

https://dspace.org/

Evaluating the Likely Adoption of a University Mobile App at WBS in South Africa

Savvides, Michael George

2017
https://hdl.handle.net/10539/23904

Downloaded from a DSpace repository. https://dspace.org/

Evaluating the Likely Adoption of a University Mobile App at WBS in South Africa

Michael Savvides

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2017

ABSTRACT

This research paper set out to determine what the likely adoption would be of a new university mobile App amongst the current Wits Business School students in Johannesburg.

The increased usage of mobile technology amongst students sets the expectation of wanting information to be available at their fingertips at any time, and anywhere. The supremacy of mobile technology has a significant influence on a student's life as it creates effective lines of communication and engagement, where students increasingly want to conduct university activities on their smartphone devices via a mobile App.

The aim of this paper was to identify the factors that have an influence on a student's decision to adopt a new university mobile App, as well as to investigate the relative impact each of the independent variables has on the student's intention to adopt the App. Using a Technology Acceptance Model (TAM) as the theoretical framework, it was discovered, after analysing the questionnaires, that the factors and key drivers that would need to be tackled for successful adoption are Trust; Perceived Value; and Social Influence.

The results showed that 83.75% of students would adopt a new university App. Based on this, it gave rise to and justified the creation of a business case in the final chapter of the report.

Using the primary research and secondary research data from literature, and addressing the key drivers in the design and development of the proposed new App, a financially viable business model resulted. This validated the formation of the business case, where the Wits Business School are effectively asked to invest a specific amount of capital to get the new mobile App developed and introduced into the Business School by the start of the 2018 academic year.

Keywords: University mobile App; TAM; WBS Students; Business Case

DECLARATION

I, **Michael George Savvides**, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at ……

On the …….. day of …… 20…..

DEDICATION

This study is devoted to the South African tertiary education sector, focusing specifically on the Wits Business School, and its students who are determined to work hard and continuously improve the institution, as well as contributing to the development of students in South Africa. It is hoped that the Wits Business School will take an interest in this business case proposal, and make use of the of the results from this study in a bid to potentially introduce a university mobile application to improve the experience of all Business School students.

ACKNOWLEDGEMENTS

With the completion of this research I am eternally grateful for the help and assistance I received from my research supervisor, Dr Thanti Mthanti, for his effort in ensuring that this study was completed on time. His detailed insights, expertise and valuable suggestions are highly appreciated.

I sincerely would like to thank the Wits Business School for allowing me to make use of their resources and facilities, which permitted me to complete this research. A special thank you goes out to all the respondents for the time they set aside to partake in this study, as well as the trust and enthusiasm to co-operate in my research, and all the people who in one way or another, contributed to, and supported me.

Lastly, I would like to show my utmost appreciation and thankfulness to my amazing parents, Mr. and Mrs. Savvides, and my older brother, as well as my incredible friends for the moral support they gave me, ensuring that this business case was completed successfully.

Lastly, I would like to dedicate a special thank you to the Lord for giving me this opportunity and the knowledge to take on this task.

CONTENTS PAGE

ABSTRACT ii

DECLARATION iii

DEDICATION iv

ACKNOWLEDGEMENTS v

LIST OF TABLES ix

LIST OF FIGURES x

ACRONYMS AND ABBREVIATIONS xi

CHAPTER 1. INTRODUCTION 1

1.1 Purpose of the study 1

1.2 Context of the study 1

1.3 Problem statement 2

1.3.1 Main problem 2

1.3.2 Sub-questions 3

1.4 Significance of the study 3

1.5 Delimitations of the study 4

1.6 Definition of terms 5

1.7 Assumptions 5

CHAPTER 2. LITERATURE REVIEW 6

2.1 Introduction 6

2.2 Communication Within Academic Institutions 7

2.2.1 Benefits of Enterprise Apps 9

2.3 How Mobile Apps Can Improve Communication 10

2.4 Evolution of Online Technology 11

2.5 South Africa's Mobile App Market 14

2.6 South Africa's Smartphone Market 15

2.7 Mobile App Preferences Amongst South Africans 16

2.7.1 Findings of Study on Undergraduate Students in SA 17

2.8 Factors That Influence Mobile App Adoption 19

2.9 Buy-in From the Target Audience 22

2.10 Funding a Mobile App 23

2.11 Cost and Time for Developing an App 24

2.12 Risks Involved in New App Development....26
2.14 Generating Revenue from an App....27
2.14 Getting an App to Market....28
2.14.1 Ways to Market a New Campus App....31
2.15 Conclusion....32
CHAPTER 3. RESEARCH METHODOLOGY....33
3.1 Research Methodology/ Paradigm....33
3.2 Theoretical Framework....34
3.3 Research Design....35
3.4 Population and sample....37
3.4.1 Population and Sampling....37
3.4.2 Data Collection and Capture....38
3.4 Reliability....39
3.5 Validity....39
3.6 Potential Limitations of the Study....40
3.7 Demographic Profile of Respondents....41
CHAPTER 4. DISCUSSION AND ANALYSIS....43
4.1 Introduction....43
4.2 Demographic Analysis....44
4.2.1 Age....44
4.2.2 Gender....45
4.2.3 Computer/ Mobile Knowledge....45
4.2.4 Correlation Matrix for Constructs....46
4.3 Factors that Influence the Students' Adoption Decision....47
4.3.1 Analysis of Independent Constructs....48
4.4 The Impact of the Factors on the Intention to Adopt....53
4.3 Concluding Remarks....56
4.3.1 Trust....57
4.3.2 Perceived Value....58
4.3.3 Social Influence....58
4.3.4 Perceived Ease of Use....59
CHAPTER 5. BUSINESS CASE....60
5.1 Executive Summary....60
5.2 Introduction and Overview....60
5.3 Addressing the Key Drivers....62

5.3.1 Trust 63
5.3.2 Perceived Value 64
5.3.3 Social Influence 64
5.4 Value Proposition 65
5.4.1 The Student 65
5.4.2 WBS and Faculty Staff 66
5.4.3 Advertising Companies 67
5.4.4 Potential Network Growth 68
5.5 Assessment of Competition 69
5.5 Monetisation Model 70
5.5.1 In-App Advertising 71
5.5.2 Job Offer Fee 73
5.5.3 Placement Fee 74
5.7 Financial Model Discussion 75
5.7.1 The App's Revenue 75
5.7.2 COGS 75
5.7.3 OPEX 76
5.7.4 Depreciation and Amortisation 76
5.7.5 Loans 77
5.7.6 Net Income 77
5.7.7 Valuation of Business 77
5.8 Conclusion 78
REFERENCES 80
APPENDIX A: App Monetisation Models 89
APPENDIX B: Research Instrument 91
APPENDIX C: Assumptions and Calculations 95
APPENDIX D: Financial Model 99

LIST OF TABLES

Table 1: Mobile App development cost and time (goodfirms.com, 2016)..... 25

Table 2: Risks in developing a native mobile App (Stangarone, 2013)……...27

Table 3: Demographic information of students……45

Table 4; Correlation Matrix……46

Table 5: Likert-Scale response choices……47

Table 6: One-sample statistics - Trust (T)……47

Table 7: One-sample statistics - perceived value (PV)……..…49

Table 8: One-sample statistics - perceived ease of use (PEOU)……....50

Table 9: One-sample statistics - social influence (SI)……..……..51

Table 10: The SPSS model summary…….....53

Table 11: Coefficients…….....53

LIST OF FIGURES

Figure 1: Number of Apps available in leading App stores as of June 2016 (Statista, 2016)..... 13

Figure 2: Most used phone activity by country (GeoPoll, 2015) 15

Figure 3: SA Smartphone market share (Effective measure, 2016) 16

Figure 4: Top App matrix in South Africa (App Annie, 2016)..... 19

Figure 5: Sources of awareness for smartphone Apps (Google, 2015)..... 29

Figure 6: Types of ads prompting App downloads (Google, 2015)..... 30

Figure 7: TAM for mobile service as an extension and modifications of TAM (Govender & Sihlali, 2014)……..……36

Figure 8: Beta and p-value control measure chart..……54

ACRONYMS AND ABBREVIATIONS

APP	Application
CAPEX	Capital Expenditure
COGS	Cost of Goods Sold
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation
IP	Intellectual Property
IRR	Internal Rate of Return
IT	Information Technology
IU	Intention to Use
MBA	Master of Business Administration
NPV	Net Present Value
OPEX	Operating Expenses
PC	Personal Computer
PEOA	Perceived Ease of Adoption
PEOU	Perceived Ease of Use
PPC	Pay-Per-Click
PV	Perceived Value
SA	South Africa
T	Trust
TAM	Technology Acceptance Model
UB	Usage Behaviour

VP	Vice President
WACC	Weighted Average Capital Cost
WBS	Wits Business School

CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose for this research is to evaluate the likely adoption of a proposed new University mobile App amongst students in the Wits Business School (WBS).

1.2 Context of the study

Technology has evolved significantly over the past 10 years, where the advancement of mobile technology has resulted in more than 80% of individuals accessing the Internet via their mobile devices on a daily basis (Taneja & Goel, 2015).

Furthermore, the use of mobile technology and the associated applications has gained attention from educational institutions, specifically amongst university students (Taneja & Goel, 2015). Universities around the world have started introducing mobile applications (Apps) in their institutions, providing an easier and more effective platform for communication that is accessible to all stakeholders involved i.e. students, lecturers, etc. (Taneja & Goel, 2015).

Students are surrounded by mobile technology, where they have an expectation for information to be available at their fingertips at any time, and anywhere. This supremacy of mobile technology in a student's life has an influence on their decision when deciding on which university to attend, where students increasingly want to conduct university activates on their mobile devices via a mobile App (Richard, 2014).

According to Taneja and Goel (2015), universities need to keep up with the changing times and listen to what students want and need if they are to continue attracting and retaining students, and having a university mobile presence will assist in doing so. Mobile Apps in any institution are able to provide many benefits from offering greater efficiency; cost saving; customer and employee engagement; value add and much more (Gunnarsson, 2013).

However, there is currently no mobile App provided in the WBS, which allows for ease of communication and that brings all University activities together on one formal platform. Therefore, research into a proposed solution of a new mobile App has been carried out.

A questionnaire was sent out, where data were collected and subsequently analysed. The researcher set out to determine the likely adoption of a proposed new university mobile App by WBS students.

Consequently, the primary and secondary research conducted in this study has contributed to the development of a business case for a proposed new university mobile App.

1.3 Problem statement

1.3.1 Main problem

There is currently no university mobile App within the WBS. Literature suggests the introduction of a university mobile App may assist in addressing communication issues; enhance the efficiency of educational activities, as well as improve the overall university experience in an institution.

There is also no formal platform in place that brings all forms of communication together, which allows for clear and effective communication that ensures the process of doing a course at the Business School, is more enjoyable, efficient and memorable.

The business case presented by the researcher, which fundamentally sets out to assist in addressing the problem identified, is the proposed development of a new University mobile App for smart phones and tablets that is sustainable and transferable, where the App will be able to bring together and provide a platform to host all the relevant WBS activities whilst allowing for ease of communication between students and the Business School.

This study set out to explore the various factors that influence the adoption decision of mobile Apps by university students.

1.3.2 Sub-questions

This study is guided by the following research questions:

1- What are the factors that influence students to adopt a university mobile App?

2- What is the relative impact of each independent variable on the intention to adopt a university mobile App?

3- What is the financial viability of a proposed new university mobile App?

1.4 Significance of the study

The study provides guidance to the researcher for the likely adoption of a new university mobile App, which is designed to manage all university activities and, amongst many other features, assist in improving communication between students and the Business School.

Communication within university institutions, not only in South Africa, but also around the world appears to be a major issue. A study led at the University of Manchester was carried out where the intention of the study was to improve communication between students and the academic staff (Waddington, 2010).

According to Waddington (2010), the research at the University of Manchester showed that dissatisfaction with communication in the institution as a whole was seen to be a key indicator that resulted in poor levels of student satisfaction.

A similar study was conducted with students at the University of KwaZulu-Natal in South Africa, where communication within the institution also posed as a significant issue (Maharajh, 2011).

Maharajh (2011) and Waddington (2010) both describe the dissatisfaction of communication within the respective universities to clearly be a key element that caused student dissatisfaction, where action needed to be taken to find an effective solution.

Harvard University in the USA introduced a mobile App in 2013 to improve the university experience of their students, where they could now effectively interact with one another, creating a community and successfully enhancing the overall day-to-day running of university activities as well as improving communication between the students and the university (Harvard, 2016).

Students really want more than an optimised version of a university website, they want a mobile App that: is trustworthy; adds value; can be used on a day-to-day basis; keeps them engaged; provides an interactive user interface; and most of all, allows for clear and effective lines of communication between them and the university (Richard, 2013).

Therefore, considering the absence of a university mobile App in the WBS, it appears there is an opportunity to provide a new platform that is able to bring all forms of university activities together by providing a formal mode of communication that can be used by students and WBS staff. This will make the life of the students and Business School staff a lot easier, where it will allow for greater communication, interaction and engagement.

1.5 Delimitations of the study

In order to narrow the scope of the research, the researcher imposed some delimitations that aided in effectively completing the study within the specific requirements.

The secondary research initially focused on communication, as it is a major issue faced in higher/ tertiary education institutions around the world, as well as in institutions that operate in South Africa. The literature review also looked at the benefits of adopting an enterprise mobile solution, where it also considered what factors have an influence on the likely adoption of mobile Apps amongst South African university students.

The main focus of the research was to evaluate the likely adoption of a new university mobile App at the WBS. Hence, the researcher limited the research to the WBS. The primary research solely focused on a sample group of students from the MBA, MMs and PDBA programmes at the WBS in the Johannesburg area of South Africa. Both male and female students from the age of 18 and older were considered, due to the fact there

is a range of ages in the Business School. However, only current students were considered and students who have graduated already were not considered.

The reason the student sample considered only consisted of WBS students is because, the intention is to initially introduce a university mobile App in the WBS. Therefore, students from the Wits main campus were not considered in this research.

1.6 Definition of terms

- Mobile Application (App): "is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs" (techopedia, 2016, p.1).
- Communication: "the process of transmitting information and common understanding from one person to another… unless a common understanding results from the exchange of information, there is no communication" (Lunenburg, 2010, p. 1).
- Technology Acceptance Model (TAM): "a model of user acceptance of information systems technology based on the theory of reasoned action" (Ekhlassi, 2017,p.1).

1.7 Assumptions

- It was assumed that the sample used represents the normal perspectives and experiences of the majority of the students at the WBS.
- It was assumed that the majority of the students had used some form of mobile App before, based on the study conducted by Govender and Sihlali (2014). According to Chaffey (2016), 90% of time people spent on their mobile device is in Apps, where usage of mobile Apps dominates browser in actual mobile device usage.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

It must be noted, although this research document follows a similar structure to that of a typical research report, in the final chapter where a conclusion is usually placed, a business case is presented instead, where it is justified by the research covered in the earlier chapters.

Due to the nature of this study, the literature review is broken down into a shape of a tree, where there are different sections that allow the reader to understand what the researcher is trying to achieve, where these sections essentially represent the various branches leading to the trunk. Therefore, In order to determine and effectively answer the main research question, it is crucial to understand all contributing factors that indeed lead to the trunk of the tree, which is the likely adoption of a proposed new mobile App.

Even though there are studies that have provided some background information on the adoption behaviour of students towards mobile Apps, research that sets out to focus on the factors that influence a student to adopt a mobile App is limited (Govender & Sihlali, 2014). This is substantiated in a similar study conducted by Potgieter (2015), where the author also suggests more research needs to be conducted that looks at the various factors that influence a students decision to adopt a mobile App in SA.

Thus, the literature review has been segmented into sections, where it sets out to answer the sub-questions identified earlier. The research initially sets out to simply outline and establish what is meant by dissatisfaction of communication, which is faced by university students, as this is a major issue in institutions that a mobile App can address (Richard, 2014).

Subsequently, the evolution of mobile technology has been looked at in great detail, focusing specifically on the mobile App industry in SA, with the aim of creating a better understanding of the mobile App market. An in-depth analysis on the preferences as well as the influencing factors that have an impact on a person’s decision to adopt a new

mobile App follows suit, where the intention is to establish a greater understanding of the topic at hand, for the purpose of eventually answering the research questions.

Lastly, the literature review looks at how an App is funded, as well as the monetisation models that enable revenue generation; this was done to get a greater understanding of what the business case for a proposed new App would need to include.

2.2 Communication Within Academic Institutions

According to Lunenburg (2011, p. 1), “Communication is the process of transmitting information and common understanding from one person to another”.

In every administrative function and activity, communication is used in some way or form, either directly or indirectly (Lunenburg, 2011). Communication is crucial whether one is planning, organising or leading people, and where it is usually done with and through other people - or by the use of a specific medium and technology platform.

The work done by Lunenburg (2011) speaks directly to the research conducted by Lutgen-Sandvik (2010), where both authors determine that one of the great hindering forces of organisational effectiveness is as a result of poor communication.

Adding to the findings of the above authors, both Brun (2010) and Summers (2010) who did their research in similar fields, believe that every person’s ability to communicate will have a noteworthy effect on their personal as well as their organisational effectiveness.

Lack of effective communication is a major issue across all types of institutions, whether it is in business, education and even sport (Keyton, 2011).

There was a study led by the University of Manchester, where the intention was to try improving communication between students and the institution. According to Waddington (2010) who conducted the research at the University of Manchester, dissatisfaction with communication in the institution as a whole was seen to be a key indicator that resulted in poor levels of student satisfaction.

This prompted the need for action to address the issue. The University acknowledged that student communication is an intricate matter that needed to be approached in a particular way, as it involved several varied interactions at a wide range of levels within the institution (Waddington, 2010).

According to Waddington (2010), when students spoke about their dissatisfaction with communication, they referred to a varied range of instances that had arisen throughout the University. Some of the issues revolved around:

- Assessment feedback;
- Relationships with academic staff;
- Provision of key course information;
- Lack of knowledge of what is going on in and around the University;
- Notice of cancelled lectures and seminars;
- Lack of communication between group members (Waddington, 2010).

A study of a similar nature was conducted on students at the University of KwaZulu-Natal in South Africa, where communication challenges were also investigated. Both Maharajh (2011) and Waddington (2010) describe the dissatisfaction with communication within the respective institutions to clearly be a key constituent that resulted in the lack of student satisfaction, where action needed to be taken to urgently address the matter.

One of the recommendations that was suggested by the students in order to address the communication problem at the University of KwaZulu-Natal, was to establish a formal or defined communication platform that could be used by all, even for international students coming to the University (Maharajh, 2011).

From the findings, Maharajh (2011) points out that the respondents thought a distinct communication network that brought all forms of communcication together, would effectively alleviate some of the challenges. Respondents also suggested the use of online techonlogy; a communication plan; together with a marketing plan that would aid in the implementation.

2.2.1 Benefits of Enterprise Apps

As the world is becoming ever more mobilised, organisations are gradually introducing mobile Apps into their business to enhance processes. These Apps are able to increase productivity, improve communications, as well as allow these companies to separate themselves from their competition (Gunnarsson, 2013).

However, there has been a much slower uptake of mobile Apps in higher education institutions in South Africa, who need to prioritise spending on other educational resources as well as on staff, where some find the potentially expensive set up costs of a new mobile App difficult to rationalise and comprehend (Richard, 2014).

Conversely, enterprise mobile Apps have been proven to enhance work productivity and lessen costs in numerous industries, so it is justifiable for a university to put up the costs by highlighting the reduction of other costs as a result of the introduction of the App (Richard, 2014).

According to Richard (2014), not only will a university App increase student as well as staff productivity, but it too has the potential to minimise costs associated with printing of teaching materials, etc. Above all, a well-designed university App can enhance the overall student experience dramatically by making the attendance at university as well as conducting research a much smoother and more effective procedure (Richard, 2014).

Some of the areas of higher education that a university App can benefit are:

- The assessment of submitted work;
- Distribution of lecture material;
- Campus news sharing;
- Timetable updates;
- Campus Events;
- Job opportunities;
- Registration.

There are many more benefits an App can bring, the potential for a university mobile App is significant and should not be overlooked (Gunnarsson, 2013). An App is able to

improve the university experience of both students and staff by effectively allowing them to have easy access to the relevant university information and activities, which can be retrieved on the App via their mobile device anywhere at any time (Gunnarsson, 2013; Richard, 2014).

But if a university intends on aligning themselves with the expectations of the modern day student, it will require the institution to go a step further by bringing together and combining existing technological solutions that will effectively allow the students to gain easy access to university services whenever they desire (Richard, 2014).

In moving forward with the research, it is beneficial to gain a greater understanding of how mobile technology has evolved to what it is today.

2.3 How Mobile Apps Can Improve Communication

Mobile Apps in the last couple of years have become a common fixture on number of university and college campuses around the world, where some institutions have created Apps for students to do everything from checking their marks to checking their laundry (Negrea, 2014).

However, according to Negrea (2014), many of these institutions have had to continuously update the Apps they offer students, by creating new features that enable the App to remain sustainable for the ever-growing tech-savvy generation.

In the USA, students from the Dallas Country Community College District have a mobile App that allows them to check their marks, submit assignments as well as post comments on the available discussion board, essentially ‘extending the classroom’ and creating further engagement (Negrea, 2014).

The use of Apps in tertiary organisations in the United States, has effectively allowed for ease of communication between students and the respective institutions. An example of this was at the Ohio State University, where, in order to avoid fragmented communication, they created a single mobile App that unified the various academic units on their campus as well as saving cost by only having to maintain one App as opposed to several integrated Apps (Negrea, 2014).

The University used the input from the students as a significant driving force behind the features and characteristics of the App the institution subsequently developed; letting the students lead the way is crucial, as they are the ones who will be using the App most of the time (Negrea, 2014).

By creating an effective mobile App for universities that attends to the needs of the students, this will effectively allow students to know what is going on in and around campus; accessing relevant information at the click of a button; as well as allow students to have their own input into what is happening in the University. A result of this will effectively reduce the number of calls and issues campus offices and administration staff have to deal with.

According to Ma et al. (2014), it is imperative to continuously preserve a mobile App in order for the App as well as the business behind the App to remain sustainable. This can be done through constantly maintaining and upgrading the App by adding new features, but it is crucial to use focus groups or questionnaires to establish whether the user will actually use the new feature.

The work done by Prinsloo and James (2015) on digital disruptions, speaks directly to what Ma et al. (2014) discussed. The authors emphasise that when developing an App and trying to get it to market, it is crucial to understand what the users actually want and what they will use, as those are not always the same.

2.4 Evolution of Online Technology

Since the introduction of the Internet towards end of the 20th century, the way in which people communicate, share information and acquire knowledge has been revolutionised on an unparalleled scale (Jadad & Gagliardi, 1998).

Nearly three decades on, the research conducted by Subramanian (2015) is in agreement and builds on the work done by Jadad and Gagliardi (1998). However, the author discusses how the Internet has altered dramatically from its initial ‘dial up’ days. It has become a dominant tool designed for varied uses, which includes connecting with an

increasingly large social support network, as well as allowing users to be aware of what is happening on the other side of the world at the click of a button (Subramanian, 2015).

In the ever changing world of technology, mobile Apps for smartphones and tablets are one of the fastest growing segments of the global mobile market, which effectively is a result of the highly advanced Internet made available to users (Holla & Katti, 2012).

The use and development of mobile Apps is progressing quickly, providing the end user with a meaningful and fast experience.

The initial birth of mobile Apps was in 2007, with the release of Apple's first iPhone (Rakestraw, Eunni, & Kasuganti, 2012). Mobile App users have the advantage of experiencing the functionality of a personal computer (PC) in the palm of their hand.

According to Rakestraw et al. (2012), a statistic was released by Mobilewalla.com (a company devoted to categorising and rating mobile Apps) in December 2011, where the one millionth mobile App was made available to users. Rakestraw et al. (2012) further explained that the mobile App industry would grow exponentially each year with advances in Internet usage and smartphone availability, where more than 15 000 mobile Apps were being developed each week already in 2011.

The prediction made by Rakestraw et al. (2012) was confirmed in the work by Nagappan and Shihab (2016). According to Nagappan and Shihab (2016), at the end of 2015, the world mobile internet user penetration surpassed more than half of the world's living population, where the estimated duration of time spent accesing online information from a smartphone device and tablet amounted to over three hours daily amongst the youth.

A reason behind this exceptional growth is the ever-increasing popularity of mobile Apps being created on a daily basis, where these Apps are developed for a wide range of uses. The work by Nagappan and Shihab (2016) is further backed by the statistics released by Statista in June 2016 (a statistical portal), where Android users have the option to now select between 2.2 million mobile Apps with Apple users having the option to choose from 2 million.

Figure 1 clearly illustrates the two dominant global players in mobile App distribution i.e. Google play and Apple's App Store. Apple's store only caters for iOS users, whereas Google play is the official App store for Android devices.

According to Ma, Gu and Wang (2014), one of the reasons why there is such an exponential growth in mobile Apps year on year, is due to the relative ease of development of the App when compared to that of a PC App. Nagappan and Shihab (2016) are in agreement and further add that mobile Apps cost substantially less to develop, which is shown in the massive year on year growth when compared to slower growth of PC Apps in recent years.

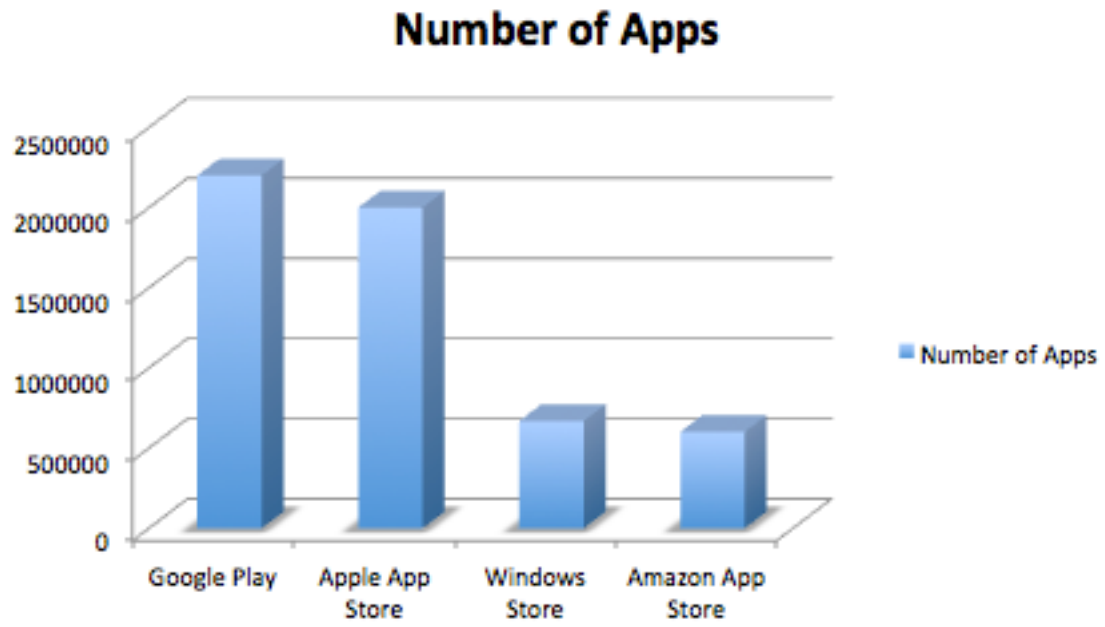


Figure 1: Number of Apps available in leading App stores as of June 2016 (Statista, 2016)

Though these figures are extraordinary, and would get anyone involved in App development excited, it must be noted that statistics show that large amounts of Apps are estimated to be used not more than once within the first six months of being downloaded (Statista, 2016).

2.5 South Africa's Mobile App Market

For the purpose of this research, it is crucial to also have a clear understanding and awareness of which category of mobile Apps is the most popular amongst users globally and in South Africa. According to Statista (2016), considering global share of Apps in June 2016, the most popular global category is 'Games' with 23.35%, in second place is 'Business' with 10.22%, where 'Social Media' is a mere 2.08%, which is something to consider.

Statista (2016) compared South Africa's average number of mobile Apps actively used by mobile Internet users to other countries around the world. South Africa has an estimated 6.7 in 2015 compared to the global average of 7.2. This statistic essentially means or represents the average number of mobile Apps that are actively being used by people in South Africa. This statistic is relatively good, as countries like Germany and Indonesia are on the same average usage.

A survey that was conducted by GeoPol and World Wide Worx in 2015, showed South Africa to be the leading Sub-Saharan African country for the number of mobile App downloads, which directly relates to the increase and high rate of smartphone users in the country (GSMA, 2016).

South Africa led the mobile App download market, where 34% of smartphone users were downloading Apps, and the next closest country is Ghana with 31% and Nigeria with 19% (GeoPoll, 2015).

Considering a report conducted by Goldstuck and Wronski (2016) on the South African mobile App market, they have identified 'Social Media' as the top mobile App category downloaded in the country in 2015.

Table 1 demonstrates the most common use of smartphones by country, with South Africa leading in the 'Download Apps' category.

	SA	Nigeria	Ghana	Kenya	Uganda
Facebook	41%				
Send SMS	52%	39%	40%	55%	43%
FM Radio	40%	36%	40%	46%	46%
Browse Internet	40%	47%	51%	34%	29%
Take Photos	45%	38%	37%	34%	29%
Instant Messaging	41%	34%	34%	40%	31%
Play Games	34%	34%	33%	30%	27%
Download Apps	34%	28%	31%	19%	18%
Twitter	14%	14%	13%	14%	11%

Figure 2: Most used phone activity by country (GeoPoll, 2015)

2.6 South Africa's Smartphone Market

Mobile Apps are sophisticated small computer programs that are designed to work on mobiles devices like that of a smartphone or tablet (Ma et al., 2014). A study conducted by Effective Measure (2016) suggested that 91.7% of South Africans have some form of smartphone device, where 81.6% of South African Internet users make use of their smartphones to gain Internet access as opposed to the traditional PC methods.

Figure 3 demonstrates how Samsung trumps all other Smartphone competitors by a staggering 41% of the market share in South Africa, with Apple having a mere 6% at the time of the study when it was conducted in March 2016 (IAB, 2016; Effective Measure, 2016). This is something to consider when deciding which App Store may be better for placing the proposed new App.

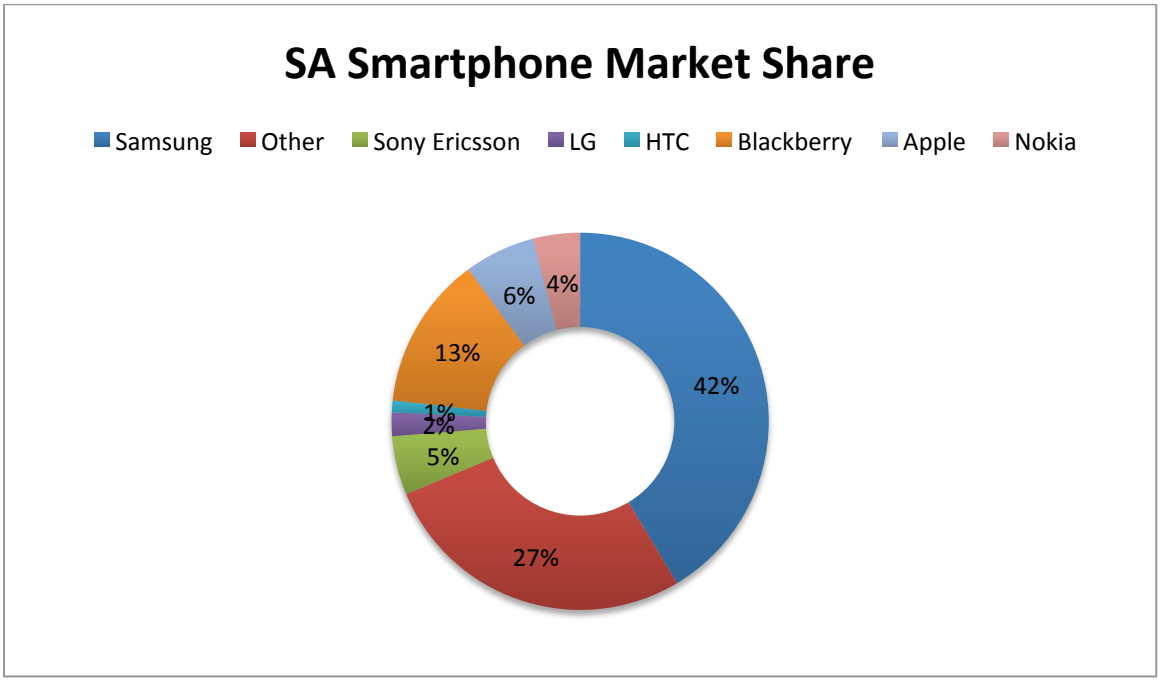


Figure 3: SA Smartphone market share (Effective measure, 2016)

The development of smartphones and devices alike have significantly altered the way in which people communicate with one another (Potgieter, 2015). Both Potgieter (2015) and Ma et al. (2014) discuss in their research how these mobile devices have progressed from a single-purpose device used for communication, into a superior tool that provides and allows users to carry out a number of different tasks.

Nagappan and Shihab (2016) build on the work by Potgieter (2015), where they strongly emphasise that these smartphone devices are mainly supported by mobile Apps, which are specifically designed to be compatible with the device, by downloading the App from the respective App Stores.

2.7 Mobile App Preferences Amongst South Africans

Potgieter (2015) conducted specific research that has significant relevance to this study, where the author set out to establish the preferences of mobile Apps amongst undergraduate university students in South Africa. The research covered the demographic profile of the respective users in order to determine what appealed to this particular market when downloading mobile Apps (Potgieter, 2015).

Around the world, and not only in South Africa, the effect of smartphone devices amongst students is extraordinary, where as much as 79% of young adult (ages 18-25) have a smartphone, and of that 79%, there is an estimated 70% who are students who use their smartphone devices to continuously remain connected (Potgieter, 2014).

Despite the number of mobile App downloads increasing year on year, the App users have revealed that if the App does not successfully lure them within the first couple of hours, they will subsequently delete the App, which is something important to consider (Srivastava 2014).

Potgieter (2015) discusses similar findings to that of Srivastava (2014), where both authors explain and point out that understanding the mobile App preferences of a smartphone user is imperative. This is definitely applicable to new App developers, where attempting to establish what motivates people to download Apps is one of the most difficult things to grasp.

The Vice President (VP) of Nielsen USA elaborates on what the above authors discuss. Monica Bannan spoke about how App developers, new or established, must continue to stay aware of what exactly App users anticipate or expect when using an App (Nielsen, 2014).

Mrs Bannan discusses something important that Srivastava (2014) failed to mention, when she emphasised the importance of how App developers need to consistently add value, functionality and robustness to their products. The VP of Nielsen also mentioned something of great relevance to this study, where she explains that there is no specific threshold or limit to the amount of Apps smartphone users are prepared to access per month, where over 30% of these users are devoting more time than they were in previous years. Thus, verifying that it is the content that really matters (Nielsen, 2014).

2.7.1 Findings of Study on Undergraduate Students in SA

The study conducted by Potgieter (2015), which set out to determine what the App preferences of undergraduate university students in South Africa are, found interesting

results. Potgieter (2015) researched two sample groups, where the one group was surveyed in 2013 and the other in 2014, which was important to see if the student's App preferences would alter from one year to the next.

It was discovered that the students (Ages 18 to 25) would discriminate which Apps they decide to download, where it was found that the regularity of App downloads was fairly low.

In 2013, the key motivation for user to download an App was based around their need for particular information, whereas in 2014, the core motivation for downloading Apps revolved around their desire for entertainment (Potgieter, 2015).

From the research, it was also discovered that both the 'price' and the 'size' of an App were significant concerns and things the students would consider when making the decision to download an App (Potgieter, 2015).

The matter around the price of an App is something Rakestraw et al. (2012) did discuss. Rakestraw et al. (2012) explains that price is crucial to consider when developing a new App, and deciding whether if it will be available on the App store for free or for purchase, will subsequently have an impact on your business plan and financial model.

One of the rare instance where a student conceded they have purchased a mobile App from an App store, the motivation behind the purchase is based on the perception that buying a mobile App effectively means it is of better quality (Potgieter, 2015).

It was established that when students purchased an App, it effectively was based on their desire to satisfy a particular need, where the average price they would pay for the App would be no more than R10, which is very important to consider when determining the price of a new App in South Africa (Potgieter, 2015).

Potgieter (2015) pointed out that the two social media Apps, Facebook and WhatsApp were the most popular, which is still consistent in 2016, with the findings discussed above of the most popular Apps and category in South Africa being social media (Statista, 2016).

The ability to access information as well as to be entertained were the two major needs of why the students download a particular App, which is why Facebook and WhatsApp were and still are the most popular Apps in South Africa, as they both satisfy the abovementioned needs. This is further validated in Figure 4 from the latest statistics on App Annie (business intelligence company providing market analysis for mobile Apps).

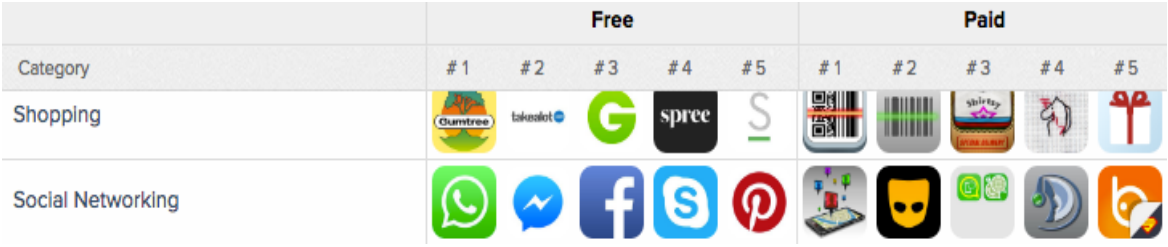


Figure 4: Top App matrix in South Africa (App Annie, 2016)

2.8 Factors That Influence Mobile App Adoption

For a person to decide to adopt and actually use a mobile App, there are various factors that need to be considered, as these factors have an influence on the adoption behaviour of the potential user (Govender & Sihlali, 2014).

A study conducted by Govender and Sihlali (2014) set out to investigate the various factors that subsequently lead to a student either adopting or rejecting a mobile App. Risk as well as privacy have been found to be significant factors that contribute to low adoption of a mobile App, but more particularly with Apps that hold sensitive personal information, like that of a banking App (Govender & Sihlali, 2014).

This is in line with the findings of the study conducted by Dupas, Green, Keats and Robinson (2012), where the authors add further by saying that risk and privacy are directly related to trust.

Rammile and Nell (2012) concur and build on this, where they add that the more technology driven a person's lifestyle, especially amongst the youth, the less risk they consider a mobile App to possess.

According to Lin (2011), customers that make use of wireless networks in their everyday life to conduct certain activities are more likely to consider adopting and using a mobile App. Potential users need to perceive and believe that a mobile App will add value to them if they are likely to adopt it (Lin, 2011).

Govender and Sihlali (2014) mention that it is important to consider the diversity of demographic groups as there may be differences in perception towards Apps, however, in their findings it is clear that amongst university students, there is little to no difference between the genders. The authors state that the majority of university students are equally exposed to the different forms of digital media, where the perceived competency of computer knowledge was significantly over the average for both male and female, suggesting they have equal opportunities to tertiary education regardless of gender (Yin, 2016).

A study by Akturan and Tezcan (2012) presented similar results, where they emphasised how student attitudes towards a mobile App is the most crucial influencing factor in their decision to adopt it. Furthermore, the authors found that the attitudes of a potential target user is affected by the perceived value of using the mobile App with regard to its performance, capabilities and social factors (Akturan & Tezcan, 2012).

Girum, Bongsik and Lee (as cited by Govender & Sihlali, 2014) also suggest potential App users are largely motivated and encouraged by their attitude towards technology as a whole. Moreover, a similar study by Zhang and Shim (2010) found that people who already use mobile Apps and technology alike, are most likely to perceive mobile Apps to be easy to use when compared to others who do not.

This claim highlights the need to potentially investigate more and specifically look at the influential factors concerning the adoption of Apps amongst university students, as they are familiar with technology.

A study conducted by Musa, Saidon, Harun, Adam, Dzahar, Haussain and Lokman (2016) suggests that the actual features of a mobile App are more influential predictors to a potential user's attitude when compared to security and confidentiality.

From the research conducted by Musa et al. (2016), it was found that the following factors have a significant influence on the attitude of the consumer towards a mobile App:

- Mobile App features as well as the allowance for user personalisation have a positive influence on their attitude;
- The Security and confidentiality a mobile App offers has a significant contribution and influence towards the adoption behaviour by a potential customer;
- The brand trust has a really significant influence, which relates to the willingness of the potential user to rely on the mobile App's ability to perform the functions it is designed to do;
- The quality of service the mobile App and the App service provider offers the customers, where the perception of a particular company, and the user's expectations have a real noteworthy influence on their attitude.

Musa et al. (2016) concluded that all these factors, acting independently, have a really positive influence on a person's intention and decision behaviour for adopting an App. This is directly in line with the study conducted by Govender and Sihlali (2014), where the authors further added that, although independently they have a positive influence, collectively they have less of a positive effect.

Therefore the work by Musa et al. (2016) is in agreement with Akturan and Tezcan (2012) on the topic of attitude, where they refer attitude to the knowledge and positive or negative feelings a person feels towards an object, and in this case, a mobile App.

The potential user's attitude will subsequently lead to their behavioural intention, which can be described as the likelihood of a person, or their subjectively probability that they will indulge in a specific behaviour (Agrebi & Jallais, 2012). A consumer's attitude will positively influence the actual decision to adopt and use a mobile App (Musa et al., 2016).

Furthermore, Govender and Sihlali (2014) emphasise the importance of understanding the difference between the various constructs that have an influence on a user's likely adoption of a mobile App. Govender and Sihlali (2014), in agreement with Akturan and

Tezcan (2012) found that trust; perceived value; the perceived ease of use; and social factors are all key constructs that form part of their attitude and have a significant influence on a student's adoption behaviour towards a mobile App.

2.9 Buy-in From the Target Audience

This section discusses the research problem concerning the buy-in from users of the proposed new App i.e. the students, lecturers and administrative staff.

A study was conducted by MacCallum and Verhaart (2014) on the adoption of mobile devices and technology by academic staff within tertiary institutions. The study found that students are usually willing and able to utilise new technology, where the uptake is a lot higher when compared to that of the academic staff (MacCallum & Verhaart, 2014).

It is suggested that students are often more technology savvy as well as are more confident and open to using technology. Thus, the buy-in to use any form of technology is intrinsic (MacCallum, Jeffrey & Kinshuk, as cited by MacCallum & Verhaart, 2014).

The study identified the uptake of mobile technology amongst tertiary academic staff was lower than the students. The results indicated that the academic staff were more confident in using normal computers (managing files, using the internet), as opposed to using mobile devices and mobile Apps (MacCallum & Verhaart, 2014).

Two main issues that inhibited more adoption of mobile devices and mobile Apps firstly related to the staff not receiving adequate skills and knowledge on how to use and integrate the mobile technology effectively; and the other related to the technical issues around Wi-Fi access and the ability to integrate the devices with other relevant work systems (MacCallum & Verhaart, 2014).

The major findings from the study identified that, in order to get buy-in or improve uptake of mobile technology from students and academic staff within tertiary institutions, the following needs to be addressed:

- Improve the skills of the users of the mobile technology through lectures, tutorials and observation;

- Provide adequate resources to make the use of the mobile technology a lot easier and efficient;
- Ensure the target audience knows the benefit of using the App.

To get buy-in is easier if the above needs are seen to, people are becoming more open to using mobile technology, but will only make use of it if they are confident, as well as if they can see the benefit in using it (MacCallum & Verhaart, 2014).

MacCallum and Verhaart (2014) suggest, to ensure optimal buy-in from users, it is beneficial to incorporate the use of mobile technology within the policies of the institution, whilst at the same time, ensusring infrustructure limitations are addressed, allowing the use of any mobile technology to be easier, efficient and more effective.

2.10 Funding a Mobile App

If seed funding from an Angel investor is not initially viable, there are other avenues to generate funding (Varshneya, 2014). This section effectively discusses the research sub-problem, relating to alternative ways a mobile App can be funded.

“Raising $1 million for your mobile app start-up is child's play, assuming you've proven that customers want your product” (Varshneya, 2014, p. 2).

According to Varshneya (2014), it is not uncommon for entrepreneurs to incorrectly assume that an investor or venture capitalist will be interested in funding their new mobile App at the idea stage. Varshneya (2014) mentions how crucial it is for any entrepreneur to understand when looking to find funding for their mobile App idea, the idea is irrelevant until it has been validated by the user or by the number of downloads, which is aligned to what Čalopa et al. (2014) discussed earlier.

In an interview with Steve Jobs some years ago, the Apple founder explained that the majority of people who come up with a great App think the idea is more than half the work done, which is absurd as there is still an incredible amount of work that needs to be done between the time of the idea and a great product being developed (Varshneya, 2014).

Varshneya (2014) emphasised the point that potential investors are aware of the countless ideas for mobile Apps, however, the decisive factor is found in the actual execution. Both Varshneya (2014) and Hofstrand (2013) explain that if a person is able to illustrate that their execution works, they are far more likely to receive funding from an investor.

Varshneya (2014) provides a great example of how the 'Buffer' App managed to raise funding. The key to successfully raising $450, 000 for seed funding was that the App had already secured 55,000 users and the company was already making $13,000 per month. A co-founder of the Buffer App, Joel Gasciogne, admitted that the only reason they managed to get funding from an investor, was a result of them already having traction in the market. He suggested to first get started on one's own and try and create something that people will be willing to download as well as invest in, and one can do this by:

- **Bootstrapping**: Raise own capital through an existing job; savings or investments; credit card.
- **Mobile App Competitions**: There are often App competitions which companies or angel investors host, where the best idea wins funding.
- **Friends and Family:** This is very common in any start-up company.
- **Loans:** However, banks are very reluctant to invest in mobile App start-ups.
- **Angel Funding:** The individuals willing to invest in your company, however with mobile Apps, it is better to have a prototype first, as this shows the angel investor belief in the idea and that one is serious enough to put something at stake (Varshneya, 2014).

Attempting to raise capital to fund a mobile App business is significantly difficult, however it is not impossible, it is essentially up to the entrepreneur to sell themselves and their idea in such a way that an investor has no other option but to fund the idea.

2.11 Cost and Time for Developing an App

A survey conducted on goodfirms.com identified the average cost and time taken to develop some of today's most popular mobile Apps.

Table 1: Mobile App development cost and time (goodfirms.com, 2016)

Mobile App	Cost	Time	Some Key Features
WhatsApp	$ 120,000.00 OR **R 1,680,000.00**	4.66 Months	-Sign up / Login -Update User Profile and set security preferences -Automatic sync of contacts from phone book -Sharing of image, video, location, contacts, audio
Instagram	$ 300,000.00 OR **R 4,200,000.00**	4.53 Months	- Sign Up/Login and Manage Profile - Home page with Live Feed -Search People -Follow People -Add Photos/Videos with description
Uber	$ 1,000,000.00 OR **R 14,000,000.00** (2 components- Driver as well as user component)	5.61 Months	-Pick up Location / Drop off Location -Contact Driver -Map View -Payment Method -Cancel the Trip

According to Dreamweave Digital (2015), in South Africa, it is not unusual for an average App to be developed in a time frame between 6 to 18 months. This is dependent on the desired features the client wants, as well as the company doing the development.

As discussed in the delimitations section, it is assumed the mobile App for this business case would be outsourced to an App development company, like that of Dreamweave Digital in South Africa.

However, it is also very important to consider the cost of maintaining the App after development. The estimated cost for a medium-sized company to maintain their App on

a monthly basis is an estimated $ 4,500.00 OR R63, 000.00, where a larger project will cost three or four times that a month (Dreamweave Digital, 2015).

A survey conducted on Anypresence (as cited by Formotus, 2016) reported that close to 80% of mobile App companies update their Apps more than twice per annum. The more frequent the App is updated, the more costs are incurred.

2.12 Risks Involved in New App Development

There are three types of mobile Apps i.e. Native, Hybrid and mobile web (Andrus et al., 2014; Stangarone, 2013). Native Apps are ideal for consumer focused Apps where the actual performance, graphics, and general user experience is very important. Though native Apps are more expensive, they can be developed for any smartphone device software i.e. iOS, Android and Java. A typical native App would be one of social media, business, education and games (Andrus et al., 2014; Stangarone, 2013).

For the purpose of this research, native Apps will be focused on as they are the typical type of App that a university or company will decide on when developing an App, an example would be the Harvard University mobile App (Harvard, 2016).

Though native Apps are the most downloaded and popular types of Apps, there are some risks in developing a new App of this type. Table 2 provides a list and a brief description of the risks involved in developing a new App (Stangarone, 2013).

Table 2: Risks in developing a native mobile App (Stangarone, 2013)

1- Risk of developing a new App that users don't need or want. Developing an App as well as maintaining it is extremely costly, thus doing the appropriate research to test the viability of a new App is crucial.
2- The risk of not being able to sustain the growth of the App. There is always the possibility of the App unexpectedly being a huge success by taking on too many users than expected. If the App owner is not prepared, this can be detrimental to the future success of the App.
3- Selecting the wrong App developer/partner. Apps can be difficult to build in-house, therefore outsourcing to the best developer is crucial. Low-cost outsourcing must be

avoided, research must be done on the App developers as this can hinder the development of the App.
4- Security breaches. Underestimating the need for mobile App security is sometimes the reason so many Apps that are destined for success, subsequently fail (Andrus et al., 2014). It is crucial to not avoid putting the appropriate security measures in place, as this can add reliability to the App for users.
5- Getting denied from the App store. There have been many instances where an App will be rejected upon submission to the App store, based on a specific feature or requirement that has not been met.

2.14 Generating Revenue from an App

This section answers the research sub-problem around the different ways a mobile App can generate revenue and remain sustainable.

It is imperative as a new App start-up company to ensure the monetisation model of the business is clear (Varshneya, 2013).

A report conducted by App Annie (as cited by Varshneya, 2013) found that in-App revenue from free mobile Apps received a greater amount of revenue at an estimated figure of 71%, whereas paid revenues were significantly lower at 24%.

There are four main pricing models that will allow the App to generate revenue:

1. Freemium: The App is free to download and use, however, any additional features or content not offered must be acquired through in-App purchase.
2. One-time Payment: The only cost to the customer and form of revenue for the App company is the initial purchase cost of the App.
3. Paid Apps with Added in-App Paid Features.
4. Free App with Advertising: The App only generates revenue from advertisers when it is downloaded, the frequency of its use and when the user clicks on the ad, revenue is instantly generated (Rakestraw et al., 2012).The lifetime value of the App will also help determine if this option is viable.

For a specific App, the monetisation model behind the App must be analysed with the specific target market in mind. This will allow the App owner to establish the optimal marketplace for the use of the App, the distribution, as well as the price structure (Rakestraw et al., 2012).

To get a better understanding of the monetisation models, **Appendix A** provides a table giving an additional explanation of the different models, along with the different advantages and disadvantages of each model.

It must also be noted that an App is not restricted to one model, it may adopt a combination of different models as well (Munir, 2014).

Considering University mobile Apps, it appears that most tertiary institutions fund the mobile App development and maintenance themselves, using student tuition fees only. The Southern Louisiana University in the USA used university fees to fund the development of their mobile App (Roscorla, 2011).

The WitsM mobile App on the main campus also appears to have been funded by the University, with no intention of generating revenue, which does pose an opportunity for the proposed new mobile App for the WBS.

Once the App is developed and ready to be used, how does one effectively get it to market?

2.14 Getting an App to Market

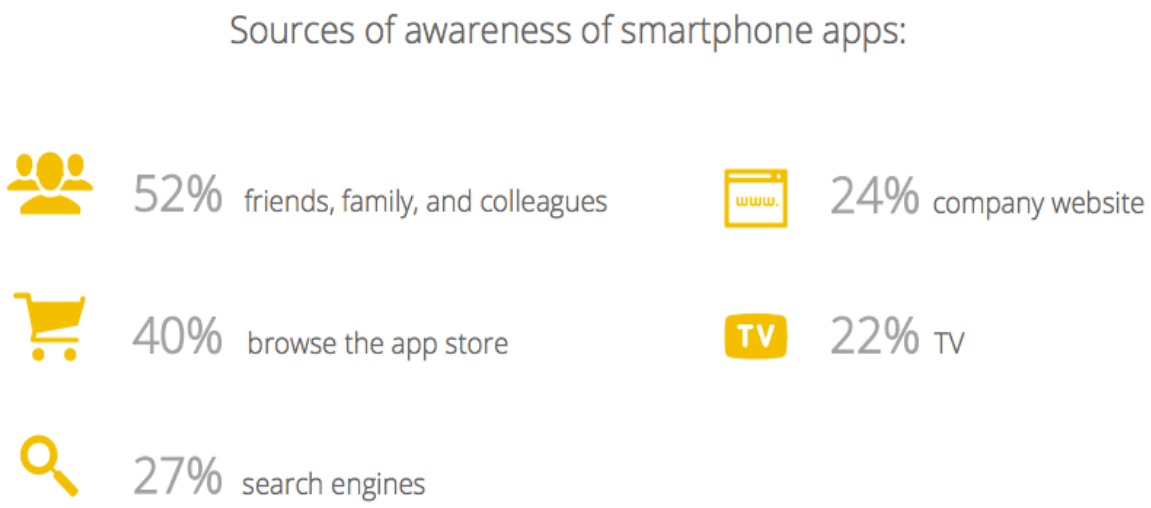
This section identifies ways in which a mobile App can be marketed to the target audience in order to increase uptake of the App, effectively answering the research sub-problem concerning how to make the target audience aware of the new App.

According to a research study done by Google, the discovery of a mobile App can happen outside of the available App stores. According to Google (2015), some of the most popular ways a new mobile App gets discovered is as a result of word of mouth, general App awareness as well as the ‘search tool’ that allows users to find an App on

the Internet. It has been estimated that every one in four mobile App users discovers an App through an online search engine (Google, 2015).

The research study Google conducted involved a sample group of over 8,400 respondents ranging between the ages of 18 to 64, where one of the online surveys asked a question around the topic of mobile app discovery (Google, 2015).

Figure 5 provides figures around how people said they would usually become aware of mobile Apps.



.

Figure 5: Sources of awareness for smartphone Apps (Google, 2015)

The question in the online survey asked users: “In which of the following ways have you first become aware of [...] smartphone apps? Please include all the sources where you have seen or heard information about apps, even if you didn't subsequently download them” (Google, 2015, p. 9).

It is clear that word of mouth through family, friends and colleagues is the most effective way a mobile App is discovered and downloaded, followed by users simply browsing the respective App stores.

The online survey subsequently asked the respondents a question around what type of online advertisement effectively encouraged them to download a particular App.

The responses form the survey showed that 'search ads' are very effective in driving mobile App downloads amongst online users (Google, 2015).

Amongst the various App users, it became apparent through the survey that many of the respondents were usually influenced by ads when downloading an App, which effectively prompted them to download another (Google, 2015).

The type of advertisements that prompted or had a significant influence on a user to download a mobile App was broken down into four elements observed in Figure 6 below.

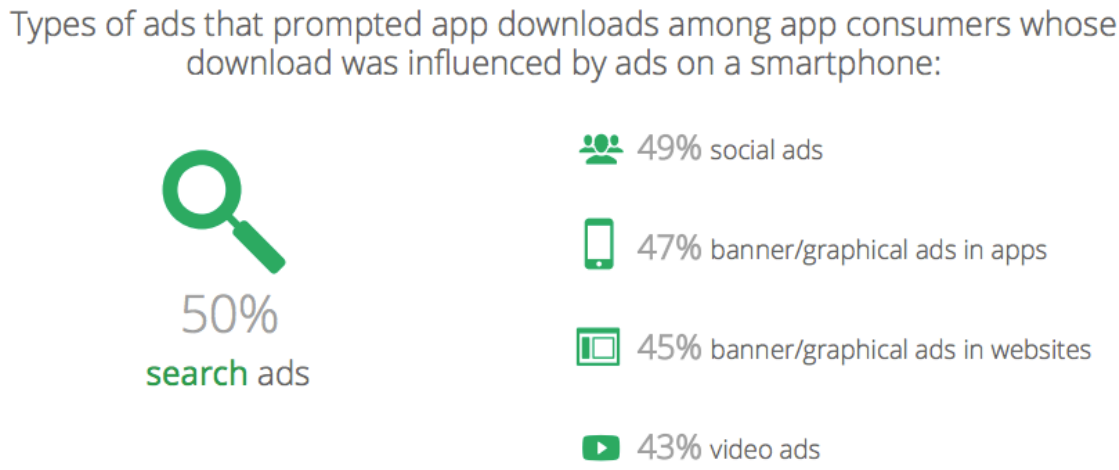


Figure 6: Types of ads prompting App downloads (Google, 2015)

According to Google (2015), three out of every four people expect a mobile App to be available for free download, which confirms the work by Rakestraw et al. (2012) earlier on, where the authors emphasised the importance of determining if the App to be available for free or for purchase.

However, there are other ways to market a newly developed mobile App that will ensure that the target audience sees it and is prompted to download the App (Hines, 2016).

According to Hines (2016), some of the most effective ways to get users to download your App is through:

- Social Advertising: By advertising on Facebook; Twitter; and Instagram. It allows the advertiser to target people online more specifically by their location, demographic and interests (Hines, 2016).

- Mobile Advertising: Google offers ‘mobile ads’ to specifically target online users whilst searching any topic around smartphones and cellphone networks. Pay-Per-Click (PPC) advertising is a very effective way of getting to a target audience (Hines, 2016).
- Guest Blogging: According to Hines (2016), this is an effective way of establishing a target audience, where marketing a mobile App on blogs related to the specific audience you are trying to attract is beneficial, as they will be more interested to read and find out more on the App i.e. posting on technology blogs.
- Marketing Agencies: There are great mobile App marketing agencies that are solely focused on marketing mobile Apps to smartphone users. A company like Appspire.me is a great advertising agency that specialises in getting an App the best quality users.

Both Hines (2016) and Varshneya (2013) have given various ways to get a mobile App to market and to advertise the App to a specific target audience, however it is up to the ‘App owner’ to decide on what method feel would best work for the specific App.

2.14.1 Ways to Market a New Campus App

According to modolabs (2015), there are various ways to get a new campus App to not only to be downloaded but also continuously used by the students and university staff. Once the App has the go-ahead from the university to be used, some methods to market the App on Campus are:

- Posters and Banners: Placing posters and banners in lecture rooms; dining halls; entrance gates and around the whole campus advertising the new App that will effectively make their university life easier.
- App Ambassadors: Hiring students within the university to spread the work and promote the App to other students and staff around the campus.
- Social Media: Using the university’s social media to share and announce the release of the new App.
- The university website: Post a link to download the new App, advertising the features and how it will benefit the user (modolabs, 2015).

2.15 Conclusion

After evaluating the relevant literature and research papers that are in line with this business case study, it can be established from the findings in the literature review that this study was academically valid.

The literature review set out to establish what the influencing factors are that have an impact on a person's decision to adopt a mobile App. The research also covered all the relevant aspects that form part of and contribute to the development of a new mobile App, as well as the establishment of a new tech-company to run the App.

The research has provided the researcher with a greater understanding of what is involved in establishing a start-up company as well as the risks and costs involved.

This research has effectively contributed to establishing that there is viability for a mobile App, which in turn, has led to the development of a business case. The research has also enabled the reader to obtain a greater knowledge and understanding around all the concepts that need to be considered to take an App to market, and subsequently launch the App with the goal of achieving profitability and sustainability.

There is a gap that needs to be filled within WBS, as well as in other tertiary institutions in and around South Africa. Therefore, if done correctly, there is a great opportunity for a successful and sustainable business.

Therefore, in order to establish a greater understanding and further investigate the intention to adopt a university mobile App amongst WBS students, a theoretical framework that is based on a modified technology adoption model (TAM) has subsequently been utilised to underpin the primary research. The following chapter explains this in much greater detail.

CHAPTER 3. RESEARCH METHODOLOGY

The research methodology set out to collect the relevant information that effectively helped in answering the main research question, which was to evaluate the likely adoption of a university mobile App amongst students in the WBS.

This chapter of the study constitutes the theoretical standpoint of the research, where it deliberates the overall nature of the research activity (Pickard, 2013). The research method adopted for this study is described in greater detail below, along with the theoretical framework on which the research instrument used is based.

Only students within the WBS were considered for this research, as they would be the target users for the proposed new mobile App. The users were typically more representative of the behaviours and trends that were identified in the literature review and assisted in providing further accurate and useful information that contributed to addressing the proposed research question.

The main objective of this research methodology is to determine the viability and likely adoption of a university mobile App that will, amongst other things, be designed to enhance communication and engagement between students and the Business School.

3.1 Research Methodology/ Paradigm

The research paradigm adopted for this particular study was principally quantitative in nature (Potgieter, 2015).

In order to obtain knowledge that was more factual, trustworthy and that allowed for measurement, the philosophical paradigm which the researcher adopted was that of positivism, subsequently permitting for the development of a larger overview and building on the casual relationships the data disclosed. This research technique can be backed up by Potgieter (2015) and Govender and Sihlali (2014) where the authors successfully conducted their research using similar methods on similar topics around the likely adoption and preference of mobile Apps amongst university students in SA.

The aim of this research was to investigate the various factors that have a significant influence on the adoption of a university mobile App by WBS students. Saunders, Lewis and Thornhill (as cited by Potgieter, 2015) suggested making use of an online questionnaire in order to achieve this. Thus, a quantitative approach was followed by utilising questionnaires for the data collection.

The theoretical framework used in this study was based on an extension of the Technology Acceptance Model (TAM). Hence, TAM for mobile device services was used to investigate the factors that have an influence on WBS students' willingness to adopt a university mobile App (Govender & Sihlali, 2014).

3.2 Theoretical Framework

The research design and theoretical framework was adopted from the similar study conducted by Govender and Sihlali (2014), in which the authors studied the adoption of a mobile banking App amongst students at the University of KwaZulu-Natal.

Therefore, like Govender and Sihlali (2014), a TAM was used for this research. TAM has been used for many years, where the research has concentrated on discovering the actual intentions of users in adopting as well as in utilising new technologies. According to Lule, Omwansa and Waema (2012), the TAM Perceived Usefulness (PU), as well as the Perceived Ease Of Use (PEOU), are the crucial elements in trying to establish whether the users will adopt in addition to whether they truly make use of a new technology.

Fundamentally, PU is seen as the actual degree to which a person trusts and considers the use of a particular technology to be one that will enhance their performance (Govender & Sihlali, 2014). Furthermore, PEOU clearly defines and measures the perception of the user, where it determines how they feel towards using a specific technology, focusing particularly on whether it will be free from significant effort (Davis, 1989).

The TAM used by Govender and Sihlali (2014) was subsequently adopted in this research as an extension of the original TAM that was recommended by Davis (1989).

Therefore, for this research and much like Govender and Sihali (2014), the TAM for mobile services included extra constructs like that of Perceived Ease Of Use (PEOU); Trust (T); the Intention to Use (IU); the Perceived Ease Of Adoption (PEOA); and lastly, the Usage Behaviour (UB) of respondents.

The PEOU has also been included in the original TAM, where it also forms part of the extended model (Govender & Sihlali, 2014). Much like Govender and Sihlali (2014), for the purpose of this research, the element of PU was redefined as Perceived Value (PV) to the user i.e. the student

3.3 Research Design

According to Govender and Sihlali (2014), trust relates to the perception the user has towards the actual reliability of the system and the service provided. Therefore, matters of risk and user privacy are elements that have an impact on the construct in the system. Moreover, the confidence of the user in their own ability to effectively use the university mobile App has an effect on their trust towards the service as well (Kaasinen, 2005).

PV was introduced in this research where it can be defined as the belief that making use of a university mobile App will offer measurable value to the user. PU was not used, as it would not effectively embrace the complete degree of motivation to accommodate a new mobile App.

Social Influence (SI) was another concept used in this study, which had the ability to influence students in a way to consider using a university mobile App. The majority of students are open to new technological innovations and it is not uncommon for them to be significantly influenced by fellow classmates concerning the use of mobile Apps that are available for download (Govender & Sihlali, 2014).

The PEOA is directly associated with the actual usage of a university mobile App. POEA was added to the model for the purpose of determining when there is a need to move from intention to use a mobile App to the genuinely wanting to use the App (Govender & Sihali, 2014).

According to Kaasinen (as cited by Govender & Sihali, 2014), the characteristics of the person as well as their environmental standings will have an influence on how the potential user will perceive the actual adoption of a mobile App. Based on this, for this research, an extension of the TAM was used with the full intention of grounding the research in information systems and mobile service technology.

The dependent variable for this research was to test the intention to likely adopt a proposed new university mobile App. The independent variables for this study were made up of smartphone usage; the technical competency and knowledge of mobile Apps; communication issues; as well as gender and age of respondents in the WBS.

Figure 7 below provides a clear illustration of the framework used in the study.

The diagram clearly illustrates how the constructs of T; PV; PEOU and SI have an influence on IU, where PEOA is then added only when there is a need to move from the student's intention to use the App to actually using the App.

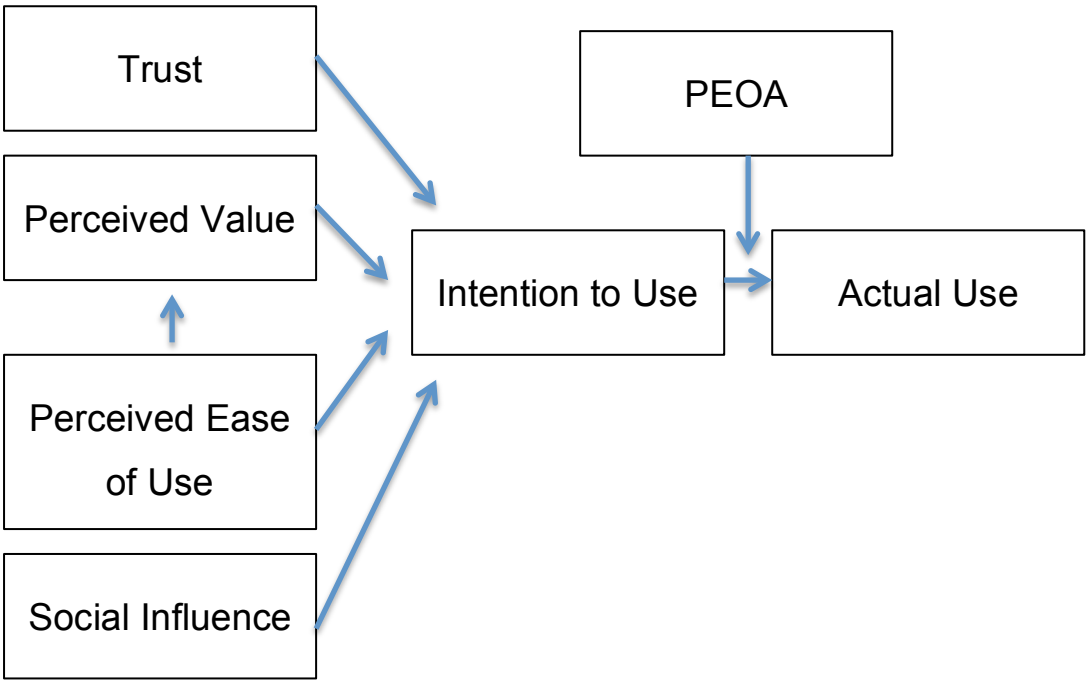


Figure 7: TAM for mobile service as an extension and modification of TAM (Govender & Sihali, 2014)

3.4 Population and sample

3.4.1 Population and Sampling

The target population for this research study was students within the WBS in Johannesburg SA. The study was conducted by using a non-profitability and convenience sampling method based on its suitability and the limited time frame (Ary, Jacobs & Razavich, 2009).

The sample was mainly taken from MBA, MMs and PDBA students in the WBS. These respondents were considered to be appropriate as they are likely to have a broad range of demographics. Additionally, this sample is most probable to be happy with downloading and using a mobile App and the utilisation of similar technologies like that of social media and business Apps for everyday communication.

Furthermore, all the respondents will have been exposed to the use of the Internet and online university platforms within the last year. The selected students are representative of the population of interest in the WBS as they are the potential users of the proposed new App.

The researcher managed to receive 70 responses from different Business School students through great persistence and determination; hence a sample size of 70 WBS students was set. There are approximately 1437 registered Business School students across all the above-mentioned academic programmes (M. Mthembu, personal communication, November 9, 2016). Charan and Biswas (2013) suggest using a confidence level of 90% and margin for error of 10%, the required sample size must be anything above 65; implying a sample size of 70 is adequate enough for this particular study.

3.4.2 Data Collection and Capture

A questionnaire was sent out via Qualtrics, where students were reminded regularly to complete the questionnaire to ensure timely completion. This was the channel effectively used for the collection of the necessary data to be analysed in this study.

The questionnaire used was made up of two sections. Section 1 allowed for and provoked the collection of demographic information, which comprised collecting age and gender, in addition to the respondents' computer/ smartphone knowledge (Govender & Sihlali, 2014).

Section 2 was specifically designed and based on the questionnaire used and validated by Govender and Sihlali (2014). Their instrument was also based on previously validated questionnaires for the various concepts, making use of a 5-point Likert-type scale.

However, for the purpose of this research, the statements were adapted to suit the contexts of the adoption of a university mobile App specifically in the WBS. The data from the questionnaire was subsequently collected and transferred into Excel where it was then placed into the Statistical Package for the Social Science (SPSS) software program for further relevant statistical analysis. The Questionnaire is provided in **Appendix B.**

Additionally, the term 'Academic Activities' was used often throughout the questionnaire. The respondents were made aware prior to taking part in the questionnaire of what the term actually referred to and meant, to avoid confusion or a misunderstanding of the term in the context of this study.

Academic activities referred to all WBS academic/ educational tasks and duties that are usually carried out by staff and students, highlighting the various features the proposed new App is intended to comprise and offer the user. The new App will bring all forms of WBS communication together on one formal platform relating to all Business School activities i.e. receiving marks; discussion boards; academic status update; syndicate meetings; communication with administrative staff and lecturers; tactical timetable updates; campus maps; instant notifications; job opportunities; parking issues; strike action; campus talks and events, etc.

3.4 Reliability

According Ary et al. (2002) (as cited by Govender & Sihlali, 2014), the purpose of a reliability test is to effectively measure the internal consistency of data gathered from a questionnaire as well as to test if the instrument being used to gather data and the actual data captured are reliable.

Considering the instrument used by Govender and Sihlali (2014) in their research, where they set out to obtain similar data findings of how students in their university would react to the adoption of a mobile App, this report adopted a modified version of their instrument to suit the context of this study.

The method used for checking the internal consistency is coefficient alpha/ Cronbach alpha, which is suitable for the 5-point Likert-scale instrument used in this study (Ary et al., 2002). The same instrument used in the research conducted by Govender and Sihlali (2014) obtained a 0.735 alpha score, which signifies that the slightly modified scale adopted in this research does also have a high internal consistency (reliability), thus making the research instrument reliable.

3.5 Validity

It is crucial to comprehend that the theory behind TAM says little about the technology itself, but rather it says a lot about what people actually believe or what they perceive this technology to be. In other words, whether a mobile App is actually useful or whether it is actually easy to use, is not a matter of the technology, but a matter of perception.

These perceptions may change depending on things like gender, age and technology know how, but the perception of a mobile App changes not because the actual technology is different, but because people are different.

The TAM assumes people plan their behaviour as well as that people are rational in their actions. Therefore, this means the model assumes that it will actually evaluate the usefulness as well as ease of use of a mobile App technology when people develop an intention to use it, and thus actually adopt the App (Vin-Cent Chang, 2004).

The issue is that individuals are not always entirely rational when making a decision, where they are also not completely rational in their behaviour. Therefore, not everything a person does is planned or easy, and the theory does not account for this.

A great example of this would be if a new university mobile App did come to market, not everyone has the chance to try the App out before downloading it, so they actually cannot know the usefulness of the App or its ease of use, but some will still have the intention to download it, so this cannot really be a reasoned action based on evaluation of the App technology (Vin-Cent Chang, 2004).

The TAM condenses numerous concepts into one model. Even though the model adopted and used in this study employs technology adoption theories and models, it is expected to be more oriented towards functional and social concepts of a university mobile App adoption process.

Thus, although the model is reliable, the theory presents that the validity construct would need to be compensated with additional concepts to offer greater validity for a study of this kind (Kang, 2014). Roberts (2006) confirms a study of this nature must be reliable but does not have to be valid, which is the case in this research.

3.6 Potential Limitations of the Study

This study does have some potential limitations. Primarily, this particular research was only conducted among WBS students who are acquainted with the use of technology already, as they make use of email and university services, like Sakai, on a regular basis. With the eventual intention of creating an App that can be transferred to other tertiary institutions in SA, this study does not represent the full population of students across the country.

However, it must be noted that this study was focused solely on WBS students, as the intention is to first establish a successful mobile App within this Business School and only later think about developing the App so it can be transferred to other tertiary institutions.

Nonetheless, future research at other universities and even the youth market finishing high school can potentially be looked at, where a broader investigation of those findings must also be evaluated. According to Govender and Sihlali (2014), university students tend to be more familiar with technology, thus it would be easier for them to adopt a new mobile App.

However, this limitation can be confronted by effectively spreading future studies to students who are non-technical as well as other youth markets, potentially students in high school.

This will offer additional factors that potentially have an influence on younger students to adopt a mobile App within their institution.

Additionally, a potential limitation of this research is that only a quantitative approach was used to collect and analyse the data of respondents. Therefore, to subsequently improve the validity of the results, a combination of both quantitative and qualitative research approaches could be adopted.

3.7 Demographic Profile of Respondents

Prior to receiving any responses, the researcher set out with the goal of achieving an equal distribution mix of male and female respondents. The distribution of responses resulted in 52.86% female and a 48.14% of male, which is in line with the goal the researcher initially set out to achieve.

The researcher planned to receive responses from students who hopefully had some form of computer literacy and knowledge. This was successfully achieved; where more than 50% of the respondents said they have ‘good’ technology/ computer knowledge, where 24.29% said they have ‘average’ computer knowledge. There was not one response of ‘no understanding’ of technology/ computer knowledge, which provided some encouragement towards how the ease of adoption and usage amongst the students would be.

The age of the respondents was much what the researcher expected and planned to obtain, where more than half (51.43%) of the respondents that took part in the study fell between the ages of 24 to 33, which is in line with the general age of the WBS student population.

CHAPTER 4. DISCUSSION AND ANALYSIS

4.1 Introduction

A sample size of 70 WBS students was selected to take part in the study. The research collected the data from the sample group by means of a questionnaire.

Much like the research instrument used by Govender and Sihlali (2014), as well as by Potgieter (2015), a five-point Likert scale was also adopted for this study. The questions that were asked attempted to balance the scale, where the spread of responses remained important. By getting a balance between the Likert scale questions, it successfully allowed for identification of relationships as well as variations.

The Likert scale was not used to assess the factual accuracy of each presented item, but instead looked at the feelings that the statement triggered in the respondent.

The Likert scale adopted from Govender and Sihlali (2014) was structured in such a way that a pool of statements was presented so that they were relevant to attitude and not necessarily fact (Page-Bucci, 2003). The choices on the scale were consistently balanced to obtain a continuum of positive as well as negative statements, where the respondents were more likely to agree or disagree. This essentially helped in avoiding the issue of bias, where it actually improved the reliability (Page-Bucci, 2003).

A combination of simple descriptive statistics as well as the use of the SPPS software program was used to analyse the data.

The study was conducted to effectively evaluate the adoption of a proposed new university mobile App amongst students within the WBS. The objective of the study was to identify the various factors that have an influence on the adoption decision of students, whilst also examining the impact that each independent variable had on the student's intention to adopt a university mobile App.

Therefore, this study set out with the aim of exploring the attitudes towards the adoption of a university mobile App that could be used for academic activities within the WBS. This study measured the students' attitudes through how they perceived the usefulness of such an App in the context of the Business School environment.

4.2 Demographic Analysis

Section 1 of the questionnaire initially set out to obtain the demographic information of the students. The intention is to provide simple characteristics of the students that took part in the questionnaire

Table 3: Demographic information of students

Variable	Classification	Frequency	Percentage
Age	18-23	12	17.14%
	24-33	36	51.43%
	34-44	16	22.86%
	45-Older	6	8.57%
Gender	Male	33	47.14%
	Female	37	52.86%
Computer/ Mobile Knowledge	No Understanding	0	0.00%
	Average	17	24.29%
	Good	40	57.14%
	Excellent	13	18.57%

Table 3 presents the demographic information of the 70 respondents that took part in the Qualtrics questionnaire. All the respondents were WBS students. The results in this research presented no noteworthy difference between them when comparing the variables of age as well as gender that concerned the students' perception or acceptance to the adoption of a university mobile App.

4.2.1 Age

The results from the questionnaire indicate that the two ages groups of 24-33 (majority) and 33-44 make up 74.29% of the sample. Approximately 17.14% of the respondents were aged between 18-23 years old. This effectively explains that many of the students have access to higher education at a relatively young age, where many middle-aged

people also return to university with the intention of expanding on their learning and knowledge, which again is in line with the research presented in the literature review by Yin (2016).

However, it must be noted, there is no significant difference between the age variables in response to the questions, which is directly in line and confirmed by the results presented by Govender and Sihlali (2014) in their research.

4.2.2 Gender

Regarding the variable of gender, 52.86% were female and the remainder of 47.14% were males who indicated that they would subsequently be persuaded and motivated to adopt a university mobile App. This representation suggests that both male and female students with the WBS possess almost equal opportunities to tertiary education irrespective of gender, which is also in line with the findings presented in the literature by Yin (2016).

Additionally, similar to the results presented in the research conducted by Govender and Sihlali (2014), female students constituted just over half of the sample survey.

However, it must be noted in this instance too, there is no significant difference between the gender variables in response to the questions, which is also in line and confirmed by the results presented by Govender and Sihlali (2014) in their research.

4.2.3 Computer/ Mobile Knowledge

It was also found in this study that all students in both gender groups are similarly exposed to all forms of digital media in the context of their specialisation. Additionally, the findings presented that all the students who took part had some form of computer competency/ mobile knowledge, where more than half of the students (57.14%) indicated that they have good computer/ mobile knowledge. While 18.57% of the students indicted they had excellent knowledge towards mobile computing, 0.00% indicted they had no understanding, which gave confidence towards the answers received in Section B of the questionnaire regarding the adoption and usability of a mobile App.

4.2.4 Correlation Matrix for Constructs

Table 4: Correlation matrix

		1.Age	2.Gender	4.T	5.PV	6.PEOU	7.SI
Pearson Correlation	1.Age	1.000					
	2.Gender	0.173	1.000				
	4.T	0.034	0.089	1.000			
	5.PV	0.051	0.043	0.754**	1.000		
	6.PEOU	0.078	0.057	0.488**	0.419**	1.000	
	7.SI	0.086	0.060	0.576**	0.601**	0.599**	1.000

** Correlation is significant at the 0.01 level (2-tailed).

After observing the correlation matrix results presented in Table 4, it is evident that even though the control variables (age and gender) are positive, they have a weak relationship with the independent variables, showing little significance with values below 0.1.

Although age was positively correlated with all the abovementioned variables, the relationship was particularly weak, suggesting the age of the participants had very little significance towards the factors that have an influence on the likely adoption of a new university mobile App.

The gender of the participants was slightly correlated with age, (r=0.173), indicating that females were marginally older than males in this study. This conclusion was drawn because the sign of the correlation coefficient presented, as well as the gender variables were coded as 1=male and 2=female.

The analysis of the correlation matrix shows that there were a few observed relationships that are very strong. The strongest relationship was between the amount of trust and the perceived value of a mobile App (r=0.719). Indicating the more trust a person has for an App, the more they perceive it to have value. The independent variables (T, PV, PEOU, SI) are all positive, where they correlate significantly with each other, demonstrating their importance and strength with values above 0.4.

Much like the research conducted by Govender and Sihlali (2014), the demographic variables provided in the above tables were subsequently not considered any further in this study, as they did not have any significance towards the contribution of the results in the succeeding analysis.

4.3 Factors that Influence the Students' Adoption Decision

Section 2 set out to confirm the findings of Gimun, Bongsik and Lee (as cited by Govender & Sihlali, 2014), where they suggest that students are highly motivated by their attitude towards their intention to adopt and use a mobile App. Furthermore, the attitude of a student towards their intention to adopt a mobile App is influenced by the following factors of Trust; Perceived Value; Perceived Ease of Use; and Social Influence.

As discussed in the Methodology Section, a slightly modified TAM for mobile device services was used to identify and measure the students' perceived attitudes towards the adoption of a potential new university mobile App. A list of carefully structured positive and negative statements were grouped strategically together under each respective influencing factor for the students' to answer.

The students' were tasked to rate their extent of agreement towards the presented statements. A five point Likert scale was used where each item was rated on a scale that ranged from 'strongly disagree' on one end to 'strongly disagree' on the other.

Table 4 below demonstrates the answer choices provided to the respondents as well as the code value assigned to each response.

Table 5: Likert-scale response choices

Answer Choice	Code value
Strongly agree	5
Agree	4
Neither agree nor disagree	3
Disagree	2
Strongly disagree	1

4.3.1 Analysis of Independent Constructs

Table 6: One-sample statistics – trust (T)

	N	Mean	Std. Deviation	Standard Error Mean
I do not trust using a mobile App for University activities	70	3.30	1.294	0.154
I have serious doubts about University activities performed using a mobile App	70	3.41	1.143	0.137
I am afraid of inherent fraud associated with Apps that holds my personal information	70	3.06	1.040	0.124
I am worried other people may access my personal account using a University mobile App	70	2.88	1.216	0.145
It can be risky to store personal information on a mobile App	70	3.47	1.188	0.142

It must be noted; the scores for the items of trust presented in table 5 were reverse coded. Following the same approach of Govender and Sihali (2014), the items were constructed in such a way so that they would imply a negative attitude towards using a university mobile App, however, they were coded in the above table in an opposite (positive) direction for the purpose of facilitating response comparison across the different constructs found in the study.

The above table indicates the perceived level of trust that the WBS students have towards mobile Apps and more specifically for a new university mobile App. The research results suggest that the students have some level of trust in mobile Apps and if they were to use a University mobile App. The trust level mean is above 3, which implies that students do not have too many concerns that relate to using a mobile App for university activities, as well as the risks and privacy issues related to performing university activities on a mobile App.

From the results, it can further be deduced that students do have trust towards using a university mobile App or perhaps they may not have yet experienced any trust Issues with using another type of mobile App before, or they simply just do not perceive a university App to be prone to risk.

However, it is clear that students have the perception that storing personal information on a mobile App can be really risky, but it can be inferred that students have a significant amount of trust towards the idea of specifically using a university mobile App. It appears that they are not concerned about other individuals accessing the information when they are using the university App specifically.

Although students perceive a university mobile App to be secure and trustworthy, it is clear that they are also aware of the inherent risks of placing personal information on any other type of mobile App. Banking Apps are generally more prone to the risk of people hacking accounts as was indicated in the research carried out by Govender and Sihali, (2014), however, the information stored on a university mobile App is much less sensitive when compared to the information stored on a banking App.

One can also infer that there is sufficient evidence that suggests that students' trust towards using a university App is significantly higher when compared to the trust of using an App like that of a banking App, which was researched in the work carried out by Govender and Sihlali (2014).

Table 7: One-sample statistics – perceived value (PV)

	N	Mean	Std. Deviation	Standard Error Mean
I must find a University mobile App useful in my life	70	3.91	0.969	0.115
Using a University App must improve my academic experience	70	3.90	1.040	0.127
A mobile App would be useful to me for academic activities	70	3.95	0.979	0.117
A University App must assist in addressing communication issues	70	4.27	0.858	0.103
A University mobile App will be convenient to use	70	4.26	0.980	0.117
A University mobile App will give me better control over academic activities	70	3.53	1.227	0.147

The results found in Table 6 above give a clear indication of how the students' perceive using a university mobile App. It can be inferred that the respondents believe that for them to adopt the App, it must add significant value to them.

Considering all the items that were used to quantify and measure the perceived value, it appears there is a mean value larger than 3, this provides a strong indication that the students will likely adopt a university mobile App if is to improve and add value to their academic activities whilst also improving their university experience.

What is a significant and a very encouraging finding is the responses to the convenience of using the mobile App along with students being content with using their mobile phone to carry out and manage university activities, where they have a mean value of 4.26 and 3.95 respectively.

Another significant finding that is seen to be positive, is the fact that the students firmly believe that the introduction of a mobile App must address the communication issues faced at the WBS with a mean value of 4.27. It appears all responses were unified with regard to this statement, where there is a low Standard Deviation with a figure of 0.858, indicating the data is gathered closely around the mean.

Although the mean value of 3.53 is positive towards the attitude of how the students feel the university mobile App will give them better control over their academic activities, the Standard Deviation is somewhat higher (1.227), indicating that the responses were generally more polarised when compared to the responses towards the other statements.

The differentiated responses may be attributed to the fact that the students have not used the App yet, hence, they actually do not know exactly how the App will work and give them better control. This attitude will most likely differ once the App is introduced, used and the students have seen the benefits of it.

Nevertheless, there is a general consensus that all the students really do believe and feel a university mobile App will be valuable and assist in providing them with greater control and access to university activities involved at the WBS.

Table 8: One-sample statistics – perceived ease of use (PEOU)

	N	Mean	Std. Deviation	Standard Error Mean
I believe it would be easy to get a phone to use the University mobile app	70	3.79	1.113	0.133
It would be easy for me to remember how to conduct academic activities on a phone	70	3.95	0.949	0.113
Conducting academic tasks on a phone would be easy to do	70	3.84	0.979	0.117
I think Interaction with a University mobile App does not require a lot of mental effort	70	3.80	0.935	0.112
University mobile App must allow me to use varied languages	70	3.74	1.116	0.133

Considering the results provided in table 8, there is a clear indication that the WBS students believe that it would be easy to use a mobile phone to carry out university activities with a mean value of 3.79. Additionally, there is a positive attitude towards remembering how to conduct the various WBS academic activities on their device with a mean of 3.95, with a low Standard Deviation for both statements, it indicates the responses were unified and congregated around the mean, which is a very positive finding.

Additionally, the WBS students also believe that using a university mobile App will not necessitate much mental effort whilst also allowing them to use various languages.

Considering the mean of the above listed items, they are all greater than 3 where most of them are close to a mean value of 4. This indicates or suggests that the majority of WBS respondents that took part in the questionnaire generally perceive that using an App to manage university activities would be easy.

The results from the questionnaire concur with the findings of the research found in the literature review that was conducted by both Govender and Sihlali (2014) as well as Gimun, Bongsik and Lee (2009), where the results in their respective studies revealed that the adoption of a mobile App amongst university students and potential users is significantly motivated by their attitudes towards the technology.

Table 9: One-sample statistics – social influence (SI)

	N	Mean	Std. Deviation	Standard Error Mean
Adopting a University mobile App will help me fit in with my peers	70	3.03	1.12	0.134
It is trendy to use a University mobile App	70	3.25	1.03	0.123
My friends and family use mobile Apps in their University/ work institution	70	3.94	0.98	0.117

After calculating the mean score of the above items, with a figure of 3.42 it suggests that social influence is relatively important, much like the other constructs in influencing a student to adopt and use a university mobile App, which reflects and concurs with the findings in the research by Yu (2012).

However, this seems to contradict the findings of Govender and Sihlali (2014), where the authors suggest that social influence was not as important or significant in their findings. However, the research conducted by Govender and Sihlali (2014) focused particularly on IT students, suggesting the more technically savvy a student becomes in their everyday life, the less they will care about approval from peers.

According to Govender and Sihlali (2014), IT students are more specialised and knowledgeable about technology and the associated services when compared to the average university student, hence why this finding makes sense.

An interesting finding is the response received from the students towards the last statement, with a significantly high mean of 3.94 and a low Standard Deviation of 0.98. This suggests that the majority of the respondents are aware of other mobile Apps being used in a family member or friends' university/ work organisation. Thus it is recommended that Wits does at least consider the proposal to introduce a university mobile App in the Business School.

4.4 The Impact of the Factors on the Intention to Adopt

Now, with the intention of establishing to what extent each of the constructs contributes to the dependent variable, which is the likely adoption of a university mobile App amongst WBS students, multiple regression analysis was subsequently carried out.

Firstly, to assess and gauge the ability of the proposed control measures of PEOU, PV and SI, hierarchical multiple regression was carried out with the intention and goal of predicting the adoption intention (IU) of a university mobile App subsequent to controlling for the impact of T.

Therefore, T was initially inserted at step 1 in the SPSS program, resulting in a 17% of the variance intention to adopt a University mobile App. Subsequent to the PEOU, PV and SI being inserted in the second step (step 2), the results provided in Table 7 below were presented by the model all together with:

- A Total Variance of 46.4%;
- An F Change (4, 65) = 13.927, p<0.000.

Furthermore, it was found that the control measures clarified an added 29.4% of variance in the intention of the respondents to adopt a university mobile App with:

- An R Squared Change of 0.294;
- An F Change (4, 65) = 11.036, p<0.001.

Table 10: The SPSS model summary[c]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0.412[a]	0.170	0.158	0.875507918634788	0.170	13.927	1[a]	68	0.000
2	0.681[b]	0.464	0.431	0.724187564970277	0.294	11.036	3[b]	65	0.000

a. Predictors: (Constant); Trust.
b. Predictors: (Constant); Trust; PV; SI; PEOU.
c. Dependent Variable: IU.

Table 11: Coefficients[a]

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.201	0.409	0.000	5.282	0.000
Trust	0.483	0.132	0.412	3.711	0.000
2 (Constant)	-0.311	0.579	0.000	-0.424	0.673
Trust	0.329	0.119	0.302	2.980	0.004
PV	0.503	0.161	0.361	3.078	0.003
PEOU	0.068	0.147	0.060	0.454	0.651
SI	0.229	0.115	0.259	2.781	0.007

It is evident that the independent variables have a positive correlation with the dependent variable of this study, where the constructs of T, PV, PEOU and SI have a positive association with the intention to adopt a university mobile App.

The table of coefficients above presents some interesting relationships. It provides a clear indication of the independent variables that have the most striking positive influence.

Considering the four independent (predictor) variables collectively, it has emerged that T and PV have a significantly larger contribution to the overall positive influence than the other two-predictor variables. However, unlike the findings in the study conducted by Govender and Sihlali (2014), where SI had very little influence, it appears that SI in this study does have a notable positive influence in the adoption of a university mobile App.

Considering the t-test values of the above mentioned three independent variables that have a positive influence on the adoption of a mobile App, it can be observed that all three of them have an absolute t-test value that is significantly larger than 1 (one). Additionally, each of their matching p-values is extremely small, where all of them have a value of less than 0.05.

Furthermore, it can be observed in the final model that the three identified measures of control were statistically meaningful, where the results presented T with a beta value of

0.302; PV with a beta value **0.3061** and SI with a beta value of **0.259**. Additionally, all three-control measures had a p value of less than 0.01 ($p < 0.01$), where it is clear the beta of PV was the largest of the three.

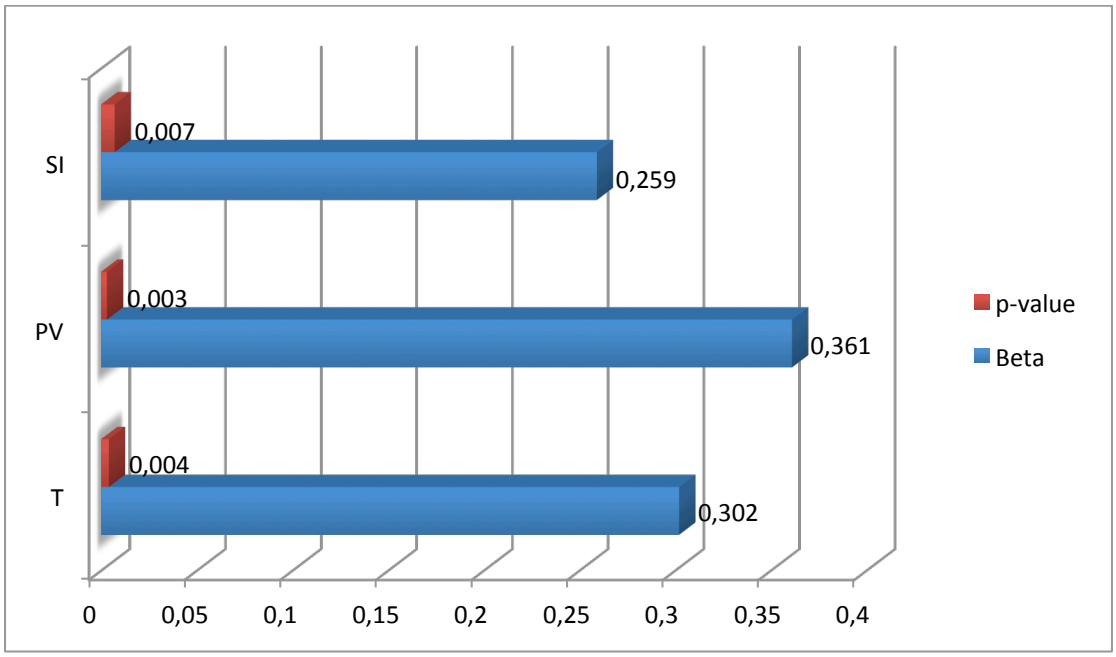


Figure 8: Beta and p-value control measure chart

Much like the study conducted by Govender and Sihlali (2014), PV of a mobile App is the most distinctive variable where it is statistically significant, where it has the largest influence to the prediction of the dependent variable, which for this study was the likely adoption of a university mobile App.

After analysing the results that the SPSS program presented, it appears that there is a general willingness from the WBS students to adopt a proposed new university mobile App.

The results presented subsequently support the study's initial motivation for considering WBS students, as they are the potential users of the university mobile App.

It is clear that the majority of the respondents that took part in the questionnaire (83.75%) indicated that they will adopt a university mobile App. This suggests that the

students' will likely adopt the university mobile App if it suits their technology driven lifestyle as was claimed in the research conducted by Govender and Sihlali (2014).

The desire of being able to conduct university activities via a mobile App as well as the need to enhance communication and engagement within the Business School along with their general tendency to make use of technology in their day-to-day life, has all played a significant role in their willingness to adopt a university mobile App.

Furthermore, the results presented in this study are in agreement with the findings of the study conducted by Lin (2011), where the author stated that people who like making use of wireless networks in their daily life will tend to adopt a mobile App as it suits their technology driven lifestyle.

From the results, it must also be noted that the PEOU for a university mobile App does not pose an issue for the students and does not have much of a positive influence on the dependent variable with a t-test value well below 1 (one) and the corresponding p-value being significantly larger than 0.01 ($p>0.01$).

It must be noted that SI in this study has a significantly larger influence on the dependent variable when compared to the results in the study by Govender and Sihlali (2014).

The research conducted by Govender and Sihlali (2014) focused particularly on IT students, suggesting the more technically savvy a student becomes in their everyday life the less they will care about approval from peers.

Therefore, it can be suggested that with time, the more students that adopt the university mobile App and actively use it, the SI variable will most likely become less influential where students will not see adopting the university App as a means of fitting in with their peers.

4.3 Concluding Remarks

This study conducted at the WBS has successively been able to provide a greater understanding of the different factors that have a significant influence on a student's intention and willingness to adopt a university mobile App.

Research Question: What factors will influence students to adopt a mobile App?

It is evident that the constructs of Trust; Perceived Value; Perceived Ease of Use and Social Influence are the factors that have an influence on the adoption decision of students.

By following the procedure of effectively extending TAM to TAM for mobile devices services, which included constructs like that of T; PV; PEOA and SI, the results from this study have indicated that PEOU has a really positive influence on the PV as well as on the IU to adopt a university mobile App.

The findings from the data gathered through the questionnaire are essentially shown to be really beneficial, where the results proved that some of the factors acting independently have a positive influence on the intention of the student to adopt a university mobile App, which is in agreement with the research presented in the literature review from Musa et al. (2016).

However, when considering the factors collectively, they have less of an effect in this study. This is directly in line with the research conducted by Govender and Sihlali (2014) that is presented in the literature review as well.

By making use of the SPSS program to do regression analysis, it was discovered that the core predictors in this study are Trust and Perceived Value, where Social Influence could also not be ignored. These three effectively had a significant influence on a person's behaviour and intention to adopt a university mobile App.

Research Question: What is the relative impact of each independent variable on the student's intention to adopt a university mobile App?

4.3.1 Trust

The trust towards using a mobile App was really positive in its entirety, as it remains a highly influential factor towards an individual's attitude, where this is in agreement with the findings of Musa et al. (2016).

The trust in the proposed new university mobile App refers to the perceived reliability of the actual App and the service it will provide. Based on the results where trust received a mean of above 3, it indicates there is trust towards using a university mobile App, as well as it having a positive influence on the student's adoption decision. Additionally, the issues of risk and privacy have a direct effect on the construct of trust towards the mobile App.

Much like the findings of Musa et al. (2016) presented in the literature review, the fact is that the respondents do believe that there is a significant risk of fraud and mobile hacking, which relates to privacy and confidentiality issues when placing personal information a mobile App.

Therefore, even though students believe that a university App is less prone to the risk of fraud, this must not be overlooked, as it is still a concern, where students should be reassured of their protection of privacy when using the proposed new university App.

4.3.2 Perceived Value

Confirming the findings of Kaasinen (2005), the PV construct also has a positive influence on a student's decision to adopt the mobile App. With a mean larger than 3, it can be confirmed that the belief in using a proposed new university mobile App will provide measurable value to the students.

4.3.3 Social Influence

Unlike the findings of Govender and Sihlali (2014), the SI construct has a positive influence on the students when considering the adoption and use of the university mobile App. The results presented indicate that the students who took part in the questionnaire are open to technological innovations, where it appears the consideration of their peers' opinion has a positive influence on the likelihood of their adoption decision too.

4.3.4 Perceived Ease of Use

PEOU, although an important construct, as discussed above, it is clear from the results that it does not have as much of an influence on a student's adoption decision when compared to the other three constructs.

Additionally, similar to the study conducted by Govender and Sihlali (2014), factors like age and race did not appear to have a significant influence on a student's decision to likely adopt a university mobile App.

This study showed that attitude towards a university mobile App is a significant aspect that essentially motivates the students to either adopt or reject adopting the App. It is evident from the results that the students have a positive attitude towards the adoption of a university App.

This is reinforced by the research conducted by Akturan and Tezcan (2012), where the authors also suggested that the attitude of student towards adoption of a mobile App is the most significant influencing aspect in their decision to subsequently adopt it.

This study has been able to provide valuable insight and information for the proposed introduction of a new university mobile App at the WBS, where it has effectively identified the significant factors that have an impact on a student's willingness to adopt a university mobile App.

These findings have been considerably useful and have contributed to the development of the business case for a proposed new mobile App provided in the next section.

It can be concluded that the results of this research have effectively answered the main research question, confirming that WBS students will likely adopt a university mobile App if it is to be introduced.

The mobile App will be used for the purpose of carrying out day-to-day university activities amongst many other tasks and features; it will also assist in enhancing some communication and engagement amongst students and the Business School.

CHAPTER 5. BUSINESS CASE

5.1 Executive Summary

After analysing the results of the primary research data that is presented in the previous chapter, it is evident that 83.75% of WBS students who took part in the research said they would adopt a new university mobile App, which validates the development of this business case.

The factors that influence a student to adopt an App as well as the relative impact that each independent variable has on a person's intention to adopt a university mobile App have been clearly identified in the previous chapter.

The factors of trust, perceived value and social influence are the key drivers for the successful adoption of the proposed new University mobile App; hence, they have been appropriately addressed in the proposed design and development of the mobile App.

The business case presents the relevant theoretical and financial justification for a new University mobile App, where the financial viability of the proposed App provides a detailed overview of the specific costs involved, as well as the monetisation model proposed to generate revenue via the App.

The value that the proposed new App will provide to those intended to use it, has also been discussed in detail. Additionally, an in-depth analysis of the financial model has also been carried out, where all assumptions have been identified.

5.2 Introduction and Overview

The name of the proposed new university mobile App will be called Snowden, where the App will fall within the education/ social media mobile App market. I, Michael Savvides am the founder of the proposed new App, where I have a passion for innovation, technology and entrepreneurship. I truly believe the development of this mobile App for the WBS will be beneficial, where it will enhance the overall WBS performance, communication and engagement with current, as well as alumni, students.

The motivation behind Snowden is to create one formal platform for the WBS students and staff to use, where the App will combine all forms of communication and related Business School activities, effectively allowing students to communicate freely amongst themselves and directly with the Business School.

The intention is to create an App that will allow students to easily connect with the Business School; classmates; syndicate members and lecturers. The drive behind developing this App is to create a more efficient channel of communication between the WBS and everyone that forms part of the institution, making a comprehensive mobile App that brings everything together on one platform.

WBS notices; news; job opportunities; career fairs; speaker events; campus issues; lecture notes; updates and everything else that relates to Business School can easily and effectively be communicated via the App.

There is an opportunity to create a mobile App since there is no App offered currently by the WBS.

Snowden will offer a more personalised user experience, allowing students to customise the App to suit their preferences, whilst also providing a stage for open, efficient and effective communication.

The intention of this business case is to make the Business School leadership aware of the idea, with the goal of asking the Business School for permission, as well as the financial investment, to develop and introduce the Snowden App to the WBS.

The idea is to create one universal technology platform for the education sector, where my intention is to create a mobile App that will start off in the WBS, where it will be designed with the capability to later be transferred to any other tertiary institution, not only in South Africa, but also in other African universities.

If the WBS agrees to invest in the App, it will essentially allow for the Business School and myself to create a profitable and sustainable business, where the revenue generated can be used to benefit the Business School. The monetisation model explains

specifically how the App will be free for all users whilst generating revenue at the expensive of corporate firms.

The objective would be to work closely with the WBS leadership; Graduate Recruitment and Employer Engagement Services; Career Management Services; and the Wits Alumni Office; to carry out the development and running of the Snowden App – where the App will be run in-house i.e. in the WBS.

As this document is a preliminary business case, there will have to be various amendments later on, once discussions commence with the WBS.

5.3 Addressing the Key Drivers

By addressing the key drivers identified in previous chapters, it will allow for the successful adoption of the App and ensure recruitment, as well as retention, of the WBS students.

Snowden will enable the Business School to be accessible to students and staff at all times. The average person spends an estimated 200 minutes on their smartphone daily, Snowden will provide a platform to interact with students at any time of the day, without the need to switch between devices and other university platforms – creating one formal university platform.

As pointed out in the literature review, one of the deciding factors that a modern day student considers when selecting a university at which to study, is based on the technological offerings and mobility the institution offers (Richard, 2014).

Hence, this is why a university mobile App in the WBS would be beneficial to the institution, effectively enhancing the Business School's image and creating a value add to current and potential new students.

The App will help engage with students and companies. There is a need for real-time and instant engagement with students and staff, where an App has the ability to create strong relationships with students (Negrea, 2014).

There is always a need to continuously add value and enhance the student experience. Snowden will help add value to users i.e. students, staff and advertising corporate firms. Students, who are the main beneficiaries, will be offered a variety of features and be served in different ways via the App, providing them with instant support and feedback amongst many other things.

5.3.1 Trust

To gain the students' trust in Snowden, various presentations will be offered to the WBS staff and students where they will be taken through how the App will benefit them, outlining and elaborating on the various features the App will house. Students and staff will be reassured that the security features on the App will protect their privacy, also making them aware that the App will not require sensitive information like that of a typical banking App (Govender & Sihlali, 2014).

Good encryption software will be designed into the App, with the inclusion of local session timeouts to prevent any physical security breaches. Using encryption and SSL certificates, it will ensure communication of the users' information is secure.

Users of the App will also have the opportunity to give real time feedback and provide reviews/ratings of the App, which will assist in building an intimate relationship with students and staff. Additionally, by considering their suggestions on how to improve the App, this will affectively help and secure and address any trust issues of the user, which is one of the main drivers for the successful adoption of the App.

Moreover, by incorporating security and privacy features, it effectively addresses the risk of security breaches highlighted by Stangarone (2013) in the risk assessment section of literature review.

5.3.2 Perceived Value

To address the perceived value factor, students will be asked to provide suggestions and give feedback on what features and capabilities they would like the App to include, where a rating system and recommendation section will be incorporated into the App.

This will promote student involvement, creating engagement and collaboration throughout the development phase and the continued running of the App that they will be using. This will provide students and staff the opportunity to add and see the value of introducing Snowden to the WBS.

Students will also be given a presentation at the WBS, where the features and capabilities of the App will be demonstrated, showing how Snowden will enhance the overall student experience by revealing the various features the App will offer. The key to addressing the perceived value is to ensure the App is useful, convenient and easy to use. By actively addressing the performance expectancy of the App, it will provide the belief that Snowden will actually improve the student and staff task performance.

A result of receiving feedback from students during the development process of the App will ensure the App is designed according to their needs and wants, which speaks to the student-driven design procedure discussed by Johnson (2016) in the literature review.

Student-driven design will engage the students and make them feel part of the process, where they can assist in creating a more convenient App for their own use. This will successfully address the perceived value factor that will encourage students to adopt and use Snowden (Johnson, 2016).

5.3.3 Social Influence

The last key driver that needs to be addressed for successful adoption of Snowden is social influence. The results provided in the previous chapter identified that the students' intention to adopt would be influenced by their peers.

To address this, the social media aspect of the App will be utilised in a positive and effective way. Snowden is effectively creating a WBS social media platform with its integrated social media capabilities.

The research has proven that a student's adoption decision is somewhat influenced by the acknowledgment of their peers.

By providing the user with the opportunity to synchronise their own social media profiles with Snowden and allowing them to have controlled customisation of their own profiles on the App, it will create greater social engagement.

Additionally, using influencers like the class representatives to promote the use of the App, this will assist in making the App more desirable to students and encourage them to want to adopt the App and fit in with their peers.

By addressing the key drivers in the design and implementation process of Snowden, it will effectively secure users for the App. Having secured the users for the App, it is now important to outline and discuss the value the App will add as well as the monetisation model, identifying the key channels of how the App will generate revenue.

5.4 Value Proposition

The value proposition of Snowden refers to the service the mobile App will provide the students and staff of the WBS, as well as the service offered to corporate firms. The value proposition has been carried out to safeguard the business from any threat of competitors, as well as to ensure the sustainability and longevity of the App.

5.4.1 The Student

- The app will allow students to connect with classmates, syndicate members and the faculty through the integration and inclusion of the messaging service.
- Instant real time notifications will be sent straight to their mobile device alerting the students of WBS news, updates and alerts.

- The students will experience greater engagement by allowing them to personalise certain aspects and features of the App, giving them a sense of control and input.
- It will offer the students the opportunity to integrate their personal calendar and tasks with the campus calendar. This customisability will improve their productivity, efficiency and attitude towards using the App.
- Students will still be able to use the App once leaving the WBS, where they will be able to personalise the App and select whatever features they still want to use and receive information on via the App. This will add value to the WBS experience where it will assist in creating a lasting relationship with the Business School after graduating.
- Allow lecturers to communicate work relating to lectures; assignments; exams; and any other relevant information to students via the App.

5.4.2 WBS and Faculty Staff

Snowden will also enhance the quality of the overall campus experience. Introducing the App will set the WBS apart from competition whilst keeping it up to date with the changing times.

It is not always easy to remain connected with students and alumni. However, with a University mobile App, the WBS will be able to stay connected and up to date with students currently in the Business School, as well as their career moves after graduating.

The most opportune time to establish a connection with alumni is prior to their completion and graduation from a WBS programme. A university mobile App that considers the students at the centre of it, will allow a connection with the alumni after they graduate, where it will also benefit them in the following ways:

- Transmit relevant WBS news and updates through the instant notification feature, assisting the Business School by enhancing the overall operations.
- The potential to increase the WBS alumni donations through this new-found engagement and communication via the university mobile App.

- Through the extraction of valuable information via the App, it will allow staff as well as lecturers to learn more and gain greater insight about the students.
- Assist the WBS in reducing unnecessary costs and saving valuable resources (printing costs), allowing the money saved to be utilised somewhere else.
- Through the In-App advertising there is opportunity now for revenue generation.
- An effective university mobile App will enhance the brand image and desirability of the WBS.
- Importantly, it will allow the WBS to stay connected with current and past students after they have graduated from the WBS.
- The WBS will now be able to track the movement of students and gain insightful data with regard to which companies as student has applied, the interviews they have attended, and their subsequent placement. This information is something the WBS career management services has struggled to accurately ascertain, as students tend to not let the Business School know of their job placement once they have graduated (C. Drobis, personal communication, February 1, 2017).

5.4.3 Advertising Companies

The advertisers on Snowden will be corporate firms offering job openings and opportunities. By developing Snowden, it essentially creates a comprehensive network of some of the country's top business professionals and graduates that top corporate firms are usually looking to hire.

The idea is to create an App that will provide an exclusive platform and network that offers corporate firms the opportunity to have direct and primary access to some of the top Business School graduates in South Africa.

Although the intention of the App is to initially introduce it in the WBS, the future goal is to expand the business and approach other tertiary institutions in South Africa, as well as other neighbouring African universities that do not have a mobile App in their institution. The App will be transferable, thus why the name of the App is not solely focused around the WBS.

This will allow the App to grow its student and partner network, creating a unique portal of Africa's top Business School graduates, where the App will provide an effective, efficient and clear channel that will promote communication between students and potential employers.

Companies that pay the advertising fee will have the opportunity to come into the Business School and offer presentations or seminars on what their company is about, enlightening students on the work they do and the type of student they are typically looking to hire.

5.4.4 Potential Network Growth

Snowden will effectively create an exclusive network between the Business School, students and advertising companies, helping to form a rather intimate relationship that benefits them all. This integrated approach will open up opportunities for all parties involved, where the longer the App stays in operation, the more the network will grow.

In 2016 there was 1437 students registered in the WBS across the MBA, MMs and PDBA programmes. It is estimated that each year the respective programmes will register more or less the same number of students from the previous year (C. Drobis, personal communication, February 1, 2017).

Therefore to be conservative, using the assumption that 1300 students will be registered at the WBS each year from 2018, this suggests that after five years of being in operation and using the figure of 83.75% of students that said they would download the University mobile App, an estimated number of 5444 Business School student users will be registered on the Snowden App.

Having a network of 5444 Business School students after five years and now being able to effectively track their career movements after leaving the WBS, the Snowden App will now assist in generating the data the WBS really wants.

Once this data and information is quantified and analysed, it will provide greater insight and understanding to the WBS in trying to understand the employment decisions and conversion rates of students getting hired after graduating from the Business School.

5.5 Assessment of Competition

Currently, there is no competition of any existing App that is operating within the WBS i.e. the same market. However, there is the potential competition from the WitsM App on the main campus, but, this App does not have any of the features intended for Snowden.

The App is designed specifically and only for the Wits Main Campus, where it does not have the capability to be transferred to any other tertiary institution. The WitsM App is also predominately used for student registration and news, offering a limited number of features, services, and personalisation. Additionally, the App does allow students to communicate and engage effectively with their peers and lecturers, where it does not offer the ability to generate revenue like Snowden.

Snowden will be designed to create a more personalised user experience specifically for Business School students, offering current and past students various benefits that no other University App is currently offering.

There is also the possibility of another technology company approaching the Business School to develop and run a mobile App. However, based on the trust and mutual respect of keeping the App in-house, with the intention of keeping costs to a minimum, as well as providing the opportunity to their own Business School students where the revenue generated will be used to the WBS's benefit, I cannot see this as a major threat.

The next form of competition would effectively be recruitment companies; this is based on the additional feature the Snowden App makes use of to generate revenue. Snowden is effectively operating as a neutral recruitment agent by putting students and companies in contact via the App.

However, Snowden will be host to a niche network of top Business School students that have various qualifications and work experience, giving these companies first, and direct access to the WBS student population through advertising or coming in to do presentations.

By ensuring the wants and needs of all parties involved are carefully sought and considered, it will assist in ensuring companies use the App to find and offer employment

via Snowden, with the goal of reducing the number of students looking elsewhere for job opportunities when leaving the Business School.

The more students registered on the App, the more companies will want to advertise on the App, and the more job placements will happen as a result of this. This will not only give the App reputability, but will also give the WBS a good image and reputation, which will in turn, encourage new students to want to join the WBS and more companies wanting to advertise through Snowden

The App will also help the WBS build data that relates to jobs offered; the number of interviews each student went through; and where the student eventually got placed.

The WBS often struggles to keep tabs on where a student is hired once they leave the Business School, so there is no real conversion rate that they can measure (C. Drobis, personal communication, February 1, 2017).

5.5 Monetisation Model

Snowden will be designed to have three revenue streams, where each channel will generate revenue in a specific way via the App. Each revenue stream will be able to feed off the others, but will not be dependent on each other. The three revenue streams are illustrated in the figure below:

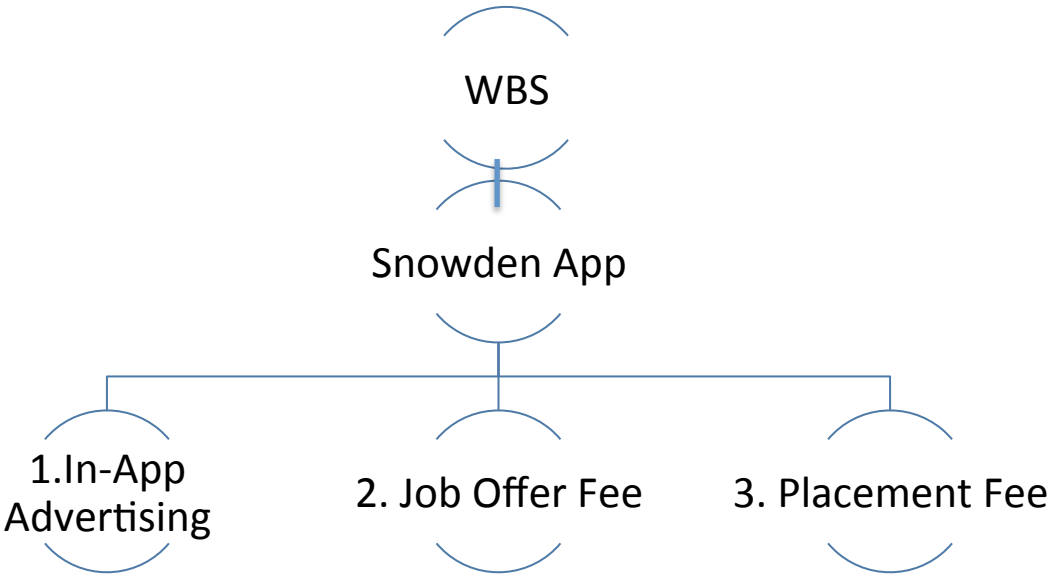


Figure: Snowden revenue streams

The key is to increase and expand on the amount of students using the App each year, the more users the App gains each year as well and the more companies on board looking to advertise and offer job opportunities, the more it will allow for greater revenue to be generated.

The companies referred to throughout the business case would be new companies and those with which the WBS already has a close relationship as a result of the recruitment process of students, career fairs and when a company comes in to do a presentation (C. Drobis, personal communication, February 1, 2017).

5.5.1 In-App Advertising

Based on the desk research conducted in the literature review, where the focus was on the different monetisation models for mobile App's, Snowden would adopt an in-App advertising monetisation model. Snowden will generate revenue by selling data-driven advertising space within the App.

In-App advertising can be based on a variety of different sizes, positions and placements within the App. In addition to this, there are various models and formats within the in-App

advertising strategy, where it is important to be mindful of the metrics to keep track of how certain advertisements are performing.

Much like Apps that use traditional advertising models, Snowden will generate revenue from in-App advertising, where corporate firms will be given the opportunity to advertise their company via the App by means of a once off yearly fee. This unique yearly fee will give the companies the opportunity to:

- Have a place in the career fairs.
- Do company presentations at the WBS.
- Gain insight into the minds of Business School students.
- Advertise their company events/initiatives/services.
- Have direct access to top Business School students and the alumni network.

The aim with this monetisation model is to first and foremost get all the current students at the WBS registered on and using the App, where it can be introduced as a formal mode of communication within the Business School.

When students register on Snowden, it will create a sizeable user base, which will subsequently result in the creation of a data set through the sign up and personal information obtained. The data collected through the sign up will contain the typical information like the names; ages; academic and job history. In addition to this, Snowden will also allow students some flexibility where they will be able to customise what they put on and how they use the App.

Students will be allowed to create profiles of themselves, amongst other things they will also be able to highlight where their personal as well as professional interests lie, adding the industry or type of job they are looking to get involved in once completing their course at the Business School. All this contributes to the valuable data set Snowden will accumulate.

The WBS generally deals with and has relationships with an estimated 50 companies that usually offer jobs, come in to do company presentations at the Business School and career fairs, amongst other things. After the personal interview with Charisse Drobis, the Head of Career Advisory who deals with these companies, a conservative figure of 30

companies a year was estimated that would be interested in the in-App advertising option (C. Drobis, personal communication, February 1, 2017).

An educated assumption of R25, 000.00 was estimated with Charisse, based on her previous experience and willingness of companies with which she has dealt, where this amount would be charged to each company opting to make use of the in-App advertising option, generating a revenue of **R750, 000.00** in year one (C. Drobis, personal communication, February 1, 2017).

5.5.2 Job Offer Fee

There is, on average, eight to ten job offers sent to the WBS each month by these companies asking the Business School to pass on the job opportunity to the students. The jobs offered range from openings for PDBA students to more advanced positions for MBA graduates.

Of the jobs opportunities offered, at least one person will take interest in the offer and apply; there is effectively a 100% response rate towards all the jobs being offered, irrespective of how many people apply for each opening (C. Drobis, personal communication, February 1, 2017).

Revenue will be generated based on a typical recruitment website or mobile App model, where each job opportunity that is offered by a company via Snowden, the company will be subsequently charged a small fee.

A conservative figure of 95 job offers a year will be sent to the WBS. One standard job offer is an estimated R1, 065.00 (Pnet, 2017). However, ensuring that companies are not discouraged by the job offer fee, a reduced amount of R380.00 would be the amount charged to a company offering a single job via the App.

By doing this, the App will be able to match students' interests with specific job opportunities that have been advertised on the App, where they will be notified of a job opening that suits their particular interests much like the advertising companies will be notified of a student that matches their specific requirements.

Using the abovementioned figures, the job offer fee revenue channel will generate an estimated **R36, 100.00** in the first year of operation.

5.5.3 Placement Fee

Lastly, if a student applies for a job opening that was offered on Snowden, and is subsequently hired by the advertising company, the company will be charged a small placement fee. The fee is not intended to discourage any companies from advertising via the App; it is purely to cover the relevant expenses linked to publishing the job offer.

This fee charged is based on the nature of the Job Portal feature in Snowden, as the App is effectively matching students and putting users and companies in contact with each other.

Snowden will have this feature where it will essentially work as a technology recruitment platform in addition to managing all WBS activities. This feature will match students and companies via the App, helping students get placed in a company that is in line with their academic and personal interests.

The typical placement fee by a recruitment company in South Africa is 15%-18% of an individual's annual gross salary (HRfuture, 2017). However, based on the relationships already formed between the WBS and the companies, this fee cannot be charged.

Therefore, to be conservative, a small percentage of 0.5% will be charged on the annual salary of the student being placed. There is a vast difference in salary figures between a PDBA and MBA graduate in South Africa. Therefore, a conservative estimate of **R330 000.00** was subsequently used as the average gross salary amount by a WBS graduate (payscale, 2017).

An assumption was made based on the experience of Charisse Drobis, where a conservative figure of an estimated 30% of jobs offered to students by companies via the WBS result in a student being placed (C. Drobis, personal communication, February 1,

2017). Therefore, 30% of 95 results in a figure of 29 students placed each year, generating revenue of **R47, 850.00** in the first year of operation.

5.7 Financial Model Discussion

The financial model with the relevant calculations and assumptions made, are provided in **Appendix C** and **Appendix D.** Prior to discussing and analysing the financial model of the business it must be noted that the figures presented are based on and are validated by research, where educated assumptions were also made after personnel interviews with the relevant WBS staff.

The financial model is made up of a pro forma income statement in addition to a company valuation. The key talking points from the financial model have been discussed in greater detail below.

5.7.1 The App's Revenue

The projected revenue/ top line in the first year of operation is R833, 950.00, which is made up of the three different revenue streams that form part of the monetisation model discussed earlier.

In-App advertising revenue growth in 2016 is an estimated 17-18% (Statista, 2017). Therefore, because Snowden is a start-up technology business, a conservative revenue growth rate of 8% was used for advertising in the financial model.

The 8% growth rate in the first five years was also applied to the job offer fee and placement fee revenue channels. It is evident that the year-on-year revenue performance is positive and sustainable.

5.7.2 COGS

Cost of Good Sold (COGS) is made up of two variables. The first is the annual App store development fee that is charged on free Apps by the App store, as well as the annual App update fee charged by the company that developed the App.

The App store developer cost is R1, 350.00 ($100.00 per annum) (Fleishman, 2016). The annual update fee charged by the company that develops the App for the WBS, where the App needs to be updated on an annual basis, costs an estimated R67, 107.00 (5% of development cost) (Otreva, 2017).

By updating the App yearly, it will ensure sustainability where it will have the capacity to host as well as grow the amount of users. This effectively addresses the risk issue Stangarone (2013) identified in the literature review, where many start-up technology businesses fail, as they are not prepared for an unexpected growth in their App.

Based on the fact that Snowden is free to download and will be providing a service as opposed to selling physical products, the App stores will not charge the typical 30% commission like that of a paid App (Fleishman, 2016). It is free, thus this additional commission is not included in COGS. The total COGS is R68, 457.00.

5.7.3 OPEX

All assumptions made on the amounts that make up the Operating Expenditure (OPEX) are provided in **Appendix D.** OPEX is made up all expenditures that Snowden will incur when engaging in operational activities that are not associated with the services offered.

The office lease is given a figure of zero, purely because the business will be run in-house at the WBS, forming part of the services the Business School offers. Thus, no lease payment would be necessary, and was not included in the income statement. OPEX in the first year amounts to R346, 000.00, where the resulting EBITDA is a positive amount of R419, 493.00.

5.7.4 Depreciation and Amortisation

The depreciation of all office computers and the server, amongst other items, was considered for depreciation. These are tangible assets, where straight-line depreciation was used over five years at R30, 800.00 (SARS, 2012). Amortisation is on the actual

mobile App, which is an intangible asset. The App was also depreciated over a five year straight-line at R268, 429.00.

5.7.5 Loans

Due to the nature of the business case, the objective is to ask for the full funding for the development of the App by the WBS, where they will be the only investor in the business. Therefore, no loans will need to be taken out, subsequently not including any interest on loans in the financial model.

5.7.6 Net Income

The Snowden mobile App business has shown a positive net profit of R86, 960.00 in the first year after paying off all its expenses. The company's earnings have also shown a positive growth increase in the succeeding years.

5.7.7 Valuation of Business

Working capital will occasionally increase when revenue grows, it can usually be assumed that the changes in Net Working Capital (NWC) is proportional to the growth in revenue (McClure, n.d.). However, to be conservative, a figure of 5% of the annual revenue was applied as a proxy to determine the change in NWC, as this is a general rule of thumb when looking at a start-up business in this particular industry (Wall Street Oasis, 2012).

The CAPEX + Development cost amount is made up of the tangible assets like personal computers and the Server, as well as the intangible asset which is the actual mobile App. The CAPEX + Development cost amounts to R1, 496, 143.00; this is the upfront capital outflow that needs to be financed by the investor. This outlay will be to effectively increase the scope of operations and the value-add the WBS will offer.

Considering the discount rate applied in the financial model, to reflect the greater risk of a start-up mobile App business in South Africa, a conservative figure was essentially used, where inflation and the risk premium of South Africa were considered.

In this instance, the discount rate is also considered to be the Weighted Average Capital Cost (WACC). The typical discount rate of a technology company in South Africa is between 14-18% (PwC, 2016). Therefore, to be conservative, a discount rate of 24% was used in this financial model.

In South Africa, the average historic inflation rate over the past 80-100 years is an estimated 5% (Inflation.eu, 2017). Therefore, considering this inflation trend, the Terminal Value Growth in this financial model was given a figure of 5%.

Research Question: What is the financial viability of a proposed new University mobile App?

When calculating the Net Present Value (NPV), at a conservative discount rate of 24% and a Terminal Value Growth of 5%, it results in an amount of R508, 777.00.

The NPV is positive, where the generating returns are in excess of the initial capital outlay, which suggests the proposed investment in the Snowden App is profitable with positive returns, proving the financial viability of the new App.

5.8 Conclusion

This business case for the Snowden mobile App has proved to be feasible, sustainable and has shown great potential, where I believe working together with and receiving the backing of WBS, this project can be carried out successfully.

The main research question has effectively been answered, where more than 80% of the students said they would be willing to adopt a new university mobile App. The three main factors that have an influence on a person’s willingness to adopt a university App have been addressed accordingly and incorporated in the development process and design of the App.

Furthermore, the financial model has provided a strong case that supports the financial viability of the proposed university mobile App, where it justifies and defends further enquiry into the business venture, effectively addressing the last research sub-question.

The initial capital outlay to get the business off the ground requires a financial investment of **R1, 496 143.00**. This is the amount I am asking the WBS to invest for 60% equity share in the business.

Although the initial investment is large, the financial model shows that by applying conservative variables, there are positive revenues with the potential to grow significantly more, with the objective of securing more companies each year to advertise via the App.

Considering the income as a percentage of revenue, there is a positive growth increase year-on-year, suggesting the business is improving in terms of managing the costs when compared to revenues.

Lastly, both the NPV as well as the IRR have shown to be positive. The IRR is 34,28% for this project, which suggest the rate of growth is good.

The business case has captured the reasoning for initiating the development of the Snowden university mobile App. The introduction of the App will assist in improving communication and engagement within the WBS; enhancing the overall student experience; help generate the relevant student data the WBS needs; whilst adding an additional revenue stream that will benefit the Business School with the opportunity to expand the network of users of the App in the future.

REFERENCES

Akturan, U. & Tezcan, N. (2012). Mobile Banking Adoption of the Youth Market: Perceptions and Intentions. *Marketing Intelligence and Planning*, 30(4), 444-459.

Andrus, J., Van't Hof, A., AlDuaij, N., Dall, C., Viennot, N., & Nieh, J. (2014). *Cider: Native Execution of iOS Apps on Android*. *ASPLOS '14* (Vol. 49). New York.

Ary, D., Jacobs, L. C., & Razavieh (2002). *Introduction to Research in Education*. USA, Belmont: Thomson Learning.

Baptista R., & Mendonça J. (2009). Proximity to knowledge sources and the location of knowledge-based start-ups, *The Annals of Regional Science*, 45(1), 5-29.

Bardo, J.W., Yeager, S.J., & Klingsporn, M.J. (1982). Preliminary Assessment of Format Specific Central Tendency and Leniency Error in Summated Rating Scales. *Perceptual and Motor Skills*, 54 (1), 227-234.

Bertram, D. (2007). *Likert Scales… are the meaning of life.* Department of Computer Science. Alberta.

Black, T.R. (1999). *Doing Quantitative Research in the Social Sciences*. London: Sage Publications

Brun, J. P. (2010). *Missing pieces: 7 ways to improve employee well-being and organizational effectiveness*. New York: Palgrave Macmillan.

Čalopa, M. K., Horvat, J., & Lalic, M. (2014). Analysis of Financing Sources for Start-Up. *Journal of Contemporary Management Issues*, *19*(2), 19–44.

Carr, D.F. (2013). *Qualtrics dominates academic survey research*. Retrieved 14th July, 2016, from http://www.informationweek.com/qualtrics-dominates-academic-survey-research/d/d-id/1110904?

Chang, L. (1994). A psychometric evaluation of four-point and six-point Likert-type scales in relation to reliability and validity. *Applied Psychological Measurement*, 18, 205-215.

Charan, J. & Biswas, T. (2013). How to Calculate the Sample Size of Different Study Designs in Medical Research?. *Indian Journal of Psychological Medicine*, 35(2), 121-126.

Chimi, C. J., & Russell, D. L. (2009). The Likert Scale: A Proposal for Improvement Using Quasi-Continuous Variables. *ICrystal*, *26*(2), 1–10.

Cisco Systems Inc. (2012). *Cisco visual networking index: Global mobile data forecast, 2011- 2016*. Retrieved 10th July, 2016, from http:/ /www. cisco.com/ en/ US/ solutions/collateral/ ns341/ ns525/ ns537/ ns705/ ns827/ white_paper_c11-520862.Html.

Davis, F. (1989). Perceived Usefulness, *Perceived Ease to User, and User Acceptance of Information Technology. Management Information Systems Research Center*, University of Minnesota 13(3), 319-340.

Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10-point scales. *International Journal of Market Research*, *50*(1), 61–77.

Eby, V.I. (1993). Validation: choosing a test to fit the design. *Nurse Researcher*, 1(2), 27-33.

Effective Measure. (2016). *Samsung remains number one for mobile phone devices in South Africa with 41 percent.* Retrieved 10th July, 2016, from http://www.effectivemeasure.com/samsung-remains-number-one-for-mobile-phone-devices-in-south-africa-with-41-percent

Fleishman, G. (2016). *How apples new app store subscriptions affect you* Retrieved 2nd February, 2017, from http://www.macworld.com/article/3081472/ios/faq-how-apples-new-app-store-

Flood, D., Harrison, R., Iacob, C., & Duce, D. (2012). Evaluating mobile applications: A spreadsheet case study. *International Journal of Mobile Human Computer Interaction*, *4*(4), 37–65.

Formotus. (2016). *Figuring out the costs of custom mobile business app development.* Retrieved 12th July, 2016, from http://www.formotus.com/14018/blog-mobility/figuring-the-costs-of-custom-mobile-business-app-development.

Gimun, K., BongSik, S., & Lee, H.G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journa*l, 19(3), 283-311.

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest Research to Practice Conference in Adult, Continuing, and Community Education*, 82–88.

Goldstuck, A., & Wronski, M. (2016). *South African Social Media Landscape 2016 - Executive summary*. Retrieved from http://www.worldwideworx.com/wp-content/uploads/2012/10/Exec-Summary-Social-Media-20121.pdf

Goodfirms. (2016). *Survey: mobile app development cost and time.* Retrieved 10th July, 2016, from https://www.goodfirms.co/resources/mobile-app-development-cost

Google. (2015). *Mobile app marketing insights: how consumers really find and use your apps.* Retrieved 9th July, 2016, from https://think.storage.googleapis.com/docs/mobile-app-marketing-insights.pdf

Govender, I., & Sihlali, W. (2014). A Study of Mobile Banking Adoption amont University Students Using an Extended TAM. *Mediterranean Journal of Social Sciences*, *5*(7), 451–459.

Gregory, R.J. (1992). *Psychological Testing: History, Principles and Applications*. Boston: Allyn and Bacon.

Harvard. (2016). *Harvard mobile apps*. Retrieved 13th July, 2016, from http://www.harvard.edu/about-harvard/harvard-mobile-apps.

Hofstrand, D. (2013). *Financing Stages for Start-up Businesses*. Ames, Iowa.

Holla, S., & Katti, M. M. (2012). Android Based Mobile Application Development and its Security. *International Journal of Computer Trends and Technology*, *3*(3), 486–490.

HRfuture. (2017). *Commission to recruitment consultants* Retrieved 3rd February, 2017, from http://hrfuture.net/news-list/commission-to-recruitment-consultants?cat=363

IBM. (2017). IBM *power systems* Retrieved 7th February, 2017, from http://www-03.ibm.com/systems/power/hardware/

Inflation.eu. (2017). *Historic inflation South Africa – CPI inflation* Retrieved 7th February, 2017, from http://www.inflation.eu/inflation-rates/south-africa/historic-inflation/cpi-inflation-south-africa.aspx

Jaffe, J., Tonick, S., & Angell, N. (2014). Quality of web-based information on epidural anesthesia. *Obstetrics and gynecology*, *123*, 110-115.

Jones, M., & Mlambo, C. (2013). Early-stage venture capital in South Africa: Challenges and prospects. *South African Journal of Business Management*, *44*(4), 1–107.

Kaasinen, E. (2005). *User acceptance of mobile services value, ease of use, trust and ease of adoption*. Helsinki: VTT Publications 566, 1-222.

Kamer-Ainur, A., & Marioara, M. (2003). *Errors and Limitations Associated with Regression and Correlation Analysis*. Bulevardul Mamaia. Retrieved 19th July, 2016, from http://steconomiceuoradea.ro/anale/volume/

Kang, S. (2014). Factors influencing intention of mobile application use. *International Journal of Mobile Communications*, *12*(4), 360–379.

Kelly, C., MacKinnon, R. A., McCrudden, M., & Tatham, N. (2015). *You ' ve got mail*. Sheffield.

Keyton, J. (2011). *Communication and organizational culture: A key to understanding work experience* (Second ed.). California: Sage Publishers.

Korosteleva, J., & Mickiewicz, T. (2011). Startup financing in the age of globalization. *Emerging Markets Finance and Trade*, 47(3), 23-49.

LaMarca. (2011). *The Likert scale: advantages and disadvantages.* Retrieved 10th July, 2016, from https://psyc450.wordpress.com/2011/12/05/the-likert-scale-advantages-and-disadvantages/

Lin, H,F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International Journal of Information Management*, 31(3), 252-260.

Lissitz, R. W., & Green, S. B. (1975). Effect of the number of scale points on reliability: a Monte-Carlo approach. *Journal of Applied Psychology*, 60, 10-13.

Lule, I., Omwansa, T. K., & Waema, T. M. (2012). Application of Technology Acceptance Model (TAM) in MBanking Adoption in Kenya. *International Journal of Computing and ICT Research*, 6(1), 31-43.

Lunenburg, F. C. (2010). Communication : The Process, Barriers, And Improving Effectiveness. *Schooling*, *1*(1), 1–11.

Lunenburg, F. C. (2011). Leadership versus management: A key distinction— at Least in theory. *International Journal of Management, Business, and Administration*, *14*(1), 1–3.

Lutgen-Sandvik, P. (2010). *Destructive organizational communication: Processes, consequences, and constructive ways of organizing*. New York: Routledge.

MacCallum, K., Jeffrey, L., Kinshuk, D. (2014). Factors Impacting Teachers' Adoption of Mobile Learning. *Journal of Information Technology Education,* 2(3), 1-10

Maharajh, M. (2011). *Communication Challenges: An exploratory study of international students at the University of KwaZulu-Natal*. Durban University of Technology, Durban.

McClure, B. (n.d). *DCF analysis: forecasting free cash flows* Retrieved 8th February, 2017, from http://www.investopedia.com/university/dcf/dcf2.asp

Mischin, M. (2015). *Startup Ecosystem Preliminary Report*. *Western Australia*. Perth. Retrieved from http://www.startupwa.org/docs/Western_Australia_Startup_Report_Dec_2015.pdf

Modolabs. (2015). *10 ways to market and promote your new campus app.* Retrieved 12th July, from https://www.modolabs.com/blog-post/10-ways-to-market-and-promote your-new-campus-app/

Mungal, A., & Garbharran, H. L. (2014). The Perceptions of Small Businesses in the Implementation of Cash Management Techniques. *Journal of Economics and Behavioral Studies*, *6*(1), 75–83.

Munir, A. (2014). *App monetization: 6 bankable business models that help mobile apps make money.* Retrieved 13th July, 2016, from http://info.localytics.com/blog/app-monetization-6-bankable-business-models-that-help-mobile-apps-make-money

Nagappan, M., & Shihab, E. (2016). *Future Trends in Software Engineering Research for Mobile Apps*. New York, 1, 1-12.

Negrea, S. (2014). *Apps move up on campus.* Retrieved 10th July, 2016, from https://www.universitybusiness.com/article/apps-move-campus

Nielsen. (2014). *Smartphones: So many apps, so much time*. Retrieved 11th July, 2016, from http://www.nielsen.com/us/en/insights/news/2014/smartphones-so-many-apps--so-much-time.html.

Otreva. (2017). *Application development* Retrieved 2nd February, 2017, from https://www.otreva.com/calculator/#

Page-Bucci, H. (2003). *The value of Likert-scales in measuring attitudes of online learners*. Retrieved 15 July, 2016, from http://www.hkadesigns.co.uk/websites/msc/reme/likert.htm

Pickard, A.J. (2013), *Research methods in information* (Second ed.). London: Facet Publishing.

Pnet. (2017). *Streamline your recruitment process* Retrieved 3rd February, 2017, from https://www.pnet.co.za/for-recruiters/recruiter- advertising/order-online.cfm

Potgieter, A. (2015). The mobile application preferences of undergraduate university students : A longitudinal study Research methodology. *South African Journal of Information Management*, *17*(1), 1–6.

Prinsloo, C., & James, I. (2015). *Digital disruption: Changing the rules of business for a hyper-connected world*. Pretoria: Vn Schaik.

PwC. (2016). *Valuation methodology survey* Retrieved 2nd February, 2017, from http://www.pwc.co.za/valuation-survey

Rakestraw, T. L., Eunni, R. V., & Kasuganti, R. R. (2012). The Mobile Apps Industry : A Case Study The Mobile Apps Industry : A Case Study. *Journal of Business Cases and Applications*, *1*, 1–26.

Ritchie, J. & Lewis, J. (2003). *Qualitative Research Practice: A Guide For Social Science Students And Researchers*. London: *Sage Publishers.*

Roberts, P. (2006). Reliability and validity in research. *Art And Science Journal*, *20*(44), 41–45.

Roscorla, T, (2011). *Universities refine mobile strategy*. Retrieved 13th July, 2016, from http://www.centerdigitaled.com/policy/Universities-Refine-Mobile-Strategy.html

SARS. (2012). *South African Revenue Services Income Tax Act, Number 58 of 1962. Wear and Tear Allowance*. Pretoria: Government Printer.

Saunders, M., Lewis, P. & Thornhill, A. (2012). *Research methods for business students* (Sixth ed.). London: Pearson.

Skiba, D.J. (2014). The connected age: Mobile apps and consumer engagement. *Nursing Education Perspectives,* 35(3), 199–201.

Srivastava, B. (2014). *Mobile app usage to rise, but new apps struggle to find market.* Retrieved 12th July, 2016, from http://www.dazeinfo.com/2014/07/17/mobile-app-usage-us-2013-catagory-interest-age-group-study/ World

Stangarone, J. (2013). *7 hidden risks of native mobile app development*. Retrieved 13th July, 2016, from http://www.mrc-productivity.com/blog/2013/11/7-hiddens-risks-of-native-mobile-app-development/

Statista. (2017). *In-app advertising revenue 2011 to 2017* Retrieved 3rd February, 2017, from https://www.statista.com/statistics/220149/total-worldwide-mobile-app-advertising-revenues/

Subramanian, R. (2015). *Diet, exercise, and smartphones - A content analysis of mobile applications for weight loss*. Southern illinois University. Retrieved from https://www.lib.uwo.ca/cgibin/ezpauthn.cgi?url=http://search.proquest.com/

Summers, D.C. (2010). *Quality management: Creating and sustaining organizational effectiveness* (Custom ed.). Upper Saddle River, NJ.: Prentice Hall.

Techopedia. (2016). *Mobile applications.* Retrieved 10th July, 2016, from https://www.techopedia.com/definition/2953/mobile-application-mobile-app

Trading Economics. (2017). *South Africa inflation rate* Retrieved 1st February, 2017, from http://www.tradingeconomics.com/south-africa/inflation-cpi

Varshneya, R. (2013). *How your mobile app can make more money.* Retrieved 13th July, 2016, from https://www.entrepreneur.com/article/228089

Vin-Cent Chang, P. (2004). *The Validity of an Extended Technology Acceptance Model (TAM) For Predicting Intranet/Portal Usage*. University of North Carolina at Chapel Hill.

Waddington, A. (2010). *Improving communication with our students*. Manchester: University of Manchester.

Wall Street Oasis. (2012). *Net working capital in percentage of sales* Retrieved 7th February, 2017, from http://www.wallstreetoasis.com/forums/net-working-capital-in-of-sales

WBS. (2016). *Academic programmes*. Retrieved 11th July, 2016, from http://www.wbs.ac.za/

APPENDIX A: App Monetisation Models

The different monetisation models for Apps (Munir, 2014)

<table>
<tr><td colspan="2">Free in-App Advertising: Fundamentally, the App owner generates revenue by selling data-driven advertising space within the App itself. With the data gathered from the users of the App, the App owner can subsequently sell the data to advertisers to target specific ads at the users. The goal with this monetisation model is the initially accrue a sizeable user base, and with the information obtained through sign up and personal information, the advertiser will then base their advertisement on the target audience and remunerate the App owner to place the specific ad. Example: Facebook.</td></tr>
<tr><td>Advantages:

• Apps generate huge amounts of data based on their users.
• Users love free Apps, allows App owner to gain users at a faster rate.
• Will be effective only if ads are moderate and specifically targeted i.e. not too many ads.
• Advertisers spend much more on Apps then on the traditional radio and newspapers.</td><td>Disadvantages:

• People may get annoyed with ads.
• Ads can compromise the in-App experience, taking too much of the screen space.
• Not the most effective model for niche or utility Apps where users just want to use the App for something quick.</td></tr>
<tr><td colspan="2">Freemium: Like free in-App advertising model where it is free to download, but specific features in the App are restricted until purchased. A great model to initially ‘tease’ users, and once hooked they tend to be a lot more open to purchasing more features. Example: Angry Birds.</td></tr>
<tr><td>Advantages:

• Allows the App owner to build a large user base quickly, as it is also free.
• People who try prior to purchase will usually become hooked as well as loyal customers.
• Very flexible model, where it can easily be altered.</td><td>Disadvantages:

• Offering a small amount of free features will in turn frustrate users and subsequently lose them.
• BUT, offering too many free features may have the opposite effect and may frustrate users when they do eventually have to buy a new feature.</td></tr>
<tr><td colspan="2">Paid Apps: Pay for the App from the App store, usually ranging between prices from R14.00 all the way up to R1000.00. The success of the App download will be dependent on how well the App is marketed to essentially convince users why it is better than a free counterpart. Example: Calendar 5.</td></tr>
<tr><td>Advantages:

• App owners earn revenue the minute that App is downloaded.
• Users who have paid for the App will most</td><td>Disadvantages:

• App stores are saturated will hundreds of thousands of Apps, thus difficult to sell a new App.</td></tr>
</table>

<table>
<tr><td>likely keep the App and become an avid user.
• Most of the time this model will not include in-App advertising, thus allowing for a better user experience.</td><td>• The App store takes commission off every App that is sold.
• Paid models are downloaded significantly less when compared to the free App downloads.</td></tr>
<tr><td colspan="2">In-App Purchases: The sale of physical or even virtual products on the App to generate revenue. Essentially another sales channel to offer users, either physical items they can use in the real world or virtual items that can only be used within the actual App. Example: Meet me.</td></tr>
<tr><td>Advantages:

• This type of App is usually successful for eCommerce brands.
• App owners can make instant and great profits at a lower risk than a normal storefront i.e. no expenses of the usual brick and mortar costs etc.
• The purchase of virtual products leads to greater relationships with the App user.</td><td>Disadvantages:

• The App store will also take commission from the virtual Apps sold.
• Instances of accidental in-App purchases have resulted in some bad publicity.</td></tr>
<tr><td colspan="2">Sponsorship: This monetisation model allows advertisers to take part in the App by financing specific rewards to the App user, where the user is able to receive such awards by simply engaging with the App. The advertisers pay the App owner to take part in a form of incentives schemes, where revenue is obtained by taking a percentage of the reward that is transferred to the user. Example: RunKeeper.</td></tr>
<tr><td>Advantages:

• Very innovative and flexible model.
• The user will most likely more openly accept this strategy of advertising, as it is relevant to the purpose of the App.
• App owners gather more revenue, advertisers are provided with more space as well as users receive free promotions etc.</td><td>Disadvantages:

• App stores are tightening their rules on Apps that use incentive schemes.</td></tr>
</table>

APPENDIX B: Research Instrument

CLASSROOM 5- QUESTIONNAIRE

Note: 'Academic activities' refers to all forms of communication, activities and tasks that go on in and around the WBS i.e. receiving marks, discussion boards, academic status update, syndicate group meetings, communication with admin staff and lecturers, tactical timetable updates, campus maps, instant notifications, job opportunities, campus talks and events etc. The C5 App will bring all forms of communication on to one formal platform with much more additional features that will enhance the overall University experience.

SECTION1- Demographic information

1. I am between the age of:

- 18-23
- 24-33
- 34-44
- 45-Older

2. I am:

- Male
- Female

3. Computer/ Mobile knowledge:

- No Understanding
- Average
- Good
- Excellent

SECTION 2

4. I do not trust using a mobile App for University activities:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

5. I have serious doubts about University activities performed using a mobile App:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

6. I am afraid of inherent fraud associated with Apps that holds my personal information:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

7. I am worried other people may access my account using a University mobile App:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

8. It can be risky to store personal information on a mobile App:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

9. I must find a University mobile App useful in my life:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

10. Using a University App must improve my academic experience:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

11. A mobile App would be useful to me for academic activities:

- Strongly disagree
- Disagree

- Undecided
- Agree
- Strongly Agree

12. A University App must assist in addressing communication issues faced at the WBS:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

13. A University mobile App will be convenient to use:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

14. A University mobile App will give me better control over academic activities:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

15. I believe It would be easy to get a phone to use the University mobile App:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

16. It would be easy for me to remember how to conduct academic activities on a phone:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

17. Conducting academic tasks on a phone would be easy to do:

- Strongly disagree
- Disagree
- Undecided

- Agree
- Strongly Agree

18. I think Interaction with a University mobile App does not require a lot of mental effort:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

19. University mobile App must allow me to use varied languages:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

20. Adopting a University mobile App will help me fit in with my peers:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

21. It is trendy to use a University mobile App:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

22. My friends and family use mobile Apps in their institution:

- Strongly disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

APPENDIX C: Assumptions and Calculations

Assumption Number	Note:
1	**Company In-App Advertising:** Companies will be offered the opportunity to pay a yearly fee to gain full access to WBS activities, company presentations, etc.
2	**Job offer Fee:** Every time a company posts a job offer on the App, they will be charged a standard fee.
3	**Placement Fee:** If a student gets placed in a job that is advertised through the App, the hiring company will be charged a fee.
4	**Revenue Growth:** In-App advertising revenue growth in 2016 is an estimated 17-18% (Statista, 2017). Therefore, to be conservative, a revenue growth rate of 8% was used for advertising. Subsequently, 8% growth was also used for job offer fee and placement fee
5	**Annual App Store Developer Fee:** Apps that are free on the App store do not get charged the typical 30% of a paid App or an App that has in App purchases. Free Apps are not charged any commission by the Apple or Google Play store (Fleishman, 2017). Annual App Store Developer Fee is $100 = R1 350.00.
6	**Updating App:** The annual update fee charged by the company that develops the App for the WBS, where the App needs to be updated on an annual basis, costing R67,107.00 (5% of development cost) in the first year (Otreva, 2017).
7	**COGS:** The rate used to inflate the COGS was 6.5%, based on the South African inflation rate at the time (Trading Economics, 2017).
8	**Employee Expenses:** I will be the only employee initially, running the App once it is developed. A salary of R300 000.00 will be taken out (payscale, 2017).
9	**Travel Expenses:** Traveling to new clients/ companies to get them to sign on as a sponsor. One full tank of petrol at R833.00.
10	**Marketing:** Marketing to students will not cost much as it is just through email, some posters on campus and the WBS website. Online marketing through social media like Facebook adverts will be utilised as well. The R20 000.00 is the marketing budget allocated in year one.
11	**Lease:** Lease is 0, the App will be in-house on the WBS premises, thus no rent will need to be paid.
12	**Insurance:** Insurance on the business equipment, PC's and printers.
13	**Setup Expenses:** The cost incurred when setting the office equipment up, getting the office ready for operation. A once off cost of R5 000.00.
14	**Other:** Any others small cost incurred throughout the year.
15	**OPEX:** The rate used to inflate the OPEX was also 6.5%, based on the South African inflation rate at the time, with the intention of keeping consistency throughout (Trading Economics, 2017).
16	**Depreciation:** Depreciation of tangible assets - it is assumed that 3 PC's will need to be bought as well as a server/mainframe. Each PC is cost at R18 000.00 with a five-year life span, where the server is cost at R100 000.00 also with a five-year life span (IBM, 2017). Using straight-line

	depreciation, which amount to a figure of R30 800.00 per annum.
17	**Amortisation:** Amortisation of intangible assets, in this case it is the actual mobile App. The full development cost of the App amounts to R1 342 143.00 (Otreva, 2017). The App is amortised over a five-year straight-line as well, at an amount of R268 429.00 per annum.
18	**Interest Payment:** Because I am asking the WBS to fund the full development of the App, no loan needs to be taken out, therefore 0 interest.
19	**Taxes Paid:** The taxes as per the income statement and the valuation is the same because the tax wear and tear is assumed to be the same as the income statement, also because there is no need to adjust for the interest charge.
20	**Change in NWC:** Working capital will sometimes increase when revenue grows, it can be usually be assumed that the changes in Net Working Capital (NWC) is proportional to the growth in revenue (McClure, n.d.). However, to be conservative, a figure of 5% of the annual revenue was applied as a proxy to determine the change in NWC, as this is a general rule of thumb when looking at a start-up business in this particular industry (Wall Street Oasis, 2012).
21	**CAPEX + Development Cost:** The CAPEX + Development cost amount is made up of the tangible assets like PC's and the Server, as well as the intangible asset which is the actual mobile App. The CAPEX + Development cost is R1, 496, 143.00 in the first year; this is the upfront capital outflow that needs to be financed. It is also assumed that office equipment like desks and chairs will be provided by the WBS as the operation of the business will be in-house, therefore these costs were not taken into account.
22	**Terminal Value:** Taking the Free Cash Flow to Firm amount in the fifth year of R533 395.00 and dividing it by the Discount Rate that is subtracted by the Terminal Value Growth percentage (R533 395/(24%-5%) = R2 807 343. It must be noted that in this instance the Discount Rate is also WACC.
23	**Discount Rate:** To reflect the greater risk of star-up mobile App business in South Africa, a higher figure was used. Inflation and the risk premium of South Africa were considered. The typical discount rate of a technology company of a similar nature in South Africa is between 14-20% (PwC, 2016). Therefore, to be conservative, a discount rate of 24% was used in this financial model.

1.Company In-App Advertising

An estimated 30 companies that the WBS has a close relationship with will opt to pay this fee		(C.Drobis, personal communication, February 1, 2017).
The yearly fee gives companies an opportunity to:		
Have a place in the career fair		
To do company presentations at the WBS		
To advertise company events/initiatives/services		
An estimated figure per year	R25 000.00	(C.Drobis, personal communication, February 1, 2017).
Companies willing to pay per year	30	(C.Drobis, personal communication, February 1, 2017).
Revenue Generation Per Year	**R 750 000.00**	

2.Job offer Fee

On average 8 to 10 job offers a month are sent by companies to the WBS		(C.Drobis, personal communication, February 1, 2017).
To be conservative, an estimated 95 offers are made each year.		
Each job offer recieves at least one application from a WBS student		
One Standard Job Offer on pnet is:	R1065.00	(pnet.co.za)
To be conservative the WBS will charge per job offered by a copmany	R380.00	(C.Drobis, personal communication, February 1, 2017).
	95 x R380.00	
Revenue Generation Per Year	**R 36 100.00**	

3.Placement Fee

The typical recruitment/placement fee by a recruitment company is 15% in South Africa.		(HRFuture.net)
However, based on the relationships already formed between the WBS and the companies, this fee cannot be charged.		
To be conservative, a small percentage will be charged, 0.5% of the annual salary.		
A very conservative Average Salary of Business School Graduate MBA, MM's, PDBA.	R330 000/pa	(payscale.com)
Commission Off One Student Being Hired.	R1650.00	
Of the 95 job offers, a realisitc assumption based on experience had to be made, where it estimated that 30% of students will get placed after applying for a job that was offered through the WBS.	95 x 30% = 29 Students	(C.Drobis, personal communication, February 1, 2017).
	29 x R1650.00	
Revenue Generation Per Year	**R 47 850.00**	

Total Revenue Generated Via the University Mobile App	**R 833 950.00**

All Amounts in South African Rand

Cost To Develop an App (otreva.com)

Totals

E-mail Login	2,063
Social Login	2,888
GeoLocation	2,063
Custom User Interface	6,600
Accept Payments	2,888
User Profiles	4,125
Messaging	4,125
Maps	2,888
Task List	2,888
Search	4,950
Gallery - Photo / Video	2,888
Calendar Integration	3,300
Auto-Learning Feed	12,375
Push Notifications	3,713
User Privacy Settings	2,888
Menu / Ordering	5,775
Contact Info	825
Event Listings	4,538
Email / Mailing Lists	1,238
Reporting	6,600
Feedback System	9,900
User Administration	9,900
Total	**$99,418**

Total: $ 99 413 x R13.50 = R1 342 143

General Assumptions			
Currency	Dollar - Rand Exchange	$1 = R13.50	(Tradingeconomics.com)
First year		2018	
Cost inflation	%	6.5%	(Tradingeconomics.com)
Forecast inflation	Years	5	
Lead Time			
Development period	Months	6	
Downloads			
Free	%	100.00%	
Paid	%	0.00%	
Total	%	100.00%	
Price paid download	ZA Rand/Downloads	R0.00	
Installs			
Active users	%	83.75%	

Net Working Capital - NWC

For the purpose of this document, a conservative figure of %% of revenue was used as a proxy to determine the change in NWC

Depriciation	**Proposed Write-Off Years**	(SARS, 2012)	**Item**	**Number**	**Price**	**Total Cost**	**Depreciation**	
Personal Computers (Tangible Asset)	5		PC	3	18000	54000	10800	(IBM, 2017)
Server/Main Frame (Tangible Asset)	5		Server	1	100000	100000	20000	(IBM, 2017)
						154000	**30800**	
Amortization								
Computer Software to run mobile App (Intangible)	5		Software	1	1342143	**1342143**	**268428,6**	(Otreva, 2017)

CAPEX			**Total**
Development Cost	ZA Rand	1342143	1496143
PC's Servers	ZA Rand	154000	

APPENDIX D: Financial Model

Income Statement	Unit	2018 F	2019 F	2020 F	2021 F	2022 F	Assumption Note
In-App Advertising	ZA Rand	750 000	810 000	891 000	980 100	1 078 110	1
Job Offer Fee	ZA Rand	36 100	38 988	42 107	45 476	49 114	2
Placement Fee	ZA Rand	47 850	51 678	55 812	60 277	65 099	3
Total Revenues	ZA Rand	**833 950**	**900 666**	**988 919**	**1 085 853**	**1 192 323**	4
Annual App Store Developer Fee	ZA Rand	- 1 350	- 1 438	- 1 531	- 1 631	- 1 737	5
Updating App	ZA Rand	- 67 107	- 71 469	- 76 114	- 81 061	- 86 329	6
COGS	ZA Rand	- 68 457	- 72 907	- 77 645	- 82 692	- 88 066	7
Gross Profit	ZA Rand	**765 493**	**827 759**	**911 274**	**1 003 161**	**1 104 257**	
Employee Expenses	ZA Rand	- 300 000	- 319 500	- 340 268	- 362 385	- 385 940	8
Travel Expenses	ZA Rand	- 10 000	- 10 650	- 11 342	- 12 079	- 12 864	9
Marketing	ZA Rand	- 20 000	- 21 300	- 22 685	- 24 159	- 25 729	10
Office Lease	ZA Rand	-	-	-	-	-	11
Insurance	ZA Rand	- 10 000	- 10 650	- 11 342	- 12 079	- 12 864	12
Setup Expenses	ZA Rand	- 5 000	-	-	-	-	13
Other	ZA Rand	- 1 000	- 1 000	- 1 000	- 1 000	- 1 000	14
OPEX	ZA Rand	- 346 000	- 363 100	- 386 637	- 411 702	- 438 397	15
EBITDA	ZA Rand	**419 493**	**464 659**	**524 637**	**591 459**	**665 860**	
Depreciation	ZA Rand	- 30 800	- 30 800	- 30 800	- 30 800	- 30 800	16
Amortization	ZA Rand	- 268 429	- 268 429	- 268 429	- 268 429	- 268 429	17
EBIT	ZA Rand	**120 264**	**165 430**	**225 409**	**292 230**	**366 631**	
Interest Payment	ZA Rand	-	-	-	-	-	18
EBT	ZA Rand	**120 264**	**165 430**	**225 409**	**292 230**	**366 631**	
Tax Rate	%	28%	28%	28%	28%	28%	
Tax Bill	ZA Rand	33 674	46 321	63 114	81 824	102 657	
Net Income	ZA Rand	**86 590**	**119 110**	**162 294**	**210 406**	**263 975**	
%		10.38%	13.22%	16.41%	19.37%	22.14%	

Valuation	Unit	2017 F	2018 F	2019 F	2020 F	2021 F	2022 F	
Discounted Free Cash Flow Analysis (DCF)		YR 0	YR 1	YR 2	YR 3	YR 4	YR 5	
EBIT	ZA Rand		120 264	165 430	225 409	292 230	366 631	
Taxes Paid	ZA Rand		- 33 674	- 46 321	- 63 114	- 81 824	- 102 657	19
Add Back D&A			299 229	299 229	299 229	299 229	299 229	
Change in NWC	ZA Rand		- 41 698	- 45 033	- 49 446	- 54 293	- 59 616	20
CAPEX + Development Costs	ZA Rand	- 1 496 143	-	-	-	-	-	21
Free Cash Flow to Firm (FCFF)	ZA Rand	- 1 496 143	344 121	373 305	412 077	455 342	503 587	
Terminal Value	ZA Rand						2 650 458	22
Total Net Cash Flows	ZA Rand	**- 1 496 143**	**344 121**	**373 305**	**412 077**	**455 342**	**3 154 045**	
PV Factor		**1,0000**	**0,8065**	**0,6504**	**0,5245**	**0,4230**	**0,3411**	
PV of Cash Flows		- 1 496 143	277 534	242 798	216 134	192 610	1 075 845	
Discount Rate (also WACC in this Instance)	%	24,0%						23
Terminal Value Growth	%	5%						
NPV	**ZA Rand**	**508 777**						
IRR	%	34,28%						