies in academic settings can also be distracting, especially in classrooms (AITameemy 2017:441). This is because the ringing or alert sounds of incoming messages urge the user to reply and in this regard can disrupt the user’s attention in class (Attia, Baig Marzouk & Khan 2017:863; McCoy 2016:4). Therefore, users calling or receiving notifications or messages can disrupt the academic

atmosphere in the library and as a result distract not only the device owner but other library users too. Despite this suggestion that the use of mobile devices in a class can be disruptive, Sullivan, Johnson, Owens and Conway's (2014:51) findings report a low level of disruption.

*f. Financial costs*

Using a mobile device has cost implications in terms of Internet subscriptions, and the purchasing of mobile apps or software (AlTameemy 2017:439). Therefore, the cost of using a mobile device to access information can influence users' information-seeking behaviour (Ikoja-Odongo & Mostert 2006:154). Despite the cost of using mobile devices to access information, De Wet *et al* (2016:8) are of the view that mobile devices can save costs in that these devices provide users with a cheaper means of communication through social networks.

In the information behaviour literature, Leckie, Pettigrew & Sylvain (1996:186) noted that the cost of an information resource can affect a user's decision to use it. Cost, however, can also translate to both the time and effort required to acquire the information (Du Preez 2008:87). If getting information from mobile devices will cost a user a lot of effort and time, the user might forgo it. On the other hand, the user might consider using the source of information if it is easily accessible in less time.

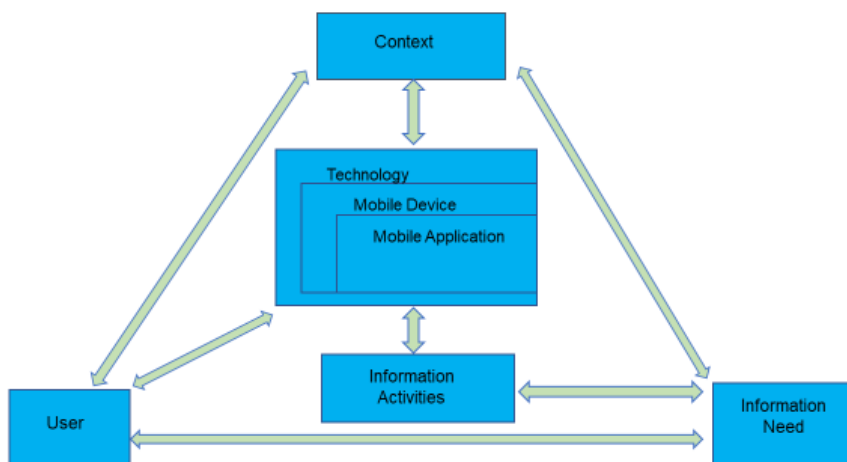
*g. Information literacy*

A lack of information literacy skills is one of the challenges that inhibit the use of mobile devices (Chen & Kinshuk 2005; Kamvar and Baluja 2006; Mayisela 2013:9; Punchoojit & Hongwarittorn 2017:7). This view is supported by Bawden, Holtham and Courtney (1999) who believe that most users are challenged in getting the right information while using their mobile devices. They attribute this challenge to a lack of the required knowledge and skills to use devices effectively. Feng and Agosto (2017) believe users who do not have the necessary skills to find the information they need feel overwhelmed with all the information they retrieve.

### 3.7 REFLECTION

The role mobile technologies play in users' information behaviour cannot be overemphasised. Mobile technologies and the apps software are embedded in the technology component. With technology forming part of the context but as an element of context, it has a very specific role in enabling information behaviour. However, the use that is made of the technology is further influenced by certain characteristics of the technology: flexibility, portability, instant feedback, easy access to information, fast Internet connectivity, easy information sharing and communication from any location. But in addition to these characteristics, there are certain prerequisites for the use of the technology: a need to seek, use, transfer or communicate information and the necessary skills and knowledge to use the information derived from the user's cognitive structures.

Mobile technologies' role in the information user's behaviour is central as depicted in Figure 3.1.



**Figure 3.1. Central role of mobile technologies**

The double-pointed arrows between the user and context and also between context and information needs show the way in which the interplay between context and the

user gives rise to and influences the user's information needs. The technology as an element of context also influences the context, as is shown by the double-pointed arrows between the context and mobile technologies. In addition, the double-pointed arrow between technology and the user shows that this element of context influences user's behaviour but could also be influenced by users because the use people make of these devices prompt new developments. Meyer (2016) also links information activities to the user as the availability of technology along with other user-related factors could prompt the user to seek information using a mobile device (see Figure 2.1). Therefore, the availability of mobile technologies influences the means or the route the user will follow to retrieve the information that is needed.

### **3.8 CONCLUSION**

This chapter explored the concepts of mobile technologies, mobile devices and mobile apps. The focus of the discussion was not only to acquire an understanding of what these concepts mean, but also to establish their potential role in the information behaviour of users and more specifically the use that is made of them in academic and library settings. The challenges related to the use of these technologies, the advantages and disadvantages of their use also received attention.

The literature review showed that the concept mobile technologies include concepts such as mobile devices and mobile apps. This is because the concept mobile devices pertain to the hardware that is needed to make use of technologies and the mobile apps are the necessary software programs that are downloaded onto the devices to enable easy access to data and information.

Mobile technologies encompass both wired and wireless networks which transmit to handheld devices to make information accessible to users. The information access and dissemination are made much easier via mobile apps downloaded onto the mobile or handheld devices. Each technology and app has a role to play in the distribution or transformation of data into information and to make communication between users in different locations possible.

In addition to acquiring an understanding of what the different mobile-related concepts mean, the literature review also highlighted some of the general mobile apps that can be used by libraries to enhance their services. The next chapter, Chapter 4, will explore social media and the social media apps that are mostly used in libraries.

## **CHAPTER FOUR**

### **SOCIAL MEDIA**

#### **4.1 INTRODUCTION**

Social media are increasingly being used in academic and scholarly communications and have brought numerous opportunities for users to connect with others using online identities (Al-Daihani 2018:196; Al-Deen & Hendricks 2012:4). Various social media and web apps that are available on mobile devices provide users with the opportunity to create an online profile and join discussion forums that help connect them to other users who share their interests. The purpose of this chapter is to review the literature on social media in relation to the potential use academic libraries could make of social media apps to disseminate information. The chapter also explores users' information behaviour in relation to the use they make of social media apps. In addition, the chapter explores some of the advantages associated with social media use and the challenges social media pose to users. Lastly, the potential use of social media in teaching and learning and in libraries is highlighted.

#### **4.2 BACKGROUND**

In chapter one, it was suggested that social media could be used by the FULafia, North Central Nigeria, to improve the university library's services to its users. This is because the use of social media technologies can enhance the creation, sharing or exchange of information in real time within an online community which, in turn, can ensure more user centred library services that are not bound by geographical or physical boundaries (Bakare 2018:1; Buettner 2016). However, the focus in chapter three was on mobile technologies, mobile devices and mobile apps, the social media phenomenon was not dealt with. In order to acquire an understanding of the use student library users make of social media, this concept and phenomenon should also be explored.

#### **4.3 SOCIAL MEDIA AND TYPES OF SOCIAL MEDIA**

Social media is a group of Internet-based apps that are built on the ideologies and technological foundations of Web 2.0 and that allow for the creation and exchange of

user-generated content (Kaplan & Haenlein 2010:61). This enables the facilitation of user interaction and also the generation and sharing of information (Steenkamp & Hyde-Clark 2014:92). In addition, social media can be web-based and mobile technologies-based with content ranging from videos, blogs, instant messaging or voice messages online (Titangos 2013:5). The various social media platforms that are available for the creation of online communities include blogs and microblogs, wikis, media-sharing (photo and video) sites, social bookmarking, virtual game worlds, and virtual social worlds (Agnihotri, Dingus, Hu & Krush 2016:173; Aichner & Jacob 2015:258; Gikas & Grant 2013:2; Guy 2012:1; Munar & Jacobsen 2014:47; Nandez & Borrego 2013:782; Whiting & Williams 2013:363).

The dawn of social media has therefore changed the ways in which people connect. As VanScoy, Hicks and Cavanagh (2018) noted, social media apps enable direct engagement between users and their communities. This is because social media has broken communication barriers, allowing immediate feedback between individuals or organisations (Abbas & Singh 2014:2; Siamagka, Christodulides, Michaelidou & Valvi 2015:2; Zavodna & Pospisil 2018:213). Organisations and academic libraries worldwide are using social media to make their digital resources and facilities available to their users (Chitumbo 2015:34). Social media bridge the gap between various groups, not only between users and librarians (Sahu 2016:303). This is achieved through the creation of user-generated content in which discussions, information sharing and collaboration takes place among group members (Gikas & Grant 2013:2; Guesalaga 2016:72; Sobaih, Moustafa, Ghandforoush & Khan 2016:296). Also, Kumar (2015:103) believes that social media are a great medium of preserving digital reputations. In addition, social media serve as a daily source of information that caters for different information needs (Bukhari *et al* 2018).

Social media platforms facilitate the creation of various online communities (Gikas & Grant 2013:2) through which community members can share their experiences and information (Chitumbo 2015:36). The ease of use and the no-cost implication in the use of social media influences users' information-seeking behaviour as they use social



media to search, use and share information and other media with others (Bukhari *et al* 2018).

Users of academic social media platforms support each other, and collaborate and share their knowledge, experience and ideas (Nandez & Borrego 2013:2). This is despite educators' concerns about users' critical thinking abilities and competencies when they use information retrieved from social media (Kim, Sin & Tsai 2014:2; Nagel, Remillard, Aucoin & Takenishi 2018). A further concern pertains to the quality of the information retrieved from social media platforms which cannot be guaranteed as some social media sites lack citations, for example, YouTube (Kim, Sin & Yoo-Lee 2014).

There are different types of social media. Each type of social media has a different purpose. Koukaras, Tjortjis & Rousidis (2020:298) identified blogging, microblogging and wikis. Bump (2019) classified social media into photo sharing (e.g. Instagram, Pinterest), video sharing (e.g. Vimeo, YouTube), and interactive media (e.g. Tik tok, and Snapchat). Some of the social media platforms have multiple functions as they can serve as instant-messaging, microblogs, and media-sharing sites. Facebook is a social networking site which also functions as a microblog, instant-messaging, and media-sharing site. For the purposes of this study, only blogs, microblogs, social networking sites, wikis and media-sharing sites along with the general advantages and disadvantages of social media will be covered.

#### **4.4 BLOGS**

The term "blog" originated from "weblog" which served as online diaries (Mahmood & Richardson 2011:371). Therefore, a blog, as defined by Houghton (2012:8), is a website that comprises articles. The articles are usually time stamped and organised in reversed chronological order to enable visitors to see the most recent post first. Blogs can also be said to be self-published online diaries or journals that provide information or discussions for other people to view (Adeleke & Habila 2012:509; Aydin 2014:244; Faizi, El Afia & Chiheb 2013; Gilman 2014:14; Mahmood & Richardson

2011:371). Most blogs are written as personal online diaries and have daily inputs (Rettberg 2014:20). Blogs are mostly used to share and publish opinions and experiences (Titangos 2013:111).

Blogs usually contain archives of earlier posts and could be linked to other online communities (Aydin 2014:245; Harricharan & Bhopal 2014:325). Blogs are easy to maintain and update (Chan & Cmor 2009:395). A blogger requires software that could be used to create the blog and blog posts and a host where the blogs can be uploaded to the web. A few notable examples of free blogs hosting sites include Wix, WordPress, Weebly, Medium and Blogger (Garrity 2020; Tuca 2020).

- Wix

Wix is a free platform that hosts and allows users to create professional blogs, while offering different layouts of templates themes for both free and premium. Users are required to sign up using a questionnaire and have the option of allowing the platform software to set up their profile based on their response to the questionnaire or they can set it up using available templates (Garrity 2020; Tuca 2020).

- Weebly

Weebly is an easy to use and user-friendly blogging domain inclined more towards e-commerce and offers premium to enable users get their own names on the site as well as to access to other features (Robinson 2020). On the free plan, the user gets chat and email support, five custom pages, a Weebly subdomain, 500MB storage, and advertising spaces (Tuca 2020; Robinson 2020). Although Weebly is more e-commerce related, it has limited customisable features (Robinson 2020).

- WordPress

WordPress is completely free and offers free open-source software to users but to get a domain name or monthly web hosting, users need to sign up for paid hosting and purchase a domain name (Garrity 2020; Robinson 2020). In addition, WordPress has

some web-hosting suggestions. Some of these web hosts allow users to create and host a blog for free, whereas others require that users pay for the hosting of their blog (Garrity 2020).

- Medium

Medium is more of a free blogging site than a free hosting site as it offers free sharing of blog content (Robinson 2020) and an avenue for writers to showcase their creative expressions and thoughts (Garrity 2020). It has virtually no customisation features as seen with other platforms (Robinson 2020).

- Blogger

This domain, as opined by Tuca (2020), is more suitable for personal than professional blogging although it has features similar to those of other blogs such as the option to create or register an account and the availability of basic themes. It also has customisation options and the choice to monetise blogs through Google AdSense (Robinson 2020). However, unlike some hosting domains, Blogger does not allow users to own their pages or sites (Robinson 2020).

Each blog host has software that includes additional features which might not be free (Tuca 2020). Examples of blogging software that were identified by Rettberg (2014:16) include Wordpress.com, LiveJournal, Tumblr.com, Technorati.com, and Metafilter.

In education, blogs are believed to enhance collaboration among users through opportunities created by interaction (Ozdemir & Aydin 2015:373). Blogs facilitate profound reflections of the creators' thoughts and what they are experiencing (Harricharan & Bhopal 2014:329), thereby giving voices and opportunities for users to share their journeys with others. In addition, blogs enhance users' critical thinking skills and improve their writing skills (Chong 2010:805). This is contrary to the findings of the study by Ozdemir and Aydin (2015:378) that blogs do not seem to have a positive effect on sentence construction.

In libraries, the collaborative and interactive features of blogs have proved worthwhile because they enable libraries to receive feedback or comments from their users on their products and services (Chan & Cmor 2009:395). Libraries can also promote, enhance and market their services through blogs (Adeleke & Habila 2012:508). Gilman (2014:14) noted that blogs are simple and efficient ways of providing librarians with information and a good platform for librarians to keep their users informed in an orderly and timely fashion. This could include keeping their users informed about new acquisitions and making recommendations on online resources (Mahmood & Richardson 2011:371).

#### **4.4.1 Microblogs**

Microblogs are social networking services capable of creating an environment that is conducive to the sharing of information (Liu, Zhang & Ye 2018:372). Microblogs serve as publishing and communicating tools for both organisational and individual interactions such as businesses and educational institutions (Lee & Warren 2010:3; Shiri & Rathi 2013:1).

In educational settings, microblogs are used for collaboration, promotion and sharing of research or resource materials (Shah, Shagbbahi & Cox 2015:13). Liu *et al* (2018:376) reported that libraries use microblogs to post real-time notices, bibliographies, and library updates. In addition, microblogs are used to share news (Kim *et al* 2014:5). Also, microblogs are used to share information in social networking sites such as Twitter, Tumblr, Tencent Weibo, Sina Weibo, Yammer, and Plurk (Anderson 2015:1; Lee & Warren 2010:4; Li, Luo, Ding, Tang, Sun, Dai, Du, Zhang & Kong 2017:554; Shah *et al* 2015:3). A new trend has emerged in which users, instead of sharing their personal ideas or diaries, share videos. This trend is called vlogging.

#### **4.4.2 Video Blogs (Vlogs)**

Video blogs (or vlogs) simply means blogging through video or social video (Gao, Tian, Huang & Yang 2010:2). Therefore, video blogs are the video versions of blogs in which

creators post compilations of short videos rather than posting text-based blogs (Moor, Heuvelman & Verleur 2010:1536). These videos are also referred to as social videos which could comprise a variety of topics in entertainment, learning and teaching, and conversational videos (Lee, Frey, Frey & Wu 2017:267; Sanchez-Cortes, Kumano, Otsuka & Gatica-Perez 2015:1).

Creators of video blogs usually form a great bond with their audience (Lee 2017:29). The contents can be viewed on the vlogger's page or downloaded for later viewing (Gao *et al* 2010:5). Vlogs share the same features as blogs and microblogs because their contents are normally personal, informative, educative and entertaining (Kim 2017:1). Examples of online platforms used by vloggers to share their vlogs include Vimeo, YouTube, Dailymotion, and Instagram (Raby, Caron, Th ewissen-LeBlanc, Prioletta & Mitchell 2018:496; Sanchez-Cortez *et al* 2015:1).

In education, vlogs have the potential to improve digital literacy and speaking skills (Combe & Codreanu 2016:122). In libraries, video channels such as YouTube (a powerful educational tool) can be used for information dissemination (Li, Bailey, Huynh & Chan 2020:2). Vlogs are also being used to post tutorials for users on different topics, for example the way in which to use different resources in the library or even guidelines for using some online resources (Sroka 2014:2). Academic libraries that use video sharing platforms include the Purdue Libraries, Indiana USA, University of Illinois at Urbana, the Witwatersrand Library, and the University of Pretoria (Howard, Huber, Carter & Moore 2018:8; Sroka 2014:2).

#### **4.5 SOCIAL NETWORKING SITES**

Social networking sites (SNS) are web-based platforms that offer users the opportunity to create public or private profiles to connect with selected users through blogging, instant messaging or chats, video calls or multimedia sharing (Khurana 2015:1; Nandez & Borrego 2013:3). A social networking site can further be described as a site that facilitates the building of social relationships among people who share interests, activities, backgrounds, or real-life connections (IGI-Global 2020b). These attributes make social networking sites unique, both in formal and informal settings (Boateng &

Liu 2014:127). In addition, social networking sites provide new users with a list of other users that share the same interests. This way the new user can add or deny a request from other users on the same platform (Sheik, Syed & Naseer 2016:46). What makes these social networking sites unique is the users' ability to share information which could range from highly personal to academic interests (Boateng & Liu 2014:127).

Having a group of users with the same interests on social networking sites can boost information use and sharing, which could foster collaboration among them, hence having an impact on their information behaviour. In terms of information search behaviour, Ho *et al* (2016:2) found that social media tend to facilitate information sharing especially for leisure travel as revealed.

Academic institutions, especially libraries, use social networking sites to inform users of new events, to market and promote their services, to upload photos, and to provide links to videos (Boateng & Liu 2014:127; Hussain, Cakir & Cadeđer 2018:3). For example, the Brooklyn College library in the United States of America (USA) uses Myspace and YouTube to market and promote its services (Liu *et al* 2018:370). This is despite the fact that an earlier study conducted by Chen, Chu and Xu (2012:1) showed that users' engagement with social networking sites in libraries was low. This is a situation which could have changed in the meantime.

Notable social networking sites used in academic libraries include Facebook, Twitter, MySpace, Instagram, WeChat, WhatsApp, LinkedIn Academia.edu, ResearchGate, Slideshare, ORCID, Mendeley (Gikas & Grant 2013:2; Khurana 2015; Nandez & Borrego 2013:783; Sayan 2016:89). It is important to note that the functions or services offered by a social networking site can determine its classification which could be SMSs, photo and media sharing and live-streaming.

#### **4.5.1 Facebook**

Facebook is a peer-to-peer social networking site that allows users to create private or public pages and connect with other users (Espinosa 2015:2206; Tutelman, Dol,

Tougas & Chambers 2018:3). As Ma and Alhabash (2016:4) explain, users are able to update their Facebook pages and share information or other media with their followers and friends. Furthermore, users can subscribe to Facebook pages by liking the pages using the “like” function and by joining Facebook communities or groups (Kim 2017:16).

Facebook is also a microblogging site (Singh 2018; Stieglitz & Dang-Xuan 2013:219). This is because each entry on a Facebook page is a microblog. The features Facebook has built in that enable the interaction between users or groups of users in their profiles or pages through text chat, video chat or inbox messages make it a social networking site (Ali 2016:163). Therefore, Facebook can be used for communication, collaboration and resource sharing and has the potential to facilitate active learning and collaboration (Sanchez, Cortijo & Javed 2014:141). This view is endorsed by Manasijević, Žicković, Arsić and Milošević (2016). They noted the value of Facebook for the effective exchange of study-related information, organisation and collaboration. This is why Nguyen (2017:14) could view Facebook as an online platform for knowledge sharing.

In libraries, Facebook serves as a strong base for the marketing and promotion of library services (Amarakone 2016:26). However, maintaining a professional page has its own challenges. The examples Tutelman *et al* (2018:8) gave include challenges relating to the friending and following of users, as well as dealing with negative comments that could be posted to the page. Negative comments are inevitable on social media. In order to deal with negative comments and a bad reputation as well as to keep good public relationships, prompt responses are required (Baker 2020; PennState College of Agricultural Sciences 2020). Since responses have to be polite, a specially trained individual is required to handle this.

#### **4.5.2 WeChat**

WeChat is a free instant messaging (IM) service and a calling app on mobile devices which allows for live chat, text, voice, video, photos, moments and location sharing

(Vaughan & Gao 2015:4; Xu *et al* 2015: 21). WeChat offers both subscribed and free services. It also allows for the sharing of updates by publishing statuses, comments or by retweeting comments (Xu *et al* 2015:23). The instant connectivity, timeliness, convenience and personalisation of the WeChat app make it attractive for use (Vinnik 2017:18).

In libraries, WeChat is used for the posting of notices on their websites. These include self-service notices such as the use of the library makes of QR codes, tips on the way in which to scan the QR codes, or other customised messages. Libraries in China use WeChat to facilitate the use of library resources and to market their services (Xu *et al* 2015:22).

### **4.5.3 Instagram**

Instagram is a free location-based mobile social network app for the capturing and sharing of photos and videos (Amaral 2015; Bergstrom & Backman 2013; Herman 2014; Hu, Manikonda & Kambhampati 2014; Song, Han, Lee & Kim 2018:5). The app allows users to apply digital filters which are used as manipulation tools in converting the appearance of images (Hochman & Schwartz 2012; Hu *et al* 2014:595; Amaral 2015). In addition to the capturing, uploading and conversion of digital images, the app enhances effective communication using visual displays and descriptions of products (Ting, Ming, De Run & Choo 2015:16).

Users on Instagram can create live-stream videos and share them with their followers (Kircaburun & Griffiths 2018:159). The followers in return can like and comment on the post and can also use hashtags (Song *et al* 2018:2). Most Instagram users create their identities using selfies (Song *et al* 2018:4). A selfie is a photograph taken of oneself with a smartphone or webcam and can be uploaded to a social media website (Brumfield 2013). In Instagram, a selfie attracts followers and brings communities who share a love for photography together (Huey & Yazdanifard 2015:5).



The findings in Huang and Su's (2018) survey show that people use Instagram for social interaction, documentation, diversion, self-promotion and creativity. In turn, Huey and Yazdanifard (2015:4) found that businesses use Instagram to market their goods and services. They argue that Instagram facilitates a better understanding between marketers and their customers. This is because Instagram users can leave and receive comments on the shared photos of products. In turn, libraries use the platform as a tool to connect with their users through the sharing of stories and highlighting collections using hashtags (Anderson 2016:12). Kaplon (2018:6) explains that hashtags make an information search in Instagram easy and possible.

#### **4.5.4 WhatsApp**

WhatsApp is an instant messaging platform. It also is a social networking site that enables interactive exchange such as live chat sessions, video calls, voice chat and even games on a mobile device. WhatsApp offers free and subscribed services and works on multiple mobile platforms (Android and IOS) and even has a web app (Gasaymeh 2017:1; Xu *et al* 2015:1; Gon & Rawekar 2017:19). Private group chats can be created with the creator being the administrator (Sayan 2016:2). The studies reviewed by Gasaymeh (2017:3) found that WhatsApp was a good social network app which could be used for collaboration and communication in an educational setting. Gasaymeh (2017) also found that libraries are able create groups and chat with their users in groups. A vital feature of WhatsApp is that it uses the push-notification feature that is available on mobile devices. As Fitzpatrick (2017) explains, a push notification is a pop-up dialog or a small badge which displays the new message on the mobile device even though the app is not actively in use. Unfortunately, these real-time notifications can distract users (El Stohy, El Khamesy & El Ghareeb 2016:29; Raiman, Antbring & Mahmood 2017:8). Kim (2014:2) cautioned that push notifications can affect serious tasks such as driving and in turn be the cause of serious mishaps.

#### **4.5.5 Twitter**

Twitter is social networking site with a microblogging app that allows for the posting of messages consisting of a maximum of 280 characters known as "tweets" (Collins & Quan-Haase 2014:54; Stieglitz & Dang-Xuan 2013:219; Tutelman *et al* 2018:2;

Voorveld, Van Noort, Muntinga & Bronner 2018:40). Tweets normally include short contents with links to images or video (Stieglitz & Dang-Xuan 2013:219). When users forward or repost a Twitter message, they “retweet” the message. This ability to retweet messages makes Twitter a powerful information-sharing tool.

In an academic environment, Twitter is used to cite articles, solicit for assistance, share resources, and discuss ideas, opinions, and professional interests (Lupton 2014:5). Both public and academic libraries use Twitter to share their activities, opinions, status and professional interests (Liu *et al* 2018:372).

#### **4.5.6 LinkedIn**

LinkedIn is a business-oriented social networking site with the highest number of professionals interested in linking up with other professionals in their field (LinkedIn 2019). Access to LinkedIn is free. However, only certain features are available on the free version of LinkedIn. For example, a registered user of the free version does not have access to the contact details of other users outside their circle unless they subscribe to the Premium version of LinkedIn (Citrome 2015:623).

Registered LinkedIn users can create their profiles based on their professional fields and can connect to users in their field or even outside their organisation (Papacharissi 2009:200; Utz & Breuer 2018:181). The network offers tools that help to make users’ credentials stand out, for example, it has features that allow other users to recommend and endorse others and this makes the profile endearing to other users and also to potential employers (Cooper & Naatus 2014:299). In addition, LinkedIn provides a sort of résumé for users, in which users can list their experiences and places they have worked before and which calculates time spent in every organisation (Cooper & Naatus 2014:301).

#### **4.5.7 ResearchGate**

ResearchGate is a free academic social networking website that gives researchers the option to upload journal articles, conference papers, posters, data and codes to an online repository (Lee, Oh, Dong, Wang & Burnett 2019:571; Palmer & Strickland 2017). The platform indexes the uploaded publications and make them available to other users who are searching for related information (ResearchGate 2020). In this manner, ResearchGate connects researchers across multiple disciplines to collaborate and share their experiences (Asmi & Margam 2018).

Owing to the ability to connect with peers and experts in various subject fields, ResearchGate enables users to have easy access to the information they need. Users also receive notifications of new publications or uploaded articles that could be of interest to them (Asmi & Margam 2018; Ovadia 2014:166). In addition, ResearchGate provides users with statistical feedback on the number of reads their articles and publications had attracted (Bhardwaj 2017:304; Palmer & Strickland 2017). ResearchGate users are also able to post questions and receive answers (Alheyasat 2015:138; Jordan 2019; Ovadia 2014:166). The opportunity to post questions and have them answered creates room for dialogue and debates, ultimately leading to further collaboration among users.

#### **4.5.8 Telegram**

Telegram is a web app and free software based on VoIP technology capable of functioning on both mobile devices and computers (Heidar & Kaviani 2016:66; Pirouz 2015:600). As a messaging app, Telegram enables users to send and receive messages in different formats such as text, images and audio-visual messages (Alizadeh 2018:2571; Mahdiuon *et al* 2020:2429; Telegram 2016; Xodabande 2017).

In an academic environment, Telegram enhances information sharing and collaboration among students and staff (Mahdiuon *et al* 2020:2428). Telegram has been shown to serve as a supportive tool for learning especially in terms of the ability to have discussions, sharing notes or useful links (Ibrahim, Norsaal, Abdullah, Soh & Othman 2016:96, 100; Tabrizi & Onvani 2018:14). It is also noted to improve academic

performance through users' interpersonal interaction (Mahdiuon *et al* 2020:2439). However, as any other social networking site, Telegram has been found to be a source of distraction for student users (Alizadeh 2018:2581).

#### **4.6 WIKIS**

“Wikis are online, collaborative environments that allow anyone to add, edit, or delete pages” (LISWiki 2018). As a collaborative online community, editing and refining of wiki content is a continuous process. Wikis are used for different purposes which include content sharing, brainstorming, and the linking of resources (Ahmadi & Marandi 2014:102-103). Wikis can be open or private and only members of a wiki community can add or edit the content (Kille 2014). To a large extent, the success of wikis depends on the involvement of users, their participation, proper checking and balanced monitoring of the content (Kiniti & Standing 2013:199; Hewege & Perera 2013:8). Unfortunately, this reliance on users' involvement and participation also challenges the use that is made of wikis. As Hsu (2007) explains, controlling the quality of the content in a wiki and tracking the changes made to the content and wiki contributions are problematic. Wikipedia is a popular example of a wiki that serves as a collaborative open-content encyclopaedia which allows revision and addition to other people's content online (Forte & Bruckman 2005).

Generally, wikis are used as a background source of information and as a collaborative workspace (Kille 2014; Kim *et al* 2014:5). This could be why Kim, Sin and He (2013) found that users use wikis more frequently to seek information than they use other social media for the same purpose. In education, wikis facilitate student-to-student collaboration as well as student-to-teacher communication (Hewege & Perera 2013:5). In libraries, wikis are used for joint authored work or for the development of group policies (Kille 2014). It is also used as a guide to users and as a reference source (Majhi, Jal & Maharana 2016:2).

#### **4.7 ADVANTAGES AND DISADVANTAGES OF SOCIAL MEDIA USE**

The use of social media has become a new normal with information technology users globally. This could be attributed to the numerous functions and enhancement in both

communication and information that come with the use. However, some pitfalls or disadvantages also come with the use. The following discussion explores some of the advantages and disadvantages of the use of social media.

#### **4.7.1 Advantages**

In general, social media serve as a resource of circulated information. In this regard, social media have essentially reinvented the ways in which people choose to communicate and collaborate in organisations and the society at large (Kapoor, Tamilmani, Rana, Patil, Dwivedi & Nerur 2018:536, 549). In addition, social media create opportunities for users such as individuals, business organisations and academics to collaborate, interact, compete, communicate and transform (Amedie 2015:3; Siamagka *et al* 2015:90).

In business, social media enhance global consumer market communication by creating an interactive communication medium through which companies can communicate with their consumers worldwide who, in turn, provide vital feedback for product development (Abuhashesh 2014:202, 204). In other contexts, customers can easily report their satisfaction and give their recommendations to friends and families on social media, and this acts as a powerful medium for viral marketing (Yadav *et al* 2015:339).

In healthcare, social media are used to educate patients and their families in terms of healthcare (Cummings & Mather 2017:1). In tourism, social media are popularly used by travellers to search, organise, share, and annotate their travel stories and experiences in blogs and microblogs (Leung, Law, Van Hoof & Buhalis 2013:3).

In education, users' communication skills are improved through the online sharing mechanisms on social media (Baruah 2012:1). Young people can learn content creation and sharing using social media (Collin, Rahilly, Richardson & Third 2011:13). In this regard, social media serve as an avenue for users to engage in learning activities as well as to create and share content such as blogs or photos (Collin *et al*

2011:14–15). This way, knowledge can easily be transferred through users' engagement with their peers on social media (Tutelman *et al* 2018:4). In addition, social media promote a more student-centred course by allowing students to interact with each other and their instructors, thereby promoting personal choice, customisation and student familiarity (Gikas & Grant 2013:2). In academic environments, social media help academic and student users to create a ground or medium for scholarly collaboration and support (Kieslinger 2015).

In libraries, social media platforms enhance the ability to digitise and share information resources with a click on some of the tools the platform offers (Abok & Kwanya 2016:152). For example, Ruge and Denison (2017) noted that the image sharing capability of social media makes it easy to scan and paste an information resource. Social media also facilitate the use of library resources through online promotions (Xu *et al* 2015:21). In addition, users can receive library notices in the comfort of their homes through the use of social media (Mabweazara & Zinn 2016:2). Librarians can reach out to their users by extending their services and remotely support them through different social media platforms.

#### **4.7.2 Disadvantages**

Several disadvantages have been attributed to the use of social media. Some users are said to reveal too much private details on social media which can lead to the loss of privacy or even identity theft (Dwivedi, Kelly, Janssen, Rana, Slade & Clement 2018; Gawkröger 2019; Ghazinour & Ponchak 2017:267). Anything that appears online can hardly be deleted as posting anything is at the user's risk (Amedie 2015:2). In some cases, posting information to a social media platform can lead to issues of intellectual property and data control (Van der Bank & Van der Bank 2017:7).

In some situations, the disadvantages directly affect users. For example, the findings of the studies by Ahmad (2020) and Brown (2018) indicated anxiety and depression. Their studies showed that users who frequently use social media become anxious and depressed from reading posts showcasing wealth and affluence, which in most cases are not real. This can negatively influence the mental health of some users, as it tends to make them feel that they are not working hard enough, or that they are not good

enough. At times, negative feedback on users' posts could make the users feel depressed. Emotional disconnection from loved ones and family has also been observed with using social media (Gawkroger 2019; Price-Mitchell 2019). This might be because social media takes over physical interactions between family members through the replacement of virtual interactions. Price-Mitchell (2019) opines that constant social media use could break family ties and could ruin friendships as social media replace real-life connections.

Dwivedi *et al* (2018:419) believe that the reign of fake news in society is the result of social media use. According to them, this is because the means of authenticating information on social media literally does not exist. In this regard, sharing features on social media makes fake news go viral fast.

Distraction and time wastage on social media have been observed to be a disadvantage of the use of social media (Benetoli, Chen & Aslani 2019:1666). This might be caused by unplanned browsing of users' posted information which forms part of passive information seeking. Users are then easily distracted from what they are doing when using social media. This could be detrimental for student users as they lose focus on their studies. In addition, students who are regular users of social media could develop poor writing skills owing to the constant use of abbreviations on social media (El-Badawy & Hashem 2015:47).

Other disadvantages that were listed by Ahmad (2020) include:

a. Fraud and scams

Fraud, according to Skype English Blog (2019), is a broad category of wrongdoing that involves deception and breach of trust. Scams on the other hand are fraudulent actions that involve monetary transactions. Criminals use social media to scam unsuspecting users.

#### b. Cyberbullying

Cyberbullying is a repeated form of harassment that occurs online through social media or instant messaging platforms available on mobile devices. According to the UNICEF (2020), the aim of cyberbullies is to shame or irritate those under attack. They do this by spreading rumours, threatening the victim or sending hurtful messages.

#### c. Hacking

Hacking is the unauthorised access or control over someone else's computer or social media account (The Economic Times 2020b).

#### d. Addiction

Addiction is a behavioural disorder that negatively affects people. When applied to social media use, addiction is the compulsive usage of social media that can negatively affect users' mental health (Hillard 2020).

In addition to the list of disadvantages that were identified by Ahmad (2020), Drahosova and Balco (2017:1005) identified Internet addiction, information overload and absence of security as disadvantages of the use of social media.

Apart from the advantages and disadvantages that can be linked to social media use, users also encounter certain barriers that prohibit them from using social media.

### **4.8 BARRIERS TO THE USE OF SOCIAL MEDIA**

Barriers, as shown in section 2.9.1.1, can be obstacles to the use of social media. Different types of barrier could arise depending on the context users found themselves, be it personal, interpersonal, or environmental.

#### **4.8.1 Personal Barriers**

The most pertinent personal barrier to the use of social media is a cognitive barrier, namely, a lack of appropriate knowledge, skills and training. This was observed by Alzaza and Yaakub (2011), Fowler (2016), Latif, Hussain, Saeed, Qureshi and



Maqsood (2019:136), Newbury, Humphreys and Fuess (2014), and Pesonena, Mikkonena, Makkonen and Honkanena (2017).

#### **4.8.2 Environmental Barriers**

As shown in section 2.9.1.3, the environmental barriers users encounter when using social media include their work environments, sociocultural environments, politico-economic environments and their physical environments. All these environments affect social media users' information behaviour. Elements within each of the environmental contexts such as time, financial constraints, location, user-unfriendly environments, poor infrastructure or even information technology could serve or give rise to barriers.

##### *a. Financial constraints*

Economic situations could serve as a barrier to the use of social media by users when they lack finances (Newbury *et al* 2014; Pesonena *et al* 2017; Vincent 2016:3). This is because the user will be unable to pay or subscribe for data, without which Internet access becomes impossible.

##### *b. Poor infrastructure*

Infrastructure is the physical and organisational structures such as power supplies, buildings, and roads needed for society to function properly (Gaal & Afrah 2017:49; *Oxford learner's dictionaries* 2020, sv "infrastructure"). When these facilities are not functional, they create barriers. For example, limited access to the Internet in an academic environment in which poor campus infrastructure can serve as barriers to students' use of social media (Newbury *et al* 2014; Sobaih *et al* 2016:302). Poor power supply has also been identified as a barrier to the use of social media, as users are unable to use their mobile devices without electricity (Ebiye 2015).

##### *c. Credibility*

Credibility is the trustworthiness of an information source (Du, Liu, Zhu & Chen 2012:3). In terms of using information on social media, authenticating information

sources or the ability to evaluate the credibility of the information that is provided can serve as a barrier to the use of social media. This then concurs with the reason Sobaih *et al* (2016:302) give for why credibility is a problem for social media users. According to them, it is always hard verifying information sources on social media. Users can distrust an information source if they are unable to verify the authenticity of the information provided in the source. Although Athukorala (2018:56) observed that some users were deterred from using social media owing to credibility issues, she also found that at times users access information through interaction with others on social media without necessarily performing information searches or evaluating the credibility of the source.

#### *d. Privacy*

The same privacy issues that were identified in section 3.6.2 as being disadvantages to the use of social media, could also act as barriers to social media use. Athukorala (2018:55) suggests this could be because users are responsible for the information they post online and when they view the posting of information as risking their or others' privacy, they would not use social media. This view is supported by Lin, Featherman and Sarker (2017:285). According to their explanation, the information users who post online can expose them to online scams.

#### *e. Ease of use*

The effort needed to operate social media affects the use of social media. As Abdul Razak and Latip (2016:3) observed, the less the effort, the more users will be willing to use a social media platform and vice versa. The thought of having to work through a great volume of information resources or materials both on social media or physically to get relevant information, turns off most users from information seeking as pointed out by Case and Given (2016:26). Such users will settle for information they can get with little or no labour at all.

Other barriers associated with the use of social media that were identified by Mabweazara and Zinn (2016:3) include the lack of skills and time. The lack of skills pertains to the user's cognitive structures whereas the time factor is an element of context. Since these elements have shown to act as barriers to information-seeking

behaviour, they will not only limit library users' interaction with social media but also affect their information-seeking behaviour while using social media.

#### **4.9 REFLECTION**

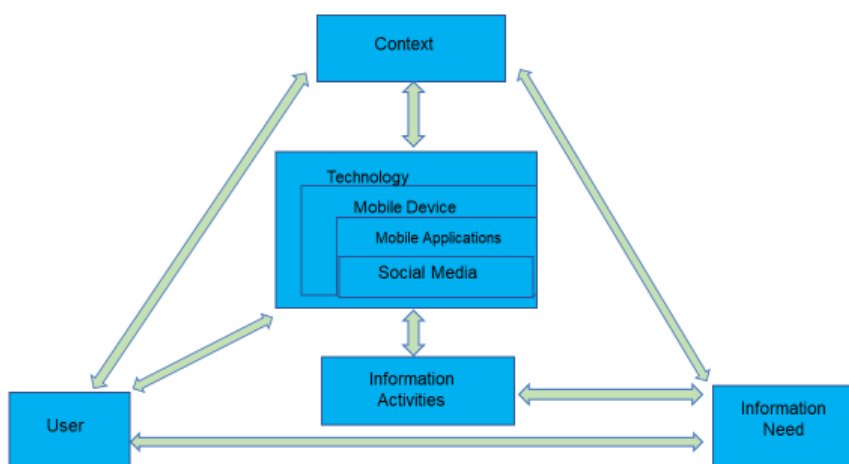
Social media play an important role in users' information activities. This is because social media facilitate user interactions and allow for instant information transfer and feedback. Furthermore, users can generate content which they are able to share with others and receive instant feedback. In this regard, social media promote the creation of online communities and collaboration among users. However, each social media platform seems to be tailored specifically for particular users and serves different purposes. For instance, in academia, most activities are geared towards information and knowledge creation, which are made available to certain users and much room is created for further collaboration and use. To this end, academic social media users can function best in academic social networks. Therefore, information users need to identify platforms which best suit their information activities.

Social media support users to bridge the information generation, transfer, sharing and use gaps. This makes the use of mobile technologies and more specifically mobile-based social media more endearing to users and encourages them to keep on using social media. Users know they can generate different kinds of information content and are able to share the generated content with others on the same platform although the other users reside at a different location.

In order to use social media, users must have knowledge and skills. A lack of knowledge and skills can hinder the use of social media. However, this barrier can be overcome through training. Therefore, libraries (including academic libraries) have the responsibility to educate and train their users on the use of social media. Such training should also include alerting their users to some of the dangers that come with the use of social media. This is because the dangers of being exposed to some of the privacy and other related issues pertaining to social media use can be traumatic and negatively affect users' mental states.

Examples of the dangers that could have a traumatic effect on users include cyberbullying, content theft and fraud. It is therefore important that libraries guide their users when protecting themselves by not exposing themselves on a public forum by posting important personal information on their social media pages. In as much as the availability of social media tools could motivate and enable information behaviour, the use thereof requires skills and training to avoid being traumatised and developing negative feelings and to engage with online information. Users' information behaviour when using social media should be closely monitored for better service delivery in terms of mobile technologies.

Given the position that social media seemingly occupy in user's information-seeking behaviour, Figure 4.1 shows the role of social media as part of technology in users' information-seeking activities.



**Figure 4.1. Role of social media technologies**

Social media, as shown in Figure 4.1, are an element of the technology component and are rooted in mobile apps. The double-pointed arrows indicate the information users' interaction with the context which gave rise to the users' information needs. As

indicated in Figure 3.1, which showed the influence and importance of technology on users' information behaviour, social media also play an important role in users' information behaviour. This is because mobile device-based social media enable certain information activities such as the sharing, transfer and exchange of information and communication. As part of technology, social media are also interconnected with each of the information-seeking behaviour processes as shown by the interconnecting double arrows in Figure 4.1.

#### **4.10 CONCLUSION**

The chapter focused on social media to explain the concept social media, to establish the different types of social media that are available and used, and to learn the way in which social media could affect users' information behaviour. With this in mind, certain social media types were reviewed taking into consideration their attributes to information-seeking behaviour. The different features of each type of social media make them useful to certain sectors such as business organisations, academic environments and libraries. The discussion showed the way in which social media contribute or enhance information dissemination and use. This goes further to show the correlation between technology and information enablement for use. To this end, the advantages, disadvantages and also the barriers to the use of social media were explored, which included the ethical use of information and users' privacy.

This chapter concludes the literature review component of the current study. The next chapter will be centred on the research methodology and design that were employed in the empirical component of the study.

## **CHAPTER FIVE**

### **RESEARCH METHODOLOGY**

#### **5.1 INTRODUCTION**

Research is a “systematic and methodological process of creating knowledge” (Faulkner & Faulkner 2019:1). Research can also be referred to as the exploration and process of inquiry in the quest for new information (Bezuidenhout, Davis & Du Plooy-Cilliers 2014:10; Rugg & Pietre 2007:33). It can be defined as an organised method of generating new information that can add to the body of knowledge.

This chapter offers the strategies taken to conduct research on the use of mobile-based social media technologies for library services at the FULafia, North Central Nigeria. In this chapter, the focus is on the research paradigms, approaches and research designs that were employed in the study.

#### **5.2 BACKGROUND**

Research serves as an original contribution to the body of existing knowledge. In this regard, research involves systematic processes of investigation or seeking answers to different questions (Kothari 2004:1, 2). Research starts with the philosophical assumption a researcher needs to build upon and it is coupled with a worldview or paradigm which informs the process of conducting or writing the research (Creswell 2007:15). The philosophical assumptions include the nature of reality (ontology), the knowledge about something (epistemology), the role of values in the research (axiology) and the process or acquiring the knowledge (methodology) (Chilisa & Kawulich 2012:51; Du Plooy-Cilliers 2019; Kivunja & Kuyini 2017:26).

#### **5.3 RESEARCH PARADIGMS**

The research paradigm is a way of thinking and conducting research in line with certain values and beliefs that guide the way in which problems can be solved (Du Plooy-Cilliers 2019). Furthermore, the research paradigm is made up of a set of assumptions about what reality is, the way in which knowledge is created and what is valuable (Davies & Fisher 2018:21). A research paradigm guides the researchers to think in

ways that frame the way in which they view the world around them, by providing a rational explanation for the research decisions they make (Du Plooy-Cilliers 2019). The main paradigms that Du Plooy-Cilliers (2019) identified include the following:

- Positivism/post-positivism: This paradigm views science as the foundation of all knowledge and in this regard knowledge must be verifiable and from a reliable source (Du Plooy-Cilliers 2019; Kivunja & Kuyini 2017:30).
- Interpretivism/constructivism: In this paradigm, knowledge is based on socially constructed reality (Du Plooy-Cilliers 2019). It emphasises an understanding of the participant's view and interpretation (Kivunja & Kuyini 2017:33).
- Critical realism: This paradigm views knowledge of reality as the result of social conditioning (Du Plooy-Cilliers 2019). This paradigm simultaneously recognises the existence of knowledge independent of humans but also the socially embedded and fallible nature of scientific inquiry (Clark 2008).
- Pragmatism: This paradigm is based on the usefulness of the research rather than the truth (Du Plooy-Cilliers 2019).

However, different research paradigms are relevant in different disciplines (Kuhn 1996). For example, Kivunja and Kuyini (2017:30) identified the critical/transformational, interpretivist/constructionist and positivist paradigms as useful research paradigms in education. In library and information science, Pickard (2013:5) identified three major paradigms. These are positivism, post-positivism and interpretivism.

Being an information behaviour-related study which falls in the library and information science field, this study will adopt an interpretivist/constructivist research paradigm. This is because an interpretivist research paradigm sees the world as others see it. As Ngulube (2019) explains, knowledge is believed to exist within an individual who makes sense out of his or her world through interactions with others. This is the foundation of this study. This study aims to acquire an understanding of the use of mobile-based social media technologies at the FULafia library, and more specifically of the use of the library services.

A further aspect that is aligned with the research paradigm is the research approach. According to Creswell (2003:3), a research approach can be a quantitative, qualitative or a mixed-methods approach. The differences in each approach lie in the way the researcher applies the philosophical assumptions to the study, and the strategies and methods employed in collecting the data (Creswell 2009:4). This means that the choice of each approach is determined by the nature of the study. In turn, the research design and procedures must also be aligned with both the theoretical and philosophical stances chosen by the researcher (Creswell 2007:16).

In order to do so, Creswell (2014:4) noted that words are used in a qualitative research approach whereas numbers are used in quantitative research. This is because qualitative researchers try to understand the meaning humans attribute to a problem, whereas quantitative researchers examine the relationship between variables (Creswell 2009:5). In turn, a mixed-methods research approach combines both qualitative and quantitative research methods (Creswell 2009:5).

Most social science research consists of qualitative studies (Cibangu 2013). So also has information behaviour research adopted a qualitative approach. According to Wilson (1999:250), this is as a result of the inappropriate quantitative research methods that were adopted until the early 1970s. Wilson (1981:11) argues that since information-seeking researchers wanted a better understanding of users' behaviour to support them in designing more effective information systems, qualitative research seems to be the more appropriate research approach for this purpose. So, since the current study is focused on acquiring an understanding of the users' information-seeking behaviour while making use of mobile devices and social media, a qualitative research method was adopted.

### **5.3 QUALITATIVE RESEARCH**

Qualitative research is a research approach used for exploring and understanding the meaning individuals or groups ascribe to a social or human problem (Creswell 2014:4).



Therefore, qualitative research is about the way in which things add meaning to an existing phenomenon in relation to human experiences (Roller & Lavrakas 2015:2). In this regard, the approach to inquiry in qualitative research is based on words rather than statistics and the research process involves emerging questions and procedures, with data collected in the participants' setting (Coyle & Tickoo 2007:205).

Qualitative research deals mainly with the development of concepts that help to understand social phenomena in their natural settings, giving meaning to the experiences and views of all the participants (Pope & Mays 1995:43). Qualitative research, as opined by Sutton and Austin (2015:226), can enable researchers to access the thoughts and feelings of the research participants, which can help in developing an understanding of the meaning that people ascribe to their experiences. Qualitative research begins with assumptions, worldviews or even theories to study research problems using a qualitative research approach (Creswell 2007:37).

The present study fits into a qualitative research approach because it seeks to answer questions about the participants' experiences and attempts to give meaning to the participants' views and perspectives of the use of mobile-based social media technologies for library services.

#### **5.4 RESEARCH DESIGN**

Research designs are types of inquiry in a qualitative, quantitative and mixed-method that provide specific directions for procedures in a study (Creswell & Creswell 2018:66). This means that the research design involves the whole step-by-step process in research, from the conceptualisation of a problem to the final writing of reports (Creswell 2007:5). Therefore, the research design is a procedural plan adopted by a researcher to answer questions validly, objectively, accurately and economically (Kumar 2011:396). The procedural plan starts with the conceptualisation of a problem, followed by data collection, data analysis and the writing of the research report (Creswell 2007:5; 2014:20).

In qualitative research, the research design stays flexible throughout the research (Marshall & Rossman 2011). This means that, while conducting the research, the research objectives and methodology might remain constant, but changes could occur while exploring the phenomenon (Taylor, Bodgan & DeVault 2016:31). In the same vein, Creswell (2007:53; 2013) identified five qualitative approaches: narrative research, phenomenology, grounded theory, ethnography, and case studies.

Of these approaches, phenomenology seeks to uncover individuals' perceptions of a phenomenon by describing or interpreting their lived experiences in a meaningful way (Mayoh & Onwuegbuzie 2015:92; Wilson 2015:38). This could be action, behaviour or changes in phenomena normally from the perspective of either the research participants or the researcher (Lunenburg & Irby 2008:90).

Phenomenological research has its origin in philosophy and psychology and is mostly based on the writings of Edmund Husserl (Bloor & Wood 2011:2; Creswell 2013:14). Manen (1990:8) defines phenomenological research as a systematic attempt to find and describe the structures and internal meaning of lived experiences. This is done when a researcher studies an individual's experiences and interprets the experiences through intuition and a rigorous examination of behaviour, actions or lived experiences (Lunenburg & Irby 2008:90). Lived experiences are valued over general knowledge in phenomenological research and the research is based on the researcher's sensitivity, knowledge and power of comprehension (Wertz, Charmaz, McMullen, Josselson, Anderson & McSpadden 2011:125, 126, 130).

Phenomenological research aims at understanding personal perceptions or interests connected to a phenomenon (Moustakas 1994). In addition, several participants' common experiences with a phenomenon are brought into focus by searching for differences between appearance and essence to give a better or acceptable description of that phenomenon (Creswell 2007:58; Manen 1990:31). The current study is an exploratory and descriptive qualitative study using phenomenological research as the research design to achieve the research objectives.

The phenomenological research design involves intentional acts of consciousness towards a phenomenon irrespective of whether the phenomenon is real or imagined (Giorgi, Giorgi & Morley 2017:179). This is to get a proper understanding, identification, new meaning or a generally satisfactory description of the phenomenon that is being studied (Creswell 2007:58; Laverly 2003:22).

Creswell (2007:59) identified two types of phenomenological research approach, namely, the hermeneutical or interpretative phenomenology as manifested in Heidegger's work and the transcendental or descriptive phenomenology as manifested in Husserl's work. Under hermeneutical phenomenology, the researcher interprets the meaning of lived experiences by identifying a phenomenon in which he/she is interested in and reflects on themes of the lived experiences (Creswell 2007:59). In transcendental phenomenology, the focus is on describing participants' lived experiences as opposed to the researcher's interpretations thereof (Creswell 2007:59; O'Halloran, Littlewood, Richardson Tod & Nesti 2018:303). This is done by the researcher first describing personal experiences of the phenomenon and then bracketing out the view before describing those of others. The present study will be a transcendental phenomenological study as it aims at acquiring an understanding of the use of mobile-based social media technologies for library services from the participants' perspectives. Just as any qualitative research design, phenomenological research designs have some advantages and disadvantages.

#### **5.4.1 Advantages of Phenomenology**

Phenomenology as a research method has certain advantages. Wilson (2015:40) identified four advantages of phenomenology which need to be considered, namely, understanding, uncovering, explication and empowerment.

#### 5.4.1.1 Understanding

Phenomenological research seeks to discover individuals' actual experiences and what their experiences mean to them (Wilson 2015:40). In this regard, phenomenology provides researchers with an opportunity to acquire a good understanding of lived experiences, which is not possible in other designs (Wilson 2015:40). Furthermore, the lived experiences of different individuals can contribute to a valuable common experience of professional groups such as teachers and therapists (Creswell 2007:62). In turn, the lived experiences could help to empower people through encouragement and an understanding of the experiences of others (Wilson 2015:41). In the light of the present study, it was hoped that the sharing of different participants' experiences of using mobile-based social media technologies with respect to library services will support an understanding of the way in which mobile technologies could affect users' information behaviour.

#### 5.4.1.2 Uncovering

To uncover, according to the *Cambridge dictionary online* (2020, sv "uncover"), the researcher needs to discover something hidden or to remove whatever is covering something else. It can be further explained as unveiling or revealing unknown perceptions of things. Phenomenology allows for the uncovering of ideas and views regarding the phenomenon using bracketing, which is also known as epoché. This is defined as the putting aside of personal beliefs or preconceived views of a phenomenon (Lin 2013:471). Bracketing in phenomenological research helps to uncover knowledge by describing experiences in a naïve way (Wilson 2015:40). Bracketing is used to reduce the researcher's influence on the study being conducted and enables the researcher to set their prejudices aside (Picton, Moxham & Patterson 2017).

However, Heidegger (1962) and Merleau-Ponty (1962) argued that bracketing is impossible to achieve as researchers are "too much beings-in the world to achieve such a state" (Wimpenny & Gass 2000:1486). This view is equally supported by Creswell (2007:62) who opined that it can be difficult for a researcher to have absolute

bracketing and that it could be challenging to select individuals with specific lived experiences of the phenomenon. Also, transparency cannot be totally guaranteed in understanding a phenomenon as there is bound to be bias (Moustakas 1994). Reflectivity can reduce bias in phenomenological research.

In the light of this, the study adopted an openness or transparent way in describing each participant's lived experiences purely from their perspective without adding any preconceived ideas concerning the use of mobile-based social media for information seeking or use. This was done to uncover real descriptions of the participants' lived experiences of using social media. Also, the researcher attempted to disregard her personal understanding of the phenomenon.

#### 5.4.1.3 Explication

To explicate, according to the *Merriam-Webster dictionary* (2020), is to give a detailed explanation. Explication therefore means the act of giving a detailed or clearer explanation or interpretation of a given phenomenon. Phenomenology, through its careful description of participants' lived experiences, gives a clearer perspective and adds meaning to a phenomenon, thereby yielding rich data. In research, explication helps to reveal specific meaning of the phenomenon or concept studied through verbal descriptions of important aspects of the phenomenon that the researcher aims to bring to light (Lombard 2007). The process of explication is equivalent to the data analysis because it involves identifying basic features of a phenomenon that are constant for clearer insight (Cole 2016:5).

The current study explicated the participants' lived experiences of the use of social mobile-based technology for information by carefully analysing the data collected from the interviews to extract meaning in order to give rich and clear descriptions of their experiences for better understanding.

#### 5.4.1.4 Empowerment

Empowerment is the act of gaining freedom and power to do what you want or control what happens to you (*Cambridge dictionary online* 2019). Empowerment also entails getting support from the strengths of others to bring about positive change (Cattaneo & Chapman 2010:646). In research, knowledge about certain concepts creates awareness thereby empowering individuals.

In the same vein, phenomenology, according to Wilson (2015), empowers by creating awareness or understanding of the lived experiences of others through imaginative experiences. Phenomenology creates empathy through the description of the lived experiences making the experiences to be seen or felt through the imaginative faculty of the mind.

In the current study the focus was on describing the participants' lived experiences with the phenomenon, capturing the essence of the lived experiences and creating awareness of the experiences in the imagination of the reader.

## 5.5 DATA COLLECTION

Qualitative data collection, as defined by Flick (2018:7), is “the selection and production of linguistic (or visual) material for analysing and understanding phenomena, social fields, subjective and collective experiences and the related meaning-making processes.” Data collection involves a series of activities of which the first activity involves getting consent, then identifying the research population, sampling, and finally collecting the data through interviews (Creswell 2013). In this process, the reliability and validity of the study also need to be considered.

### 5.5.1 Consent

Once the researcher has identified and selected the participants for the study, the researcher needs to obtain their consent to be interviewed, to the recording of the

interview and to being observed (Creswell 2015:146). This is to ensure their full cooperation in the study. This is done using an informed consent form and by requesting the participants to sign the form before they participate. Some of the information that needs to be included in the consent form include an agreement by the participants that their participation is voluntary, a guarantee of their rights, their agreement to participate and their right to know the purpose of the study (Creswell 2015:147). Unisa's prescribed consent form complies with Creswell's (2015) guidelines. The participants' consent letter appears in Appendix C.

Furthermore, before the data collection, permission was sought from the participants' parent institution, the FULafia. The approval was granted, and the approval letter appears in Appendix B.

### **5.5.2 Research Population**

A research population is referred to as the totality of people, organisations, objects or occurrences from which a sample is drawn (Gray 2014:688). It can also be referred to as the sum of all the individuals included in a study (Hanif, Shahbaz & Ahmad 2018:2). As Thompson (2012:1) explains, selecting part of a population to observe can give one an estimate about the whole population.

The population for the current study includes second-, third- and fourth-year undergraduate students who are users of the FULafia's library. The population includes more than 3 000 students who are registered in about 30 different departments at the university. This population is specifically selected because the duration of these students' stay at the institution suggests that they have been exposed to and have been using the library services. The population consists of both male and female students. The research population is given in Table 5.1.

**TABLE 5.1: RESEARCH POPULATION**

<b>Faculty</b>	<b>Department</b>	<b>2nd Year</b>	<b>3rd Year</b>	<b>4th Year</b>
<b>Arts</b>	English	50	44	34
	French	24	3	10
	History	27	26	35
	Philosophy	68	24	25
	TMA	49	35	42
	VCA	31	34	43
<b>Science</b>	Biochemistry	97	120	42
	Botany	45	63	32
	Chemistry	80	50	39
	Computer Science	107	112	44
	Geology	25	0	0
	Mathematics	31	41	14
	Statistics	16	0	0
	Microbiology	119	125	57
	Physics	30	45	29
	Zoology	47	46	40
<b>Social Sciences</b>	Criminology	1	0	0
	Economics	124	108	78
	Political Science	131	91	71
	Sociology	137	119	62
	Social Works	85	91	33
<b>Total number of participants in each academic year for all faculties</b>		<b>1 324</b>	<b>1 177</b>	<b>730</b>

Source: FULafia Academic Affairs Office

### 5.5.3 Sampling

Sampling in qualitative research is the process of selecting the participants to represent the total population (Naderifar, Goli & Ghaljaie 2017:1). Sampling can also be “the selection of a portion of a population for a study based on non-probability and purposive sampling approaches” (Maree 2007:79). Also, the intention with sampling in a qualitative study is not to generalise a population but rather to get an in-depth exploration of a central phenomenon (Creswell 2014:204). The sample size in qualitative studies is normally small and in this regard the sample size is flexible and continuous until the data collection reaches saturation (Maree 2007:79). The sample is only selected from the main population (Thompson 2012:2). Sampling makes the research more accurate and easier to manage (Showcat & Parveen 2017).



There are mainly two types of sampling. According to Hanif *et al* (2018:3) and Connaway and Powell (2010:117), these are probability or random sampling and non-probability or purposive sampling. Probability or random sampling is associated with quantitative studies (Etikan & Bala 2017:210). Purposive sampling is associated with qualitative studies and allows for the selection of individuals who could support the researcher in acquiring an understanding of a central phenomenon (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood 2016:534). However, non-probability sampling cannot be used to generalise from the sample to the population as there is no assurance of it being representative of the population and it runs the risk of error in making inferences (Connaway & Powell 2010:117). Some examples of non-probability sampling techniques that were identified by Connaway and Powell 2010:117) include the following:

- Accidental sampling. In accidental sampling, cases are selected based on what is available until the sample reaches a desired or designated size.
- Quota sampling. This is similar to accidental sampling except that care is taken to ensure samples include significant diverse elements of the population.
- Snowball sampling. This is a sampling technique that requires selected participants to identify and locate other members of the population. Snowball sampling is a non-probability sampling technique that involves the participants in the research group in nominating additional members to participate (Dudovskiy 2019). Yuksel and Yildirim (2015:9) recommend snowball sampling for phenomenological studies.
- Self-selected sampling. Here, the researcher puts a notice at the university library for library users who are willing to participate in the research to volunteer.
- Purposive sampling. This is a qualitative research sampling technique used to ensure the effective use of limited resources through the selection and identification of information-rich cases (Palinkas *et al* 2016:535; Patton 2002). Purposive sampling is a non-random sampling technique which is used to select specific participants who are able and willing to give the required information (Etikan, Musa & Alkasim 2016:2). Some researchers referred to it as purpose sampling (Creswell 2014; Palinkas *et al* 2016:534).

The current study employed a non-probability sampling technique. Purposive sampling is a recommended sampling technique for phenomenological research (Bloor & Wood 2011:2). Both purposive and snowball probability sampling were used to select participants who met the following requirements:

- registered at the FULafia in different departments;
- enrolled for second, third or fourth year of study at the FULafia;
- own and use mobile technologies which provide them with Internet access; and
- have experience of accessing information online via mobile devices.

Purposive sampling was used to get participants who meet up with the requirement for the study. In order to deal with the difficulties the researcher encountered in getting participants who meet with the requirement of the study, the researcher also employed snowball sampling. With this sampling method in mind, she, following interviewing them, encouraged participants to invite their friends and peers in their year groups who complied with the sampling requirements to participate in the study.

Seven participants were taken from each year group to give a total of 21 participants. This was in order to have a uniform representation from each year group. The researcher with little help from two library staff members approached users in and outside the library who complied with the participation requirements and who were willing to participate in the study and to be interviewed. The staff members only assisted with the recruitment of participants. The researcher was the only person who conducted interviews..

Table 5.2 provides a profile of the participants and shows their respective years at the institution (full-time registered students at the FULafia for academic session 2018/2019).

**TABLE 5.2: PARTICIPANTS' PROFILE**

<b>Participating library users</b>	<b>Department</b>	<b>Years at the university</b>
A	Sociology	2 Years
B	Social Work	2 Years
C	Political Science	2 Years
D	Sociology	2 Years
E	Political Science	2 Years
F	Philosophy	2 Years
G	Computer Science	2 Years
H	Biochemistry	3 Years
I	Economics	3 Years
J	Economics	3 Years
K	Mathematics	3 Years
L	Computer Science	3 Years
M	English	3 Years
N	English	3 Years
O	Philosophy	4 Years
P	History and International Studies	4 Years
Q	Philosophy	4 Years
R	Botany	4 Years
S	Botany	4 Years
T	Computer Science	4 Years
U	History and International Studies	4 Years

#### **5.5.4 Interviews**

An interview is a direct verbal exchange between the researcher (interviewer) and the participant (interviewee) with the hope of getting vital information (Brinkmann 2013:1). Interviews can also be viewed as a two-way conversation in which the researcher asks the participant certain questions in order to collect data (Maree 2007:87). Rubin and Rubin (2005:4) describe a qualitative interview as a gentle conversation in which the researcher guides the participant in a long dialogue. Interviews bring out the essence of other individuals' stories by making it known (Seidman 2006:9). In addition, Schostak (2006:54) opined that an interview gives an in-depth view about the phenomenon as interpretations are based on the participant's opinion. This comes as a result of the interaction between the researcher and the participant which can have a varying duration (Young, Rose, Mumby, Benitez-Capistros, Derrick, Finch, Garcia, Home, Marwaha, Morgans, Parkinson, Shah, Wilson & Mukherjee 2018:11). Interviews are meant to produce knowledge and are not conducted just for the sake

of having conversations (Denzin & Lincoln 2018:1003). There are different types of interview in research, which include the following:

- **Structured interviews:** In this type of interview, the interviewer has a list of predetermined, closed-ended questions which is presented to all the participants (Salmons 2015:3). Structured interviews lead to answers that can be compared to others from various participants because exact questions are read out by the researcher to different participants (Brinkmann 2013:20; Young *et al* 2018:12).
- **Semi-structured interviews:** This type of interview is focused on obtaining descriptions of the life world of the participant to interpret the meaning of the described phenomena (Brinkmann & Kvale 2015:6). The interview is made up of a set of premeditated topics drawn to elicit more explanations by the participants and is very flexible unlike the structured interviews (Salmons 2015:3; Showcat & Parveen 2017). Using semi-structured interviews enables the researcher to probe more into understanding a phenomenon because it gives room for comparison between interviews (Young *et al* 2018:12).
- **Unstructured interviews:** The conversation between the interviewer and the participant is controlled by the responses from the participant as the interviewer asks questions based on each reply (Salmons 2015:3; Young *et al* 2018:12). The interview here is more in the form of a participant narrative; in this regard the researcher does not prepare specific questions but only facilitates the interview by listening without interruption (Brinkmann 2013:20). However, this type of interview requires many skills from the researcher as it takes a considerable time to collect the data (Brayda & Boyce 2014:320).

The current study used semi-structured interviews to collect the data. This supported the researcher in having in-depth discussions with the participants about their lived experiences while using mobile-based social media. This is because semi-structured interviews can facilitate the unfolding of the participants' shared experiences and give room to follow up with questions that can provide more description of the participants' views and opinions with regard to the phenomenon. Also, in-depth interviews are used in phenomenological research to collect the data (Creswell 2007:60, 61). This is

because in-depth interviews serve in uncovering the participants' lived experiences and the meaning they attached to those experiences (Seidman 2006:9; Wallace Foundation 2009:3). The researcher was wholly involved in the interviews as a human instrument in the data collection process. For this purpose, she listened to the participants' lived experiences of using mobile-based social media.

#### 5.5.4.1 Interview schedule

An interview schedule is a guide that consists of a prepared set of questions meant to assist the researcher or interviewer in collecting data by probing the participants for their lived experiences (Cleverism 2019; Fowler 2004:2). The interview schedule involves primary open-ended questions which were formulated to generate a response from the participants (McIntosh & Morse 2015:4). The interview schedule helps to coordinate the line of inquiry to prevent digression from the topic in such a way that the questions can be asked verbatim in an orderly manner (Fowler 2004:2).

In the current study, a semi-structured interview schedule was used to elicit more discussion and explanation from the participants about their lived experiences of using mobile social media technologies to access information. As suggested by Denzin and Lincoln (2018:1003), researchers who use a semi-structured interview schedule to collect data have the opportunity to introduce new questions to the conversation. This ability then enables them to unearth more insight into their participants' lived experiences. In this regard, the researcher was able to allow the participants to freely share their experiences of using mobile social media technologies to search for information either from the library or from the Internet. With this opportunity in mind, the interview questions captured in the interview schedule were organised in terms of their complexity.

The interview schedule consisted of 12 questions of which the first two questions were focused on acquiring demographic information pertaining to the department in which the participants were studying and their year of registration. These questions were followed by questions on the kind of phone the participants had and whether they used their phones to search for information. The rest of the questions intended to prompt the participants to freely share their experiences of using their phones and mobile apps

to seek for information that would support their information needs. The interview schedule appears in Appendix D.

#### 5.5.4.2 Administering of interviews

Several methods can be followed to administer an interview. These methods vary from online, face-to-face and telephone interviews (Opdenakker 2006). As suggested by Guerra-Castaneda, Meneae and Ojeda-Vargas (2017:2), phenomenological interviews are open discussions between two people. Therefore, the interviews for the current study were face-to-face interviews. The interviews were conducted in offices at the FULafia library's permanent site, in an office off-campus, and in one instance in a participant's living quarters. The interviews progressed as follows:

- Background information. In order to create a friendly atmosphere between the researcher and the participants, the researcher first introduced herself, and gave the title of the research and the reason why she was conducting the research. This was to build rapport with the participants, so that they could feel comfortable during the interviews.
- Opening. The researcher expressed her appreciation to the participants for honouring the invitation to participate and for partaking in the study. She then gave an indication of the expected duration of the interviews. The participants were reassured that their participation would remain confidential, i.e. their names would not be revealed in the study but they would be assigned numbers, and that their privacy would be respected. The participants' attention was drawn to the focus of the topics under discussion. They were also given the opportunity to ask questions to clarify issues of concern before the interviews started.
- Interview questions. The participants were first asked to indicate their individual departments and their year of study or registration. They were then asked which type of mobile devices they own. Then the participants were asked whether they have accessed information from the Internet using their mobile devices. This was in line with the research questions. The participants were questioned to compare their experiences using their mobile devices to the use of computers. The participants also had to indicate the types of mobile app they

used and their lived experiences of using them. They were requested to air their views and opinions about mobile social media apps, and share their personal experiences of using them while searching for information. The participants were required to describe the process they go through while seeking and accessing information online via their devices and from the library webpage. The challenges they faced when using mobile social media technologies, and their preferences, suggestions or recommendations for the library were also explored.

- Closure. The participants, before leaving, were gently probed into sharing additional thoughts on the phenomenon. They were also granted the opportunity to ask the researcher for further clarification on the study.

The interview ended with words of appreciation to the participants and a request to call or write to them for follow-up questions should the need arise. The interviews were audiotaped using an audio recorder (Bell voice recorder DVR5005), in conjunction with an iPhone 6s plus voice recording as a backup. The recorded interviews were transcribed by the researcher word by word. Using a 16 GB memory stick, the recorded interviews were uploaded to the researcher's Google Drive for safekeeping and storage. The researcher, using an earpiece (Oppo F11 Pro Android), listened to each interview repetitively for accuracy with each interview lasting between 40 to 45 minutes for transcription purposes. The first 10 minutes of the interviews were not captured as this time was used for the introduction and explanation purposes. All the interviews were conducted in English, as this was the official language used by the participants. However, not all the participants were fluent in expressing themselves in English, and most participants resorted to the use of slang language. Since the researcher resides in the same region, she was able to understand them.

The researcher encountered some challenges while transcribing the interviews. One such challenge pertained to a high noise level which was captured on the audio recorder. The researcher used the backup recording on the iPhone 6 plus for clarity as well as personal notes that were made during the interviews. In addition, some participants were nervous about having the interviews recorded using an audio recorder despite reassurances from the researcher.

### **5.5.5 Reliability**

Reliability in research means that the data collection instruments are stable and consistent even when administered at multiple times (Strang 2015:70). According to Brink (1993:35), reliability reflects the ability of a research method to yield repeatedly the same results over different periods through consistency in the measurement of the analytical procedures. This means that research should yield the same result when repeated over time. Also, reliability refers to “the extent to which results are consistent over time with an accurate representation of the total population under study” (Joppe 2006). Reliability is closely related to or replaceable with dependability (Golafshani 2003:601; Lincoln & Guba 1985:300; Seale 1999:468).

In qualitative research, reliability deals with how consistent research is across different other research (Creswell 2013:201). A means to ensure reliability in a study is to minimise errors and biases (Singh 2014:83). The necessary reliability steps and procedures that are associated with a phenomenological research design were applied to ensure the reliability of this study. These include the use of a semi-structured interview schedule, and the researcher conducting all the interviews and the data transcription personally.

### **5.6.6 Validity**

Validity in qualitative research is the act of checking for the accuracy of the research findings using certain procedures (Creswell 2013:201). This involves the suitability of the research tools, the processes as well as the quality of the data (Leung 2015:325). Validity also deals with the truthfulness in the research findings (Brink 1993:35; Le Compte & Goetz 1982:32). Therefore, when the methods applied and the research findings meet the required level of integrity, it is said to be valid (Noble & Smith 2015:34).

The term validity has its roots in quantitative studies which have a positivist tradition. Therefore, the validity test and measures cannot be applied to a qualitative study (Golafshani 2003:599; Noble & Smith 2015:34). This is because qualitative research



uses a naturalistic approach which seeks to understand phenomena in a real-world setting (Patton 2002:39). However, the validity of the findings can be determined through terms such as credibility, truth value, applicability, transferability, neutrality, confirmability, consistency, and dependability (Brink 1993:35; Golafshani 2003:601; Lincoln & Guba 1985; Toma 2011:11).

#### 5.5.6.1 Credibility

Credibility refers to the degree to which the research represents the actual meanings of the research participants, or the “truth value” (Lincoln & Guba 1985; Moon, Brewer, Januchowski-Hartley, Adams & Blackman 2016). In other words, the participants’ true representations of their lived experiences should be presented accordingly. Research is said to be credible when its purposes and research decisions align with the researchers’ decisions (Moon *et al* 2016). Some strategies identified for demonstrating credibility in research include data and method triangulation, peer debriefing and member checking (Korstjens & Moser 2017:2; Moon *et al* 2016). All the steps taken in the course of the research are made explicit so that other researchers can replicate the study. Informal member checking was carried out after every interview by summarising the interview with the participants to confirm whether the researcher understood the participants correctly and the recorded data were in accord with the participants’ descriptions.

#### 5.5.6.2 Confirmability

The concept confirmability refers to the neutrality or objectivity of the data so that two or more people can reach an agreement on the data’s relevance or meaning (Im & Chee 2006:6). The results in research should be clearly linked to the conclusions in ways they can be followed as a process and can also be replicated (Moon *et al* 2016). As observed by Moon *et al* (2016), a researcher needs to report on the steps taken to manage and reflect on the effect of their philosophical preferences to ensure that the results are based on the participants’ experiences and preferences. In other words, the researcher must ensure her ideas or beliefs do not affect or influence the participants’ opinions. In the course of all the interviews, the researcher employed “bracketing” as a measure to ensure confirmability. By bracketing her thoughts and

ideas concerning the phenomenon under study, the researcher was able to open her mind to the participants' descriptions and experiences regarding their use of mobile social media technologies in information seeking and use. In this manner, the researcher ensured that she remained neutral while collecting the data.

#### 5.5.6.3 Dependability

Dependability is said to be the stability of data over time in different conditions (Elo, Kaarianen, Kanste, Polkki, Utrainen & Kyngas 2014:2). Dependability is viewed also as the consistency and reliability of the research findings and the degree to which research procedures are documented, allowing someone outside the research to follow, audit, and critique the research process (Moon *et al* 2016; Polit, Beck & Hungler 2006; Sandelowski 1986; Streubert 2007). The researcher stored the original recorded interviews and the original transcripts on Google Drive. This is to serve as a form of tracking the research process which could be traced in the near future.

#### 5.5.6.4 Transferability

Transferability, a type of external validity, refers to the degree to which the phenomenon or findings described in one study are applicable or useful to theory, practice, and future research (Lincoln & Guba 1985; Moon *et al* 2016). Transferability can be ensured through a thick description (Korstjens & Moser 2017:2). This process involves giving a detailed description of enquiry (Anney 2014:278). In the present study, the researcher gave an in-depth description of all the research findings, even citing some extracts from interviews.

#### 5.5.6.5 Truth value

Research should uncover and display a single reality, however, multiple realities exist in which case a researcher's personal experiences can influence the findings from the participants' viewpoints (Lincoln & Guba 1985:294; Noble & Smith 2014:34; Seale 1999:467). To ensure the truth value of the study and to avoid the researcher's personal experiences from influencing the findings, clear and accurate descriptions of the participants' lived experiences were given.

#### 5.5.7 Rigour

Rigour is defined as the state of being strictly precise, exact or careful (Cypress 2017:254). In qualitative studies, rigour is valuable in constructing knowledge and is best examined by exploring potential sources of bias (Carey & Asbury 2016:35). Rigour in a qualitative research approach is based on the research design, the researcher's competence and the research paradigms (Jason & Glenwick 2016:17). Qualitative research is widely renowned to be ethical because of the appropriate and rigorous methods (Hammarberg, Kirkman & De Lacey 2016:499). As pointed out by Moustakas (1994), bias in research is reduced through reflectivity. According to Moustakas (1994), this is because phenomenal experiences are clarified and expanded in meaning through reflective processes. Moreover, reflectivity is a thoughtful and insightful process and in this regard gives room for observation and an understanding of researchers' bias (Carey & Asbury 2016:34).

Before the onset of the interviews, rigour was achieved through the researcher's putting aside all she knew about the use of mobile technologies when accessing information online and some possible challenges. This was to fully open her mind to the participants' description of their lived experiences of the phenomenon. Rigour was also established during the interviews through the detailed clear steps taken by the researcher to remove any preconceived ideas about the use of mobile-based social media. These steps to ensure rigour are in line with reduction in descriptive phenomenology. The researcher did not try to influence the participants' views during the interviews. She also did not tamper with the audio recordings of the interviews to suit her interpretations. The descriptions of the participants' lived experiences were

subsequently made available to the participants to ensure the clarity of their descriptions. This report will also be made available to other researchers who intend to replicate the study.

## **5.6 DATA ANALYSIS**

Qualitative data analysis deals with the process of describing, classifying and interconnecting phenomena with the researcher's concepts (Graue 2015:8). As Creswell (2007:37) explains, qualitative data analysis is normally inductive, using established patterns and themes. Therefore, according to Rubin and Rubin (2005:201), data analysis involves classifying, comparing and combining material from the interviews to extract meaning, or to identify patterns in the data for coherent description. The themes that the researcher needs to identify are derivatives of common essences shared by the participants with researchers that are carefully collected during phenomenological studies (Blundell 2015:76). The themes enable the researcher to extract the essence of the participants' meaning to the phenomenon being investigated (Miles, Huberman & Saldana 2014). The general purpose of the phenomenological study is to understand and describe a specific phenomenon in depth and reach at the essence of participants' lived experience of the phenomenon (Yuksel & Yildirim 2015:3).

In order to keep with the research design selected for this study, the data analysis method was based on phenomenological guidelines. For this purpose, Butler-Kisber's (2018:64) adapted version of the descriptive phenomenological methods of Colaizzi (1978) and Rieman (1986) was used. This version involves a five-step process which has been used to identify the essence of the participants' lived experiences of the phenomenon under study. The five-step process is as follows:

- Read and reread the field texts to get a feeling for what is contained in them.
- Extract significant statements from the field texts that relate to the phenomenon under study and eliminate duplications.

- Formulate the meanings on the significant statements that relate to the participants' context and highlight hidden meanings, being careful not to lose the link to the significant statement.
- Cluster the formulated meanings into a series of themes to reveal common patterns across experiences.
- Write a detailed exhaustive description that reflects the participants' ideas and feelings about each theme.

### **Step 1: Read and reread the field texts to get a feeling for what is contained in them**

After carefully transcribing the participants' interviews verbatim, the researcher read through each interview while bracketing her preconceived knowledge of the phenomenon. The reading was repeated numerous times. This was to gain a better understanding of the participants' lived experiences of the phenomenon. All the transcripts were reread to have a feeling of the participants' experiences and to ensure an understanding of their descriptions. In addition, the researcher became familiar with the data collected from each participant.

### **Step 2: Extract significant statements from the field texts that relate to the phenomenon under study and eliminate duplications**

The researcher examined the transcripts line after line before extracting significant statements. The significant statements included phrases, words and sentences that were related to the phenomenon. The significant statements were copied to a fresh page and numbered. This was repeated with all the transcripts. Extraction, as suggested by Colaizzi (1978:59), can be modified to bring out its general meaning.

### **Step 3: Formulate the meanings on the significant statements that relate to the participants' context and highlight hidden meanings, being careful not to lose the link to the significant statement**

After extracting the significant statements from participants' transcripts, the researcher painstakingly created meaning out of the significant statements. The researcher ensured that the links between the created meaning and the significant statements

were not lost through thorough checks to ensure the meaning bears close relation to the statements.

#### **Step 4: Cluster the formulated meanings into a series of themes to reveal common patterns across experiences**

The researcher organised all the formulated meanings into a cluster of themes. To ensure the themes were closely linked to the participants' original transcribed interviews, the researcher carefully checked each clustered theme to validate the themes. The process involved going back and forth between the original transcriptions, the significant statements and the formulated meanings. The formulated meanings were grouped into theme clusters which were compared to the data from the participants' interviews to ensure they contained the essence of the participants' experiences.

#### **Step 5: Write a detailed exhaustive description that reflects the participants' ideas and feelings about each theme**

The researcher, at this stage, used all the emerging themes to define an exhaustive description of the participants' use of mobile social media when seeking task-related information. All the related information of the use of mobile-based social media technologies was combined and described.

## **5.7 CONCLUSION**

The focus in this chapter was on the research methodology that was followed in the current study. For this purpose, different research approaches and designs were discussed and the reasons for opting for a qualitative study and a phenomenological research design were explained. The different steps taken in the data collection process were discussed. These include the sampling techniques that were employed, the data collection through the interviewing of 21 undergraduate users of the FULafia library and the data analysis. The findings regarding the users' information-seeking

behaviour and experiences when using and searching for information via mobile social media technologies are discussed in the next chapter.

## CHAPTER SIX

### RESEARCH FINDINGS FROM THE DATA ANALYSIS

#### 6.1 INTRODUCTION

This chapter focuses on the presentation of the research interview findings. The data gathered from the interviews were analysed and sorted into research themes that are consistent with the research objectives. The research objectives include to

- a) acquire a better understanding of the factors that influence students' information behaviour when using mobile technologies for information,
- b) identify the types of social media technology FULafia student library users use to ensure that the library uses the same technologies for service delivery purposes,
- c) understand the influence the availability of mobile technologies has on users' information behaviour, and
- d) determine the potential information barriers that prohibit information-seeking activities on mobile-based social media technologies by library users of the FULafia, North Central Nigeria, to seek information in the library.

#### 6.2 FACTORS THAT INFLUENCE STUDENTS' INFORMATION BEHAVIOUR WHEN USING MOBILE TECHNOLOGIES

Mobile technologies play a major role in users' information behaviour (Singh & Nikandia 2017:158). As shown in section 3.6.1, students use their mobile devices to search for information that is relevant to their studies. In line with the research objective to acquire a better understanding of those factors that influence participants' information behaviour while using their mobile technologies, the following question was asked: What are the factors that influence your information needs and seeking behaviour while using mobile technologies when you seek information?



The themes discussed below emerged from the participants' responses to factors that influence their information behaviour when using mobile technologies to seek information online.

### **6.2.1 Privacy**

Privacy, as discussed in section 3.6.2, is a state of being alone or keeping one's personal matters secret (*Cambridge dictionary online 2020*, sv "privacy"). Participant 3 felt that by using his mobile device to seek information granted him a sense of privacy because he could easily delete his search history without anyone seeing it. He explained his view when he said, "It's just you and your phone whenever you want to do anything. But your computer is more exposing, mobile phone you can clear your chat history or what you've done.'. His sense of privacy is in line with Nicholas' (2014:5) observation that the use of a mobile device does grant some sense of privacy.

Participant 3's comment is in stark contrast to what was reported by Khan, Abbas and Al-Muhtadi (2015:379) and Barth, De Jong, Junger, Hartel and Roppelt (2019: 56). According to them, users' privacy is at a greater risk when they use their mobile devices. The reasons they give is that mobile device users are exposed to different online threats and the possible loss of data through theft and leakage. This is because, according to Langone (2018), deleting one's mobile history does not mean that Google does not have a record. They therefore call for extra vigilance on what one does online. Users are at risk of losing their privacy which comes with the use of mobile technologies. However, it is not Google alone that has records of users' online behaviour while using their mobile devices. In their study, Alsaleh *et al* (2017:14) discovered that users who share their location and grant permission to some of the apps they use expose them to privacy threats.

### **6.2.2 Google**

The study participants seemed to view "Google" as the term to be used to describe their online information-seeking behaviour. This is because most of the participants described their online information-seeking activities as "googling". Most of the

participants said they “google information”. According to one of the participants (Participant 7), “you can google anything and get instant access.” Participant 6 simply said that he “googles a lot” when asked if he uses his mobile device for searching online. In terms of his information search experience, Participant 1 noted that “Google always gives different search results making it hard to get right information”. Despite being termed as hard for getting information, Participant 11 explained that at the end of the day Google gives the right information. This is supported by Kovvali (2019) who opined that Google serves as a useful source of knowledge for students.

### **6.2.3 Flexibility**

Mobile technologies have brought flexibility to the everyday lives of users in that the users can search for information when and where they need to. Most of the participants acknowledged using their mobile devices to accomplish tasks such as class assignments, seeking everyday life information, and for conducting research. Participant 1 described this as follows: “I use my mobile device when I have a problem, and when I cannot find a particular topic in library.” Participant 15’s comment concurs with that of Participant 1. According to her, she uses mobile technologies “when I need information and there are no books readily available for me, I go online”. These statements suggest that users revert to their mobile devices when the available printed sources in the library do not meet their information needs. Mobile devices seem to be useful when users need to seek alternative information to support their information needs.

Some of the participants who live far away from the university library were able to accomplish tasks using their mobile devices without having to travel from their living quarters to the university library. As Participant 7 explained, his mobile device offers him instant access to the relevant information and saves him the stress of visiting the library. Participant 9 had a similar view and explained that mobile devices assist library users with assignments and liberate them from the stress of having to visit the university library. The convenience of accessing information on their mobile device makes it easy for the students to engage in active learning and information seeking from any location (Ocran 2017). This view is supported by Mamud and Oyewo

(2015:70) who noted that a large number of students consult their mobile devices for academic tasks. They found that mobile devices can be readily used at any given time owing to the constant availability in the device owner's grasp. The convenience that comes with the use of their mobile devices can translate to Participants 1 and 9's sensorimotor structures (i.e. their willingness or motivation to use their mobile devices) and their cognitive structures (i.e. having the knowledge and skills to use their devices), in realising their need for information.

#### **6.2.4 Affordability**

Affordability, as seen in section 3.6.1, refers to the ability to afford or buy something at a modest price. As shown in section 2.5.2, affordability is an element of the sociocultural context and in this regard influences the use that is made of mobile devices to seek information. Within the context of this study, affordability pertains to the price the participants need to pay for data and for their mobile devices. Low data prices and the modest cost of mobile devices make it financially viable for the participants to use their mobile devices when seeking information. When asked about their experiences of accessing information through their mobile devices, Participant 10 noted, "It's been easy . . . very fast you don't need to spend much money. With NG100 you can go online and get information." Participant 10's comment implied that information seeking using a mobile device is financially viable. The only requirements are that the participating students have Internet-enabled mobile devices and can get affordable data which would then allow them to browse for information. Participant 17's view concurred with that Participant 10 when he said, "mobile phone is faster and cheaper than using personal laptop." Participant 9 equally thought that data consumption is more affordable while using a mobile phone than a personal computer.

The three participants' views pertaining to affordability concur with the view of Azadeh & Ghasemi (2016:28), and Soleymani, Garivani and Zare-Farashbandi (2016:192) on the way in which affordability can influence users' information-seeking behaviour and their ability to access information. Users are motivated to use information resources when the costs involved in terms of time, money and effort are low (Borlund 2009).

This view is also supported by Stork, Esselaar, Chair and Khan (2016:2) who posited that mobile Internet saves cost unlike information access through a computer.

### **6.2.5 Mobile Memory**

The discussion in section 3.3 showed that the memory capacity of a mobile device is an important device-related factor affecting users' information-seeking behaviour. A few of the participants were of the view that a mobile device's memory size determines how fast the device processes an information search. For example, Participant 9 claimed that mobile phones with larger RAM are faster. His claim concurs with an observation made by Ferron (2017) who noted that the RAM capabilities of a mobile device determine the access speed of the phone. According to him, the larger the phone's RAM capability, the faster the device. However, Ferron (2017) also noted that this does not apply to all phones, as mobile device manufacturers manage memory differently in their designs. Participant 12's views concur with Ferron's observation of memory devices. He thinks that the device brand rather than the devices' memory determines how fast a mobile phone can be. He explained this as follows: "Samsung Android is better than the rest of the Android like Tecno and Infinix . . . when compared, 1G RAM of Samsung is still be faster than other brands with claims of 2G RAM." Participant 12's claims also concur with Hildenbrand's (2020) observations that the Samsung Galaxy devices have a more resource intensive interface, which keeps the running of other apps to the minimum and allows the user interface to remain open while using a part of the reserved RAM.

### **6.2.6 Learning Enhancement**

Using a mobile device to search for information enhances academic learning as shown in section 3.6.1. Participant 16 maintained that he gained more knowledge from using his mobile device to seek information as compared to the knowledge he gained during lectures. This view also holds true for Participant 19. According to her, "you may have little idea on something when you go online, and the Internet just broadens your scope." Participant 17 described his experiences of using his mobile device as follows:

Using my phone for searching things online is basically tremendous . . . because it supports my academics. . . . without me using my phone to get things for studies is more like a human being that goes around without blood in his own vein and you know what will happen when you go about without blood in your vein.

These findings endorse Chee, Yahaya, Ibrahim and Hassan's (2017:114) observation that the use of a mobile device in an academic context enhances learning and breaks through educational barriers. However, Gikas and Grant (2013:23, 25) caution that the use of mobile devices can be distractive to learning if it is not properly managed.

### **6.2.7 Mobile Applications**

Mobile apps, as shown in section 3.5, are software that extracts information from websites or resources. The discussion in section 3.5 also identified ways in which mobile apps can support users. These include the use users could make of the different information sources at their disposal to support their information needs. This view is supported by Participant 1's report on her use of different mobile apps to conduct information searches to ensure that her information needs were met. She reportedly used Instagram and Facebook for her academic and entrepreneurial information searches. Mobile apps make information access easy for users through certain features on the mobile device (Khan *et al* 2015:377).

The other participants also identified apps that they use for various purposes. The purposes for which they use the apps include:

#### **a. News apps**

Participant 5 gets his news and information updates on his mobile device through news apps. He specifically uses CNN, BBC and Channel Tv. According to him, the news apps assist him in easily verifying fake news that circulates on social media.

Participant 5's use of news apps on his mobile device supports Westlund's (2015:2) observation that mobile devices are becoming a major source of online or digital news.

b. Banking app

Participants 6, 7, 13, 14 and 15 use banking apps to conduct banking transactions and to transfer mobile airtime. Therefore, online banking apps enhance the participants' use of online banking services as suggested by Pankomera and Van Greunen (2019:22) and Muñoz-Leiva, Climent-Climent and Liébana-Cabanillas (2017).

c. Note-taking app

A few of the participants mentioned their use of mobile apps such as Writer, Presentation and Spreadsheets (WPS) Office, Quick Office and Microsoft Word. According to Participants 6, 4, and 14, these apps enable them to type their assignments, to copy and to edit and also to store their lecture notes on their mobile devices.

d. File-sharing app

Some of the participants mentioned using file-sharing apps such as Xender, which Participant 10 described as easy to use, evolutionary and faster than Bluetooth. Both Participants 4 and 10 claimed that it is common practice to share documents, files and photographs between mobile devices or between a mobile device and a personal computer.

e. Educational apps

The use of mobile apps such as dictionaries, encyclopaedias, reading apps and language translation apps were described by Participants 2, 3, 7, and 17 as being very useful for their academic tasks. Participant 3 installed a French language translation app on his mobile device to enhance his learning. He said, "I love French, so I have French mobile apps that help me.". Participants 2 and 7 downloaded dictionaries to aid their studies. Participant 17 downloaded a subject encyclopaedia which is relevant

to his field of study, an encyclopaedia of philosophy. He uses the encyclopaedia to search for information to satisfy his study-related information needs. Participant 16 reported “there are some books that cannot be downloaded easily online, they do charge money. So, you can easily download books free of charge using the pdf drive”.

#### f. Games

Game apps can be downloaded onto mobile phones for free from any app store, depending on the brand of the phones as not all phone brands support the same app stores. Participants 2, 3, 7, 8, 9, 11 and 14 acknowledged having games on their mobile devices for leisure purposes. Participant 14 said, “I use game application to ease off.” In turn, Participant 8 uses games to while away the time as a form of recreation. Only Participant 9 identified a specific game he has on his mobile device, namely, “Temple Run”. This reporting of games as leisure activity among the participants endorse the findings in Lepp, Li, Barkley and Salehi-Esfahani’s (2015:210) study which noted that mobile devices allow for leisure-related functions such as playing video games and streaming movies from any location.

### **6.2.8 Users’ Preferences**

*The Free Dictionary* (2020, sv “preference”) defines preference as selecting something over another or the right or chance to make a choice. When asked about their device preferences when they need to choose between using their mobile devices and their personal computers, most of the participants indicated that they preferred using their mobile devices instead of their computers. This is even though some participants pointed out that computers’ processors are superior as opposed to the processors of mobile devices. These findings are different from those reported in a study by Elkins, Hwang, Kim, Manolovitz, Mueller and Owens (2020) which showed a decline in the use students make of their mobile devices. The following section discusses the reasons for the participants’ preferences.

#### 6.2.8.1 Mobile device preference

Some of the reasons the participants gave for why they prefer using their mobile devices include the following:

*a. Portability*

The concept “portability” refers to the ability to be carried or transferred easily from one place to another (*Cambridge dictionary online 2020*, sv “portability”). Participants 6, 9 and 19 noted that the ability to carry their mobile devices everywhere while running different tasks on it makes it their preferred device. Participants 2, 14, 15, and 18 believed it takes a lot of effort to move around with a personal computer as compared to a mobile device. Participant 19 explained that “you can use it on the go, moving from school to the house . . . . But when using the computer, I will need to sit down which confines me to a place”. As Participant 19 explained, using a portable mobile device allows for greater flexibility than her computer as she is able to move around and remain connected as opposed to her personal computer which requires being static and in a certain position. In turn, her explanation endorses the findings by Sung *et al* (2016:252) that the advancement in mobile technologies has made it possible for users to move around with their devices while being connected. In this regard, the use of mobile phones improves learning from anywhere. This is explained by Participant 5: “when you are looking for a certain word or something someone said, you can easily remove your phone from your pocket and search for it.”

*b. Battery life*

The capacity of the mobile device’s battery is better than that of a personal computer. According to Participants 4 and 6 this is because mobile devices have “the ability to store battery power for a longer time”. For instance, Participant 4 claimed that a mobile phone’s battery can last between 6 and 8 hours which is longer than that of a personal computer which can only last for 3 to 4 hours. However, Participant 11 noted that his mobile device’s battery had disappointed him when he was “at the peak of completing a task”. Participant 11’s disappointment was echoed by Participant 16 when he explained, “Virtually issue of battery . . . is a very serious issue. Some Android phones the battery doesn’t stay, they don’t . . . last. And students do make use of power bank, and most power banks spoil the batteries of phones.”



A study by Ferreira, Dey and Kostakos (2011:19) noted that users are often let down by their mobile devices' batteries because of the battery life limitation. In addition, Kaur, Sharma and Arora (2014:292) concluded that mobile devices are limited by their battery life. This seemingly contrasted with the participants' opinions.

### *c. Accessibility*

Accessibility or ease of access as shown in section 3.6.1 has to do with how conveniently users can locate information. Some of the participants reported on the way in which their mobile devices supported them in gaining access to the information they needed. For example, Participant 7 noted, "Information access from a mobile device is quite easy with instant feedback." In turn, Participants 5 and 6 noted that their mobile devices are always available which makes the information they can retrieve while using their devices readily accessible. Participant 3 believed that an Android phone makes information accessible. He reckoned, "It's easy to access if you have an Android . . . smartphone."

Information seeking using a mobile device is easy because the relevant information is accessible. This is according to Participant 20. This participant's views concur with Ebiye's (2015) observation that users prefer to use their mobile devices to seek information and that their preferences are based on the ease of access to information. This is contrary to the views of Dunaway, Searles, Mingxiao and Paul (2018:110) and Adepu and Adler (2016) that it can be quite difficult to search for information using a mobile device because of the device's small screen. The reported findings and Ebiye's (2015) observations seem to suggest that the screen size of the mobile device does not act as a barrier to information seeking and use when a choice is made between the use of a bigger screen and the ability to access the required information instantly.

### *d. Time-saving*

Time is an element of context and, in the information behaviour of users, a factor that influences users' decisions to consult or use specific information sources. This was

discussed in section 3.6.1. When compared to the use of a personal computer, mobile devices can provide instant access to information. The user can avoid unnecessary delays of having to start the computer which needs to boot up, to log on and to connect to the Internet before an information search can be conducted. This view was shared by Participant 19. Participant 17 also thinks mobile devices are faster than computers and in this regard saves the user time while seeking information. Shonhe and Jain (2017:14) reported similar findings. They found that mobile technologies enable fast information access thereby saving time. In addition to the time it takes to boot a computer, Ebiye (2015) noted that users who use their mobile devices save time because they do not need to visit a cybercafé or the library to get access to the information they need.

#### 6.2.8.2 Computer preference

A few participants prefer using their computers rather than their mobile devices to search for information. Their preferences are based on the following reasons:

##### *a. Unlimited information*

The use of a personal laptop or desktop enables access to information in all formats unlike the mobile device which, owing to technical reasons, sometimes restrict access to online information that is available on some sites (Participants 8 and 20). Participants 8 and 20 also noted that a personal computer can allow users access to information from any page on the Internet. Findings from a study by Lee and Song (2015:158) revealed that software compatibility and screen size could limit information access on a mobile device, unlike when searching on a desktop or a personal computer. Their findings explain the “technical reasons” for why a mobile device could restrict access to information, which were suggested by Participants 8 and 20.

##### *b. Faster information access*

Participant 18 thinks that the speed with which an information search can be conducted when using a personal computer is faster than conducting a search on a mobile device. This view is supported by Participant 15 who explained that the internal

capacity of the computer causes it to process information faster than the mobile device. Participant 12 says, "I love my computer because it is amazingly so fast." This could be attributed to the fact that most websites were created for computers and in this regard easier and faster access is possible while using computers as opposed to using a mobile device (Clark, Rowland & Jamali 2013:1311).

*c. Better display*

Personal computers offer larger fonts and a better display of information when compared to mobile devices (Participants 7, 8 and 9). As Participants 7, 8 and 9 explained, a personal computer gives bolder information because of its wider screen and it offers better presentation. Therefore, a computer makes it more comfortable to view and use the information that was retrieved. Their views endorse Bowler, Julien and Haddon's (2018) view that serious information seeking is mostly done on computers while fast and easy searches are done on small mobile devices. The reason they gave was that the small screen size of a mobile device can be stressful on the eyes when used for longer periods.

*d. Multitasking*

Multitasking involves the simultaneous execution of two or more tasks (*Cambridge dictionary online* 2020, "multitasking"). According to Participant 10, multitasking is possible and easy when using a computer. As he explains, this is because one can perform several activities such as watching a video and typing while still conducting an online search. The simultaneous performance of different activities does not affect or disturb the computer's normal functions. However, it is almost impossible to multitask when using a mobile device because, according to Participant 9, the performance of multiple tasks on a mobile device might cause the screen to hang (freeze). The ability to multitask is important to most information users. Spink, Alvarado-Albertorio, Narayan, Brumfield and Park (2007:178) are of the view that multitasking forms part of human information behaviour as users handle multiple tasks in the search process.

#### *e. Keyboard*

The well-spaced and arranged keyboard on a computer makes typing relatively more comfortable and easier than on a mobile device (Participant 10). Contrary to this finding, Participant 14 is of the view that it is much slower to type on a computer than on a mobile device. This is discussed in section 3.4.2. The keyboards on mobile devices, especially smartphones, are virtual QWERTY keyboards and need to be used on the devices' touch screen. This makes typing quite tasking and slow as compared to typing on computer keyboards.

#### *f. Connectivity*

Participant 11 believed that Internet connectivity is faster on a computer than on a mobile device. Participant 12 supported this when stating “the Internet on my computer system is very fast; I can download up to like 780G quality videos”.

#### 6.2.8.3 Summative notes

Based on their experiences of using their mobile devices to seek for information, the participants provided the following most important reasons: flexibility, affordability, enhancement of learning, mobile memory, apps, portability, accessibility, and time-saving. However, some characteristics of the mobile devices such as the battery durability, privacy using the device, network failure, and low signals can also challenge the use they make of mobile devices. The listed challenges prompted some of the participants to rather use their desktop computers. The reasons for this preference include a better screen display, unlimited information access, online speed, the ability to multitask while engaging in other activities on the system, and better and easier keyboards for typing.

### **6.3. SOCIAL MEDIA USE**

Social media connect library users to the library from whichever location (Mabweazara & Zinn 2016:1). When asked about the type of social media used, the participants first provided the researcher with an explanation of what they understood with the concept

“social media”. Their explanations and descriptions of social media include the following:

- Social media “is a means of interacting, by way of interacting you are socialising with people basically not living within the same geographical location” (Participant 9).
- “Social media is fun . . . although it is a two-sided coin with positive and negative parts” (Participants 19, 9).
- Social media can be very interactive because information could easily be transferred (Participants 1, 14). “In addition, one can get to socialise with people far away, get to know what is happening in their area and you can also inform them about the events occurring around you” (Participant 14).
- Product advertising and communication have become easier (Participants 9, 10, 1). “Using social media, users can pass across vital information not disclosed in classes to their different forums like year groups” (Participant 16).
- “Social media like the name implies is for social activities and place to easily pass information across” (Participant 14).
- “Social media is a form of distraction when reading for studies from the mobile device because you get distracted especially when messages comes from a person you need to attend to immediately” (Participant 16).

All the participants acknowledged using different types of social media. The different social media apps used by the participants are tabled in Table 6.1.

**Table 6.1: Types of social media application used by participants**

	<b>Social media type</b>	<b>Participants</b>
1.	Facebook	2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21
2.	WhatsApp	2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 18, 20, 21
3.	Instagram	1, 2, 7, 8, 9, 11, 12, 18
4.	Telegram	9, 12
5.	Twitter	2, 3, 8, 12
6.	YouTube	4, 6, 13, 16
7.	Messenger	21

8.	Wikipedia	4, 9,14
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An analysis of the information captured in Table 6.1 shows the participants used Facebook, WhatsApp, Instagram, Telegram, Twitter, YouTube and Messenger. Of all these, WhatsApp appeared to be the most popular, followed by Facebook, whereas Messenger and Telegram seemed to be the least popular.

### 6.3.1 WhatsApp

WhatsApp, as discussed in section 4.5.4, is an instant messaging app which promotes social networking by enabling interaction among peers, community members or other groups of people. Almost all of the participants acknowledged using WhatsApp on their mobile devices. Participant 20 felt WhatsApp is a lot easier to use than the other apps as it has a friendly interface and instantly notifies the user when a message comes in. Participant 9 thought WhatsApp is the fastest and the most popular social network app. He said, “virtually everybody uses it.” He further added that WhatsApp is very efficient as it saves credit (airtime), enables video calls, the transfer of different files and the advertisement of goods. Participant 15’s opinion supported that of Participant 9 who reported that WhatsApp is fun, faster and cheaper than a traditional SMS. Participants 6 and 13 believed WhatsApp is a good medium for communication via chats. In turn, Participants 4, 7 and 8 described having created a WhatsApp group for their colleagues in their respective departments to facilitate communication among themselves, to send notifications on new lecture schedules and to share lecture materials. Participant 8 reported similar behaviour. She felt it was compulsory to check their WhatsApp group daily in order not to miss important information.

### 6.3.2 Facebook

Facebook, as shown in section 4.5.1, serves as a medium through which people can connect with one another. Participants 5, 7 and 13 have a preference for using Facebook because it helps them to connect with friends they had not seen for a long time or with whom they had lost contact, and also to chat with them without using airtime data. This view was supported by Participant 15 who believes using Facebook beats using SMSs. Participant 6 specifically claimed using Facebook to read good and

bad posts. For Participant 18, Facebook boosts information sharing even while working.

Facebook allows users to create pages or groups. Group pages were created by the FULafia for its students and are managed by the students. All the participants acknowledged to relying on the FULafia's Facebook pages, namely, FULafia Diary, FULafia Gist, and FULafia Entertainment. One of the reasons the participants gave was that vital school information with current events in and around the university are shared on these pages. They indicated that students can access information that is exclusively available on these Facebook pages, gossip and read news on what is happening in their environment. They are also able to chat with the page administrators who are also students.

In addition to the university's group pages, the participants also use academic or discipline-related pages that are available on Facebook. These pages serve as educational information sources. As Participants 9 and 10 explained, the page members post questions, and those who are knowledgeable about the specific subject areas respond with relevant instructions on the way in which to solve the problems.

Participant 17 reported using the university library Facebook page which had links to where participating students could access books. This means the library created a Facebook page to help students getting access to information.

### **6.3.3 YouTube**

YouTube, as defined in section 4.4.2, is an educational tool for information dissemination. Participant 9 defined YouTube as "an online video streaming site where, if you need a video on anything tutorials, music videos you can always get it".

The participants use YouTube for different purposes which varied from learning the way in which to do something (i.e. a practical purpose), as an information-seeking

resource, tutorials, and entertainment. Participant 13 reported using YouTube for a variety of purposes. According to her, “YouTube, I use it at times for entertainment and also, I use it for assignment purposes. For example, I once used it to search out something pertaining to my project topic. When . . . there, I typed ‘double consciousness in Dubois philosophy’. It showed me everything and not only his own ideas, even other people’s commentaries”.

In turn, Participant 16 explained using YouTube for clarity in his field of study. He noted, “We watch videos . . . as historians there are some information, we will like to see how it happened. So, we do go to YouTube to watch videos of events that has happened in the past which requires lot of data.”

Participants 4 and 6 explained they log onto YouTube specifically to watch tutorial videos uploaded by their lecturers.

#### **6.3.4 Instagram**

Instagram is a mobile photo-sharing app, as shown in section 4.5.3. Participant 1 indicated that Instagram is a very popular app and it is especially used for “communication and . . . selling your products.” This participant also revealed that the platform could harbour scammers: “nowadays people don’t trust each everybody now on because some people might be 419 [a Nigerian term for scammers], it’s not what you see, you get.”

A few of the participants, namely, Participants 2, 7, 9, 11, and 12 also mentioned using the Instagram app. Unfortunately, they did not describe their experiences of using the app.



### **6.3.5 Telegram**

As seen in section 4.5.8, Telegram is a web and also a messaging app that enhances information sharing in different formats. Participants 9 and 12 mentioned using the app for their information activities. Participant 12 reported:

It's very good Telegram. Because I have . . . groups that I am added to, for all programming stuffs . . . they use to send code problems that they have solved with people from around the world . . . like they all interact. I can a post a problem and somebody . . . will like reply maybe if he has solved or if he has had similar problem, he thinks he can solve, or you can work on it together like. He can just tell me okay; this is how it's done. There are like people who have post problems that I have solutions to like codes. All I have to do is like copy it from my laptop and just post it there.

This participant uses Telegram to cognitively enhance his learning and to share information with others on the group. And this can motivate him to keep on using the social network platform.

### **6.3.6 Twitter**

Twitter, as shown in section 4.5.5, is a social networking site with a microblogging app which allows the use of a maximum of 280-character messages. Participants 2, 3, 8, and 12 mentioned using the app to get access to information. Participant 3 reported, "I prefer Twitter out of all, because with Twitter I see information, a lot of information especially from politicians. I follow most of them and celebrities. And football, I love football. I follow my club, Liverpool."

### **6.3.7 Wikipedia**

Wikipedia, as mentioned in section 4.5, is an example of a wiki combined with an encyclopaedia. It is created and generally edited by willing individuals worldwide (Wikipedia 2020). A few of the participants described their experiences using this

platform. Participant 9 finds Wikipedia a good source of information pertaining to class assignments. The reason he gave was that “most questions, most of the assignments are found on Wikipedia.com. I think most of the researches now and assignments are done online”. Participant 2 shared the same view when he said, “if given any question that you don’t understand, you [can] check Wikipedia, a lot of things are there.” Participant 14’s comments reflect his concerns about the volatile nature of Wikipedia information. He said that their lecturers “will tell us, these things we are getting are the wrong things, I will quote Wikipedia. Anybody can post things there and people could edit things too . . . Someone could post some wrong things there and you go to get it and before you know you will just be going off what you supposed to do”.

The concerns raised by Participant 14 concur with the findings in Selwyn and Gorard’s (2016:28) study. They found that the majority of undergraduate students rely on Wikipedia as a source of information although it is not generally regarded as reliable source of information. Meishar-Tal (2015:126) echoed these views when she observed that Wikipedia is not wholly accepted by teachers as an information source for learning and teaching.

### **6.3.8 Summative Notes**

It seems as if groups formed on Facebook and WhatsApp play a vital role in supporting the participants’ information activities. Users can derive knowledge from experienced members of groups they belong to on Facebook or Instagram through discussion, debates or posting of questions to their various groups. The users get notifications as well as vital messages on the WhatsApp groups they created or belong to. Unlike the other platforms, YouTube consumes a lot of data as reported by Participant 16. The implication is that using YouTube can be costly, so student users must be adequately equipped with data to access videos there. Therefore, despite the value of YouTube as a learning tool, the costs involved to use YouTube could act as a barrier to the use thereof. Also, some users unknowingly rely heavily on Wikipedia which most academic staff (i.e. lecturers) frown upon. Others, such as Participant 3 is on Twitter to follow news and events from celebrities and sport clubs, while Participant 12 is on Telegram to interact with members of academic group he belongs to.

## **6.4 INFLUENCE OF AVAILABLE MOBILE TECHNOLOGIES ON INFORMATION BEHAVIOUR**

The availability of mobile technologies for information seeking has enhanced information access on mobile devices as shown in section 3.3. Thus, affecting user's information need and seeking behaviour.

### **6.4.1 Participants Information Needs**

Information needs as shown in section 2.7, is a mental process that involves an unconscious need for information. Most participants' information needs arise in the academic context in which they find themselves, such as the tasks they are given to complete, and that are rooted in the participants' cognitive and affective structures. In order to provide for the knowledge gaps the participants experienced when confronted with academic tasks, most of the participants needed to use information sources that were easily accessible. These include sources they could access while using their mobile devices. Some of the participants needed to use the library's resources whereas others needed to consult with their peers using their various departmental year groups on WhatsApp. For example, Participant 7 reported, "when you are having an assignment to do . . . using your mobile phone, you can access it very easy . . . google anything you want, and you get the feedback in a short while." Participant 7's comment is descriptive of the way in which using his mobile device supported him in finding information that would meet the requirements set by his task-related information needs.

In turn, Participants 8 and 10 also seemed to experience feelings of uncertainty. In order to deal with his uncertainty, Participant 8 acknowledged "getting more knowledge about a particular topic in a course". For this purpose, she sought information using her mobile device. In turn, Participant 10 needed to consult with his peers online to acquire a better understanding of the topic. He explained, "there is some group that is on Facebook like for my department . . . we talk about topics that we are discussing class . . . they break it down for us to understand." This need to

have someone explain assignment topics is both a cognitive need for information and a need to deal with feelings of uncertainty.

Some of the participants also experienced some everyday life information needs in which feelings of trust prompted their information needs. For example, fake news and a need to verify the validity of the news motivated Participant 5 to search for information. He said, “if there is any fake news around, someone said something before I accept. I must have to check the validity of what that person is telling me.”

The participants’ various information needs seemed to be prompted by the interplay between the academic context in which they were given tasks to complete, their cognitive structures which are represented by a knowledge gap and their affective feelings of uncertainty and trust. When considering that some participants first relied on social media groups to deal with their uncertainty, their information needs were also influenced by the information sources that were available and the trust they had in the sources they used. This corresponds with the study by Connaway, Dickey and Radford (2011:179) that pointed out that the methods users employ to seek information are dependent on their information needs. This means that whatever situation or context the users find themselves in, influences their choice of information source.

#### **6.4.2 Information Activities**

In section 2.9, it was shown that users can embark on a variety of information activities. The information activities the participants reported on include information seeking, information sharing and collaboration.

##### **6.4.2.1 Information seeking**

Information-seeking activities, as shown in section 2.9.1, have to do with the conscious activities a user who seeks information to satisfy an information need engages in. In this study, the participants’ information-seeking activities are centred on the use they made of their mobile devices and mobile-based social media apps.

The majority of the participants engaged in both everyday life and academic information seeking on social media. According to Participant 5, information seeking and access to information while using social media are relatively easy. Participant 1 shared a similar view and provided the following description of the way in which she sought information on social media using hashtags: “[when] I am searching for something I go to hashtag [for instance] #biochemistry, usually it will give me different types of things I am looking for.” She acknowledged using hashtags in searches on both Instagram and Facebook. Participant 8 also commented on how easy it was to find information on social media. She said using social media is “in any case is not difficult”. According to her, one simply needs to type their names on the search bar when searching for brands or persons and the results will come up almost immediately. It seems as if Participant 8 confused looking for individuals or specific products on social media with looking for academic information that could be supportive of completing an academic task.

But despite the ease with which information could be found on social media, Participant 5 acknowledged that whereas some of the information found on social media is reliable, some of the information found on social media information tends to be misleading and needs to be checked.

Some of the participants used social media to complete their academic tasks. For example, Participant 19 said, “I am a project student, most of the things I use for my project, my writings, I get them all from social media.” Participant 15 particularly loves using Facebook for information-seeking purposes. The reason she gave was that some Facebook groups deal with different information than the information they are generally exposed to in class. This view is further explained by Participant 14’s response. He joined an English language Facebook group, through which different topics were treated. The page helped him with his research methodology course because of the inputs he received from the group. Participant 13 joined a philosophy Facebook group for the same reasons. She noted that the information she retrieved from this group’s page has made a positive contribution to her studies. In turn, Participant 8 was of the view that it was easier to search for individuals on Facebook

than on Instagram. The reason she gave was that users on Instagram use names different from their real names which then makes it difficult to search for them. Participant 18 also noted that seeking for information on some platforms such as ResearchGate requires a membership registration. This participant also found that some social media platforms were unfriendly, which made it difficult for her to seek information on them.

Several of the participants seemed to be confused about what is understood with “social media” as they referred to the Internet, Google, and other mobile browsers as mobile social media. For example, Participant 3 explained that he searches for information on social media by simply going to “Google service”. Participant 4 called the UC browser (a free Android web browser available on Google play store) social media which he uses to search for information. He thinks that whatever one does not understand, can be searched and that the answer can be easily found. Participant 18 acknowledged using social media for assignments, which has led him to no longer rely on or use textbooks or any printed copies of books. When asked to specify the social media he was referring to, he said “the Internet”. However, Participant 15 indicated she was a skilled information searcher; she reported:

while using the phone . . . I use opera mini to browse . . . I just type in the question . . . it takes me to the particular site, the answers relating to the questions. But . . . you don’t just type in the question . . . given to you. You have to rephrase so that the actual thing you are looking for comes out.

#### 6.4.2.2 Information sharing

Information sharing, as defined in section 3.6.1, is the sharing of useful information among users. Participant 9 maintained that valuable information is shared on social media by individuals that have knowledge of different subjects and topics and share information of common interests with others. In a reference to the use of social media, this participant indicated “There different people have different knowledge on mathematics and physics, post certain topics and information on physics and

mathematics. And if anyone is in doubt (or) has a question that is complicated to you, you can go there and type the question so people and members of the group who know the topic can answer you”. Based on his explanation it is evident that social media groups could assist each other to solve or satisfy their information needs. Participant 10 provided a similar response. To further stress the importance of groups on social media, Participant 9 explained that he joined a group on Facebook in which they talk about topics related to the ones discussed in his class. He reported “... there are some groups that I joined on Facebook, that they talk about topics that we are discussing class. The group is comprising people from different places, so we get to know more about that topic ... they break it down for us to understand. So, we discuss, kind of a debate”. In this manner, group members levels increase each other’s level of understanding.

#### 6.4.2.3 Collaboration

As shown in sections 4.3 and 4.4, social media support collaboration among members of a social media group. Collaboration is the act of working together to produce something (*Collins dictionary online* 2020, sv “collaboration”). Although collaboration was not identified as an information activity in Chapter 2, some of the participants did comment on their collaborative activities, hence the inclusion of collaboration in this discussion.

The participants, through dialogue with their likeminded peers, created groups on social media and interacted with group members to collaborate and find a solution to the tasks they share. For example, Participant 12 joined a programming group on Telegram and explained, “I can post a problem in the group, persons with similar problem can contact me, and we can work on it together.” Participant 12’s explanation supports the view by Sarwar, Zulfiqar, Aziz and Chandia (2019:247, 248) that student users can collaborate on social media through which they can communicate and share information on solving tasks with immediate feedback, thus supporting each other academically.

#### 6.4.2.4. Summative notes

Mobile technologies and social media apps can enhance users' information seeking and access to information. This is manifested in the participants' comments on their information seeking, collaboration and information-sharing activities while engaging with their peers and other users on social media. However, to be able to access information on some of the social media platforms, they needed to be registered members of the platform and have shared interests with other users. Most of the participants did not differentiate between an Internet information search using search engines and social media searches. This could reflect on their lack of knowledge and understanding of what the Internet, social media and a search engine such as Google entail.

### **6.5 INFORMATION BARRIERS TO INFORMATION-SEEKING ACTIVITIES**

As shown in sections 2.9.1.1 and 4.8, barriers can be something that prohibits users from beginning or completing an information task. The reporting below focuses on the different barriers the participants encountered when they used or did not want to use social media.

#### **6.5.1 Personal Barriers**

As shown in section 2.9.1.1, these are barriers that arise normally from information users' cognitive and affective motivations.

##### 6.5.1.1 Affective barriers

The participants reported on only one affective barrier, that is trust. Trust as an affective element in the user component was discussed in section 2.9.1.1. When the participants felt uncomfortable about the usefulness of an information source or they became suspicious of the source, they developed negative feelings towards the source and opted not to use it. Participant 1 believed social media serve as an avenue for online scammers using dubious means to swindle innocent users. She reported, "You know, some people nowadays people don't trust each everybody now on social media. Because there are some people like . . . 419 [Nigerian term for scammers] . . .



It's not what you see, you get." This opinion was also supported by Participant 9 who viewed social media as a

kind of a home for all these online fraudsters. Sometimes they will display a good online and put a price on it and ask you to pay before they deliver it. Once you pay for that good, you will discover that you won't get the good and by the time you call the number that was attached to that good, the number won't be getting through.

This shows negative feelings of uncertainty and distrust to the use of social media.

In similar manner, Participant 6 commented on a "lot of fake news circulating on social media with just 50% true." He explained that the information they get online are processed by people and which could most of the time be wrong. Participant 18 also shared Participant 6's view when she states, "there are times you search a topic, and they tell you entirely different thing."

#### 6.5.1.2 Cognitive barriers

Cognitive barriers, as shown in section 2.9.1.1, pertain to users' inability to understand or to make sense of information. Two elements in the participants' cognitive structures seemed to act as barriers to their information-seeking activities, namely, their lack of awareness and their lack of information searching skills.

##### a. Lack of awareness

An awareness of information sources that could be used to satisfy an information need reflects the user's knowledge of the information that is available and from where that information can be accessed. As shown in section 2.9.1.1, users who are unaware of a relevant or vital information source are likely not to use it.

Almost all the participants reported that they were not aware of the library's social media presence nor were they aware of the available online services the library provided or the resources that are available in the library, for example, the digital handouts. Some of the participants were doubtful as to whether the library did have a social media presence. One such participant is Participant 5 who expressed his surprise when hearing that the university library has a website and also social media pages. However, a few of the participants mentioned that they were not only aware of the library's social media presence but had used it as well. For instance, Participant 17 noted, "the university library has its own Facebook page . . . I saw them posting sites students can log into those sites to get books . . . Though most students don't know about it."

b. Lack of information-searching skills

The discussion in sections 2.9.1.1 and 3.6.2 showed that a lack of information search skills reflects on a knowledge gap which becomes observable when the user is unable to conduct an information search. A lack of knowledge and skills could be the reason why Participants 8, 11, 13 and 18 reported they found it difficult to get the relevant information while using their mobile devices to search for information. They felt this required a lot of effort and determination to achieve. For example, Participant 8 reported her experience searching for information on her mobile device. She said, "it's not so easy because you have to dig deep . . . you browse about something and it shows you another. You have to go deeper and deeper into reading it line by line to get what you want from inside the article or something."

In turn, Participant 18 had, what she termed "unfriendly", experiences in which certain requirements were set to gain access to the information, such as having to register on the site or the social media platform. She noted that she often failed to "meet up". Participant 1 explained how difficult it was for her to get specific information because of a variety of reviews and writing available on social media. This confused her as it required a lot of "sifting" through the retrieved information to get to the right information. Also, this made it difficult for her to use mobile social media to seek information. Participant 6's response concurs with that of Participant 1. He indicated that he wasted

a lot of the time he had available when he had to go through so much irrelevant information. Also, he ended up wasting mobile data without achieving much.

The participants' responses pertaining to being overwhelmed by the amount of information they retrieved correspond to the findings reported on by Feng and Agosto (2017). They revealed that mobile users are usually overwhelmed with too much information making it near impossible for them to get relevant information. Madden, Webber, Ford and Crowder (2017:696) suggested that being overwhelmed by the amount of information retrieved could be attributed to a lack of critical searching skills and an inability to make the right selection.

### **6.5.2 Environmental Barriers**

Environmental barriers, as shown in sections 2.9.1.1 and 4.8 are those barriers that come from within the context of a work, a sociocultural, a politico-economic, and a physical context. Environmental barriers could also be poor infrastructure, slow internet speed, or financial constraints. All of these barriers could have an effect on the use of social media. Some of the barriers that were identified by the participants include network signals, financial constraints (i.e. cost), power supply, and mobile devices' memories.

#### *a. Network signals*

Network signals, as defined in section 3.6.2, are electromagnetic fields used to convey data from one place to another. In this regard, network signals play a significant role in information access. This is because the strength of the signal can determine whether the user can access online data. In turn, this affects the users' information-seeking activities. Many of the participants reported on their inability to conduct information searches while using social media technologies due to low network signals in their locations. A few of the participants reported on the way in which network signals act as barriers to information. The following quotations from the participants' responses explain the way in which network signals acted as barriers to information:

It depends on the network you are operating . . . MTN . . . have more coverage . . . more signal strength than other networks . . . information is almost instant once you search. But other networks like Glo, the results . . . take long. Sometimes you have to refresh and refresh. It takes time, some time they cut off, the network signal might disappear. So, it is very, very difficult, very, very tasking. (Participant 9)

Network varies from location to location . . . When . . . at home I usually get smooth workings . . . with the network connection. But when I moved to school my location . . . I started having difficulties with browsing. (Participant 13)

We have network issues because of the environment or the placement . . . sometimes you must walk from place to place to in order to get network. (Participant 10)

The challenges I experience is sometimes due to network failure and devices which don't access 3G services. When making use of them it makes the work to be very slow. (Participant 7)

The Network is not always available so it's discouraging. (Participant 7)

In order to deal with this problem, some of the participants (i.e. Participants 13 and 17) resorted to buying different SIM cards so that they could change to a different service provider when the service provider they were using's signals get poor to one with better signal strength to ensure internet access.

High network speed with fast download capabilities enhances instant information access and communication via a mobile device (Mitra & Agrawal 2016:132). Network strength therefore determines the speed, which can make it either attractive or unattractive (i.e. act as a barrier) for users to conduct their information searches. The participants' comments clearly show the way in which network-related issues acted as barriers to their information-seeking activities.

*b. Financial constraints*

Cost as a factor affecting information seeking was discussed in sections 2.9.1, 3.6.2 and 4.7.2. The inability to secure funds for data subscriptions was pointed out as a barrier to the use of social media by Participant 21. Participant 4 also reported on the way in which the lack of funds for data was an obstacle to going online to search for information on his mobile device. Participant 8 approached this differently. She noted that being financially buoyant made it possible for users to purchase the data they needed to conduct online searches.

Participant 5 claimed that the university library's Internet network is never available and that the unavailability of the network discourages the students from seeking information. This view was illustrated by Participant 16's comment. He explained that finance is a problem as most students cannot afford data and the university Wi-Fi is inactive. This could be attributed to an inadequate budget for Wi-Fi or Internet connectivity in the library.

*c. Poor infrastructure*

An environment with all the necessary infrastructure for learning can support and enhance information seeking as discussed in section 2.9. In turn, a non-supportive environment can yield negative reactions. Participant 17 reported that the unstable electricity power supply was a great challenge to using social media as he was unable to charge his gadgets. His experiences were echoed by Participant 4 who reported on the way in which regular power supply interruptions affected his studies and information use. In turn, Participant 16 noted "the school environment most times, they don't use to bring light. Most times you shift assignments you are supposed to do immediately because of light you postpone it and it affects the student".

*d. Mobile devices' memory*

Some of the social media apps use a considerable amount of the mobile device's available memory space and this can lead to the partial malfunctioning of the mobile

device (Participant 8). Participant 8 explained that, for example, she was forced to delete Snapchat from her mobile device to avoid her device from crashing.

Since certain social media platforms regulate the amount of data that may be uploaded on their sites, users are sometimes unable to upload large files. For example, Participant 20 identified Facebook Lite as a platform that restricts the size of files that may be uploaded. This dampens some users' willingness to use such platforms.

### **6.5.3 Summative Notes**

Barriers confronting information users in this study have been shown to centre on low signals, poor electrical power supply, users' lack of information or digital literacy skills and also the fact that the users were unaware of the available online library services. The academic context in which the participants is required to participate in academic activities requires a regular power supply. The reported findings showed the way in which the lack of a regular power supply affected their information-seeking activities. However, even if the needed infrastructure were available, the reported findings also showed that the participants were not necessarily equipped with the required information literacy skills that would support them in seeking the information they required. In similar manner, the financial constraints that both the users and the library management experience have adverse effects on the users' information-seeking activities.

## **6.6 PARTICIPANTS' SUGGESTIONS TO IMPROVE THE USE OF SOCIAL MEDIA TECHNOLOGIES**

The participants suggested a number of ways to avoid these challenges and to make information seeking using social media feasible.

### **6.6.1 Teaching Information Literacy Skills**

Participant 1 believes a number of library users' lack the knowledge of the way in which to search for relevant information online. She suggested that the library offer online

information literacy skills training. According to her, users who have acquired the relevant skills should be able to easily identify the right information from the “piles of information posted online”. This would also enhance users’ ability to distinguish between real news and fake news.

### **6.6.2 Functional Website**

As shown in section 1.1, the FULafia has a website and in order to encourage the users to use the website, the participants suggested that

- a functional mobile-friendly website be created from which users can easily find information (Participants 2 and 5),
- the website be engaging for users’ to easily access information, and
- the website include links to the social media pages on which the library has a presence, which this would make information dissemination easier (Participants 6 and 9).

In addition to the suggestion that links to the social media the library supports be included on the library’s website, Participant 3 was of the view that studies would be much easier if the library could also provide access to digital handouts. He suggested the creation of online links to the handouts. This is a service that is already available in the library. Participant 3’s suggestion to make such information available therefore reflects his unawareness of the library’ services or the sources that are made available in the library.

### **6.6.3 Suggested Social Media for Library Services**

The participants made some suggestions for social media platforms which they reckon the library could use to enhance the library’s service delivery. These include:

- Facebook: The majority of the participants believed this would better serve in service delivery as every student is using Facebook. In addition, the university

generally uses Facebook to interact with students. They reckon it will be easier for the library to use also for communication purposes (Participants 1, 4, 7, 8, 9, 10, 13, 14, 15, 16 and 18).

- WhatsApp: Several of the participants (Participants 4, 5, 8, 12, 19, 20 and 21) felt that WhatsApp allows for one-on-one interaction between the library and the user and should be used. In addition to making one-on-one interactions possible, Participants 5, 11 and 19 recommended a library WhatsApp group which could be used for notification messages.
- Telegram: Two of the participants (Participants 9 and 12) identified Telegram for use in library. According to Participant 9, Telegram can accommodate larger groups than WhatsApp, which can include up to 1 000 users. Despite the potential value Telegram could add to the library's service, including a Telegram service does not seem feasible. This is simply because most of the participants (and probably most of the students) do not use this service.

The suggestions made by the participants are based on their experiences using such platforms and their perceived convenience using the suggested platforms.

#### **6.6.4 Building Trust**

Participant 1 thinks that the library should build trust in their dealings with users on social media. She believes that earning the users' trust through authenticity and good service delivery can attract more users. She reckoned that engaging with users on the library page was one method of enhancing the library's service delivery and building the users' trust. According to her, the library should emulate ways influencers on social media interact with their followers on social media for better interaction and promotion of products, as they can forge a better bond and confidence between users and users' reliance on the library services.

#### **6.6.5 Summative Note**

Many of the participants shared their views on the way in which they believed the library's services could be enhanced and what could be done to support their



information seeking in the library. However, most of them are seemingly ignorant of the services offered by the library because they hardly or never visit the library either physically or online. This suggests that the library is likely not proactive in marketing their services to their users. There is the likelihood of the library using some of the suggested social media but most of their users are unaware of this service.

## **6.7 CONCLUSION**

This chapter presented the findings from the data analysis using the themes that emerged from the participants' responses to the study objectives. The reported findings were structured according to the context which influenced the participants' information-seeking behaviour, their personal dimension, their information needs and information activities. Lastly, the report focused on the barriers to information the participants experienced and the suggestions they provided to improve the library's service delivery. The next chapter will discuss the findings reported on in this chapter.

## **CHAPTER SEVEN**

### **DISCUSSION**

#### **7.1 INTRODUCTION**

Chapter 6 reported on the participating FULafia students' information-seeking activities while using mobile-based social media. The purpose of this chapter is to discuss the reported findings. The major components in Meyer's (2016) model of information behaviour will provide the framework for this discussion. The information behaviour components Meyer (2016) identified in her model and which are important to this study include the information user, context, information needs, mobile-based social media technologies and information activities. Furthermore, the discussion will attempt to show the way in which the interplay between the different elements of each component and between the different components affects users' information needs and seeking behaviour. Lastly, Meyer's model will be adapted to reflect the participants' information-seeking behaviour while using social media.

#### **7.2 BACKGROUND**

Throughout the literature review it became evident that certain elements in the context of students have an effect on their information needs and seeking behaviour and that these are further affected by the availability of mobile-based technologies such as social media. However, the literature review also showed that certain user-related characteristics such as their cognitive skills and knowledge, feelings of uncertainty and trust, and their motivation to seek information also influence their information needs and seeking behaviour. In order to acquire an understanding of the way in which the reported findings in Chapter 6 manifest in the participating students' information-seeking behaviour, it is necessary to acquire an understanding of the way in which the different elements in their contexts and their mental structures contribute to their information needs and in turn influence their information-seeking activities.

#### **7.3 INFORMATION SOURCES AND RESOURCES**

Information, as defined in section 2.4, is knowledge or processed data needed by users to accomplish certain tasks within a context. Students need information for

academic tasks more than any other activities (Thindwa *et al* 2019). As shown in Chapter 6, the participants consult various types of information source and resource to get access to the information they required. Google seems to be an important resource for information which is used by the participants to retrieve discipline-related information that would support them in completing their academic tasks. Participant 18 expressed the importance of Google as follows: "I use Google Scholar most times to search for information for most of our research work like as at last semester we had lot of researches to do, we did a lot of research, checking, reading like similar works on the Internet done by different scholars as a guide to doing our own research work and seminar". Participant 15 said, "Like when I need information and there are no books readily available for me, I go online. Most of my researches I do them online." Participant 16 revealed, "the lecture notes don't used to be enough as students, so we do come back to the Internet to still get information to add to what we have as lecture note."

The Internet and Google are not the only sources of information. The participants also consulted with their peers Participant 14 reported that "some courses I am doing like the research methodology, I get their views and what is expected of us in the course and so far, so good I have been getting good inputs. And it is really helping".

#### **7.4 USERS**

As shown in section 2.6, Meyer (2016); Reddy *et al* (2018:84) described an information user as an individual or groups of people who actively seek and use information. In the present study, the users are the participating the undergraduate students who use the library at the FULafia. As noted in section 2.6, Meyer (2016) identified three mental structures that influence user's information behaviour. These are their cognitive, affective and sensorimotor structures. The interaction between these mental structures enables the information users to decide on the way in which to execute a task or seek additional information.

#### **7.4.1 Cognitive Structure**

The users' cognitive structures include their thoughts and related thoughts and mental processes. The participants' recognition of their information needs and their need to seek information to accomplish the tasks that were assigned to them reflected their cognitive abilities. Having identified the gaps in their knowledge base, they purposefully decided to consult information sources they could easily access which often proved to be available through their mobile devices.

The participants' cognitive abilities were not only visible in their ability to recognise their information needs. This was also visible in their knowledge of the library's online presence and the services that were offered by the library. For example, Participant 7 was not sure whether the library had a social media presence whereas Participant 8 indicated that she didn't know "that something like that exists". In turn, Participant 9 acknowledged that he did not know "FULafia library has a website". Lastly, Participant 6 noted that "you don't get anything you are searching for there, no interesting thing in the university library website". The participants' showed that they lacked the necessary knowledge and skills to effectively use the library's services and resources. It is most probable that they, owing to their lack of knowledge and skills, experienced feelings of uncertainty and as a result were reluctant to visit the library.

In order to support their information needs and deal with their lack of knowledge about the library's services and the available resources, some of the participants solely relied on Wikipedia or used the first hits that popped up when conducting a search on the Internet. They did not even thoroughly scrutinise the retrieved sources to evaluate the relevance or authenticity thereof. For example, Participant 9 believed Wikipedia has the answers to assignments given in the class. This is despite the fact that, according to Participant 14, they were advised by their lecturers to avoid using information from Wikipedia as that might be incorrect and that the library was the best place to get the right information. Participant 14's comment indicates that he knew of the existence of the available library resources. In turn, the participants' reliance on Wikipedia could also be indicative of the fact that they previously had used Wikipedia and found reliable

information. Because of their positive experiences of using Wikipedia, they trusted Wikipedia as a reliable source of information.

Several of the participants reported having a hard time when identifying the information they needed while using their mobile devices to seek information. They were overwhelmed by the amount of information they retrieved. These reports are indicative of a lack of information literacy or information searching skills as the participants were unable to refine their searches or evaluate the relevance of the retrieved information. That is why a study by Rubinic (2014:109) pointed out a need of students to be taught independent information searching skills. This is to enhance their information searching skills from the different information sources.

#### **7.4.2 Affective Structure**

Users' affective structures involve their feelings, emotions and beliefs which can positively or negatively affect their information-seeking behaviour. This was discussed in section 2.6. Some of the participants indicated having feelings of uncertainty. It seems as if their feelings of uncertainty were the reason why they either avoided or were reluctant to visit or use the library. These findings seem to support Savolainen's (2015:183) observation that uncertainty could trigger negative affective states such as reluctance, confusion and even fear and in this regard the negative states the users experience could affect their information seeking.

The participants' feelings of uncertainty and their resulting reluctance to use the library seemed to have resulted in a heavy reliance on the information sources they experienced as being trustworthy. For example, some participants trusted Wikipedia as an information source because they had some positive experiences of using Wikipedia.

The participants, when in doubt, used their mobile devices to confirm information. This shows that their feelings of uncertainty prompted them to search for information that

would support them when dealing with a situation or completing a task. On the other hand, negative feelings or emotions such as stress, fear and anxiety or a user-unfriendly environment can also affect users' information seeking. Participant 3's comment on why he did not visit the library but rather used his mobile device to seek for information is descriptive of the way in which his feelings of uncertainty affected his information-seeking behaviour. He said:

The library is at the permanent site . . . but students are not even using it. Because most times, they even lack interest in going there. Because they feel like they are not free. It's not a free environment. So, anything they want to do, they do it at home in their own private time.

Participant 4 further noted that it was stressful going to the library because of the distance from the students' living quarters to the library. In other words, the participant felt unsafe to visit the library and his feelings of the library being an unsafe environment made him anxious. Participant 7 provided similar reasons for not using the library. He said, "when you are having an assignment to . . . Sometimes the stress for you to go to the library . . . due to the distance but using your mobile phone, you can access it very easy . . . and you get the feedback in a short while."

The comments of Participants 4 and 7 are indicative of the way in which a negative emotion such as feelings of being unsafe resulted in their reluctance to use the library. Owing to their negative feelings, they resorted to using their mobile devices.

### **7.4.3 Sensorimotor Structure**

The sensorimotor structure reflects the individual users' motivation to take the required action in order to deal with the identified problem and their feelings of, for example, uncertainty. This was discussed in in section 2.6. Several participants (Participants 2, 9, 11, 13, 16 and 18) acknowledged they used their mobile devices regularly to accomplish different tasks such as academic assignments, tests, examinations,

project work or to expand their knowledge of a topic. This shows they were motivated to act on the information needs they had identified by conducting information searches on their mobile devices. The outcomes of their actions manifested in some of the participants participating in different social media groups in which they supported each other through interaction, communication and information sharing ultimately leading to information use. For example, every year the students formed a WhatsApp group to facilitate information sharing and to receive important notifications in relation to any of their academic courses (Participants 4, 7, 8, 16, 18 and 20). This showed their willingness to collaborate, to distribute information, to provide links to websites and to update their peers who were off-campus on the arranged lecture schedules. The behaviour exhibited by these participants endorses the findings made by Balfagih (2017:9). He found that students make use of instant messaging platforms to enable collaboration among their fellow students on campus.

Some of the participants (Participants 9, 12, 13 and 14) also joined educational groups outside their immediate school context consisting of members worldwide with whom they shared similar subject- and discipline-related interests. The groups they joined were mainly based on Facebook and in a few instances on Telegram. The participants who joined such groups posted questions to the group and received answers from experienced group members.

## **7.5 CONTEXT**

Context, as seen in section 2.5, is not an easy concept to define. However, it involves the setting, environment or information ground or system that influences information users or where users' information activities occur (Courtright 2007:276, 290; Du Preez 2015:28; Sedghi, Shormeij & Tahamtan 2018:446). This discussion will show the way in which context influenced the participants' information-seeking and use activities.

The studies by Sonnewald and Livonen (1999:435), and Sonnenwald (1999:3) revealed that users, time, social networks (collaboration), space, tasks, and systems are all elements of context. The elements of context that seemed to influence the

participants' information-seeking behaviour include the academic context in which they found themselves and the tasks they were assigned to complete. As students, they co-exist with their course mates and other peers. Their course mates and other peers form part of their social networks which in turn form part of their sociocultural context.

The participants tended to rely on members of their social networks for information as these people acted as sources of information. They interacted with their social network members in the university environment, off-campus and even online (e.g. the educational Facebook sites they joined). Their interaction was focused on collaboration and the sharing of task-related or social information. For example, almost all the study participants reported being members of a WhatsApp group that was established in their various departments and year groups. Information pertaining to their assignments was shared with the group. Also, lecturers posted important notices to the groups.

The participating students' information activities were usually centred on their study- and task-related information seeking. Part of the learning process required the participants to complete certain tasks such as home assignments, work on projects, and the writing of tests or examinations to assess their level of understanding. The successful accomplishment of their tasks supports them in their academic growth and eventually graduating. In this regard, they tried their best to achieve their goals. Therefore, the tasks they were given also acted as motivators to seek information.

Most of the participants, in their eagerness to accomplish the tasks at hand, used some mobile educational and social media apps. The participants also made use of different information sources. These include family members, peers, books or online resources that were available to them in their space or context. For example, Participant 7 indicated, "when I have some assignments, I do call my elder brother sometimes." Seeking information from sources that are readily available concurs with an observation made by Agarwal *et al* (2011:4). They observed the way in which the



importance of a task and the urgency to complete the task affects the information seeking of users and the use that is made of reliable, easy and accessible sources.

Humans are said to directly interact with their environment and get feedback from what they learnt (Vostroknutov, Polonio & Coricelli 2018:1). To this end, the participating students made adequate use of any space or context they found themselves in to pursue their information-seeking activities as long as it supported them or was conducive to their information search. Similarly, the findings by Sedghi *et al* (2018:452) revealed that a user-friendly environment might influence users' information activities and that individual users' activities are dependent on the user. For instance, Participant 18 believed, "you can decide to search for information, if you're on a bike or on a tricycle."

The participants, while within the confines of the university environment, were generally expected to make good use of the university library when seeking information. Only a few of the participants mentioned using the university library and accessing the electronic or online resources from outside the library when assigned an academic task. For instance, Participants 10 and 17 mentioned visiting (and using) both the physical and the electronic library to borrow or download e-resources for their assigned tasks. Participant 1 equally reported using the library to search for information, however, if unsuccessful she reverted to her mobile device to search for information online. A good number of the participants were unenthusiastic about making use of the university library's website. Participant 6 said, "if you click at times you don't even get what you are searching for. There are no interesting things there," and Participant 13 said, "I hardly come to the library . . . actually, it's only once I have ever been to this library to read." Participant 3 only used the library while participating in a refresher course on the way in which to use the library.

Some of the other participants sought information from the comfort of their homes. One of the reasons they gave was that the library has strict rules and regulations they are expected to adhere to when they use the library. As Participant 3 explained, they

experienced the library as not being a “free environment”. They found seeking information from home was in a more convenient and a more relaxed environment as they did not need to adhere to the library’s regulations. These participants’ experiences can be attributed to the fact that they feel comfortable in their homes as their homes are environments in which family life is built. In this regard, their homes form part of their physical and their social cultural surroundings which they experience as being a safe environment in which they can freely search for information. This is opposed to the library which they perceived as being a user-unfriendly environment because of all the rules and regulations they needed to adhere to. The participants’ reasons for not using the library therefore reflect on the way in which their affective feelings which originate in the context influence their information-seeking behaviour.

The participants noted that although they were satisfied with the information they retrieved, they were able to repeat the search process at home should the need arise. This was owing to the fact that the feeling of freedom, informality and user-friendliness enhances their information-seeking activities. Participant 7 also explained that he was assisted by family members when assistance was needed. This indicates that the participants most probably feel anxious to ask a librarian or someone else to help with an information search. They have experienced their family members to be supportive and therefore trust their support. As a result, they are comfortable to ask them for support.

In turn, some of the participants consult with other people or peers in their departments in virtual forums such as chat groups on WhatsApp or Facebook to assist them in dealing with their given tasks. This is because they think some of their peers have access to the material or resources they are required to use for the assignments (Participant 20).

## **7.6 TECHNOLOGY**

Technology in this context consists of information communication technology (ICT) and more specifically mobile technologies. In section 2.8, ICT was described as being

a blend of telecommunication, computing and electronics. The discussion here will focus on mobile technologies and mobile devices as part of information technology.

### **7.6.1 Mobile Technologies and Mobile Devices**

The participants reportedly use technology daily. The devices they used for their information-seeking activities varied from mobile devices to personal computers. All the participants indicated they were using Android mobile phones. The software they used to seek information encompassed social media apps such as instant messaging apps and also different mobile browsers and search engines. During the interviews, the participants used terms such as privacy, flexibility, affordability, learning enhancement and mobile applications to describe their information-seeking processes. According to them, these features enhanced their information activities. In the course of their information activities, whether active or passive, the participants showed that their daily activities were centred on the use of mobile technologies. The use each of the identified features were dependent on their cognitive or affective structures.

In terms of their affective structures, some of the participants seemed frustrated with the barriers they experienced while using their mobile devices. The experienced barriers included poor network signals (a technological barrier), financial constraints (a sociocultural barrier) and the inability to multitask. The participants acknowledged their reliance on mobile devices to support their information needs, irrespective of whether they were for news to remain current on daily events, for gossip or for information related to the academic tasks they needed to perform. Participant 17, for instance, described being without a mobile device as a “human body without blood”. According to him, this is because the mobile device forms an “integral mechanism” that keeps his “learning in school afloat.” Therefore, his mobile device enables him to access information, hence meeting his information needs. These findings endorse Meyer’s (2016) inclusion of technology as an enabler of information activities in her model.

The participants' affective structures were also observable in their willingness to use their mobile devices for information seeking and use purposes. This is despite the physical barriers to information mobile devices such as the devices' small screens, low battery life and limited memory space to save documents. Most of the participants were discouraged (i.e. they experienced negative emotions) to use their devices to retrieve information. The reasons they gave for their reluctance to use their devices included, "it is difficult for you to search, and see the correct answer" (Participant 11), "It's not so easy, you browse about something and it shows you another" (Participant 8), and they needed to "go through many information to get to the right one" (Participant 1). The participants' hesitance to use technology for information-seeking purposes reflects on the interplay between an element in context (i.e. technology) and the individual participants' cognitive and affective structures.

The participants' sensorimotor structures manifested in their motivation to seek information using their mobile devices. The convenience and ease of use the devices offer also motivated their use of mobile devices. For example, Participant 5 reported on easily reaching for his mobile device to confirm certain information when in doubt, because the device is portable and within reach in his pocket. This shows that Participant 5 had acquired the required knowledge and skills to search for information on his mobile device. His report also revealed the interaction between his cognitive mental structure and his sensorimotor structure. Therefore, it could be assumed that the availability and ease with which a mobile device can be used to gain access to information in the comfort of the participants' homes could also be linked to their willingness, eagerness and commitment in completing their given tasks on their mobile devices.

### **7.6.2 Characteristics of Mobile Technologies**

The participants identified a number of mobile technology and device characteristics that prompted them to use their mobile devices for information-seeking purposes. These include privacy, affordability, flexibility, Google, mobile apps, learning enhancement, and mobile memory.

#### 7.6.2.1 Privacy

Having a sense of privacy, as revealed by Participant 3 in section 6.2.5, is similar to having a feeling of solitude, which is an affective phenomenon. Participant 3 needs to ensure his privacy and reflects his fear of having his privacy violated which in turn shows the way in which his knowledge and possibly experiences of having had his privacy violated prompted the negative feelings such as fear and anxiety. This is because his feelings of fear and insecurity are also rooted in his knowledge of what could happen when his privacy is violated. This could influence this participant's inclination in using his mobile device. However, in this context, it also shows a lack of online information literacy knowledge and skills. This was reflected in his comment that he could protect his privacy by deleting his search history on his mobile device. Unfortunately, his lack of knowledge of the way in which Google operates, gave him a false sense of security. This is because deleting one's online history does not mean Google did not keep a record.

#### 7.6.2.2 Affordability

The participants viewed the cost of using their mobile devices to seek information as being affordable. For example, Participants 9, 10 and 17 claimed that it was cheaper (i.e. more cost effective) to use their mobile devices as opposed to their personal computers as their mobile devices "consume" less data. This is as a result of the affordable costs involved in mobile device and data subscription packages. Therefore, the low costs of using a mobile device seemed to serve as an activator of the participants' sensorimotor structures which motivated (or influenced) them to use their mobile devices for information-seeking purposes. Furthermore, the participants' confidence that they would be able to secure a mobile device and use it to connect to the Internet reflects on their knowledge and skills of using their devices for information-seeking purposes.

#### 7.6.2.3 Flexibility

As opposed to the comments made in section 7.6.1, indicating a reluctance to use technology for information-seeking purposes, Participants 1, 7, 9 and 15 revealed their ability to instantly connect to the relevant information online. They reported on the way

in which they used their mobile devices from whatever location to meet their academic goals. This is illustrated in the comments made by Participants 1 and 9. Participant 9 believed using his mobile device “saves” him from “stress” and Participant 1 reported turning to her mobile device when she had a “problem”.

#### 7.6.2.4 Google

Most of the participants reported using Google to search for information. Also, they noted Google was a useful source of knowledge. The participants’ use of Google to search for information reflects their personal experiences of using this search engine. In this regard, their use of Google shows the interplay between the participants’ cognitive structures (knowledge and experience) and elements in the context (Google). It can then be assumed that they had experienced Google as being a reliable search engine through which they find information. Despite being a useful resource, Participant 1 reported getting too many search results on Google, making it difficult for her to identify the relevant results. Participant 1’s comment on how difficult it was to obtain relevant information while using Google could be an indication that this participant lacked the required information or digital literacy skills to conduct successful information searches. Furthermore, it seemed as if a number of the participants lacked the critical online searching skills while using mobile technologies. Many of the participants complained of difficulties finding relevant information as there was so much information.

#### 7.6.2.5 Mobile applications

Some of the participants seemed to possess the required skills when handling different mobile apps. This is despite the fact that others found it difficult to use the technology to retrieve information. Also, many of the participants reported using mobile apps to carry out a number of information activities which varied from information searches to information sharing. For example, Participants 4, 12 and 10 used the Xender app to share documents with their peers. In similar manner, Participants 3, 4, 8 and 15 mentioned using mobile apps such as WPS Office. Participant 4 explained he used WPS to store notes and assignments and to type up an assignment in the absence of

a computer. In turn, Participants 2, 3, 7, 8, 9 and 11 reported using games apps to relax and while away the time.

#### 7.6.2.6 Use of mobile devices

The participants' use of their mobile devices as opposed to their computers is based on certain mobile device-related characteristics, as shown below.

##### *a. Mobile memory*

As shown in section 6.2.5, mobile devices' RAM could affect the usefulness of the devices. The participants noted their awareness of the way in which their devices' RAM affected their information-seeking behaviour. For example, Participant 9 indicated "some phones have low RAM. If you are multitasking such as watching video and pinging [chatting] and you want to minimise and do a search. It might hang [screen freeze]". This is supported by Wright (2020) who opined that having more RAM means more apps can be opened at the same time without experiencing freezing; however, the loading of web pages could also depend on the speed of the Internet service.

##### *b. Battery life*

Participants 4 and 6 expressed that they have confidence in the battery life of their mobile devices. However, Participants 11 and 16 had negative experiences of using their mobile devices when their mobile devices' batteries left them in the lurch.

##### *c. Time-saving*

As seen in section sections 3.6.1 and 6.2.8.1, time influences the information behaviour of users by determining the time available to seek for information and the number of information sources the user can consult. Fast information access motivates users' willingness to use mobile technologies as an information resource because of the instant outcome. Participants 17 and 19 felt that using mobile devices helps to cut the time they needed for rebooting and logging into personal computers, thus making the search process faster. However, Lopatovska and Arapakis (2011:586)

noted that for users who do not have the basic skills to use mobile devices to conduct an information search, the search process can turn to frustration – a negative emotion in the users' affective structure.

Despite the advantages of using a mobile device for information-seeking purposes, some of the participants indicated that they preferred using their computers for the same purposes. The reasons they gave include faster information access, better display, multitasking, a better keyboard, and faster internet connectivity.

### **7.6.3 Social Media**

Social media, as seen in sections 4.2 and 6.3, are Web 2.0 technologies that enhance the interaction and sharing of information between users. The findings reported on in Chapter 6, showed that the participants engaged with different social media apps that aligned with their different information needs and enhanced their information activities. Some of the social media the participants in the study engaged in include the following:

#### **7.6.3.1 Facebook**

Facebook, as shown in sections 4.4.1 and 6.3.1.2, is both a microblogging and a peer-to-peer social networking site that allows users to connect to other users while using private or public profiles. The majority of the participants reported that they used Facebook to connect with long lost friends, and other participants use it for serendipity as they go through different posts for no specific reason. A good number of the participants reported using the FULafia's Facebook group pages (FULafia Diary, Gist and Entertainment) purely for social purposes. This supported them in remaining current on campus gossip and events within the school context or for chatting with the page administrators. They visited these pages daily. Participants 9 and 10 acknowledged being part of academic groups on Facebook through which they interacted with other group members on academic-related questions and answers to solve academic tasks. The reports on using Facebook to enhance their learning supports the view of Sanchez *et al* (2014:141) that the use of social media have the potential to facilitate learning, communication, collaboration and resource sharing.



The FULafia's library has a Facebook page. Participant 17 reported on the way in which he was assisted on this page in getting access to information. It is a pity that almost all the participants were unaware of its existence. This could mean that the library had not done much work to promote the page or activities to the student library users.

#### 7.6.3.2 WhatsApp and Telegram

As seen in sections 4.5.4 and 6.3.1, WhatsApp is an instant messaging social network app that enables interaction between users whether peer to peer, in groups or communities through live chat, video calls and voice chats. The participants reported on being members of different departmental WhatsApp groups through which they shared relevant academic-related information or sources which would support them in completing the academic tasks they were given, and to keep abreast of vital information on lecture schedules. Participant 8 noted having to check the group WhatsApp as being compulsory so as not to miss any important notifications. In turn, Participant 15 reported, "I use WhatsApp to communicate with people and it's more fun unlike the traditional messaging that you just like, the text message. WhatsApp is faster and you get your feedback instantly if the person is online and then it is cheaper than the SMS."

This shows that WhatsApp could be a fast communication platform and could serve as a collaboration platform in which the students could interact. This finding is line with Gasaymeh's (2017:3) observation reported on in section 4.5.4 that WhatsApp is a good social network for collaboration and communication in an educational setting. The convenience of using the platform as well as the instant communication influences its use by the participants.

In turn, Participants 9 and 12 acknowledged using Telegram as an instant messaging platform. Participant 12 noted he belonged to an educational group whose members assist others through the posting of programming problems and solutions. This finding

supports the study by Ibrahim *et al* (2016:96, 100) and Tabrizi and Onvani (2018:14) who noted that Telegram has been shown to serve as supportive tool in learning especially in terms of discussion and sharing of information and collaboration (Mahdiuoun *et al* 2020).

#### 7.6.3.3 YouTube

As shown in sections 4.3 and 6.3.3, YouTube is a video streaming channel that serves as an educational tool. Participants 4, 6, 9, 13, and 16 reported using the YouTube channel to seek information and to access academic tutorials related to their different disciplines. These reports can be aligned with the findings by Al Zboun, Al Ghammaz and Al Zboun (2018:171) that YouTube serves as a learning resource. In addition to being a learning resource, some of the participants also reported on using YouTube for entertainment or leisure purposes. For example, Participant 16 who is a History student, uses YouTube to watch past events for better clarity in his field.

The participants' use of YouTube reflects their awareness of the value of this social media tool for learning purposes. It also shows that the participants had the knowledge and skills to use YouTube and also their willingness to seek additional information that would support their learning. In this regard, YouTube as a social media platform influenced the participants' academic task-related (i.e. contextual and cognitive) information-seeking activities.

#### 7.6.3.4 Instagram

Participant 1 used Instagram for personal reasons and for communication purposes. She, however, noted that Instagram was a popular communication platform which could be used to sell products. She also noted that online scammers were active on Instagram. This shows that the participant's Instagram information activities were marred with fear and distrust. These are negative emotions that can influence her information activities as a result of the anxiety about her safety online.

#### 7.6.3.5 Twitter

Twitter, as shown in sections 4.5.5 and 6.3.6, was used by Participants 2, 3, 8 and 12. Participant 3 maintained it was easier for him to access information on Twitter as he followed different people and activities that were of special interest to him. His report as given in section 6.3.6, indicated that his use of Twitter seems to be focused on his leisure-related information needs rather than his academic-related needs.

#### 7.6.3.6 Wikipedia

Wikipedia, as shown in sections 4.5 and 6.3.7, is a popular wiki that allows users to revise or edit other people's content. Participants 2 and 9 revealed relying on Wikipedia as a useful information source for their academic-related tasks. Participant 9 reported, "Most questions, most of the assignments are found on Wikipedia.com." Although Participant 9's opinion corresponds with the finding by Selwyn and Gorard (2016:30) that Wikipedia is a useful source, his view was not shared by all the participants. For example, Participant 14 noted, "Someone could post some wrong things there and you go to get it and before you know you will just be going off what you supposed to do." This showed that despite users such as Participant 9 who views Wikipedia as a useful resource, there are users who are cognisant of more reliable online sources than Wikipedia.

The participants' information-seeking activities, whether within the academic context or in their everyday life, seemed to be connected to the use of mobile technologies in different contexts.

### 7.7 INFORMATION NEEDS

Information needs, as seen in sections 2.7 and 6.4.1, represent a knowledge gap. The participants' information needs were prompted by academic tasks and events in and around the university. Although many of the participants relied solely on their mobile devices when confronted by a need for information, a few of the participants still believed in visiting the library first to search through the available resources. When they were unable to get access to the required information in the library, they reverted

to their mobile devices. For example, Participant 1 revealed that: “I have different mobile apps for different research. When I am having problem or maybe I can’t find a particular topic in library . . . I go to Google and I find that particular thing I am looking for . . . Google directs me to watch a movie if I don’t understand it. Maybe if I watch the video I will fully understand.”

The participants learn to collaborate in their various year groups and departments. For example, as shown in section 6.4, Participant 10 reported contacting online group members to discuss topics treated in class. These group discussions were prompted by a need to learn from group members who had a better understanding of the topics that were discussed. The knowledgeable group members then explained the topics to the rest of the group and in the process enhanced their understanding thereof. The development of support groups reflects on the role such groups have as sources of information not only to support the individual participants’ need for task-related information but also to serve the group’s collective information needs.

Another example highlighting the importance of online groups to support the participants’ information needs comes from Participant 14. He reported:

I got into a group in Facebook, an English group to be precise so I could get topics from them, learn things about particular courses I am doing like the research methodology. I could get different topics, their views and what is expected of us in the course and so far, so good I have been getting good inputs. And it is really helping

In this instance, the realisation that he lacked the required knowledge and skills motivated him to join a group on Facebook that focused on a specific field of interest and which would support him in satisfying his information needs. This finding corresponds with the study by Thwala (2019:6) that users’ decisions to seek

information is based on their recognition of an information gap which gives rise to their information needs.

## **7.8 INFORMATION ACTIVITIES**

As discussed in sections 2.9 and 6.4, information activities involve the active and passive information seeking, and awareness, use and transfer of information. Some of the information-seeking activities the participants engaged in were based on their awareness of certain information sources. For example, Participants 10 and 17 were influenced in using the university library's online resources because they were aware of the availability of the resources. That awareness influenced their decision to use links provided by the library to access information sources. Individually, the participating student users also strived to enhance their learning by making adequate use of mobile apps. For example, Participant 12 mentioned using apps such as Xender to transfer classmates' lecture notes to his mobile device which he later transferred to his personal laptop. This is not surprising because a study by Elfeky and Masadeh (2016:22) reported that most university students cognitively use mobile technologies for learning purposes.

Tasks seemed to be a great influence in the participants' information-seeking activities. The participants relied on channels of communication and information shared through group chats or posts on social media forums such as WhatsApp, Telegram, Facebook, Instagram or Twitter for information-seeking purposes. A few of the participants indicated their reluctance to use the library to get access to task-related information and that they only used the library because they were specifically instructed to do so by their lecturers. Their reluctance to use the library reflected their anxiousness and uncertainty of using the library. Participant 7 said it was "stressful" to use the library. The reason he gave was that he lives far from the library and having to travel to the library was stressful. Participant 9's comment shows the way in which the interplay between an element of his sociocultural context and his affective structures caused feelings of anxiety, which in turn resulted in a cognitive decision not to use the library.

A similar example of the way in which feelings of anxiety influences a decision not to use the library comes from Participant 3. He reported he did not “feel free” to conduct information searches in the library. Participants 3 and 9’s comments on the way in which their feelings of anxiety influenced their decisions to use the library concur with Savolainen’s (2014:1) findings. He observed that affective feelings can significantly influence users’ ways of accessing, seeking and using information sources in contexts such as tasks and learning.

As opposed to Participants 3 and 9’s decisions not to use the library, some of the other participants indicated that their visits to the library were determined by their need to have one-on-one consultations with library staff on issues that could not be taken care of from afar or by themselves. Such decisions were also affected by a lack of awareness of the available of information resources or some of the services offered by the university library. Therefore, instead of visiting the library, they used their mobile devices.

In order to accomplish certain tasks, the participants collaborated with group members. As shown, for example in section 6.5.3, Participant 12 joined a programming group on Telegram and explained his information activities in the group as follows: “I can post a problem in the group, persons with a similar problem can contact me, and we can work on it together.” Most of the groups or forums the participants joined reflected their shared interest in areas of disciplines or hobbies which serve as informal information sources. They actively participated in group discussions to keep abreast of the latest information in their collective areas of interest. Their need to participate in online discussion groups and to monitor group postings motivated them to use mobile social media apps. The participants constantly go online to view group postings. Their viewing of group postings reflected their passive information-seeking behaviour. This showed their willingness to acquire information and knowledge that would support them in completing their given academic tasks. Their need to participate in online discussion groups motivated them to use mobile social media apps as these apps make information sharing or transfer easy and

convenient. Convenience as a factor influencing information seeking reflects a perceived ease of use, understanding and nearness (Connaway *et al* 2011:180).

In addition to perceiving the use of mobile apps as being easy and convenient for information seeking and sharing, some of the participants perceived the use of their mobile devices as being more convenient than the library for the same purpose. Despite the difference between using a browser or search engine and a social media app, some of the participants referred to mobile Internet and Google as social media. For this purpose, the participants used their mobile phones to search for information while using a mobile browser or search engine such as Google. This confusion of the purpose of mobile apps was evident in Participant 4's comment. This participant called the UC browser (a free Android web browser available on Google play store) a social media app which he uses to search for information. The participants' confusion of social media apps and web browsers shows that they do not really understand what the term "social media" means. It is also possible that they use social media apps so interchangeably that they no longer distinguish between the different types of app and the purpose of each type of app that they now refer to all apps as being social media. This seems to indicate their ignorance of the difference between the various online information sources and resources.

Most of the searches the participants reportedly conducted on their mobile social media were easy, although some of the participants identified certain challenges they faced when using social media platforms. For example, Participant 18 found ResearchGate as not being user-friendly, and as a result, she was negative about using ResearchGate. Her negative feelings (an affective structure) towards using the platform could therefore affect her information seeking on the platform. At the same time, her experiences could also reflect her lack of knowledge as she did not know that the platform was established for researchers to publish and self-archive their publications and that one needed to be a member to gain access to information published on ResearchGate. This was discussed in section 4.5.7. Had she known what the purpose of ResearchGate is, she might not have found it stressful to use. Similarly, Participant 8 found it easier to seek information on Facebook as opposed to

Instagram. She also seemed to not know the difference between Facebook and Instagram and lacked the necessary skills to search for information on these social media platforms. In turn, Participant 1 explained that she used hashtags when conducting a search for information on Instagram and Facebook. Lastly, Participant 15 rephrased her questions when searching online to get relevant information.

Despite the fact that the majority of the participants reported on how easy it was to access information on social media, they also reported various barriers to information while searching for information on social media.

## **7.9 BARRIERS TO INFORMATION SEEKING ON SOCIAL MEDIA**

Barriers to the use of mobile social media, as seen in sections 2.9.1, 4.8 and 6.5, can arise from the context or situation participants find themselves in while using mobile social media. The barriers they experienced can be grouped as being personal, interpersonal or environmental.

### *a. Personal-related barriers*

As seen in section 2.9.1.1, barriers to information seeking can arise within the inner person, that is the affective or cognitive structures.

### *b. Affective barriers*

Participants 1 and 9 felt threatened when using the social media that are available on their mobile devices. Their feelings of being threatened when using social media could demotivate them to use social media for information-seeking purposes. This corresponds with the findings in Khosrowjerdi and Sundqvist's (2017:16) study. They found that users avoid platforms or information sources they feel negative or uncertain about as their feelings of uncertainty decreases their perception of the credibility of the information that is available on these social media platforms.



### *c. Cognitive barriers*

The participants lacked awareness of the available online resources in the university library and social media platforms. Their lack of awareness contributed to their feelings of uncertainty when seeking information in these resources. Although knowledge and skills pertain to the users' cognitive structures, a lack of knowledge translated to their affective structures. This is because a lack of knowledge and skills prompted feelings of uncertainty. As a result, a lack of knowledge and the resulting feelings of uncertainty contributed to a lack of confidence when searching the library's resources to get access to the required information. So, they turned to other means to satisfy their information needs.

Many of the participants (Participants 1, 6, 8, 11, 13 and 18) indicated finding it difficult to get the relevant information while searching for information especially on social media. This was shown in section 6.5.1.2. The difficulties the participants experienced reflect a lack of information literacy skills. This challenge persists because most academic users, as noted by El-Maamiry (2017), see themselves as capable of conducting information searches and in this regard do not participate in instruction classes. As discussed in section 6.5.1.2, the users' inability to get information while using their mobile devices can be attributed to some of the disadvantages of the use of mobile devices such as the devices' small screens or websites that were not developed with mobile devices in mind.

### *d. Environmental barriers*

Barriers, as seen in sections 2.9.1 and 6.5 can pertain to the context or environment within which users conduct an information search. The environmental barriers the participants faced pertained to Internet speed, financial constraints, and poor network infrastructure. Locations with poor network infrastructure affected connectivity thereby leaving most participants with a slow connection to the Internet. Although some of the participants were able to overcome these barriers by having multiple SIM cards which allowed them to switch between networks, the majority of the participants had financial constraints. The financial constraints they experienced affected their ability to subscribe to data packages which consequently affected their ability to seek

information while using their mobile devices when they were off-campus. This was also a problem when conducting online searches in the university library as the library's Wi-Fi was inactive for a period. This too could have been as a result of inadequate finances available by the university to maintain the Wi-Fi infrastructure – an element in the participants' sociocultural environment.

In terms of infrastructure, an inadequate supply of electricity in the academic environment and the students' living quarters badly affected their information-seeking activities. For example, Participant 16 reported having to forestall assignments most often because of a lack of electricity. This could lead to feelings of frustration which in turn could discourage the participating student users' information-seeking activities. However, some of the participants were able to overcome this by using power banks.

A further technology-based contextual barrier pertained to the mobile devices' memory capacity. A device with a low memory capacity restricted the participants' ability to access some websites. However, some of the participants were not aware of the effect their devices' available memory had on their ability to access information from certain websites. In turn, some of the participants did understand their devices' memory limitations. For example, Participant 20 reported that “the level of information you can access with your smartphone can sometimes be limited when compared to the desktop computer. . . . Like for instance, there are pages that you can't open on your smartphones but can be opened on the desktop”. This participant knew what to expect while using his mobile device to access information online and the way in which to deal with the problem. Some of the other participants were unable to get access to the information they required.

## **7.10 PARTICIPANTS' INFORMATION BEHAVIOUR**

Meyer's information behaviour model was used as the conceptual framework for the current study. Her model includes several components which should form part of an information behaviour definition. These components are information, user, context, technology, information needs and information activities. As shown in Chapters 2, 3

and 4, technology plays a central role in the enhancement of users' information behaviour. The literature review chapters as well as the discussion of the findings in this chapter showed the way in which the interplay between elements in the participants' mental structures and the context in which they find themselves give rise to their information needs and in turn motivates them to engage in certain information activities.

Although technology was discussed as a separate component, it is also an element in context. The availability of technology (and more specifically mobile technologies) seems to influence the participating students' information-seeking behaviour in various ways. This is because the participating students actively or passively consult their mobile device-based resources when undertaking information tasks. This also manifests when they casually go through posts on social media. The information that is gathered in this manner contributes to their decision-making processes in order to achieve their goals of satisfying their information needs.

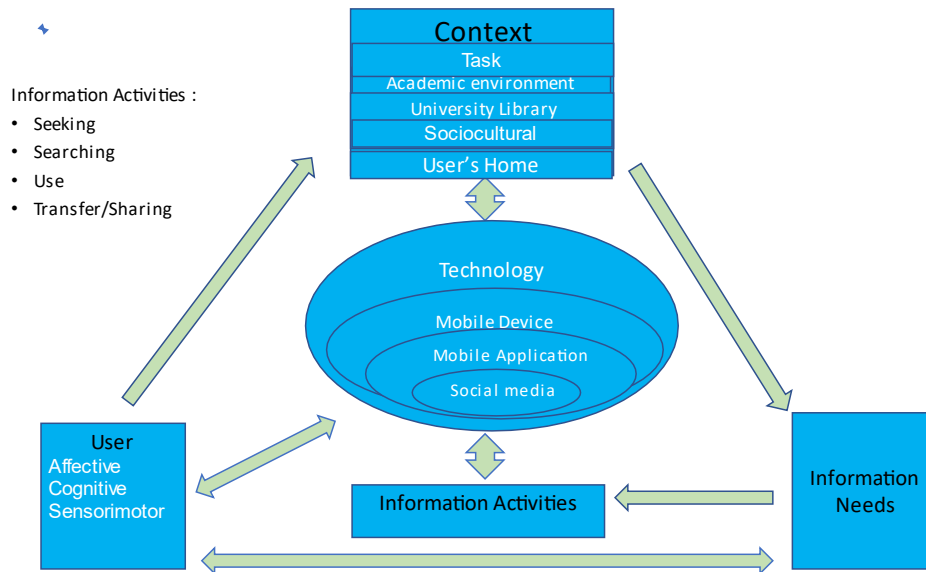
Every element in the different components of an information behaviour definition is important as it influences the decisions or actions users take when seeking information that would satisfy their information needs. For example, in the personal component, the participating students' cognitive and affective structures influence the manner in which they approach a problem such as an academic assignment.

The participating students' skills determine the ease with which they employ mobile technologies to search for relevant information. Their skills will also determine how fast the participating students can complete their information tasks in the library, at home or in the classroom. The participants who lacked the required knowledge and skills could not succeed. This is irrespective of how sophisticated their mobile devices are. So, the participating students' perceptions of how difficult or easy the task is, can determine the direction they need to follow in order to achieve their information goals. This can trigger their sensorimotor structures into action such as going online on their mobile browser or search engines to look for information or visiting the library. When

the results are not according to their expectations, the participating students often consulted or collaborated with others on social media to get solutions to the task at hand.

The context in which the participating students found themselves determined their information needs. For example, their information needs could arise owing to assigned tasks or news events on campus. In turn, the participating students' motivation (sensorimotor structure) prompted them to take action in order to bridge the knowledge gaps they identified as a need for information.

In addition to the information that was needed to support the participating students' information gaps, certain sociocultural contexts could also influence their information seeking. Some of the elements in the sociocultural context that influenced their information-seeking behaviour include network signals, data subscription, and mobile devices' battery life. Figure 7.1 graphically illustrates the way in which mobile technologies and social media could influence students' information needs and seeking behaviour.



**Figure 7.1.** Students' mobile technology-based information behaviour

The single arrows in Figure 7.1 show the information-seeking processes or directions the participants take when trying to accomplish a task. The participating students' context pertains to the academic contexts in which they are given tasks to complete, the university library, and their individual sociocultural contexts. Their sociocultural contexts include their homes, social groups, the availability of technology, and the costs involved when using a mobile device.

The double-pointed arrow between context and technology suggests that technology is an element of context and the availability of technology has the potential to influence the participating students' information-seeking behaviour. The technology component includes elements such as mobile devices, mobile apps and social media (which is an example of a mobile app used by the students).

Three double-pointed arrows link the user component to the context, information needs and technology components. This suggests that the interaction between the user, the context and technology gives rise to information needs which in turn prompt

an information activity. This interaction is illustrated through the double-pointed arrow between information needs and information activities.

The double-pointed arrow between technology and information activities suggests that elements in the context and technology influence the users' information-seeking behaviour. When confronted with a task, the participants use either their mobile devices or personal computers to seek information online. For this purpose, they either use Internet-based sources found via Google or the online resources the library provides access to. The participating students could conduct their information searches from the comfort of their homes or while still in the school vicinity. Some of the participants opted to visit the library in order to access the relevant information. In instances when they were unsuccessful, they ended their searches in the library and resorted to their mobile technologies to conduct further searches. Either way, the individual participants' information activities also included discussions or collaboration with fellow student groups they had established on social media platforms such as WhatsApp. This suggests that technology plays a vital role in the information-seeking activities of students.

## **7.11 CONCLUSION**

This chapter discussed the reported findings of the study. Meyer's information behaviour model guided the discussion which focused on information, the users (participating students), context, technology and information activities.

Using Meyer's model, the participating students' information-seeking behaviour could be illustrated. It was also possible to adapt Meyer's model to reflect on the role mobile-based social media technologies play in the participating students' information behaviour. The next chapter will cover the final conclusions, recommendations and limitations of the study.

## **CHAPTER EIGHT**

### **CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS**

#### **8.1 INTRODUCTION**

The purpose of this chapter is to discuss the conclusions to the research questions that were formulated in Chapter 1. The limitations of the study will follow the conclusions to the research questions. After that, suggestions for further research will be made and the value of the study will be discussed. The final summary and comments will conclude the chapter.

#### **8.2 CONCLUSIONS TO THE RESEARCH QUESTIONS**

In Chapter 1, it was suggested that the majority of the library users use their mobile devices as a preferred medium to seek information. The main research question was formulated as follows:

What use do users of the library at the FULafia, North Central Nigeria, make of mobile-based social media technologies to access the library's services to seek information that would satisfy their academic-related information needs?

In order to answer the research question, the following sub-questions were identified:

1. What are the user-related factors that affect students' information needs and seeking behaviour while using mobile technologies for information? And how do these factors influence students' information behaviour when using mobile technologies?
2. What types of mobile-based social media technologies do library users use for information seeking?
3. In what way does the availability of mobile-based social media technologies affect the students' information behaviour?
4. What are the contextual information barriers that affect the information-seeking activities of users who use mobile-based social media at the FULafia, North Central Nigeria?

The research questions were dealt with theoretically and empirically to gain insight into the participating students' use of mobile-based social media for information-seeking purposes and to understand their information behaviour while using mobile technologies. This will hopefully reveal their information-seeking activities using mobile-based social media when accessing information.

### **8.2.1 Research Question One: What are the User-related Factors that Influence the Students' Information Needs and Seeking Behaviour while Using Mobile Technologies for Information? And how do these factors influence students' information behaviour when using mobile technologies?**

The question was intended to shed light on factors that influence the library users' information needs and seeking behaviour when using mobile technologies. The academic context in which the participating users found themselves as students set certain information use-related requirements. For example, the participants needed to make use of various sources of information to complete their academic tasks. They therefore needed to use information sources and resources that are available in the FULafia's library for this purpose.

Owing to the different subjects for which the participants enrolled, the participants' knowledge and skills as well as the various tasks they needed to complete for different subjects, their information needs varied. In order to ensure the completion of their tasks within the set time frames, the participants needed timeous access to information.

Owing to these and other factors such as the time frame and elements in their socio-economic environments, the participating students mainly depended on mobile technologies, especially their mobile devices, to seek information. A few of the participants preferred to use their personal computers. Their use of their mobile devices largely depended on their cognitive skills, feelings of trust, uncertainty and anxiety and their motivation. Some of the factors they identified that influenced their



information needs and seeking behaviour while using mobile technologies include privacy, Google, flexibility, affordability, mobile memory, learning enhancement, mobile apps, battery life, portability, accessibility and time-saving.

#### 8.2.1.1 Privacy

The desire to ensure their privacy is not violated while undertaking information-seeking activities endeared some students to use their mobile devices. Using their mobile devices seemed to afford them the perceived freedom and secrecy in carrying out their information activities without disruption from outside influences. This is despite the fact that privacy is not absolute when conducting online searches using mobile technologies.

#### 8.2.1.2 Google

The majority of the participants used the Google search engine as a first point of their information searches, which seemed to yield positive results. Owing to their positive experiences of using Google, the participants felt confident to use Google and therefore tended to rely on Google as a search engine for their information-seeking activities. However, only a few of the participants had acquired the required skills to optimally use this search engine.

#### 8.2.1.3 Flexibility

The ability of the participants to make use of their mobile devices at any time or location to seek information made the use of their mobile devices very attractive. Therefore, the participants used their devices whenever they experienced a need for information.

#### 8.2.1.4 Affordability

The price range of both mobile devices and data subscriptions makes it easy for students to afford and use mobile technologies for their information-seeking activities. Affordability has seemingly enhanced their capacity to conduct information searches at will without additional cost.

#### 8.2.1.5 Mobile memory

The limitations of some mobile devices' memory seemed to have affected the participants', information seeking while using these devices. This was because the memory requirements of some websites were challenging as these websites' requirements exceeded the memory limitations of the devices and the size of the information the mobile devices could access. Certain functions of the devices were also limited as the participants were unable to multitask.

#### 8.2.1.6 Learning enhancement

The participating students were able to collaborate with their course mates, share information, communicate and use their mobile technologies to enhance their learning experiences. The study participants used their mobile devices to save and store their lectures and other subject-related information which was of great value to their learning.

#### 8.2.1.7 Mobile applications

Information access, use and transfer became faster and easier for students who had acquired the required cognitive skills to use mobile apps. Their knowledge and awareness of certain apps enabled their information activities and enhanced their ability to effectively complete their assigned academic tasks. Whereas for some, the apps served as distractions and disturbance owing to the constant updates that were required by the apps. In turn, these distractions affected the students' information-seeking activities.

#### 8.2.1.8 Battery life

Confidence in the battery life of mobile devices made them useful for information-seeking activities among the participating students. The participants relied on working with their devices for long periods without having to charge the batteries.

#### 8.2.1.9 Portability

The size of the mobile devices made it easier to be carried everywhere and enhanced the use that was made of them for information-seeking purposes. Therefore, when the participants experienced a need for information, they were able to seek and access the required information very quickly as the device was always within the participants' grasp.

#### 8.2.1.10 Accessibility and time-saving

The ease of getting information on mobile devices made it a favourite among the participating students as they require less effort and skills as compared to personal computers which required space, time to boot the system, and log in. In this regard, using their mobile devices saved the participants a lot of time as they could get instant access to information.

#### 8.2.1.11 Summative notes

It can be concluded that several factors influenced the information needs and seeking behaviour of the participating students while using mobile technologies. These factors are related to the advantages of the use of mobile technologies and some factors are also found in some elements of the disadvantages of the use of mobile technologies. These factors in most instances enabled the participants' information-seeking activities.

### **8.2.2 Research Question Two: What Types of Mobile-based Social Media Technologies Do Library Users Use for Information Seeking?**

It can be concluded that the participating students used different social media technologies for information-seeking purposes. Some of the major social media apps they used for information-seeking purposes include Facebook, WhatsApp, Telegram, Twitter, Instagram, YouTube and Wikipedia.

### 8.2.2.1 Facebook

This microblogging social networking site was very popular among the participating students. This is because the participants generally used Facebook for personal reasons such as connecting with friends and following pages of their interests with some using it for academic purposes. The participants who used Facebook for academic purposes joined groups in their respective disciplines through which they followed topics of interest or posted questions on topics. They then received responses from members who were knowledgeable in the field. Also, the participants were active members of the student-related Facebook pages hosted by the FULafia. The pages had student administrators who are members of the student community. The participants regularly received posts on social activities, events or happenings on and around the campus from these groups. Some of the participating students have personal pages which they use to market their own services.

The empirical findings showed that Facebook was a popular platform among student users for different information activities. The personal information activities of the participating students took prominence over their academic-related activities.

### 8.2.2.2 WhatsApp

WhatsApp proved to be a valuable communication, information sharing and discussion or collaboration platform for the participating students. The fact that this platform allows for instant communication and access to information that is shared, made the use of this platform very attractive for the participants. The participating students supported each other on WhatsApp by clarifying topics or tasks and discussing topics. They also shared and uploaded study materials and other information resources to their respective WhatsApp groups. The participants communicated notifications about lecture schedules and other vital information with those classmates who were absent in classes. In this manner, they kept each other abreast of what was happening on campus.

The reported findings from the literature also showed that WhatsApp is a good communication and collaboration tool.

#### 8.2.2.3 Telegram

Some of the participating students, such as the students involved in programming, joined academic interest groups on Telegram. They used Telegram to collaborate and get relevant information to accomplish academic-related tasks and also to assist others with difficulties in areas the participating students are conversant with.

#### 8.2.2.4 Twitter

Twitter is a microblogging social media site which was used by a number of the participating students. The participants mostly used Twitter to follow celebrities, football clubs, politicians or their subject of interest to get regular news updates. However, some of the participants found that their mobile devices did not comply with Twitter's use requirements.

#### 8.2.2.5 Instagram

Instagram is a media sharing social networking platform which was used by some of the participating students for personal and academic seeking activities. The hashtag was mentioned as being used by a participating student to search for topics of interest.

#### 8.2.2.6 YouTube

Several of the participating students made use of YouTube to watch live-stream videos or tutorials. This was either for pleasure or for academic-related purposes. For example, the participating students followed and watched the videos that were uploaded by their lecturers. They also viewed other academic videos in their field of interest.

#### 8.2.2.7 Wikipedia

A few of the participating students used Wikipedia as a source of information for their assigned tasks. The reason the participants gave was that Wikipedia was an easy source to access information from. Some of the other participants were aware of Wikipedia but they were cautious to use information from Wikipedia because they were concerned about the authenticity of the retrieved information. One of the reasons they gave for being cautious was that Wikipedia users can edit, add or remove information that was uploaded by others. Only one participant in the study indicated an awareness of the way in which Wikipedia functions.

#### 8.2.2.8 Summative notes

The central idea behind this question was to bring to light the types of social media specifically used by the participating students for their information-seeking activities. Of the available social media, the participants seemed to mainly use WhatsApp, Facebook, and YouTube. In general, the participating students used social media for both personal and academic purposes.

### **8.2.3 Research Question Three: In what Way does the Availability of Mobile-based Social Media Technologies Affect the Students' Information Behaviour?**

Mobile technologies provided the participating students with easy access to the information they required. Since ease of access is a factor influencing information behaviour, the ability to provide instant access to information and the availability of mobile technologies influenced the participating students' information behaviour. This was reflected in the participants' information needs and resultant information activities such as seeking, searching, sharing, and use.

#### 8.2.3.1 Information needs

The participating students were confronted with information needs that arose from different contexts in which they found themselves. These included their academic

environments, homes, and tasks which required information to complete. The mobile technologies provided them with convenient and easy access to information. They also needed to use social media to clarify concepts or to get access to the information they needed.

Some of the features of mobile-based social media apps made it easy for the participants to be involved in other information activities such as information seeking, searching, use and sharing.

#### 8.2.3.2 Information seeking

Based on the convenience, instant connectivity, affordability and access of the use of mobile technologies, the participants were able to carry out their information-seeking activities smoothly. Through their membership of online academic groups, the participating students received support from online discussions. They also posted and shared links to their online groups. This created avenues for further collaboration among the participants who were members of the same interest groups. Unfortunately, only a few of the participating students sought, accessed and used information from the library while using social media.

#### 8.2.3.3 Information searching

The availability of different browsers such as UC browser and Opera in addition to existing browsers such as chrome coupled with popular search engines such as Google makes information searches easy and fast for the participating students. This means that the participating students could carry out information searches at will from any location.

#### 8.2.3.4 Information use and sharing

The participants were able to use the retrieved information from the mobile Internet to accomplish their assigned tasks. In addition, the participating students made links available to useful task-related information. This included information they had

downloaded from the Internet or the library's e-resources for their peers. For this purpose, they used the sharing features that are present on mobile-based social media technologies such as WhatsApp.

#### 8.2.3.5 Summative note

The participants' information-seeking activities were made much easier when they used mobile social media. This could be because they were able to communicate, share and collaborate on the different mobile social media platforms such as WhatsApp and Facebook.

### **8.2.4 Research Question Four: What are the Contextual Information Barriers that Affect the Information-seeking Activities of Users who Use Mobile-based Social Media in the Library at the Federal University of Lafia, North Central Nigeria?**

The participating students encountered contextual information barriers when they sought information while using mobile-based social media. As shown in sections 2.9.1 and 6.5, they encountered personal and environmental barriers.

#### 8.2.4.1 Personal barriers

These are barriers from within an individual and in this regard the barriers derived from this factor included the participants' cognitive and affective structures.

##### a. Cognitive barriers

The participating students' lack of awareness of the available library resources such as the social media pages on which the library has a presence affected their information-seeking activities in the library. Also, most of the participants lacked the required knowledge and information literacy skills to conduct online searches. Their inability to effectively search for information while using mobile technologies influenced their information-seeking behaviour. In order to find and get access to the information they required, these students relied on their peers for support. As a result of the



challenges they experienced in getting the right information, they wasted time and data, which made their information seeking costly.

b. *Affective barriers*

Most of the negative emotions (affective) the participating students had towards the university library stem from their unawareness of available resources in the library. The feelings of discomfort and stress of using the library that some of the participants' experienced, affected their information-seeking activities. This is because their feelings of uncertainty and stress made them reluctant to use the library's resources. Therefore, to find the information they required to successfully complete their tasks, they embarked on alternative avenues to seek information. These included asking their fellow students on WhatsApp for support or conducting a search in Google.

8.2.4.2 Environmental barriers

The environmental barriers the participants encountered that affected their use of mobile technologies when seeking information included network signals, financial constraints, poor infrastructures and space limitations.

a. *Network signals*

Weak network signals affected the Internet connectivity on the participating students' mobile devices leading to some participating students getting multiple SIM cards and leaving others frustrated.

b. *Financial constraints*

Data affordance served as great challenge to the participating students and their situation was made worse when the university library experienced technical problems and the library Wi-Fi was inactive for a period. This added to the participating students' feelings of frustration which also had a negative effect on their use of the university library.

*c. Poor infrastructure*

Poor power supply affected the participating students' information activities both on campus and off campus. Owing to the power interruptions, the participating students were unable to charge their devices which hindered their information-seeking activities.

*d. Space limitation*

Storage capacity of some participating students' mobile devices affected their information-seeking activities. This was because, owing to a lack of space, the participants were not able to save the information they had downloaded for future use.

#### 8.2.4.3 Summative comments

The contextual barriers the participating students faced pertained to the personal and contextual components of Meyer's information behaviour model. The participating students were faced with negative attitudes towards the use of certain information resources. This could be attributed to an unawareness of the existence of such resources and a lack of information literacy skills which made it difficult for them to conduct information searches on their mobile devices. On the other hand, poor infrastructure, network signals and financial constraints contributed to the barriers the participating students were confronted with in their environment.

#### **8.2.5 Concluding Answer to the Overall Research Question**

From the study findings and the literature reviews it was evident that the participating students' use of mobile-based social media technologies centred on the information needs they experienced. The participants' information needs arose owing to the interplay between elements in their mental structures and the different contexts they found themselves in. The findings showed that only a few of the participating students were aware of the university library's online resources and social media pages which supported them in satisfying their information needs. This is opposed to the majority of the participating students who were unaware of the existence of the university library's social media pages. These students were unable to effectively use the

library's resources, which in turn prompted negative attitudes towards the use of the university library's resources.

Irrespective of whether the participating students used the library's resources, they all relied on support groups and other online academic interest groups to satisfy their information needs. For this purpose, they made use of the various mobile apps on their mobile devices. These included social media apps and educational mobile apps.

Certain contextual factors influenced the participating students' use of mobile-based social media. These factors included user-related factors and certain environmental factors. The user-related factors included the participating students' cognitive (e.g. knowledge and skills) and affective (e.g. feelings of uncertainty, anxiety and frustration) mental structures, whereas the environmental factors that served as barriers to their access to information on their mobile devices and mobile-based social media included network signals, power interruptions, poor infrastructure, an environment unconducive to physical and online information searching, financial constraints, information source credibility, privacy and ease of use. However, some participating students were able to come up with innovative ways of bridging the barriers to information they encountered. One such example entailed the procurement of SIM cards for other networks that are available as backups so that they could switch to a different network should the need arise.

### **8.3 LIMITATIONS OF THIS STUDY**

The limitations of a study can be twofold. It can be limitations in the literature reviewed and it can be limitations in the empirical study.

#### **8.3.1 Literature Review**

The study's literature review was fairly comprehensive and focused on mobile technologies and social media. The study also dealt with and explained information behaviour concepts in Chapter 2. The discussion in this chapter was limiting in the

sense that it did not focus on collaboration and the study's empirical findings showed that the students collaborated. This implies that the study was unable to show the way in which collaboration acted as a factor affecting the participating students' information needs and seeking behaviour.

### **8.3.2 Empirical Limitations**

The sample for the study included both student library users and non-library users. This limited the user group. If the researcher had approached all library users, including academic staff and undergraduate and postgraduate students (i.e. users who were regular library users instead of limiting the target group to undergraduate students who use mobile technologies), the findings of the study might have yielded different results. On the other hand, should non-library users also have formed part of the target group, the researcher could have learnt other reasons for why the library is not used. Furthermore, interviewing individual participants was a limitation as the participants were formal and guarded. Using a different interview technique such as focus group interviews might have ensured a more relaxed environment that could have been more conducive to information sharing. Lastly a larger group inclusive of academic staff might have given an interesting output.

## **8.4 RECOMMENDATIONS**

Based on the findings from the study, various recommendations can be made to improve the FULafia library's services. The recommendations are set out below.

### **8.4.1 Information Literacy**

Developing an online information literacy skills training course for library users would equip them to identify the relevant information and teach them the way in which to conduct an online search in different information systems. In this regard, all registered students should be required to complete a credit-bearing information literacy course which introduces them to the different types of library source (e.g. online or e-resources and print sources) at some point during their undergraduate studies. For the purposes of information literacy skills training, the library should consider both face-

to-face training and online training to enable the library users to overcome some of the physical and location barriers which manifested during the recent lockdown situation when student users were unable to physically access the library. Furthermore, such training should not only be computer-based training but also include training on the way in which to conduct an information search while using a mobile device. Equipping users with online information literacy skills can assist them in effectively seeking information while saving time and data. Training could also focus on enlightening students on the privacy threats they might encounter while searching for online information to support them in safeguarding themselves from possible threats and dangers that exist online.

#### **8.4.2 Functional Websites with Embedded Social Media Links**

Academic institutions should budget for the improvement and maintenance of their Wi-Fi infrastructure to ensure permanent Internet connectivity at their libraries. Academic libraries should also optimise their websites and ensure their websites are mobile-friendly. For this purpose, the development of a mobile app could be considered.

An optimised website should include embedded functional links to social media pages and other information resources available in the library. The provision of interactive and frequently updated websites from which users can easily access information on their mobile devices would attract more library users and in this regard, would enhance their information-seeking activities.

Furthermore, libraries should regularly undertake aggressive marketing to promote their services and to create an awareness of the available library resources. Regular physical and online surveys should be carried out to determine users' preferred social media platforms for service delivery. Using the selected social media, the library should ensure its service delivery is fully functional, engaging and capable of enhancing information seeking for library users. Specially trained social media library staff should regularly be online to engage with their users in order to effectively answer

user queries and to guide them in the right direction in getting access to the information they require.

#### **8.4.3 Access to Digital Instructional Materials**

Making links available to instructional resources which are downloadable on mobile devices could enhance users' information-seeking activities. Library staff have the mandate to raise an awareness of such links. This is especially important because, as the findings in the study showed, most student library users were unaware of the available information sources and resources in the library. Therefore, they did not make use of the resources.

#### **8.4.4 Suggested Social Media for Library Service by Participants**

Notable social media that were being used by the participating students of the current study include Facebook, WhatsApp and Telegram. Considering the ease with which the participants used these apps, it is recommended that the FULafia's library ensure a presence on these social media platforms to enhance its services. Using platforms in which the users already have a presence is important as the users are confident in using the platform and trust the information they receive on the platform. A library presence on the platforms that are used could enhance users' willingness to use the library's social media accounts to accessing information.

#### **8.4.5 Student–Library Social Network**

Library staff should liaise with the leaders of each year group on designated social media deemed suitable and share vital information about the library with them. They could then expect the group leaders to share the library information with the students on their groups. This will ensure that the students remain informed about the available information in their respective fields of study as well as other library events and promotions.

#### **8.4.6 Staff Training**

Academic library staff should undergo training on user behaviour to create awareness on the way in which to positively respond to their users' expressed information needs. This would support them in inculcating a warm reception towards their users and support their users by guiding them on the way in which to satisfy their information needs. This contributes to the creation of a user-friendly environment, leading to positive attitudes and feelings towards the library and the use of the library for information-seeking purposes.

#### **8.4.7 Building Trust**

Users need to use the library confidently and they need to trust the library's services. Therefore, it is important for the library to build trusting relationships with its users to enhance their information-seeking experiences and the delivery of library services. For that to happen, the library would have to create a user-friendly and organised environment with the necessary resources to cater for user information needs to ensure reliability.

### **8.5 FUTURE RESEARCH**

A descriptive phenomenological research method using semi-structured interviews to collect data was used in the current study to acquire an understanding of the student library users' lived experiences of using mobile-based social media. A different methodological approach such as focus groups or narrative inquiry might yield different insights and could therefore be used in future studies to explore users' information-seeking behaviour while using mobile-based social media technologies.

Future studies should be carried out on the use of mobile-based social media technologies by academic staff of the FULafia when interacting with students, to understand their information behaviour using the mobile technology.

The present study focused on library users' information-seeking activities. Subsequent research could also explore the use of mobile-based social media technologies in a classroom setting. Such a study would provide better insight into the role social networking among peers and collaboration play in carrying out assigned tasks in their learning environments.

In the findings, some participants revealed negative emotions towards using the library. A future study could focus on identifying the library-related barriers students experience which influence their information-seeking activities in the university library.

Postgraduate library users' information-seeking activities when using online resources in the library of the FULafia can be explored, to acquire an understanding of the use they make of mobile-based technologies.

## **8.6 VALUE OF THE STUDY**

The study contributed to the body of knowledge by using Meyer's information behaviour model. This model includes a technology component which could be used to show the way in which technology influences users' information behaviour. In this regard, this model supported the researcher in her exploration of student library users' information-seeking behaviour when they use mobile-based social media technologies. Using Meyer's model supported the researcher in identifying some of the means students employ to deal with their academic task-related issues when they lack the necessary knowledge and skills to seek information in the library.

Secondly, Meyer's model served as a conceptual framework in steering the study's literature review chapters to cover important aspects of information behaviour such as the identification of vital components of information and information behaviour. For instance, the components of information, user, context, technology and information activities, all contributed to clarifying the context of the study.



Thirdly, the model supported the researcher in placing mobile technologies in the technology component and to show the way in which mobile technologies influence information behaviour.

Finally, the library has learnt more about the students' use of mobile technologies and social media to satisfy their information needs. The acquired knowledge will enable the library to, if applied, improve its services and ensure the library remains relevant when assisting its student users in meeting their information needs.

## **8.7 SUMMARY AND FINAL COMMENTS**

The present study explored the use of mobile-based social media technologies for library service delivery in FULafia, North Central Nigeria, with a focus on users' information-seeking behaviour. Meyer's (2016) information behaviour model was used as the conceptual framework for the study and in this regard guided the literature review and the empirical study. Using the model supported the researcher in revealing insights into users' information behaviour while using mobile technologies, mobile devices, mobile apps and social media. The study also showed the way in which the participating students' cognitive, affective and sensorimotor structures influence the use of the mobile-based social media technologies while seeking information.

A descriptive phenomenological research method was employed, and data were collected through semi structured interviews. This allowed the researcher to collect data on the participants' lived experiences of using mobile-based social media technologies. The findings revealed that the use of mobile-based social media in information seeking is affected by the participants' cognitive and affective structures which shape their attitude towards information sources and the way they use the information sources. In addition, personal and environmental barriers were revealed that affect the participants' information-seeking activities. In order to get access to information that would satisfy their information needs, the participants relied on online social media groups.

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## APPENDIX A

### RESEARCH ETHICAL CLEARANCE LETTER



#### DEPARTMENT OF INFORMATION SCIENCE ETHICS REVIEW COMMITTEE

22 August 2019

Dear Ms Alice OIje Odu

**Decision:**

**Ethics Approval from 22 August 2019 to 22 August 2024**

DIS Registration #: Rec-220819

References #: 2019-DIS-0031

Name: AO Odu

Student #: 58554459

Researcher(s): Alice OIje Odu  
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082 664 1972

**Use of mobile-based social media technologies for library services in Federal universities North Central Nigeria.**

Qualifications: Doctoral Study



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Thank you for the application for research ethics clearance by the Unisa Department of Information Science Research Ethics Committee for the above-mentioned research. Ethics approval is granted for five years.

The *low risk application* was reviewed and expedited by the Department of Information Science Research Ethics Committee on 21 August 2019 in compliance with the Unisa Policy on Research Ethics and the Standards Operating Procedure on Research Ethics Risk Assessment. The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy of Research Ethics.
2. Any adverse circumstances arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Department of Information Science Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards the protection of participants' privacy and the confidentiality of the data should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no. 4 of 2013; Children's Act no. 38 of 2005 and the National Health Act, no. 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date of **22 August 2024**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

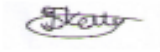
*Note:*

*The reference number 2019-DIS-0031 should be clearly indicated on all forms of communication with the intended research participants, as well as the Committee.*



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Yours sincerely




Dr Isabel Schellnack-Kelly  
Department of Information Science: Ethics Committee



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## APPENDIX B

### PERMISSION LETTER TO CONDUCT RESEARCH AT THE FEDERAL UNIVERSITY OF LAVIA, NIGERIA

	<b>FEDERAL UNIVERSITY LAFIA</b> P.M.B 146 LAFIA <b>OFFICE OF THE REGISTRAR</b>
<b>Professor Muhammad Sanusi Liman</b> B.Tech (ATBU), M.Sc (Jos), Ph.D (Okayama) <b>VICE CHANCELLOR</b>	<b>Dr. Abubakar Mamuda</b> B.Sc (Hons), M.Sc, Ph.D (Abuja) mamuda.abubakar@fulafia.edu.ng <b>REGISTRAR</b>
FUL/REG/EST/A0176/153	June 4, 2018

**Odu, Alice Olije**  
Information Science Department  
University of South Africa  
South Africa

Dear Madam,

**RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT FEDERAL UNIVERSITY LAFIA, NORTH CENTRAL NIGERIA**


Your letter of request dated May 23, 2018 refers, please.

I am pleased to convey to you, the Vice Chancellor's approval to conduct research at the Federal University Lafia on "**Use of Mobile Based Social Media Technologies for Library Services Federal Universities, North Central Nigeria**".

The University wish you goodluck in carrying out the research and that when completed, it (The Research Work) will contribute immensely to wealth of knowledge.

Please accept the best wishes of the Vice Chancellor.

Thank you.

  
**Ignatius Efiom**  
Deputy Registrar, Legal

For: Registrar

## APPENDIX C

### PARTICIPANT CONSENT FORM

#### CONSENT TO PARTICIPATE IN THIS STUDY

I, \_\_\_\_\_ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the semi-structured interview.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname ..... (please print)

Participant Signature ..... Date .....

Researcher's Name & Surname ..... (please print)

Researcher's signature ..... Date:2/08/19

## **APPENDIX D**

### **INTERVIEW SCHEDULE**

#### **A. Background Information**

My name is Alice Odu, a doctoral student from the Information Science Department at the University of South Africa. I am conducting research on the use of mobile-based social media technologies in the library at the Federal University of Lafia, North Central Nigeria. I also happen to be a librarian and I thought talking to you as a student of the Federal University of Lafia will afford me the opportunity to understand from your perspective what it takes to use mobile phones to access information especially for academic purposes (library and internet).

#### **B. Opening**

Thank you once again for agreeing to grant me this opportunity to interview you. As I mentioned in the survey questionnaire, the duration is between 30 and 45 minutes. For privacy sake, your name will not be mentioned in the study, only your year of study and field of discipline. The interview questions will be centred on your experiences using mobile devices, apps and social media technologies. Let me know if you have any question before we start.

#### **C. Interview Questions**

1. In what department are you studying?
2. What is your year of registration?
3. What kind of mobile phone do you have?
4. Do you use your mobile device to access the Internet for information searches? What are the factors that influence your information seeking using your mobile device?
5. Do you make use of any mobile apps? (Mobile apps/social media apps) If yes, what types of social media app do you use?
6. What is your experience of using mobile apps or social media apps?
7. Does the availability of social media make seeking information using your mobile device easier? Can you describe the process of accessing information using your mobile device?

8. Have you tried to search for information from the university library using social media?
9. What are the barriers or challenges you experience when using your mobile device to search, access or use information online or in the library?
10. What type of mobile app or social media would you recommend that the library use?

**D. Closing**

I sincerely appreciate the time you took for this interview. Is there anything else you think would be helpful for me to know so that I can successfully describe users' experiences using mobile-based social media technologies for library services? Would it be acceptable to call you if I have any more questions? Thanks once again.