RELATING INTENSIVE AND COMPULSIVE FACEBOOK USE WITH LIFE SATISFACTION AND ACADEMIC PERFORMANCE AMONGST FIRST YEAR UNIVERSITY OF NAMIBIA STUDENTS

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ABSTRACT

As a new field of study, the impact of Facebook use is not well understood. Consequently, this descriptive quantitative cross-sectional study aims to address identified gaps by collecting Namibian specific data on the intensive Facebook use (IFU) and compulsive Facebook use (CFU) of first year students from the University of Namibia and describing how IFU and CFU relate to each other and to academic performance, life satisfaction and user characteristics. Using random sampling from a list of Computer Literacy classes, data were collected from 559 students by means of a self-report questionnaire. Descriptive statistics, correlation analysis, simple and multiple hierarchical linear regression analysis were conducted. The sample was comprised of 63.4% females and 36.6% male aged on average 22.6 years (ranging from 18 to 52). The user profiles revealed Facebook use in Namibia is similar to Facebook use globally, except that Namibians have relatively more Facebook friends. The major findings include the positive correlation between IFU and CFU ($r = .454$, $p < 0.01$) with IFU explaining 20.6% of the variance in the CFU scores. Hence, the more integrated Facebook is in the lives of its users, the more likely they are to also use Facebook compulsively. Neither IFU nor CFU relate to grade average or life satisfaction, but rather appear to predict academic impairment due to Facebook use, jointly accounting for 32.3% of the variance. However, controlling for covariance between IFU and CFU reveals that academic impairment due to Facebook use (missing class, poor sleep and social withdrawal) is more likely to follow compulsive Facebook use, which, in turn, negatively affects their grade average ($R^2 = 0.03$, $p < 0.01$) and satisfaction with life ($R^2 = 0.015$, $p < .001$). This study will hopefully raise awareness of the impact of excessive Facebook use and enable Namibia to participate in the global debate about Facebook use and its consequences.

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LIST OF ABBREVIATIONS

AIDFU – Academic impairment due to Facebook use

CFU – Compulsive Facebook use

CIUS – Compulsive Internet Use Scale

DV – Dependent variable

FA – Facebook addiction

FB – Facebook

FU – Facebook Use

IA – Internet addiction

IFU – Intensive Facebook use

IV – Independent variable

SNS – Social networking site(s)

SWL – Satisfaction with life

SWLS – Satisfaction with Life Scale

USA – United States of America

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DEDICATIONS

I dedicate this mini-thesis to my younger self, who at times stopped believing in the dream. I also dedicate this thesis to my parents, for theirs are the shoulders of giants upon which I stand. Your drive and dedication to all you undertake is my inspiration and what I try to emulate.

DECLARATIONS

I, Iani de Kock, hereby declare that this study is my own work and is a true reflection of my research, and that this work, or any part thereof has not been submitted for a degree at any other institution.

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CHAPTER 1: OVERVIEW

This chapter provides an orientation to and elaborates on the purpose of the study. The significance of the study and its objectives are also discussed. Finally, the delimitation is clearly defined and justified.

1.1. Introduction

The rise of social network sites (SNS) such as Facebook has been one of the most important social trends of this decade (Caers et al., 2013) and has significantly changed the way we interact and rate our lives. However, as with many previous technological advancements, the impact of Facebook use on our behaviour and our psychological well-being is not well understood. As SNS allow individuals to "articulate and make visible" their social networks (Boyd & Ellison, 2008, p. 211), they provide a rich source of naturalistic behavioural data that makes SNS an exciting new field of research. However, as with new fields of research, the research questions, methods, and perspectives on Facebook, specifically, are diverse and fragmented (Wilson, Gosling, & Graham, 2012; Caers et al., 2013) and most studied are cross-sectional, limiting any causal inferences from being made (Field, 2009). Finally, research has mostly been limited to certain settings or conducted within the borders of single countries (Caers et al., 2013; Wilson et al., 2012) despite cross-cultural studies that indicate that users from diverse countries differ in their Facebook use and that Facebook is used in culturally appropriate ways (Hong & Na, 2017).

Initially, research focused on the demographics of Facebook users, their motivations for joining and using the platform, and personality factors (Wilson et al., 2012; Caers et al., 2013). Contemporary research, however, is increasingly focused on the excessive use of Facebook (conceptualised as intensive Facebook use [IFU] and compulsive Facebook use [CFU]), and their impact on Facebook users. IFU refers to the emotional connectedness to Facebook or the degree to which Facebook is integrated into the everyday activities of users (Ellison et al., 2007), while CFU can be used interchangeably with Facebook addiction. The concepts are closely related in that IFU is a prerequisite of CFU, but addictive behaviours and problematic consequences do not necessarily follow from IFU. To contribute to this growing area of study, this research study aims to focus on describing the relationships between Facebook use (IFU and CFU), academic performance (academic impairment due to Facebook use and grade average) and satisfaction with life amongst first year university students from the University of Namibia in Windhoek.

The largest demographic group of Facebook users is aged 25-34 years old (Facebook, 2017), although the prevalence rates of IFU and CFU have not yet been established. Internet addiction (IA), however, appears to be most prevalent among young people (Bakken, Wensel, Gotestam, Johansson, & Oren, 2009; Nath, Chen, Muyingi, & Lubega, 2013), especially students (Leung, 2004). Students are more vulnerable and at risk to develop problems with Internet use due to their higher accessibility to the Internet and their flexible schedules (Moore, 1995). Thus, students represent a high-techno culture with unprecedented access to SNS at any time and nearly anywhere (Gabre & Kumar, 2012), which can make them more vulnerable to excessive SNS use. Furthermore, SNS use offers short-term gratification in comparison to schoolwork, which offers delayed gratification and long-term rewards (Panek, 2014). Consequently, students may be unable to maintain a balance between social media use and schoolwork, especially since they are often without the external constraints imposed by parents and teachers for the first time in their lives. To this point, Nath et al. (2013) found that students in both Namibia and Uganda let their school performance slip as a result of being online. However, literature on the impact of SNS use on academic performance have produced mixed results with some studies finding no relationship (Panek, 2014), a negative relationship (Kirschner & Karpinski, 2010) as well as positive relationships (Evans, McFarland, Rios-Aguilar, & Deil-Amen, 2016). Consequently, more research on the impact of SNS in general, and Facebook, specifically, on the academic performance of students is warranted.

Similarly, research on the impact of Facebook use on the life satisfaction of Facebook users is also a new area of study. While Internet addiction has been linked to lower levels of life satisfaction (Meerek, Van Den Eijnden, Vermulst, & Garretsent, 2009; Dhir, Chen, & Nieminen, 2016), the impact of Facebook use is still inconclusive. On the one hand, Facebook use has been found to improve feelings of belonging and higher levels of satisfaction with life (Valenzuela, Park, & Lee, 2009; Rui & Wang, 2015; Srivastava, 2015). However on the other hand, students who spent more time on Facebook report a lower quality of life (Kross et al., 2013; Satici & Uysal, 2015; Blachnio, Przepiorka, & Pantic, 2016). Consequently, further research into the impact of Facebook use on the satisfaction of life by students is also deemed necessary.

1.2. Statement of the problem

This study seeks to describe Facebook use amongst first year students enrolled at the University of Namibia. It also aims to explore how Intensive Facebook use and compulsive Facebook use relates to life satisfaction and academic performance (conceptualised as grade average and academic impairment due to Facebook use) as well as selected demographic variables (gender, age smartphone use).

1.3. Objectives of the study

The objectives this study seeks to address include:

1. To describe Facebook use amongst tertiary students in Namibia.
2. To describe how intensive Facebook use and compulsive Facebook use relate to satisfaction with life, academic performance (grade average and academic impairment due to Facebook use) and user characteristics (gender, age, smartphone use).
3. To examine predictors of intensive Facebook use, compulsive Facebook use, satisfaction with life, grade average and academic impairment due to Facebook use.

1.4. Significance of the study

This study seeks to address specific gaps identified in the research. Firstly, as Facebook use has increasingly become integrated into users' daily lives (Ellison, Steinfield, & Lampe, 2007) research is needed to understand how Facebook use impacts Facebook users, specifically on its largest demographic: students (Nath et al., 2013). Secondly, contemporary research has produced mixed results with regards to the impact of Facebook use on the academic performance as well as the life satisfaction of students, which heralds further investigation. Consequently, the current study stands to contribute significantly to the growing field of Facebook-specific research by addressing gaps that have been identified by researchers globally. Thirdly, this study also serves to produce Namibian specific data regarding Facebook use in the local context, which can enable Namibian researchers to participate in the global discussion on Facebook use. Finally, it is hoped that the results of the study can be practically put to use by raising awareness on the impact of Facebook use and implementing strategies to minimise any potential negative impact on the students at the University of Namibia. It is also hoped that the results can be used to optimize the satisfaction of life and academic performance of students who do use Facebook by promoting responsible Facebook use.

1.5. Delimitation of the study

It has been demonstrated that the specific features of the different SNS platforms vary and the results cannot be generalised (Boyd & Ellison, 2007; Ryan, Chester, Reece, & Xenos, 2014). Furthermore, limited research exists in the literature for Facebook, specifically. As such, it was decided to focus on Facebook as a platform, specifically, to enable differentiation and comparison of results between platforms in future.

As students form the largest demographic for SNS and Facebook (Leung, 2004; Nath et al., 2013) and are easier to access, it was decided to focus on the first year student population at the main campus and at the health sciences campus of the University of Namibia in Windhoek.

CHAPTER 2: LITERATURE REVIEW

This chapter serves as a summary and synthesis of the contemporary research published on Internet, Social Network Sites (SNS) and Facebook use as well as how they relate to academic performance and life satisfaction. The goal of the literature review is to provide the reader with a comprehensive understanding of the topic and to provide a theoretical basis for the discussions, conclusions and recommendations of this study.

2.1. Introduction

As the use of Facebook continues to increase worldwide, including in Namibia, there is no denying that it is changing the way we interact and how we rate our lives. Consequently, it is also increasingly becoming an important area of study in the behavioural and social sciences. However, as a relatively new social phenomenon and field of study the available data are cross-sectional, therefore causal inferences about the relationship between variables cannot truly be made (Field, 2009). Furthermore, the research questions, methods, and perspectives on Facebook are still diverse and fragmented *(*Wilson et al., 2012; Caers et al., 2013) and limited with regards settings (Caers et al., 2013; Wilson et al., 2012). As a global medium, the Internet and SNS, such as Facebook, have been nearly universally adopted with a demographic user base that stretches across the globe. Due to their global user base, SNS hold great potential for cross-cultural research, yet, most research has been limited to certain settings or conducted within the borders of single countries (Wilson et al., 2012; Caers et al., 2013). Yet, cross-cultural studies have demonstrated that SNS users from different cultures vary in their motivations, uses, time spent online (Ozer, Karpinski, & Kirschner, 2014), and in their construal and expression of the self (DeAndrea, Shaw, & Levine, 2010). It is also suggested that Facebook is used in culturally appropriate ways and functions as a mechanism to maintain or reinforce cultural differences (Hong & Na, 2017). This was also concluded in the only study completed on the impact of culture on Facebook use in Namibia, which found that users from Namibia engage in online behaviour that is more open and transparent due to tighter family and community structures in comparison to users from the United States who are trending toward more self-censorship (Peters, Winschiers-Theophilus, & Mennecke, 2015). Besides for this study, very little else is known about Facebook use in the Namibian context.

With these limitations, challenges and potentials in mind, this literature review aims to present an overview of the extent of Internet, SNS and Facebook use in order to provide a global and local context and a deeper understanding of the need for research into SNS. Next, the literature review aims to summarise, synthesise and present the relevant international research findings on excessive Facebook use (IFU and CFU) and how Facebook use relates to the satisfaction with life and the academic performance of Facebook users.

2.2. Internet and SNS use in context

Social network sites (SNS) can be defined as web-based services that allow individuals to construct a public or semi-public profile and connect with other users by providing them with a virtual platform to “present” themselves, articulate their social networks, and establish or maintain connections with others (Ellison et al., 2007; Boyd & Ellison, 2008, p. 211). SNS also integrate digital communication which allows members to interact with each other by sharing posts, including statuses, notes, photos and videos and by communicating directly via the chat option (Park & Kim, 2013). The use of the Internet, and with it, the use of SNS has exponentially increased to a global user base that few could have initially anticipated. This exponential increase in Facebook use is also attributed to the increased use of smartphone use, with smartphone use allowing Facebook users to check in anywhere and any time (Kuru, Bayer, Pasek, & Campbell, 2017, p. 103). The penetration and growth of the Internet and SNS globally, geographically and for Southern Africa have been summarised in Table 1 below.

Table 1: *Comparative Internet and SNS user statistics, 2016-2017*

	Population 2017	**Internet use penetration**	**Internet Use growth from 2016**	**Social media penetration**	**Social Media Use growth from 2016**	**Active mobile use penetration**
Global	7.48 billion	50%	+10%	37%	+21%	34%
Europe	839 million	76%	+3%	49%	+5%	40%
Americas	1 billion	71%	+8%	60%	+17%	53%
Asia-pacific	4.15 billion	46%	+15%	36%	+25%	35%
Middle East	246 million	60%	+15%	38%	+47%	34%
Africa	1.23 billion	29%	+4%	14%	+32%	12%
Angola	26.24 million	23%	+10%	15%	+15%	14%
Botswana	2.32 million	34%	+27%	34%	+22%	31%
Namibia	2.54 million	23%	+23%	23%	+27%	20%
South Africa	55.21 million	52%	+7%	27%	+15%	24%
Zambia	16.99 million	21%	+25%	9%	+23%	8%
Zimbabwe	16.15 million	42%	0%	6%	+12%	5%

Adapted from *Special reports. 2017 Digital yearbook: Digital data for every country in the world* (Kemp, 2017).

Africa still has the lowest Internet penetration in the world at 29% as well as the lowest social media penetration at 14%. However, social media usage from 2016 to 2017 showed the second highest growth rate at 32% (after the Middle East at 47%). In southern Africa, Namibia showed the highest growth in SNS users from 2016 to 2017 at 27%. This makes for a compelling argument for further research into SNS use in Namibia to better understand this trend and its potential impact on its users.

According to the *2017 Digital Yearbook* released by the website *We Are Social* (Kemp, 2017), Facebook is the most widely used SNS globally. Although it only opened to the public in 2006, Facebook reported having 1.72 billion daily active users on average in March 2017 of which approximately 85.8% reside outside the United States of America (USA) and Canada (Facebook, 2017). While comparative data for the user bases of the various SNS is not currently available for Namibia, the 2017 Digital Yearbook listed the most widely used platforms in South Africa as Facebook followed closely by YouTube, WhatsApp, and Facebook Messenger (Kemp, 2017). The Facebook user statistics that are available for Africa have been summarised below in Table 2.

Table 2: *Global and southern African Facebook user statistics, January 2017*

FB statistics 2017	**Avg. monthly active users**	**Daily FB users**	**Mobile FB users**	**Female**	**Male**
Global	1.87 billion	55%	50%	44%	56%
Angola	3.9 million	21%	95%	38%	62%
Botswana	790 000	35%	90%	48%	52%
Namibia	580 000	36%	90%	48%	52%
South Africa	15 million	40%	87%	51%	49%
Zambia	1.6 million	24%	88%	37%	63%
Zimbabwe	920 000	18%	84%	38%	62%

Adapted from *Special reports. 2017 Digital yearbook: Digital data for every country in the world* (Kemp, 2017).

Considering the percentages of daily users, Namibia rates second highest in the region with 36% of users accessing Facebook daily following 40% of daily users in South Africa. Of these users, 90% access Facebook using their mobile phones, which is comparative to other SADC countries, but much higher than the globally tendencies (50%). In line with the global trend as well as most of the southern African countries, slightly more men (52%) in Namibia use Facebook than women (48%). The data further illustrate that there has been a rise in the use of Internet and SNS globally, but especially so in Africa and Namibia, in particular. As Facebook is accessed daily by a substantial number of its user base, the impact of this increase in technology use on its users must be queried. Research has illustrated that there are indeed benefits to Facebook use, especially in terms of serving as a platform for communication, increased perceptions of social support and decreased feelings of loneliness (Shaw & Grant, 2002). However, of great concern is when Facebook use becomes excessive and leads to problematic consequences.

2.3. Excessive Facebook use: IFU and CFU

With the increased dependence on information technologies, excessive and problematic technology use is also on the rise (Nath et al., 2013). However, not all users who spend excessive time on Facebook necessary view their use as problematic nor do they experience negative consequences. To understand this distinction, it is necessary to differentiate between intensive Facebook use (IFU) and compulsive Facebook use (CFU), the first of which does not necessarily lead to pathological use while the latter can be interchangeably used with Facebook addiction. IFU refers to the emotional connectedness to Facebook or the degree to which Facebook is integrated into the everyday activities of users (Ellison et al., 2007) as well as the diverse psychological ways that people have come to relate to the world by using Facebook (Gabor, Tóth-Király, & Bőthe, 2015). The concepts are closely related in that IFU is a prerequisite of CFU, but addictive behaviours and problematic consequences do not necessarily follow from IFU. IFU also goes beyond mere descriptions of Facebook habits (such as time spent on Facebook, number of Facebook friends, and number of group memberships, or user motivation) as it considers the level of involvement and the emotional connectedness of users to Facebook.

In contrast to IFU where negative consequences do not necessarily follow, Facebook use becomes compulsive when users constantly seek to use Facebook while abandoning other important aspects of their lives, which is one of the hallmarks of any addiction. As multiple definitions for Internet and Facebook addiction have emerged in the literature, how Facebook addiction is defined and, consequently, measured must also be explicitly specified. According to Kubey, Lavin and Barrows (2001, p. 368) the concept of addiction broadly extends into the so-called "excessive appetite disorders" such as pathological gambling. As with the other "excessive appetites", many of the definitions and measuring instruments for Internet addiction has substance dependence and pathological gambling as its theoretical basis. This includes the compulsive Internet use scale used in an adjusted form in this study (as the compulsive Facebook use scale), which has the DSM-IV criteria as its basis. In particular, it includes criteria around the loss of control, preoccupation (including mental and behavioural preoccupation), withdrawal symptoms, coping or mood modification and conflict (including inter- and intrapersonal conflict) (Meerek et al., 2009). As such, the term compulsive Facebook use (CFU) will be used in this study, although it can be interchangeably be used with Facebook addiction.

2.4. A clinical picture of compulsive Facebook use

While the course of the development of CFU is still unknown, as with the other "excessive appetite" disorders, over time compulsive Facebook users experience an inability to regulate Facebook usage leading to a compulsive pattern of Facebook use, the neglect of other important areas of functioning (Turel, He, Xue, Xiao, & Bechara, 2014) and tolerance (Zaremohzzabieh, Samah, Omar, & Kamarudin, 2014). This, in turn, leads to the negative psychological, behavioural and cognitive consequences typical of most addictions. Compulsive Facebook users have a high frequency of use characterised by spending hours a day on Facebook, a compulsive checking of Facebook, especially upon waking and until late at night, daydreaming about status updates and comments, using Facebook as a way to avoid 'offline' responsibilities (Zaremohzzabieh et al., 2014) and tendency to hide their Facebook use (Kuss & Griffiths, 2011).

Despite the obvious differences with regards to the methodologies, cultural factors, definitions, outcomes and assessment tools used, a review of studies on Internet addiction rates by Cash, Rae, Steel and Winkler (2012) indicate that the rates in the USA and Europe fall between 1.5% and 8.2%, which is comparative to the rates of gambling and substance addiction. Andrew and Goolam (2005) found that the prevalence of problematic Internet use in South Africa was relatively low (between 1.7% and 5.3%). However, the data were collected using a link in an online magazine, which limits its representativeness to the general public. Using the Internet

Addiction test developed by Young (1998) Nath et al. (2013) found that 6.5% of students in Namibia and 4.7% of students in Uganda have significant problems with Internet use. While the prevalence rates of CFU use is not certain, with the increased use of the platform, there is sure to also be a rise in the problematic use of Facebook.

The aetiology of CFU will be discussed using the biopsychosocial approach, which considers a combination of biological, social and psychological factors that can influence the development of CFU. The biological factors refers to the traditional medical approach to addiction. According to Cash et al. (2012) there is a genetic predisposition to all addictive behaviour resulting from an inadequate number of dopamine receptors or an insufficient serotonin/dopamine production. Consequently, activities that most people would find rewarding are experienced as comparatively less pleasurable making predisposed individuals more likely to engage in behaviours that stimulate an increase in dopamine, thus placing them at a higher risk for addiction (Cash et al., 2012). Addiction is furthermore associated with an imbalance between activity in two key brain systems: the impulsive amygdala-striatal system and the reflective inhibitory prefrontal brain system (Turel et al., 2014). Using functional MRI, Turel et al. (2014) examined the brain systems in 20 compulsive Facebook users (ages 18–23). An impairment of the amygdala-striatal system was found that is implicated in the dopamine-reward system similar to that resulting from gambling and substance disorders. However, in contrast, they did not find an inhibition of the prefrontal brain system responsible for the cognitive control over addictive behaviours. Although limited by its cross-sectional design, the study suggests that there are differences between Facebook addiction and gambling and substance addiction in terms of the ability to regulate and control their addictive behaviours that could be the result of different underlying pathophysiology.

While the socio-demographic factors related to compulsive use, specifically, have not yet been studied, the Facebook user demographics from the USA suggests that Facebook users are young, affluent, and educated (Stern, Bilgen, McClain, & Hanscher, 2016). Internet users aged 18-29 comprise the largest demographic of Facebook users in the USA, with 88% having a Facebook account (Greenwood, Perrin, & Duggan, 2016). Women also tend to use Facebook more than men (Greenwood et al., 2016), although we saw in the discussion on Internet and SNS use that in Namibia, specifically, men use Facebook more than women (Kemp, 2017).

Finally, psychological factors that relate to higher Facebook use include personality and user motivations for using Facebook. With regards to personality factors, high Facebook use has been linked to narcissism (La Sala, Skues, & Grant, 2014), neuroticism (Caci, Cardaci, Tabacchi, & Scrima, 2014) and extraversion (La Sala et al., 2014). Extroverts also tend to have more friends on Facebook, as well as higher addictive tendencies (La Sala et al., 2014). Despite having smaller friendship networks, users that are shy and have low self-esteem have also been shown to use Facebook more intensively (Nadkarni & Hofmann, 2012). These findings suggests that Facebook use may serve different functions for different people and that the perceived social value offered by Facebook differs from people to people depending on their personalities and cultural backgrounds (Basilisco & Cha, 2015). Uses and gratifications theory suggests that individuals use SNS to satisfy their social and psychological wants and needs, especially due to the interactive nature of SNS

(Basilisco & Cha, 2015). Uses and gratifications that have been found to relate to higher levels of problematic Facebook use including the use of Facebook for companionship, entertainment, mood modification. To better understand the dynamics involved one needs to distinguish between the passive consumption of content, which meets user needs for entertainment, and the active use of Facebook for networking, which meets user needs for companionship (Wise, Alhabash, & Park, 2010). Both the active and passive use of Facebook has the potential to lead to problematic Facebook use when used for escape or mood modification. Wise et al. (2010) found that time spent on socially passive activities, such as checking the news feed or playing games to pass the time when bored or to procrastinate from doing other activities, in other words to escape or alter their moods. When Facebook networking is used to alleviate negative moods, it may reinforce online use and, when combined with deficient self-regulation, can lead to problematic Facebook use (Ryan et al., 2014). The passive use of Facebook has also been shown to reduce perceived levels of social capital and increase feelings of loneliness (Oh, Ozkaya, & LaRose, 2014).

In contrast, when Facebook is used as a platform for networking, it can foster feelings of connectedness and social support (Gabre & Kumar, 2012) and therefore fulfil the basic human need for social connection (Kross et al., 2013). However, as Facebook allows for social interaction without physical proximity or without ever meeting, (Coyne, Padilla-Walker, & Howard, 2013; Oldmeadow, Quinn, & Kowert, 2013) using Facebook to network can be particularly appealing to individuals who suffer from social anxieties or whose belonging needs are not realized in their offline social interactions (Oldmeadow et al., 2013). However, multiple studies (Kuss &

Griffiths, 2011; Ryan et al., 2014; Rui & Wang, 2015) have confirmed the original findings of Ellison et al. (2007) that Facebook rather functions to maintain existing offline relationships rather than serving as a source of social capital expansion.

Extending these findings to tertiary students, specifically, Facebook has the potential to increase the socio-academic integration of students and help them to feel like they belong. This promotes feelings of satisfaction with life and can lead to positive academic outcomes (Evans et al., 2016). However, as Facebook rather tends to enhance existing social capital, there are limits to the degree that Facebook actually does increase students' socio-academic integration and, therefore, there are limits to the positive impact on satisfaction with life and academic performance. As describing the impact of Facebook use on the life satisfaction and academic performance of students forms one of the study objectives, research pertaining to these variables have been summarised and synthesised below.

2.5. Facebook use and life satisfaction

Life satisfaction was defined by Diener, Emmons, Larsen and Griffin (1985) as the individual's subjective experience of well-being resulting from a judgement process or global evaluation of their lives. Existing research highlights that life satisfaction is determined, in part, by a sense of belonging to a network of social ties (Valenzuela et al., 2009). As Facebook use can increase the frequency of interaction with friends, it allows its users to form both strong ties and weak ties, which can positively influence users' life satisfaction (Ellison et al., 2007; Valenzuela et al., 2009). According to Rui and Wang (2015) students who use Facebook report reduced feelings of uncertainty and better adaptation to their new environment. Consequently, Facebook use can be viewed as the "social glue" that promotes students' satisfaction with college life (Srivastava, 2015, p. 205) and has been positively related to the life satisfaction of students internationally (Valenzuela et al., 2009, Srivastava, 2015).

However, on the other hand, Satici and Uysal (2015) found that students in Turkey who spent more time on SNS, including Facebook, reported a lower quality of life. This was supported by a study by Blachnio et al. (2016) in Poland who found that Facebook users who use Facebook less report statistically higher levels of self-esteem and life satisfaction than Facebook users who use Facebook excessively. It has been proposed that students with lower levels of life satisfaction could use SNS for mood modification purposes to increase their personal well-being (Ellison et al., 2007; Valenzuela et al., 2009), which, in turn, could lead to problematic Facebook use. However, this was refuted by a study completed by Kross et al. (2013) in the USA who found that as Facebook use increased over a two-week period, the life satisfaction of participants declined over time, including when controlling for the size of people's Facebook networks, perceived supportiveness, motivation for using Facebook, gender, loneliness, self-esteem, or depression. This suggests that excessive Facebook use can negatively impact the life satisfaction of Facebook users. The above studies seem to indicate that by allowing users to network, Facebook use enhances social capital and makes users feel more connected and satisfied with their lives. However, when Facebook use becomes excessive, the life satisfaction of users may instead become negatively impacted.

2.6. Facebook use and academic performance

With more regular access to the Internet, regardless of location, it has become possible for students to use SNS at any time and in any place, including the classroom. As with life satisfaction, research indicates that the academic performance of students can be both positively and negatively impacted by Facebook use. The positive impact of Facebook relates to its usefulness as an academic tool as well as for social integration with both fellow students and academic staff, which both enhance student engagement. Facebook can be used as pedagogical tool (Wood et al., 2011) by establishing distant collaborative learning environments (Song, 2016) that allows students to contact one another and lecturers directly, regardless of where they live (Ellison et al., 2007; Junco, 2012). This increases opportunities for socio-academic contact and access to socio-academic information (Evans et al., 2016), which can enhance student engagement and academic performance.

However, rebuffing these findings, Hew (2011) found that, while Facebook may have the potential to be used for academic purposes, students rather use it to socialise. Consequently, Facebook rather serves as a distraction and leads to lowered student engagement as students constantly check in online during classes and while studying. According to Kubey et al. (2001) in comparison to the sequentially or serial processing of the same information, multi-tasking, or attempting to simultaneously process different streams of information, leads to increased study time needed for learning to occur as well as more mistakes while processing information. The use of Facebook during academic activities can therefore impair the learning process. A study by Junco (2012) found that 69% of college students texted and 28% used Facebook during class, which significantly and negatively related to their academic performance. Wood et al. (2012) further reported that students who did not use any technologies during lectures outperformed students who did.

Kirschner and Karpinski (2010) found that, despite students' self-reported perceptions that time spent on Facebook did not impact their academic performance, it was contrary to the evidence. Facebook is indeed time consuming and students in the USA who spent less time on Facebook had significantly higher grades (Stollak, Vandenberg, Burklund, & Weiss, 2011). Furthermore, using Facebook may replace activities that could indirectly impair academic performance. According to Kubey et al. (2001) academic impairment indirectly related to Facebook use could result from changing sleeping patterns, reduced communications with peers and missing class due to the inability to regulate Facebook use.

In summary, the literature review elaborated on the differences between IFU and CFU. IFU refers to how ingrained Facebook is in the daily lives of users. IFU is a precursor to CFU, although problematic consequences do not necessarily follow. CFU is interchangeable with Facebook addiction and its clinical picture is comparable to other gambling and substance addictions, including an inability to regulate Facebook usage, compulsiveness, neglect of other important areas of functioning and tolerance, although there is evidence of differing underlying pathophysiology. The Uses and Gratifications theory furthermore found that people use Facebook to meet their various needs, of which using Facebook for companionship, entertainment and mood modification are related to higher levels of problematic Facebook use. For students, specifically, Facebook enables them to network with their fellow students and lecturers, improve their access to information and support, which can positively impact their levels of life satisfaction as levels of engagement in learning. However, when students use Facebook excessively, both life satisfaction and academic performance may be negatively impacted.

CHAPTER 3: RESEARCH METHODS

In chapter 3 the research methods used in the study will be presented, including the research design, the population and the sampling method. The research instruments used will be presented and discussed, including their design, validity and reliability where available. The study procedure will also be delineated, followed by a discussion of the pertinent ethical considerations. Finally, a discussion on the rationale behind the data analyses is included to facilitate a deeper understanding of how the results were obtained.

3.1. Research design

As research on Facebook use in the Namibian context is a new area of study this will be an exploratory descriptive study following a quantitative cross-sectional research design. According to Kothari (2004) exploratory studies aim to gain familiarity with or gain insight into an unknown phenomenon, while descriptive research aim to accurately portray an individual, group or situation, which are both intentions of this study. In order to explore and describe the use of Facebook by students at the University of Namibia, various variables (intensive Facebook use, compulsive Facebook use, satisfaction with life, academic impairment due to Facebook use and academic grade averages) will be measured quantitatively, as this allows for statistical analysis and the generalisation of results beyond the study sample.

3.2. Population

The study population consisted of all first year students enrolled in Computer Literacy as it is a compulsory subject for all first year students from all faculties and therefore is more representative of the University of Namibia as a whole. Students were selected from the two main campuses in Windhoek, the UNAM main campus and at the School of Medicine with a total of 4 487 first year students enrolled at these campuses for Computer Literacy at the beginning of 2017 (R. Ihemba, personal communication, 25 October, 2017).

3.3. Sample

Using G*Power version 3.1, sample sizes were calculated to satisfy the data analysis techniques used in this study for two-tailed tests with an alpha of 0.05, a power of 0.95 and a moderate effect size of 0.3 for bivariate normal model correlation (requires a sample size of 138), linear bivariate regression (requires a sample size of 567) and linear multiple regression (requires a sample size of 74 participants when using 8 predictors). Consequently, a sample size of a 567 first year students was calculated to satisfy all the parametric data analysis techniques used in this study.

In order to select the sample participants, a timetable of all the Computer Literacy classes was compiled in conjunction with the lecturers. The classes were written down on slips of paper and randomly selected from a pile until the sample size was sufficient. A total of 648 students were selected from 13 classes. Subsequently, all non-Facebook users (n = 68), students younger than 18 (n = 9) and respondents who chose not to participate (n = 16) were excluded, giving a non-response rate of 14%. Accordingly, a final sample of 559 students were included in the study, which was considered to be sufficiently close to the sample size recommended by G*Power. The final sample comprised of 63.4% females and 36.6 % males with a mean age of 22.6 years ranging between 18 to 52 years.

3.4. Research instruments

3.4.1. An overview of the questionnaire

A self-report questionnaire was compiled including a section for collecting socio-demographical data and data for compiling a profile of Facebook use by students. The Facebook Intensity Scale (Ellison et al., 2007), the Compulsive Facebook Use Scale (adapted from Meerek et al., 2009) the Satisfaction with Life Scale (Diener et al., 1985) and the Academic Impairment Due to Facebook Use Scale (adapted from Kubey et al., 2001) were also included as measuring instruments of the main variables under study. Finally, the participants were also asked to report their academic average of all their subjects for the previous examination as a measurement of their academic performance. The questionnaire has been attached as Annexure 3 and took about 10 to 15 minutes to complete.

3.4.2. Socio-demographical data

Part A of the questionnaire collected socio-demographical information from the participants, including their gender, age, region of origin, home language and the faculty at which they study.

3.4.3. Facebook user profile

Part B collected information regarding the participants' activities on Facebook with the goal of creating a Facebook user profile. The questions probed the extent of Facebook activity, including time spent using Facebook daily, frequency of Facebook use, and whether they check Facebook during class.

3.4.4. Facebook Intensity Scale

Part C of the questionnaire was dedicated to the Facebook Intensity Scale designed by Ellison et al, (2007), which includes six items measured on a 5 point Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Intensive Facebook use was designed to tap the extent to which Facebook users are emotionally connected to Facebook and the extent to which Facebook is integrated into their daily activities by measuring participants' agreement to statements like "Facebook has become part of my daily routine" and "I would be sorry if Facebook shut down". The Facebook Intensity scale has been extensively used internationally and has a high internal reliability (Cronbach's alpha = .83) (Ellison et al., 2007). It has also been used in South-Africa (Johnston, Tanner, Lalla, & Kawalski, 2013), however its psychometric appropriateness for use in Namibia has not yet been established.

3.4.5. Compulsive Facebook Use Scale

At the time that this study was conducted, no measurements were yet available to specifically measure compulsive Facebook use. Consequently, the Compulsive Internet Use Scale (CIUS) designed by Meerek et al. (2009) was adjusted to measure Facebook use, specifically, by replacing the term "Internet" with "Facebook". The fourteen item Compulsive Facebook use scale asks participants to rate on a 5 point Likert-scale ranging from 1 (never) to 5 (always) how frequently the statements apply to them, including "How often do others (e.g. partner, children, parents, friends) say you should use Facebook less?" and "How often have you unsuccessfully tried to spend less time on Facebook?". The CIUS has been extensively researched in multiple countries, including Germany, France, the Netherlands, Switzerland (Laconi, Rodgers, & Chabrol, 2014) and India (Dhir et al., 2016). Consequently, it has received multiple psychometric validations demonstrating high content validity as well good concurrent validity and highly correlated with the Young Internet addiction test and the Internet addiction questionnaire (Laconi, et al., 2014). It has, however, never been used or validated in the African context.

3.4.6. Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS), designed by Diener et al. (1985), was included in Part F of the questionnaire and asks participants to rate their agreement ranging from 1 (strongly disagree) to 5 (strongly agree) with five statements, including “In most ways my life is close to my ideal.” Having only 5 items, the SWLS is quick, yet offers high predictive and discriminant validity and has been demonstrated to be temporally stable (Pavot, Diener, Colvin, & Sandvik, 1991). Diener et al. (1985) also found that the scale measures a single factor, shows good internal consistency and reliability and is appropriate for use with all ages. It has also been used in South Africa and Namibia (Rothmann, 2013).

3.4.7. Academic performance

Part G of the questionnaire collected data regarding the participants’ academic performance. Academic performance was measured by asking students to report the average grade they obtained across all their subjects for the first semester. This was supplemented by a scale comprised of items from a survey designed by Kubey et al. (2001) to measure indirect Internet-related behaviours that can impair academic performance, including changing sleeping patterns, reduced communications with peers and missing class due to their inability to regulate internet use. To make it appropriate to the study, the term "Internet" was replaced with the term "Facebook". As the items were taken from the section of the survey by Kubey et al. (2001) intended to measure academic impairment due to Internet use, the scale will be referred to as the Academic Impairment Due to Facebook Use Scale. Participants were asked to rate their agreement with statements (E.g. "How often do you sleep late because of using Facebook?") on a five point Likert scale containing six items. In their study, the survey managed to differentiate between the "Internet dependent" group in comparison to a "non-dependent" group, which is an indication of its discriminant validity. However, the survey has not been widely used nor have any of its psychometric properties been reported in the research.

3.5. Procedure

As all the measuring instruments that were used to collect data are public domain, there was no need to request permission for their use. Permission to conduct research was received from the Postgraduates Studies Committee. Ethical clearance was furthermore obtained from the UNAM Research Ethics Committee (Annexure 1). Finally, since the study population is comprised of UNAM students, further clearance was obtained from the Centre for Research and Publication as prescribed in section seven of the UNAM Research Policy. Subsequently, the associate dean, department coordinator and the lecturers of the department of Computer Literacy were approached to discuss the purpose of the study, to compile a list of classes for random selection and to coordinate when the questionnaires would be distributed. The questionnaires were administered at the beginning of each class. The participants were briefed on the questionnaire instructions, including the inclusion criteria and ethical considerations. Each participant was given a consent form to complete and sign before commencing with the questionnaire (Annexure 2). The questionnaires were then distributed and collected with the help of research assistants that were recruited from the Department of Psychology second year students. Finally, the questionnaires have been stored in a locked safe, where they will be kept for 5 years, after which they will be destroyed.

3.6. Research ethics

In order to ensure that the ethical standards as specified by the American Psychological Association (2017) are maintained, ethical clearance was applied for and obtained from the UNAM Research Ethics Committee before the study commenced. Ethical considerations included informed consent, confidentiality and the avoidance of harm. To that end the aims and purpose of the study was explained to the study participants, including that participation is voluntary and that were free to withdraw at any time. They were also assured that their information would be collected anonymously and kept confidentially for a period of 5 years in a locked safe. As the questionnaire used is unobtrusive and participation, or lack thereof, held no consequences, harm to the participants was minimised. All the students that agreed to participate were given a consent form that reiterated the information given by the researcher. The consent forms were signed and returned separate from the questionnaire to ensure that the data remained anonymous and could not be linked with the participants. Finally, as the all participants younger than 18 were excluded from the study, it was not necessary to obtain parental consent.

3.7. Data analysis

The collected data was analysed using SPSS version 20.0. Immediately before being collected, each individual questionnaire was checked for missing responses and was only accepted if complete. Consequently, there was a high response rate with most items having less than 1% missing responses.

The purpose of data analysis is to meet the objectives of the study. However, before the process of data analysis can be undertaken, the measuring instruments need to be assessed for appropriateness for use in the context of this study as well as whether the assumptions of parametric tests have been met. This is particularly important as most of the scales have not been used in the Namibian context yet. Moreover, the constructs being measured are also relatively new concepts in contemporary research, so they scales have also not been widely used abroad. Consequently, as a precursor to data analysis the internal consistency was measured using Cronbach alpha. Exploratory factor analysis was also done to provide evidence that the components of the scales are sufficiently inter-correlated and that the grouped items measure the underlying variable or variables under study (Sullivan & Artino, 2013). Subsequently, the measuring instruments were used to produce mean scale scores that measure the main variables (IFU, CFU, satisfaction with life and academic impairment due to Facebook use). According to Anglim (2009) using the mean of item scores, as opposed to the total summed scores, allows the scores to be interpreted using the same 5-point scales that the respondents originally used (ranging from 1 = strongly disagree to 5 = strongly agree, or 1 = never to 5 = always). Using the 5-point scales enables the interpretation of the scale scores as percentages corresponding to each point on the Likert scale, which allows for the categorizing of low scores (1 = strongly disagree/never and 2 = disagree/rarely), approximate mean scores (3 = neutral) and high scores (4 = agree/sometimes and 5 = strongly agree/always), which can then be used as practical cut-off points, especially as no validated cut-off points for the scales currently exist, with the exception of the. Satisfaction with Life Scale, for which cut-off points have been created for the 7-point Likert scale, but not for the 5-point Likert scale. However, the 7-point Likert scale uses the midpoint of the scale to separate satisfied from unsatisfied participants. Consequently, on a 5-point scale the approximate midpoint has been taken as 3 (neither agree not disagree) with 1 (strongly disagree) and 2 (disagree) indicating that participants are either very dissatisfied or dissatisfied (18.1%) with their lives, while a score of 4 indicates that participants are satisfied and 5 indicated that they are very satisfied with their lives. However, as none of these cut-off points have been validated as appropriate, they will only be used as a guide and will be interpreted with caution.

As grade average was collected categorically, the data was converted into interval data by assigning the average category score to the participant. For example, if the category 50% - 60 was selected, they were assigned a grade average of 55%. All responses that indicated a score of <40% were assigned a score of 35%. For purposes of interpretation, all scores below 55% are considered a fail, while all scores above 85% will be considered a distinction.

Once the variable scores were calculated, the basic assumptions of parametric tests were assessed, including independence, homogeneity of variance (Levene’s Statistic Test), and the normality of the distribution of data (Kolmogorov-Smirnov test, Shapiro-Wilk test, histograms and P-P plots). Next, assumptions specific to regression analysis were assessed, including the normalcy of the residuals, linearity and homoscedasticity (P-P plots of the residuals), as well as the independence of errors (Durbin–Watson statistic) and multicollinearity (Variance Inflation Factor). As some of the assumptions of parametric tests were not met, the types of analysis appropriate for the data include either non-parametric tests or tests that are robust, which will be indicated under the discussion for each kind of analysis.

As the psychometric properties had been established and the parametric assumptions were assessed, the data could subsequently be analysed in order to address the objectives of the study. Firstly, in order to describe Facebook use amongst the participants, the socio-demographical data was presented and a user profile was compiled making use of descriptive statistics including means, standard deviations, and percentages.

Subsequently, the differences between groups (gender, age, smartphone use) and their scores for IFU, CFU, satisfaction with life, academic impairment and grade average were explored. As the independent t-test is not robust when applied to a non-normally distributed sample (Field, 2009), the differences between the genders as well the differences between participants who access Facebook using smartphones in comparison with other devices will be calculated making use of the non-parametric independent samples Mann-Whitney U test. Although the one-way ANOVA can be said to be a robust test against deviations from normality when comparing the differences between multiple groups, according to Field (2009) it is only robust if the sizes of the groups are the same. Consequently, as the age groups differ in size, use will be made of the non-parametric Kruskal–Wallis test for assessing differences between the age groups,. As non-parametric tests, both the Mann-Whitney U and the Kruskal–Wallis tests make use of rating variable scores, consequently the median is used as a measure of central tendency. However, both the mean and median were reported to allow for easier comparison and interpretation of the differences between the groups.

The second objective of the study is to describe how intensive Facebook use and compulsive Facebook use relate to satisfaction with life, academic performance (grade average and academic impairment due to Facebook use) and user characteristics (gender, age, smartphone use). As the Pearson's product-moment correlation (*r*) is robust to nearly all non-normal and mixed-normal conditions (Bishara & Hittner, 2012), it will be used to calculate the correlations between the main variables. In order to include gender and smartphone use, they have been coded as non-continuous dichotomous variables, which allows for point–biserial correlation analysis. As the literature review offered mostly conflicting outcomes with regards to the relationships between the variables, no hypothesis or assumptions are made about the directionality of the relationships, hence all correlational analysis will be two-tailed. Finally, Cohen's guidelines for effect sizes will be used, which categorises a small effect as an *r* between 0.10 and 0.29, a medium effect as an *r* between 0.30 and 0.49 and a large effect as an *r* between 0.50 and 1.0 (Cohen, 1988).

In order to achieve the final objective simple linear regression analysis will be completed based on the significant relationships identified in the correlation analysis in an attempt to identify and assess for predictors of intensive Facebook use, compulsive Facebook use, satisfaction with life, grade average and academic impairment due to Facebook use. To determine which of the variables to use as the dependent variables and which variables to use as independent (predictor) variables, the level of measurement, logic and findings from studies included in the literature review will be considered. This will be described before each analysis is conducted.

Finally, as shared variance is inherent when dealing with multiple independent variables, hierarchical multiple regression analysis will be conducted in an attempt to control for the shared variance (Field, 2009). As hierarchical multiple linear regression allows the researcher to enter variables in sequenced blocks to either include or exclude their variance with the dependent variable (Field, 2009), it allows for the assessment of the degree to which each predictor contributes to the combined change in variance (R^2-change). According to Field (2009) if the predictors are all completely uncorrelated the order of variable entry has very little effect on the ultimate model. However, as the correlation analysis showed that some of the predictors (IFU, CFU and academic impairment due to Facebook use) covary, the order of predictor entry is crucial. According to Field (2009) the well-researched and established predictors should be entered into the model first in order of their importance in predicting the outcome. Consequently, the order of the variable entry into the hierarchical regression model will depend on the research reviewed in the literature study and the variance (R^2) of the simple linear regression models calculated previously. This will be discussed preceding each analysis. Finally, Cohen's F^2 guidelines for regression effect sizes will be used (.02 = small effect, .15 = medium effect, .35 = large effect).

CHAPTER 4: RESULTS

In this chapter, the results from the data analysis will be presented in order to offer the reader a summary of the data intended to meet the research objectives. This is intended as a precursor to the discussion in the next chapter, in which the aim will be to compare and contrast these results to the findings discussed in the literature review. First, the psychometric properties and parametric assumptions will be presented. Next, the socio-demographical data and Facebook user profile data will be presented, followed by the participant scores of the Facebook Intensity Scale, the Compulsive Facebook Use Scale, the Academic Impairment Due to Facebook Use Scale, the Satisfaction with Life Scale and participant grade averages, as well as differences between the scores based on gender, smartphone use and age. Results regarding how intensive Facebook use (IFU) and compulsive Facebook use (CFU) correlate to satisfaction with life (SWL), academic performance (grade average and academic impairment due to Facebook use (AIDFU) and user characteristics (gender, age, smartphone use) will then be presented. Finally, the predictors of intensive Facebook use, compulsive Facebook use, satisfaction with life, academic impairment due to Facebook and grade average use will be reported.

4.1. Psychometric properties and parametric assumptions

As stated in the data analysis, prior to addressing the research objectives the underlying psychometric properties of the measuring instruments were assessed for internal consistency by means of the Cronbach alpha and for construct validity by means of exploratory factor analysis, which assesses whether the grouped items are sufficiently inter-correlated and do indeed measure the underlying variables being studied (Sullivan & Artino, 2013). Subsequently, the assumptions of parametric testing will be explored.

4.1.1. Psychometric properties

As they have not yet been used in Namibia, the underlying psychometric constructs of the Facebook Intensity Scale, the Compulsive Facebook Use Scale and the Academic Impairment Due to Facebook Use Scale were assessed whether they are appropriate for use with the target population based on the selected sample. While it has been assessed for local use (Rothmann, 2013), the Satisfaction with Life Scale was also included in the assessment for consistency. The Cronbach's alpha was calculated for the Facebook Intensity Scale (α= .86), the Compulsive Facebook Use Scale (α=.90), the Satisfaction with Life Scale (α=.80) and the Academic Impairment due to Facebook use Scale (α=.89) and demonstrated that all the scales show a high internal consistency.

The results of the exploratory factor analysis have been summarised in Annexure 4 for each measuring instrument (scale). All the scales were shown to be appropriate for exploratory factor analysis according to the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The communalities between items, correlation cross-matrices and the factor loadings of items onto their scale all demonstrated that the items sufficiently correlate with each other. The extracted components and the factor loadings are summarised below in Table 3.

Table 3: *Factor loadings on extracted components*

Facebook Intensity Scale (IFU)	**Component**
	1
Item 1: Facebook is part of my everyday activity.	.594
Item 2: I am proud to tell people I'm on Facebook.	.817
Item 3: Facebook has become part of my daily routine.	.731
Item 4: I Feel out of touch when I haven't logged onto Facebook for a while.	.762
Item 5: I feel I am part of the Facebook community.	.744
Item 6: I would be sorry if Facebook shut down.	.797

Satisfaction with Life Scale (SWL)	**Component**
	1
Item 1: In most ways my life is close to my ideal.	.804
Item 2: The conditions of my life are excellent.	.860
Item 3: I am satisfied with life.	.777
Item 4: So far I have gotten the important things I want in life.	.706
Item 5: If I could live my life over, I would change almost nothing.	.627

Academic Impairment Due to Facebook Use Scale (AIDFU)	**Component**
	1
Item 1: How often has your studying been hurt because of the time you spend on Facebook?	.759
Item 2: How often do you sleep late because of using Facebook?	.781
Item 3: How often do you feel too tired to go to class the next day because you spend too much time on Facebook?	.827
Item 4: How often has your university grade or percentages been hurt because of the time you spend on Facebook?	.841
Item 5: How often did you not complete your work or studies because of the time spent on Facebook?	.875
Item 6: How often do you find it difficult to stop using Facebook when you are online?	.738

Compulsive Facebook Use Scale (CFU)	**Component**		
	1	**2**	**3**
Item 14: How often do you feel restless, frustrated, or irritated when you cannot use Facebook?	.743		
Item 6: How often do you think about the Facebook, even when not online?	.708		
Item 13: How often do you use Facebook to escape from your sorrows or get relief from negative feelings?	.708		.370
Item 4: How often do you prefer to use Facebook instead of spending time with others (e.g. partner, children, parents, friends)?	.682		
Item 5: How often are you short of sleep because of Facebook?	.646	.358	
Item 12: How often do you go on Facebook when you are feeling down?	.640		.504
Item 10: How often do you rush through your (home) work in order to go on Facebook?	.594		
Item 7: How often do you look forward to your next Facebook session?	.582	.352	.347
Item 11: How often do you neglect your daily obligations (school or family life) because you prefer to go on Facebook?	.511	.335	.313
Item 1: How often do you find it difficult to stop using the Facebook when you are online?		.830	
Item 2: How often do you continue to use Facebook despite your intention to stop?		.744	.343
Item 3: How often do others (e.g. partner, children, parents, friends) say you should use Facebook less?	.493	.543	
Item 9: How often have you unsuccessfully tried to spend less time on Facebook?			.755
Item 8: How often do you look forward to your next Facebook session?			.733

Only one component was extracted for the Facebook Intensity Scale (Eigenvalue of 3.32 explaining 55.40% of the variance between items), the Satisfaction with Life Scale (Eigenvalue of 2.88 explaining 57.59%) and the Academic Impairment Due to Facebook Use Scale (Eigenvalue of 3.89 explaining 64.80% of the variance). Consequently, the scales all appear to measure one underlying construct only. For the Compulsive Facebook Use Scale, three components were identified. The items that load onto the first component all measure preoccupation and compulsion. Factor 1 has an Eigenvalue of 6.16 and explains 43.99% of the variance between the items. The items loading onto the second component relate to neglect of duties and other important areas of functioning. Factor 2 has an Eigenvalue of 1.14 that explains 8.15% of the variance. The items that load onto the third component relate to a lack of control. Factor 3 has an Eigenvalue of 1.01, accounting for 7.26% of the variance. In their review of international validation of the Compulsive Internet Use Scale (CIUS), Dhir et al. (2016) found that in five out of six analyses, the CIUS measured one component. However Alavi, Jannatifard, Eslami and Rezapour (2011) also extracted three factors when using exploratory factor analysis. Regardless, all the items that comprise components of the Compulsive Facebook Use Scale do appear to measure underlying constructs associated with compulsive Facebook use.

4.1.2. The assumptions of parametric data

The main variables under study (intensive Facebook use, compulsive Facebook use, satisfaction with life, academic impairment due to Facebook and use and grade average) were assessed as to whether they satisfy the four underlying assumptions of parametric tests: interval data, independence, homogeneity of variance, and a normal distribution of data (Field, 2009). The results of all the tests of the parametric assumptions have been attached as Annexure 5. All assumptions have been met with the exception of the assumption of normalcy for CFU and academic impairment due to Facebook use, which are both positively skewed (CFU skewness = .563; academic impairment due to Facebook use skewness = .834) with heavy left tails. However, according to the central limit theorem, if the sample size is sufficiently large (>30) the distribution will tend to be normal. Consequently, normalcy is not the worst assumption to break, especially when using robust tests like the Pearson's product moment correlation (Field, 2009).

Further assumptions that apply when using regression analysis, specifically, include the independence of errors, multicollinearity, the normalcy of the distribution of errors around the mean, linearity and homoscedasticity, which have been summarised in Annexure 6. According to the Durbin–Watson test, the assumption of independence of errors has been met for all the variables. The variance inflation factor (VIF) also indicates that multicollinearity is not an issue. The normalcy of errors, linearity and homoscedasticity have been summarised in Table 27 of Annexure 6. When age is used as a predictor for satisfaction with life, heteroscedasticity appears to be problematic with the variance in the errors being spread unequally and, therefore, limiting the predictability of model. Similarly, when age was used as a predictor of academic impairment due to Facebook use, all three assumptions (normalcy, linearity and homoscedasticity) were not met. Also in the hierarchical regression model where age, IFU and CFU are included as predictors of academic impairment due to Facebook use, heteroscedasticity again is problematic. Consequently, any predictions based on these analyses are limited. These assumptions will be reported following each regression analysis.

4.2. Research participants and their Facebook use

In order to describe Facebook use amongst first year students in UNAM, the socio-demographical data describing the participants will be presented, followed by a summary of their Facebook use.

4.2.1. Participant socio-demographical data

Socio-demographical data that was collected included age, gender, region of origin and home language, as summarised below in Table 4. The majority of the participants were from the Faculty of Humanities and Social Sciences (19%), the School of Nursing and Public Health (16.6%) and the Faculty of Economic and Management Science (15.2%). Females comprised 63.4% (n = 353) of the participants with 36.6 % (n = 204) being male and two cases containing missing data. The average age of participants was relatively young at 22.6 years (SD = 6.1), but ranged from 18 to 52 years old. The regions with the most students were the Khomas (18.1%), Oshana (14.3%), Ohangwena (11.3%) and Omusati (10.9%) regions. The home languages of students were predominantly Oshiwambo (55.5%), followed by Afrikaans (7.9%) and English (7.3), although other foreign languages were also common (10.9%) and included mostly Shona, Silozi, Portuguese and German.

Table 4: *Socio-demographical data*

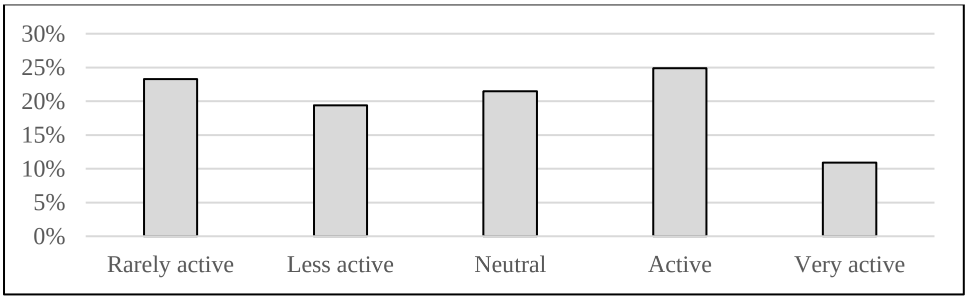
	n	**%**
Age groups		
Ages 18-21	377	67.7
Ages 22-25	64	11.5
Ages 26-35	89	16.0
Ages >35	27	4.8
Gender		
Male	353	63.4
Female	204	36.6
Faculty		
The Faculty of Agriculture and Natural Resources	7	1.3
The Faculty of Economic and Management Science	85	15.2
The Faculty of Education	75	13.4
The Faculty of Engineering and Information Technology	43	7.7
The School of Medicine	18	3.2
The School of Nursing and Public Health	93	16.6
The School of Pharmacy	18	3.2
The Faculty of Humanities and Social Sciences	106	19.0
Faculty of Law	47	8.4
Faculty of Science	67	12.0

Region	***N***	**%**	**Home language**		
Erongo	34	6.1	Oshiwambo	310	55.5
Hardap	17	3.0	Otjiherero	38	6.8
Karas	13	2.3	Kavango	26	4.7
Kavango East	24	4.3	Nama/Damara	38	6.8
Kavango West	4	.7	Afrikaans	44	7.9
Khomas	101	18.1	English	41	7.3
Kunene	16	2.9	Other	61	10.9
Ohangwena	63	11.3			
Omaheke	22	3.9			
Omusati	61	10.9			
Oshana	80	14.3			
Oshikoto	51	9.1			
Otjozondjupa	22	3.9			
Zambezi	21	3.8			
Other	30	5.4			

4.2.2. The profile of UNAM Facebook users

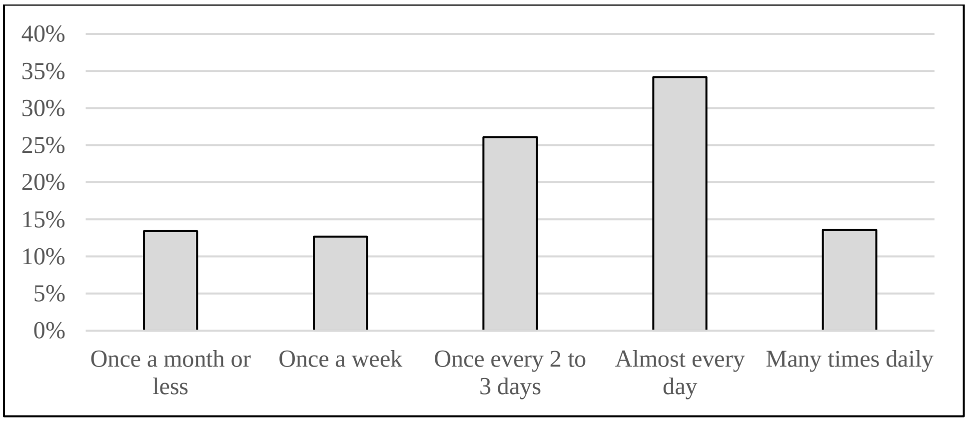
Data were also collected to describe the participants' Facebook use, including level of activity, frequency of check-ins, time spent actively using Facebook, number of Facebook friends and whether they check-in on Facebook during class. Of the original 648 students selected, 10.5% (*n* = 68) were excluded from the study because they do not have Facebook accounts. Consequently, 89.5% (of the original 648 students selected) have Facebook accounts.

Figure 1: *Facebook activity*



Facebook activity has been illustrated in Figure 1. The mean for Facebook activity was 3.19 (*SD* = 1.33). Nearly a quarter (23.3%) of respondents regard themselves as rarely being active on Facebook, while 19% are less active and 22% are neither active nor inactive. The most frequently selected category, however, was for active users (25%), while another 11% considers themselves to be very active.

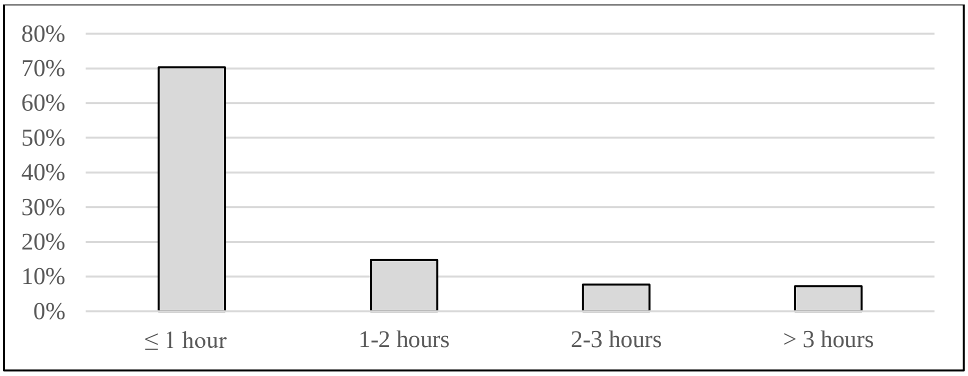
Figure 2: *Frequency of Facebook use*



With regards to how often Facebook is used, illustrated in Figure 2, the mean was 2.8 (*SD* = 1.26), corresponding to once every few days or daily. Just under half (47.8%) of the participants use Facebook at least once every few days or daily, while

26% check Facebook every 2 to three days About 13% only checks in on Facebook once a week, while another 13% only checks Facebook once a month or less.

Figure 3: *Time spent actively using Facebook*



Time spent actively using Facebook is shown in Figure 3. The mean of 1.52 (*SD* = 0.91) indicates that the participants actively use Facebook for less than two hours a day. However, most of the participants (70.3%) have a score of 1 (*SD* = 0.91), indicating that they use it for less than an hour per day. Only about 15% of the participants spent more than two hours per day using Facebook.

Figure 4: *Facebook friends*

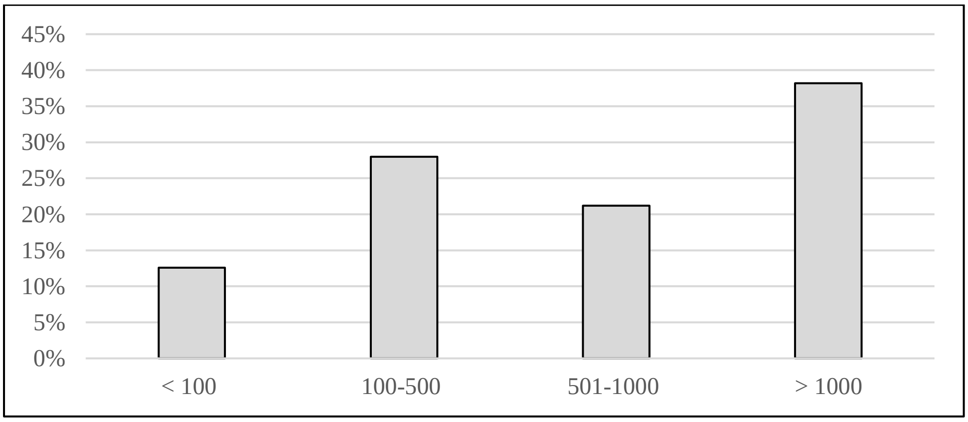
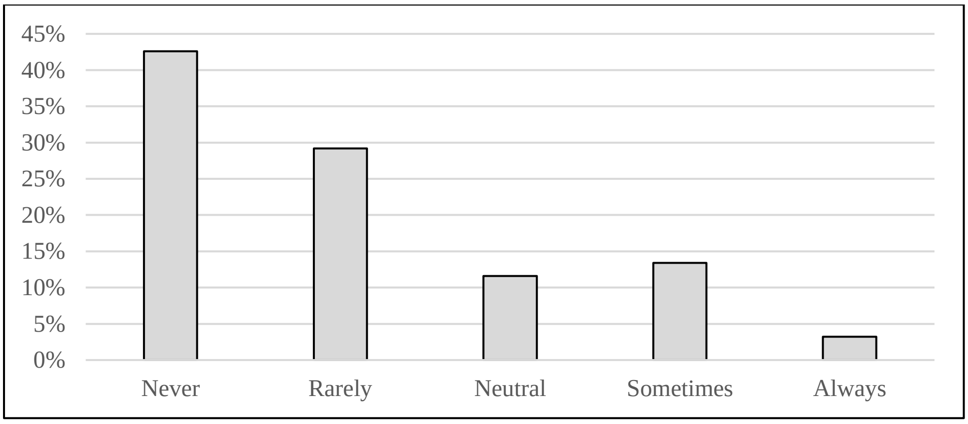


Figure 4 illustrates the amounts of Facebook friends reported by the respondents. The mean for the amount of Facebook friends was 2.85 (*SD* = 1.07), which corresponds to the categories ranging between 100 and 500 friends (score of 2) or between 500 and 1000 friends (score of 3). However, a sizeable percentage (38.2%) had a rating of 4, indicating that they have more than 1 000 friends. About 13% had fewer than 100 Facebook friends.

Figure 5: *Checking Facebook during class*



Finally, the mean for Facebook use during class was 2.1 (SD = 1.17) indicating that, overall, the participants rarely check Facebook during class. However, as Figure 5 shows, about 17% did have scores of 4 or 5, indicating that they sometimes or always check Facebook in class.

4.3. Group differences for IFU, CFU, SWL, academic impairment due to Facebook use and grade average

The mean scores for the main variables (IFU, CFU, satisfaction with life, academic impairment due to Facebook use) and grade average will be reported in this section, followed by an analysis of any group differences with regards to the variable scores.

4.3.1. IFU, CFU, SWL, academic impairment due to Facebook use and grade average scores

The mean scores were calculated for each of the measuring instruments as well as for their grade average for the first term at university. However, as the measuring instruments have not been validated for use in Namibia, no cut-off points yet exist for the interpretation of the generated scores. Consequently, as recommended by Anglim (2009), the percentages of respondents with scores associated with each of the 5 points of the Likert scales are reported instead to enable a critical discussion of the performance of the participants on each scale. Still, until cut-off points have been established and validated in future studies, the conclusions of this study should be cautionary. The scale scores and a break-down of the percentages for each Likert scale rating have been summarised below in Table 5.

Table 5: *IFU, CFU, SWL and AIDFU scores*

Scale	***Likert Scale Rating***					$\bar{x}$	***SD***
	1	**2**	**3**	**4**	**5**		
IFU	*Strongly Disagree* 8.9%	*Disagree* 33.5%	*Neutral* 36.7%	*Agree* 17.7%	*Strongly agree* 3.2%	2.65	0.90
CFU	*Never* 20.4%	*Rarely* 43.8%	*Neutral* 27.7%	*Often* 7.4%	*Always* 0.7%	2.24	0.81
SWL	*Very dissatisfied* 2.3%	*Dissatisfied* 18.1%	*Neither* 42.0%	*Satisfied* 30.2%	*Very satisfied* 7.3%	3.20	0.86
AIDFU	*Never* 35.1%	*Rarely* 36.6%	*Sometimes* 19.2%	*Often* 8.2%	*Always* 0.9%	1.99	0.89

IFU = intensive Facebook use, CFU = compulsive Facebook use, SWL = satisfaction with life, AIDFU = academic impairment due to Facebook use

The mean IFU score of the participants was 2.65 (*SD* = 0.90). About 42.4% of the participants either disagreed or strongly agreed with the items that measure IFU in comparison to only 20.9% who either agreed or strongly agreed and, consequently, are more likely to have Facebook highly integrated into the various areas of their lives. Of all the scores, the rating that correspond to a neutral (36.7%) stance on the scale was the most frequently selected. The mean CFU score was 2.24 (*SD* = 0.81) with only 8.1% of the participant scores corresponding to ratings that often or always experience the problems associated with the compulsive use of Facebook. Nearly two-thirds (64.2%) of the respondents have scores that indicate that they never or rarely experience any compulsivity issues with regards to their Facebook use.

The mean academic impairment due to Facebook use score was 1.99 (*SD* = 0.89). Only 9.1% of the participants' scores correspond to ratings that indicate that they often or always experience academic impairment due to their Facebook use. The overwhelming majority (71.7%) never or rarely experience academic impairment due to their Facebook use.

On a 5-point scale the approximate midpoint has been taken as 3 (neither agree not disagree) with 1 (strongly disagree) and 2 (disagree) indicating that participants are either very dissatisfied (2.3%) or dissatisfied (18.1%) with their lives, while a scale of 4 indicates that participants are satisfied (30.2%) or 5, being very satisfied (7.3%) with their lives. Considering the mean score of 3.2, the participants can be said to be fairly satisfied with their lives.

As the measure of academic performance, the participants were also asked to report their grade average for the previous semester, as summarised below in Table 6.

Table 6: *Percentage distribution of participant grade averages*

Fail (<55%)	**Pass (55%-75%)**	**Distinction (>85%)**	$\bar{X}$	***SD***
8.5%	82.6%	8.7%	60.23	11.55

The mean grade average reported by the participants was 60.2% (*SD* = 11.55). Only 8.5% of students reported that they failed their first semester exam. Comparably, only 8.7% passed with a distinction. The majority of the students achieved results ranging between 55% and 75%.

4.3.2. Group differences for IFU, CFU, SWL, academic impairment due to Facebook use scores and grade average

4.3.2.1. Gender

The participants consisted of 353 females (63.4%) and 204 males (36.6 %). In order to assess whether any differences exist between men and women and their scores on the main variables, the scores were ranked and analysed using the Mann-Whitney U test. The results are summarised in Table 7 below. The IFU scores were significantly higher for men (*Mdn* = 2.83) than for women (*Mdn* = 2.50), U = 30 898, z = -2.80, $p < 0.05$. No significant differences between the genders were indicated for CFU, satisfaction with life, academic impairment due to Facebook use or grade average.

Table 7: *Differences between males and females*

Scale	**Mean**		**Median**		**Significance level (*p*)**
	Male	***Female***	***Male***	***Female***	
IFU	2.78	2.58	2.83	2.50	**.005**
CFU	2.32	2.20	2.21	2.07	.181
SWL	3.13	3.24	3.20	3.20	.267
AIDFU	1.99	2.00	1.83	1.83	.575
Grade average	60.1	60.3	60.0	60.0	.585

IFU = intensive Facebook use, CFU = compulsive Facebook use, SWL = satisfaction with life, AIDFU = academic impairment due to Facebook use

4.3.2.2. Differences between smartphone users and users of other devices

There were 501 (89.6%) participants who accessed Facebook using smartphones, compared to 58 (10.4%) who accessed Facebook using desktop or laptop computers.

The Mann-Whitney U test was used to establish whether any differences existed between the two groups. The results have been analysed in Table 8 below. Participants who access Facebook using their smartphones (*Mdn* = 2.67) were much more likely to have high IFU scores compared to participants who access Facebook using other devices (*Mdn* = 2.17), U = 10 591.5, z = -2.70, $p < 0.05$. However, no other significant differences were found.

Table 8: *Differences between smartphone users versus users of other devices*

Scale	**Mean**		**Median**		**Significance (p)**
	Smart phone	***Other devices***	***Smart phone***	***Other Devices***	
IFU	2.68	2.36	2.67	2.17	**.007**
CFU	2.26	2.08	2.14	2.11	.189
SWL	3.18	3.41	3.20	3.60	.070
AIDFU	2.00	1.96	1.83	1.83	.861
Grade average	60.2	60.00	60.0	60.0	.751

IFU = intensive Facebook use, CFU = compulsive Facebook use, SWL = satisfaction with life, AIDFU = academic impairment due to Facebook use

4.3.2.3. Differences between age groups

The Kruskal–Wallis test was used to explore the differences between the variable scores between the age groups. As the sample was large, the Monte Carlo method for assessing the significance level was selected. As four age groups were included, the significance level (*p)* has been adjusted to < .0125 (Field, 2009). The results have been summarised below in Table 9.

Table 9: *Differences between age groups*

				IFU	CFU	SWL	AIDFU	Grade average
				557	553	557	557	557
		N	**%**			**Mean**		
Ages 18-21		377	67.7	2.62	2.21	3.24	2.05	59.9
Ages 22-25		64	11.5	2.83	2.32	3.12	2.04	57.8
Ages 26-35		89	16.0	2.90	2.36	3.24	1.67	63.0
Ages >35		27	4.8	1.92	2.05	2.70	1.48	61.1
						Median		
Ages 18-21				2.50	2.14	3.20	1.83	60.0
Ages 22-25				2.91	2.21	3.20	1.75	60.0
Ages 26-35				2.83	2.29	3.20	1.67	60.0
Ages >35				2.00	2.00	2.80	1.17	70.00
Chi-Square				21.04	2.16	0.80	17.77	14.28
Df				3	3	3	3	3
Asymp. Sig.				**.000**	.540	.849	**.000**	**.003**
Monte Carlo Sig.	Sig.			**.000**	.548	.853	**.000**	**.002**
	99% Confidence Interval	Lower Bound		**.000**	.535	.843	**.000**	**.001**
		Upper Bound		**.000**	.561	.862	**.001**	**.003**

IFU = intensive Facebook use, CFU = compulsive Facebook use, SWL = satisfaction with life, AIDFU = academic impairment due to Facebook use

IFU was significantly affected by age H(3) = 21.04, $p < .0125$. Considering the mean and median scores, IFU is lowest amongst the 35 year and older age group, followed by participants aged 18-21 years. IFU scores were highest for the age groups ranging from 22 to 25 years as well as 26 to 35 year olds. Post-hoc pairwise comparison revealed that there were significant differences between the oldest participants (aged >35) and all other age groups (p <0125), however no significant between-group differences were found for any of the other age groups.

Grade average was also significantly affected by age H(3) = 2.157, $p < .05$. The mean and median scores seem to indicate that there is a tendency for the grade average to increase with age. However, the post-hoc pairwise comparison only found significant differences between participants aged 26 to 35 and the younger age groups. Hence, the grade averages of participants aged 26 to 35 aged differed significantly from the grade averages of 22 to 25 years ($p < .05$) as well as with the grade averages of participants aged 26 to 35 ($p < .05$). There were no other significant difference between age groups and their grade averages.

Considering the mean and median scores, the academic impairment due to Facebook use seems to decrease with age. This effect was also significant H(3) = 14.28, $p < .0125$. Post-hoc pairwise comparison revealed that there were significant differences between the oldest participants (aged >35) and the younger age groups including 18 to 21 year olds (p <001) as well as 22 to 25 year olds (p <001). However, no other significant differences were found.

4.4. Relationships between IFU, CFU, SWL, academic impairment due to Facebook use, grade average and user characteristics

The Pearson's product-moment correlation (r) was used to calculate the relationships between IFU, CFU, satisfaction with life (SWL), academic impairment due to Facebook use (AIDFU), grade average and the user characteristics used as grouping variables in Section 4.3.2 (age, gender and smartphone use to access Facebook). The correlation matrix has been summarised below in Table 10.

The intensity with which the participants use Facebook (IFU) was significantly and positively related to CFU ($r = .454$, $p < .05$) and academic impairment due to Facebook use ($r = .428$, $p < .05$), both with a moderate effect. Confirming the results of the Mann-Whitney U test, significant but small effects were also found between IFU and gender (r_{pb} = .109, p < .05) as well as IFU and smartphone use (r_{pb} = .106, p < .05). No relationship was identified between IFU and either satisfaction with life (r = -.024, p >.05) or grade average (r = .020, p > .05).

Table 10: *Correlation analysis of variable scores and user characteristics*

	IFU	**CFU**	**SWL**	**AIDFU**	**Grade average**	**Age**	**Gender**	**Smart Phone**
IFU	1	**.454****	-.024	**.428****	.020	-.073	**.109***	**.106***
CFU	**.454****	1	-.050	**.524****	-.068	.000	.071	.065
SWL	-.024	-.050	1	**-.122****	.082	**-.092***	-.061	-.080
AIDFU	**.428****	**.524****	**-.122****	1	**-.173****	**-.148****	-.004	.014
Grade average	.020	-.068	.082	**-.173****	1	.063	-.009	-.009
Age	-.073	.000	**-.092***	**-.148****	.063	1	-.016	.033
Gender	**.109***	.071	-.061	-.004	-.009	-.016	1	-.015
Smartphone	**.106***	.065	-.080	.014	-.009	.033	-.015	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level
IFU = intensive Facebook use, CFU = compulsive Facebook use, SWL = satisfaction with life, AIDFU = academic impairment due to Facebook use

No relationship between CFU and satisfaction with life (r = -.050, p >.05) nor CFU and grade average (r = -.068, p > .05) was found either. There was also no significant relationships between CFU and age (r = -.000, p > .05) or gender (r = .071, p > .05). The only significant relationship with CFU was a positive and significant relationship with academic impairment due to Facebook use (r = .534, p < .001), which had a large effect.

Academic impairment due to Facebook use emerged as one of the most important variables, relating positively with both IFU and CFU, but also negatively with grade average (r = -.173, p < .001, small effect), satisfaction with life (r = -.122, p < .001, small effect) as well as to age (r = -.148, p < .001, small effect). Besides for the negative relationship with academic impairment due to Facebook use, satisfaction with life only related significantly and negatively with age (r = -.092, p <.05). Besides for the negative relationship with academic impairment due to Facebook use, grade average showed no significant relationship with any of the other variables.

4.5. Predictors of IFU, CFU, SWL, academic impairment due to Facebook use and grade average

Based on the significant relationships identified in the correlation analysis, simple linear regression analysis and hierarchical multiple regression analysis were conducted. According to Field (2009) regression analysis can be used to describe how much the dependent variable changes when we change the independent variable, enabling predictions to be made. The choice of which variables to use as either the predictor or dependent variables is based on the research findings discussed in the literature study. All supplementary histograms, P-P Plots and scatterplots of the residuals that were used to assess the parametric assumptions have been attached as Annexures 6 and 7 and will be discussed following each regression analysis.

4.5.1. Predictors of IFU

As both gender and smartphone usage are binary categorical variables and logically temporally precede IFU, they were used as the predictor variables. Firstly, a simple linear regression analysis was completed with gender as a predictor of IFU, according to following equation:

$Y \text{ (IFU)} = \beta_0 + \beta_1 \text{ (gender) } X_1$

The results have been summarised below in Table 11. With IFU as the dependent variable and gender as the independent variable, a significant regression equation was found ($F(1,555) = 6.67$, $p < .05$) with an R^2 of .012. At the $\alpha = 0.05$ level of significance, there exists enough evidence to conclude that gender is a significant predictor of IFU ($t(555) = 2.58$, $p < .05$) and accounts for 1.2% of the variance.

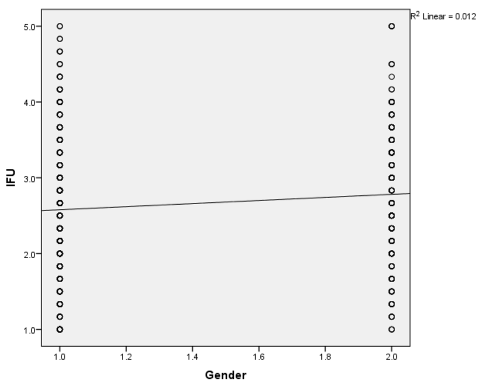
Table 11: *Simple linear regression table for gender as a predictor of IFU*

Independent variable	**Unstandardised Coefficients**		**Standardised Coefficients**	***t***	***P***	***F***	***R²***
	B	***SE***	***B***				
Constant	2.38	0.11		20.80	.000	(1, 555) 6.67**	.012
Gender (IV)	0.20	0.08	0.11	2.58	.010		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .010

The regression equation was then solved (Annexure 8) and illustrated in Figure 6. As men scored 0.20 (CI 95% [0.05, 0.36]) points more than women, the predicted IFU score (y-intercept) will be 2.58 (CI 95% [2.42, 2.73]) when gender is female (x = 1) and 2.78 (CI 95% [2.42, 2.73]) when gender is male (x = 2) as can be seen on the scatterplot. All the assumptions of regression analysis have been met.

Figure 6: *Scatterplot of IFU (DV) and gender (IV)*



Next, a simple linear regression analysis was completed with smartphone use as the predictor of IFU, according to the following equation:

$$Y\ (\text{IFU}) = \beta_0 + \beta_1\ (\text{smartphone use})\ X_2$$

The results have been summarised below in Table 12. Smartphone use explained 1.2% variance in the IFU score with a significant regression equation ($F(1,557) = 6.33$, $p < .05$). Smartphone use also significantly predicted IFU scores ($t(555) = 2.52$, $p < .05$).

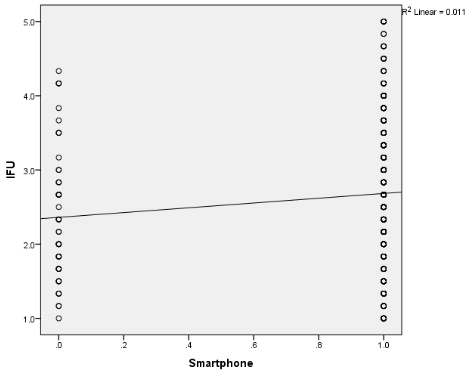
Table 12: *Simple linear regression table for smartphone use as a predictor of IFU*

Independent variable	**Unstandardised Coefficients**		**Standardised Coefficients**	***T***	***P***	***F***	***R²***
	B	***SE***	***B***				
Constant	2.36	0.12		19.28	.000	(1, 557) 6.33*	.011
Smartphone use (IV)	0.322	0.13	0.11	2.52	.012		

* $p < 0.05$, ** $p < 0.01$
Adjusted $R^2 = .009$

Next, the regression equation was solved. The results have been summarised in Annexure 8 and shown in Figure 7. The scatterplot shows that smartphone users scored 0.32 (CI 95% [0.07, 0.57]) points more for IFU than participants who did not use smartphones. Consequently, the predicted IFU score is 2.68 (CI 95% [2.43, 2.93]) when the participants did not use smartphones (x = 0), and 3.00 when smartphones were used (CI 95% [2.50, 3.51]). The regression analysis also met all the assumptions of regression analysis.

Figure 7: *Scatterplot of IFU (DV) and smartphone use (IV)*



Both variables were then entered into a two stage hierarchical regression equation based on the regression equation below:

$Y\ (\text{IFU}) = \beta_0 + \beta_1\ (\text{gender})X_1 + \beta_2\ (\text{smartphone use})X_2$

According to Field (2009), if there is no covariance between the variables (as with gender and smartphone use), the order of entry into the hierarchical model will not matter. Gender was entered into the model first, followed by smartphone use. The results have been summarised in Table 13 below.

Table 13: *Hierarchical regression models with IFU as dependent variable*

		Unstandardized Coefficients		***Standardised Coefficients***			***Change Statistics***	
		B	**SE**	**B**	***t***	***R*²**	***R*² Change**	***F* Change**
Model 1	Constant	2.38	0.11		20.80	.012	.012	6.67**
	Gender	0.20	0.08	0.11	2.58*			
Model 2	Constant	2.07	0.16		12.72	.024	.012	6.61**
	Gender	0.21	0.08	0.11	2.64*			
	Smartphone use	0.33	0.13	0.11	2.57*			

* $p < 0.05$, ** $p < 0.01$

Adjusted R^2 for model 1 = .010, Adjusted R^2 for model 2 = .020

The hierarchical multiple regression analysis revealed that in model 1, gender contributed significantly to the regression model, ($F(1,557) = 6.67$, $p < .05$) and accounted for 1.2% of the variance in the IFU score. When smartphone use is included in model two, an additional 1.2% of the variability is accounted for and this change in R^2 is significant ($F(1,557) = 6.61$, $p < .05$). For model 2, gender ($t(553) = 2.64$, $p < .05$) and smartphone use ($t(552) = 2.57$, $p < .05$) are both significant predictors of IFU and together account for 2.4% of the variance in the IFU score. The regression equation was then solved (Annexure 8). Considering the β_1 score of 0.21 (CI 95% [0.53, 0.36]) for gender and the β_2 score of 0.33 (CI 95% [0.78, 0.58]) for smartphone use, combined with the constant of 2.07, the predicted IFU score is 2.61 (CI 95% [2.21, 3.02]) at the y intercept. The regression analysis also met all the assumptions.

4.5.2. Predictors of CFU

According to Gabor et al. (2015) IFU is a prerequisite of CFU. Consequently simple linear regression was conducted in an attempt to predict the change in the CFU score that can be accounted for by IFU according to the formula:

$$Y\ (\text{CFU}) = \beta_0 + \beta_1\ (\text{IFU})$$

The results have been summarised below in Table 14. A significant regression equation was found ($F(1,553) = 143.9$, $p < .001$), explaining 20.6% of the variance in the CFU score. IFU significantly predicts CFU scores, ($t(555) = 2.52$, $p < .05$). The regression equation was then solved. The results have been summarised in Annexure 8 and is demonstrated in Figure 8.

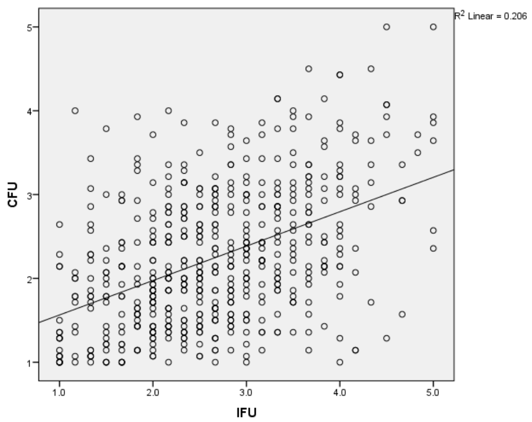
Table 14: *Simple linear regression table for IFU as a predictor of CFU*

	Unstandardised Coefficients		Standardised Coefficients	*t*	*P*	*F*	R^2
	B	***SE***	***B***				
Constant	1.15	0.10		12.05	.000	(1,553) 143.82**	.206
IFU	0.41	0.03	0.454	12.00	.000		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .205

As the scatterplot demonstrates below in Figure 8, the CFU score increases by 0.41 (CI 95% [0.34, 0.48]) points with each point the IFU score increases. Consequently the predicted CFU score is 1.56 (CI 95% [1.50, 1.63]) when the IFU score is 1. Again, all the assumptions of regression analysis were met.

Figure 8: *Scatterplot of CFU (DV) and IFU (IV)*



4.5.3. Predictors of satisfaction with life

The correlation analysis with satisfaction with life revealed only two significant relationships, both negative (academic impairment due to Facebook use [AIDFU] and age) which were both used as independent variables. While satisfaction with life could also be said to impact on academic impairment due to Facebook use, the findings of Kross et al. (2013) that Facebook use leads to lowered satisfaction of life even when controlling for other factors, will also be extended to academic impairment due to Facebook use. Consequently, academic impairment due to Facebook use will be used as the independent (predictor) variable. Age logically and temporally precede satisfaction with life, therefor was also used as a predictor variable. Firstly, a simple linear regression analysis was completed with academic impairment due to Facebook use as a predictor of satisfaction of life, based on the equation:

$Y\ (SWL) = \beta_0 + \beta_1\ (AIDFU)$

The results have been summarised in Table 15 below. A significant regression equation was found ($F(1,557) = 8.35$, $p < .05$) with an R^2 of .015. Consequently, academic impairment due to Facebook use accounts for 1.5% of the variance in the satisfaction with life score. Academic impairment due to Facebook use also significantly predicts satisfaction with life scores ($t(555) = -2.89$, $p < .05$).

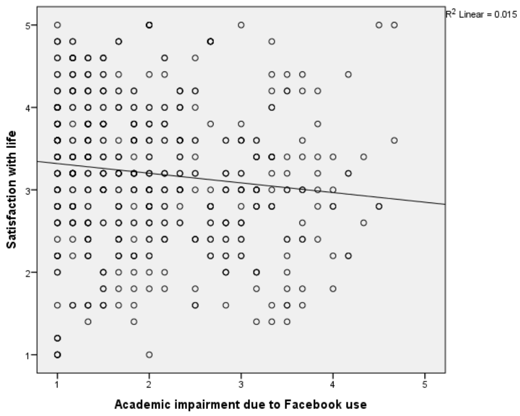
Table 15: *Simple linear regression table for AIDFU as a predictor of SWL*

	Unstandardised Coefficients		***Standardised Coefficients***				
	B	***SE***	***B***	***t***	***P***	***F***	***R²***
Constant	3.44	0.09		38.86	.000	(1,557) 8.37*	.015
AIDFU (IV)	-0.12	0.04	-0.12	-2.89	.004		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .013

The regression equation was then solved (Annexure 8) and illustrated in Figure 9. The β_1 score indicates that the satisfaction with life score decreased by 0.12 (CI 95% [-0.20, -0.04]) points for each point the academic impairment due to Facebook use score increased. Consequently, with a constant (β_0) of 3.44, the predicted satisfaction with life score (y-intercept) was 3.32 (CI 95% [3.24, 3.40]) when the academic impairment due to Facebook use score was 1, as can be seen on the scatterplot. However, considering the scatterplot of the residuals (Annexure 7) there appear to be outliers and evidence of heteroscedasticity, which limits the generalisability of the results.

Figure 9: *Scatterplot of SWL (DV) and AIDFU (IV)*



Next, a simple linear regression analysis was completed with age as a predictor of satisfaction of life, based on the equation:

$$Y\ (SWL) = \beta_0 + \beta_1\ (age)$$

The results have been summarised below in Table 16. Using age as the predictor, another significant regression equation was found ($F(1,557) = 8.35$, $p < .05$) with an R^2 of .008, accounting for 0.8% of the variance in the satisfaction with life score. The age of the participants can be considered a useful predictor of the satisfaction with life score ($t(553) = -2.18$, $p < .05$).

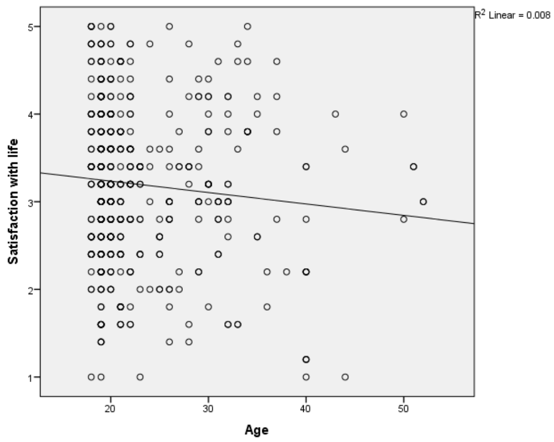
Table 16: *Simple linear regression table for age as a predictor of SWL*

	Unstandardised Coefficients		***Standardised Coefficients***				
	B	***SE***	***Β***	***t***	***P***	***F***	***R²***
Constant	3.50	0.14		24.97	.000	(1, 555) 4.73*	.008
Age (IV)	-0.01	0.01	-0.09	-2.18	.030		

* $p < 0.05$, ** $p < 0.01$
Adjusted $R^2 = .007$

The regression equation was then solved. The results have been summarised in Annexure 8 and are shown in Figure 10 below. According to the β_1 score the satisfaction with life score decreased by -.013 (CI 95% [-0.25, -0.00]) points for each year that age increased. This has been illustrated in the scatterplot below in Figure 5. Therefore, the predicted satisfaction with life score is 3.48 (CI 95% [3.24, 3.40]) when participant age is 18 (x = minimum age). However, the scatterplot of the residuals (Annexure 7) indicates outliers and heteroscedasticity.

Figure 10: *Scatterplot of SWL (DV) and age (IV)*



Both variables were then entered into a hierarchical regression equation based on the formula below:

Y (SWL) = $\beta_0 + \beta_1$ (AIDFU)X_1 + β_2 (age)X_2

Field (2009) recommends that known predictors are included in the hierarchical regression model first. Consequently, based on the research by Kubey et al. (2001) academic impairment due to Facebook use was entered into the model first, followed by age. The results have been summarised in Table 17. In model 1, academic impairment due to Facebook use contributed significantly to the regression model, ($F(1,555) = 8.26$, $p < .05$) and accounted for 1.5% of the variance in the satisfaction with life score. When age is included in model two, an additional 1.2% of the variability is accounted for and this change in R^2 is significant ($F(1,554) = 7.04$, $p < .05$). In model 2, both academic impairment due to Facebook use ($t(552) = -3.25$, $p < .001$) and age ($t(551) = -2.65$, $p <.05$) significantly predict satisfaction with life, accounting for a combined 2.7% of the variance in the satisfaction with life score.

Table 17: *Hierarchical regression models with SWL as dependent variable*

		Unstandardized Coefficients		***Standardised Coefficients***			***Change Statistics***	
		B	**SE**	**B**	***t***	***R*²**	***R*² Change**	***F* Change**
Model 1	Constant	3.44	0.09		38.60	.015	.015	8.26*
	AIDFU	-0.12	0.04	-0.12	-2.87			
Model 2	Constant	3.84	0.17		22.23	.027*	.012	7.04*
	AIDFU	-0.13	0.04	-0.14	-3.25			
	Age	-0.02	0.01	-0.11	-2.65			

* $p < 0.05$, ** $p < 0.01$

Adjusted R^2 for model 1 = .013, Adjusted R^2 for model 2 = .024

The regression equation was then solved (Annexure 8). Considering the β_1 score of -.013 for academic impairment due to Facebook use and the β_2 score of -0.02 for age added to the constant of 3.84, the satisfaction of life score is predicted to be 3.68 (CI 95% [3.33, 3.77]) at the y-intercept. However, homoscedasticity again appears to be an issue, which limits the generalisability of the results.

4.5.4. Predictors of academic impairment due to Facebook use

For the simple linear regression analyses, the CFU score, the IFU score and age will each be assessed independently for their ability to account for change in the academic impairment due to Facebook use (AIDFU) score. IFU and CFU were selected as predictor variables since Facebook use logically temporally precedes any impact from Facebook use. Logically, age would also rather impact on academic impairment due to Facebook use rather than vice versa. A simple linear regression analysis was then done with CFU as the predictor of academic impairment due to Facebook use, according to the following formula:

$$Y\ (\text{AIDFU}) = \beta_0 + \beta_1\ (\text{CFU})$$

The results have been summarised below in Table 18. A significant regression equation was found ($F(1,553) = 208.8$, $p < .001$) with an R^2 of .274, accounting for 27.4% of the variance in the academic impairment due to Facebook use scores. CFU also significantly predicts academic impairment due to Facebook use ($t(551) = 14.5$, $p < .001$).

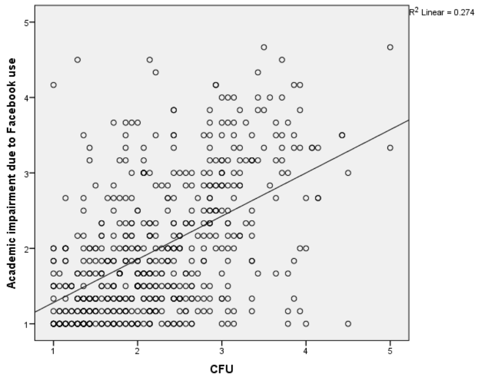
Table 18: *Simple linear regression table for CFU as predictor of AIDFU*

Independent variable	**Unstandardised Coefficients**		**Standardised Coefficients**				
	B	***SE***	***B***	***t***	***P***	***F***	***R²***
Constant	0.71	0.10		7.50	.000	(1, 553) 208.82**	.274
CFU (IV)	0.57	0.04	0.52	14.45	.000		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .273

The regression equation was then solved. The results have been summarised in Annexure 8 and is demonstrated in Figure 11. The scatterplot shows that the academic impairment due to Facebook use score increases by 0.57 (CI 95% [0.50, 0.65]) points for each point the CFU score increases and that the predicted academic impairment due to Facebook use score is 1.28 (CI 95% [1.20, 1.36]) when the CFU score is 1. The regression analysis also met the assumptions of regression analysis.

Figure 11: *Scatterplot of AIDFU (DV) and CFU (IV)*



Subsequently, a simple linear regression analysis was conducted with IFU as a predictor of academic impairment due to Facebook use according to the following equation:

Y *(*AIDFU) = $\beta_0 + \beta_1$ (IFU)

The results have been summarised below in Table 19. A significant regression equation was again found ($F(1,557) = 125.0$, $p < .001$) with IFU accounting for 18.3% of the variance in the academic impairment due to Facebook use score. The IFU score is also a useful predictor of the academic impairment due to Facebook use score ($t(555) = 11.2$, $p < .001$).

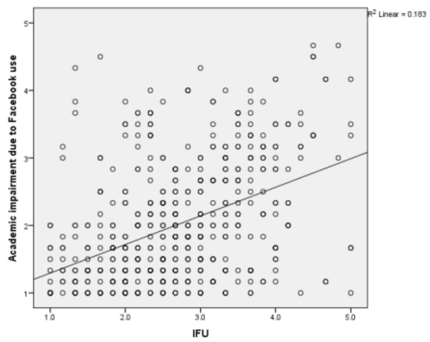
Table 19: *Simple linear regression table for IFU as predictor of AIDFU*

Independent variable	**Unstandardised Coefficients**		**Standardised Coefficients**				
	B	***SE***	***B***	***t***	***P***	***F***	***R²***
Constant	0.87	0.11		8.19	.000	(1, 557) 124.95**	.183
IFU (IV)	0.42	0.04	0.43	11.18	.000		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .182

Next, the regression equation was solved and the results are summarised in Annexure 8 and demonstrated in Figure 12. The scatterplot demonstrates that the academic impairment due to Facebook use score increases with 0.42 (CI 95% [0.35, 0.50]) points with each point the IFU score increases and that the predicted academic impairment due to Facebook use score is 1.29 (CI 95% [1.22, 1.37]) when IFU is 1. All the parametric assumptions have also been met.

Figure 12: *Scatterplot of AIDFU (DV) and IFU (IV)*



A linear regression analysis was then conducted for age as the predictor of academic impairment due to Facebook use, according to the following formula:

$$Y\ (\text{AIDFU}) = \beta_0 + \beta_2\ (\text{age})$$

The results have been summarised below in Table 20. Again, a significant regression equation was found ($F(1,557) = 12.5$, $p < .001$) with an R^2 of .022. Despite the small contribution to the variance, age can also be considered a useful predictor of the academic impairment due to Facebook use score ($t(555) = -3.54$, $p < .001$).

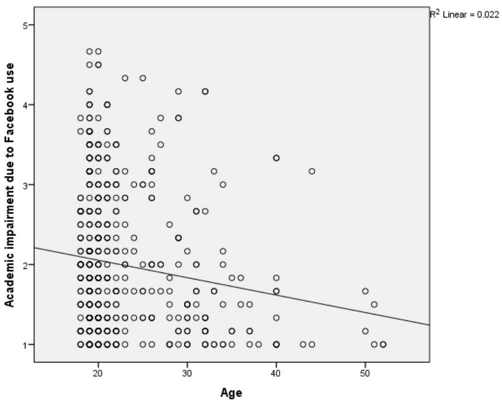
Table 20: *Simple linear regression table for age as a predictor of AIDFU*

Independent variable	**Unstandardised Coefficients**		**Standardised Coefficients**				
	B	***SE***	***B***	***t***	***P***	***F***	R^2
Constant	2.49	0.14		17.28	.000	(1, 557) 12.51**	.022
Age (IV)	-0.02	0.01	-0.15	-3.54	.000		

* $p < 0.05$, ** $p < 0.01$
Adjusted $R^2 = .020$

The regression equation was then solved (Annexure 8) and demonstrated in Figure 13. If age is at its youngest (18 years) the predicted academic impairment due to Facebook use score is 2.47 (CI 95% [2.47, 2.48], but decreases with 0.42 (CI 95% [0.35, 0.50]) points with each year that the participants are older. The results have been included in Annexure 8 and illustrated in Figure 13. However, the assumptions of normality, linearity nor homoscedasticity have not been met.

Figure 13: *Scatterplot of AIDFU (DV) and age (IV)*



All three variables were then entered into a hierarchical regression equation based on the regression equation:

$$Y \text{ (AIDFU)} = \beta_0 + \beta_1(\text{CFU}) + \beta_2(\text{IFU}) + \beta_3(\text{age})$$

As CFU had the highest R^2, it was entered into the equation first, followed by IFU then age to assess whether the additional variance accounted for by each variable was significant. The results have been summarised in Table 21 below.

Table 21: *Hierarchical regression models with AIDFU as dependent variable*

		Unstandardized Coefficients		***Standardised Coefficients***			***Change Statistics***	
		B	**SE**	**B**	***t***	R^2	R^2 **Change**	***F* Change**
Model 1	Constant	0.69	0.10		7.33	.281	.281	215.12**
	CFU	0.58	0.04	0.53	14.67**			
Model 2	Constant	0.35	0.11		3.18	.323	.042	34.04**
	CFU	0.47	0.04	0.42	10.69**			
	IFU	0.23	0.04	0.23	5.83**			
Model 3	Constant	0.81	0.16		5.00	.340	.018	14.70**
	CFU	0.47	0.04	0.42	10.97**			
	IFU	0.22	0.04	0.21	5.56**			
	Age	-0.02	0.01	-0.13	-3.83**			

* $p < 0.05$, ** $p < 0.01$

Adjusted R^2: model 1 = .279; model 2 = .320; model 3 = .337

The hierarchical multiple regression analysis shows that in model 1, CFU contributed significantly to the regression model, ($F(1,551) = 215.1$, $p < .001$) and accounted for 28% of the variance in the academic impairment due to Facebook use score. When IFU is included in model two, an additional 4.2% of the variability was accounted for and this change in R^2 was also significant ($F(1,550) = 34.0$, $p < .001$). Finally, age was included as a predictor in model 3, which accounted for additional 1.8% of the variance in the academic impairment due to Facebook use score and this change in R^2 was also significant ($F(1,549) = 14.7$, $p < .001$). The t statistics for model 3 indicate that the slopes for CFU ($t(549) = 11.0$, $p < .001$), IFU ($t(548) = 5.6$, $p < .001$) and age ($t(547) = -3.8$, $p < .001$) are all appropriate predictors of academic impairment due to Facebook use. Together, all three variables account for 34% of the variance in the academic impairment due to Facebook use score. The regression equation was then solved and summarised in Annexure 8. With a β_1 score of 0.47 for CFU, a β_2 score of 0.22 for IFU and a β_3 score of -0.02 for age, the academic impairment due to Facebook use score is predicted to be 1.48 (CI 95% [1.30, 1.65]) at the y-intercept. However, the results are limited due to heteroscedasticity.

4.5.5. Predictors of grade average

The Academic Impairment Due to Facebook Use Scale measures Facebook related behaviours that can indirectly impair academic performance, so academic impairment due to Facebook use (AIDFU) will be used as the predictor variable in order to assess if a change in academic impairment due to Facebook use can account for any significant change in the grade average scores of the participants, according to the following equation:

$$Y \text{ (grade average)} = \beta_0 + \beta_1 \text{ (AIDFU)}$$

The results have been summarised in Table 22 below. A significant regression equation was found (F(1,557) = 17.2, $p < .05$) with an R^2 of .030, with academic impairment due to Facebook use accounting for 3% of the variance in grade average. Academic impairment due to Facebook use was also found to be a significant predictor of grade average ($t(555) = -4.15$, $p < .001$).

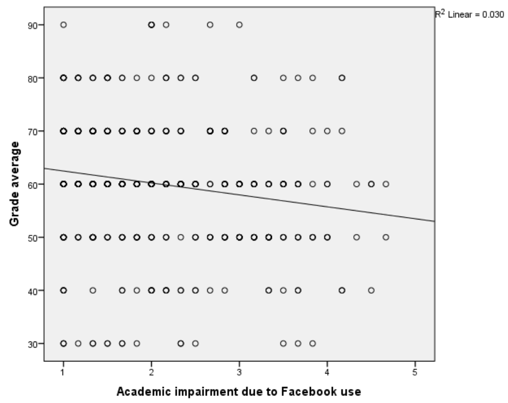
Table 22: *Grade average as dependent variable*

	Unstandardised Coefficients		**Standardised Coefficients**				
	B	***SE***	***B***	***t***	***P***	***F***	***R²***
Constant	64.71	1.18		54.76	.000	(1,557) 17.22**	.030
AIDFU (IV)	-.2.25	0.54	-0.17	-4.15	.000		

* $p < 0.05$, ** $p < 0.01$
Adjusted R^2 = .028

The regression equation was then solved (Annexure 8) and illustrated in Figure 14 below. Considering β_1, grade average decreased by -2.25% (CI 95% [-3.31, -1.18]) points for each point the academic impairment due to Facebook use score increased, the grade average score is predicted to be 62.46% (CI 95% [61.40%, 63.53%]). The regression analysis also met all the assumptions.

Figure 14: *Scatterplot of grade average (DV) and AIDFU (IV)*



The correlation analysis indicated strong relationships between IFU and CFU and academic impairment due to Facebook use. The high covariance between these variables necessitated the use of hierarchical multiple linear regression analysis. IFU was confirmed as a predictor of CFU with IFU accounting for 20.6% of the variance. Both CFU (R^2 = .274) and IFU (R^2 = .183) significantly predict academic impairment due to Facebook use, however when the impact of IFU is considered in combination with the impact of CFU, the change in R^2 only accounts for an extra 4.2% of the variance. Consequently, academic impairment due to Facebook use is more likely to follow compulsive Facebook use. In turn, academic impairment due to Facebook use significantly predicts both grade average (R^2 = .030) and satisfaction with life (R^2 = .015), although the effect is small. Smartphone use and gender both predict IFU, although the effects are small. Similarly, age predicts academic impairment due to Facebook use and satisfaction with life, but also only has a small effect.

4.5.6. Summary

The significant predictors and the effect sizes (f^2) associated with the R^2 values have been summarised below in Table 23.

Table 23: *Regression analysis summary and effect sizes*

Dependent variable	**Predictor**	R^2	F^2	**Effect size**
Simple linear regression analysis				
IFU	Gender	.012	.012	Small
IFU	Smartphone use	.011	.011	Small
CFU	IFU	.206	.259	Medium
SWL	AIDFU	.015	.015	Small
SWL	Age	.008	.008	Small
AIDFU	CFU	.274	.377	Large
AIDFU	IFU	.183	.224	Small
AIDFU	Age	.022	.022	Small
Grade average	AIDFU	.030	.030	Small
Hierarchical regression analysis				
IFU Model 2	Smartphone use	.012	.012	Small
	Gender	.012	.012	Small
	Gender, smartphone use	.024	.025	Small
SWL Model 2	AIDFU	.015	.015	Small
	Age	.012	.012	Small
	AIDFU. Age	.027	.028	Small
AIDFU Model 3	CFU	.281	.391	Large
	IFU	.042	.044	Small
	Age	.018	.018	Small
	CFU, IFU, age	.340	.515	Large

CHAPTER 5: DISCUSSION

Guided by the study objectives, the results will be discussed and synthesised with findings from the studies included in the literature review. This will present a contextualised understanding of the results of the study and allow for a discussion on how the Namibian data compares with international research.

The socio-demographic data will be discussed first. The gender composition of 63.4% females and 36.6% males compares well with the overall gender statistics (61% females and 39% males) enrolled at the main campus and at the School of Medicine. As the sample was drawn from first year students, the average age of participants was relatively young at 22.6 years (*SD* = 6.1). The region with the most students was Khomas (18.1%), which is also where the main campus and School of Medicine of the University of Namibia, are located. As there are also campuses located in other regions, students from those regions could likely enrol closer to home. Nonetheless, the northern regions of Oshana (14.3%), Ohangwena (11.3%) and Omusati (10.9%) also had a large proportion of students represented in the study. Along with the Khomas region, these regions are also the most highly populated areas in Namibia, so the sample appears to represent the general population of Namibia (NSA, 2013). This is also reflected in the home languages of students, which compares well to the national prevalence (NSA, 2013). In summary, with the exception of age, the socio-demographical data (gender, region of origin, language) can be deemed fairly representative of the Namibian population in general.

A profile of Facebook use amongst UNAM first year students was then compiled. The results revealed that about 89.5% of the total 648 students sampled have

Facebook accounts, which is comparable with 88% of students in the USA (Greenwood, et al., 2016), but notably more than students in South Africa (67%) (Johnston et al., 2013). The participants rated their Facebook activity as moderately active. About 34% reported that they use Facebook almost every day, while 13.6% reported using Facebook many times daily. This is comparable with the data reported by Kemp (2017) that Facebook is used daily by 36% of users in Namibia, 40% in South Africa and 55% globally. Consequently, daily Facebook use by the participants seems to be following regional and global usage trends. Although the participants tend to check into Facebook at least once every few days or daily, they mostly (70.3%) use it for less than an hour per day. This also compares well with students in South Africa (10 to 30 minutes) (Johnston et al., 2013) and Hungary (20 to 30 minutes) a day. Both the frequency of Internet use and the length of time spent online relate to higher Internet use rates (Thatcher & Goolan, 2005). Consequently, the low activity rates, frequency of use and time spent by the participant to use Facebook could be indicative of lower Facebook use rates and that the participants are not likely to experience the problems associated with excessive Facebook use. In the study published by Ellison et al. in 2007, their respondents listed having between 150 and 200 friends listed on their profile. Johnston et al. (2013) found that students in South Africa have between 100 and 150 friends. For this study, the majority of respondents reported having either between 100 and 500 friends or between 500 and 1000 friends. Yet, a sizeable percentage (38.2%) listed having more than 1 000 friends. Consequently, it appears that Namibian students have a comparatively high number of Facebook friends. Finally, the participants were asked whether they check Facebook during class. The vast majority of the participants do not, with only about 17% responding that they sometimes or always check Facebook in class. For these students, their smartphone use could be distracting and can interfere with their engagement in class and, consequently, their academic performance (Wood et al., 2012).

In order to examine the Facebook use (IFU and CFU), satisfaction with life and academic performance (academic impairment due to Facebook use and grade average) of the participants, the Facebook Intensity Scale, the Compulsive Facebook Use Scale, the Satisfaction with Life Scale, and the Academic Impairment due to Facebook use Scale were administered. The scales were then assessed for appropriateness for use with the sample and were found to have high internal reliability (Cronbach's alpha) and good construct validity (exploratory factor analysis). Consequently, they are appropriate for use with the study sample. However, no cut-off points yet exist to enable the interpretation of the scores for the measuring instruments, with the exception of the Satisfaction with Life Scale. Based on the recommendation by Anglim (2009), the percentages of respondents with mean scores associated with each of the 5 points of the Likert scales are reported instead. While this enables a critical discussion of the performance of the participants on each scale, any conclusions should be cautionary until cut-off points have been established and validated in future studies.

While the mean score for the six items of the Facebook Intensity Scale was 2.65 (*SD* = 0.90) in Namibia, in South Africa the mean was 3.22 (*SD* = 1.21) (Johnson et al., 2013). Consequently, Namibian students were more likely to disagree with the items relating to IFU in comparison to students in South Africa, who were more likely to neither agree nor disagree. Thus Facebook use appears to be less intensive amongst students in Namibia than in South Africa. Considering higher IFU scores of 4 or 5, about 21% of the participants in this study either agreed or highly agreed with the statements related to IFU and therefore appear to have Facebook highly integrated into the other activities of their lives. But overall, the majority of students did not use Facebook intensively.

Similarly, less than 1%, the participants listed that they always (5) experience problems associated with CFU, while an additional 7.4% often (4) experience issues (e.g. an inability to regulate Facebook use, constantly thinking about Facebook, neglecting daily obligations, using Facebook when feeling down). Using ratings of always (5) and often (4) as cut-off points, a total of 8.1% of the participants reported experiencing potential problems with CFU. These prevalence rates are comparable to the Internet addiction statistics reported by Cash et al. (2012) for Internet addiction prevalence rates in the USA and Europe (ranging between 1.5% and 8.2%), South Africa (between 1.7% and 5.3%) (Andrew & Goolam, 2005), and Namibia (6.5%) (Nath et al., 2013), although it must be noted that different measuring instruments were used for all these studies, so the results are not truly directly comparable. Despite the methodological differences, the results internationally appear to be analogous and, according to Cash et al. (2012), also approximates the rates of gambling and substance addiction. Consequently, despite the low CFU prevalence rate, it could constitute as much of a mental health risk to students as the other types of addiction and with similar consequences, including impairment in important areas of functioning.

This appears to be corroborated by the fact that 9.1% of the participants stated that their studies have (often or always) been impaired due to their inability to regulate their Facebook use and a consequential reduction in sleep, communication with peers and class attendance. This is somewhat less than the original study by Kubey et al. (2001) in which about 14% of the total sample reported that their schoolwork had been impaired due to their Internet use. Still, any impairment in functioning could be symptomatic of compulsivity and needs to be considered a warning sign of problematic Facebook use.

With regards to their satisfaction with life, the mean score of 3.2 indicates that the participants are fairly satisfied with the subjective quality of their lives, supporting the findings by Pavot et al. (1991) that most people rate as fairly satisfied. Similarly, Rothman (2013) also found that people in both Namibia and South Africa are fairly satisfied.

Finally, the grade averages of students is consistent with a fairly normally distributed sample, with about 8% of the students earning distinctions (>80%), another 8% failing (<50%), and the majority of students (41%) attaining a 60% grade average across their subjects for the last examination.

Subsequently, group differences were assessed, including differences between the genders (male versus female), between participants who access Facebook using smartphones (versus other devices) and, finally, for any differences between the age groups (18-21 year olds, 21-25 year olds, 25-35 year olds, and participants older than 35). Kemp (2017) reported that men in Namibia use Facebook more than women. This study furthermore suggests that men (Mdn = 2.83) are significantly more likely than women (Mdn = 2.50) to use Facebook intensively. No differences were found between the median CFU scores for males and females, countering the findings by Thatcher and Goolam (2005) as well as Dhir et al. (2016) that males are higher at risk for Internet addiction. No significant gender differences were found for satisfaction with life, academic impairment due to Facebook use or grade average.

Of the sample, 89.6% of the participants access Facebook using their smartphones. These participants (*Mdn* = 2.67) were more likely to use Facebook intensively (IFU) compared to participants who use other devices (*Mdn* = 2.17). However, no relationship was found between smartphone use and CFU, which is contrary to the findings of Thatcher and Goolam (2005) as well as Kuru et al., (2017). Smartphone use could also not be linked to academic impairment due to Facebook use, grade average or satisfaction with life. No contemporary research findings were identified in a review of available literature that could serve as a basis of comparison for these variables.

Finally, age significant affected IFU with the age groups ranging between 22 and 35 using Facebook more intensively than the youngest or oldest age groups. This confirms the findings of Thatcher and Goolam (2005) that students in their twenties and thirties use the Internet more intensively than younger students as they likely experience greater freedom from restrictions and have greater access to the Internet. Both grade average and academic impairment due to Facebook use were also significantly affected by age. Grade average appears to significantly increase with age, while academic impairment due to Facebook use significantly decreased with age. Accordingly, older students outperformed younger students with regards to higher grade averages and also reported the lowest levels of academic impairment due to Facebook use and vice versa. While Dhir et al. (2016) found that compulsive Internet use correlates positively with the age, this study found no significant differences between the age groups and their median CFU, IFU or satisfaction with life scores.

Men tend to use Facebook more intensively, and, although the effect was small, gender significantly predicts IFU and accounts for 1.2% of the variance. Any research findings concerning IFU and gender that can be used for comparison and discussion purposes are not yet available in the contemporary literature. Participants who access Facebook with their smartphones also use Facebook more intensively, although the effect was also small. This confirms the findings by Kuru et al. (2017, p. 102) that smartphone users use Facebook more "absorbingly". Despite the small effect, smartphone use still significantly predicts the IFU score, accounting for a further 1.2% of the variance in IFU. As neither gender not smartphone use covary, when they are both included as predictors of IFU their individual variance remains at 1.2% each for a combined impact accounting for 2.4% of the variance. Consequently, participants who are both male and access Facebook using their smartphones are more likely to have Facebook integrated into the various parts of their lives.

In line with the findings by Gabor et al. (2015) that IFU is a prerequisite of CFU, the study findings conclude that participants who use Facebook more intensively are also more likely to use Facebook compulsively, with a medium effect (F^2 = .259). IFU accounts for 20.6% of the variance in the CFU score. In turn, CFU strongly and positively relates to academic impairment due to their Facebook use and also significantly predicts academic impairment due to Facebook use, accounting for 27.4% of the variance. This parallels with the research findings on Internet Addiction by Kubey et al. (2001) that compulsive Internet use leads to behaviours that can indirectly impair academic performance, including changing sleeping patterns, reduced communications with peers and missing class due to their inability to regulate internet use. Of all the variables included in this study, the relationship between CFU and academic impairment due to Facebook use showed the largest effect [r = .534, F^2 = .377].

The study also concludes that participants who use Facebook more intensively are also more likely to experience academic impairment due to their Facebook use, again with a moderate effect and accounting for 18.3% of the variance. However, this appears to contradict the findings by Gabor et al. (2015) that, unlike with CFU, problematic consequences do not necessarily follow from IFU. However, when the combined impact of CFU and IFU are considered, CFU accounts for 28.1% of the variance while IFU only accounts for an extra 4.2% of the variability (with a combined variance of 32.3%). Consequently, much of the variance assigned to IFU could actually be explained by the covariance between CFU and IFU. Consequently, the findings by Gabor et al. (2015) are still substantiated in that IFU rather acts as a predictor of CFU, but negative consequences do not necessarily follow. Rather, the negative consequences appear to rather result from compulsive use.

Additionally, age accounted for an additional 1.8% of the variance in the academic impairment due to their Facebook use score with younger participants being more likely to sleep less, communicate less with their peers and miss class as a result of their Facebook use. The effect was small, but significant nonetheless. However, as the inclusion of age does not meet the assumptions of normality, linearity nor homoscedasticity, consequently the results are not generalizable. Besides for this study, no data on the academic impairment of Facebook users as a result of their Facebook use has been reported in the literature yet, so there is no data available for comparison.

In contrast with the non-parametric Kruskal–Wallis test, the parametric Pearson’s product-moment test for correlation did not find any significant relationship between age and grade average. As the only significant predictor of grade average, academic impairment due to Facebook use accounts for 3% of the variance in grade average. While the impact is small, it is still significant. Consequently, the more likely students are to report reduced sleep, communication with peers and class attendances due to their Facebook use, the more likely they are to also have a lower grade average.

Similarly, the more likely students are to report academic impairment due to Facebook use, the more likely they are to report lower levels of life satisfaction. Academic impairment due to Facebook use significantly predicts satisfaction with life, accounting for 1.5% of the variance in the satisfaction with life score. However, the predictability and generalisability of this conclusion is limited due to heteroscedasticity. In contrast, with the findings by Westaway and Maritz (2003) that there is no relationship between age and satisfaction with life amongst South Africans, this study found that the satisfaction with life of students in Namibia is significantly predicted by age. However, the effect was very small with age only accounting for 0.8% of the variance in the satisfaction with life score. Combined, academic impairment due to Facebook use and age accounts for 2.7% of the variance in satisfaction with life. While the variance contributed by academic impairment due to Facebook remains at 1.5%, the change in R^2 when adding age accounts for an additional 1.2% of the variability in satisfaction with life, compared to just 0.8% when considered in isolation. Consequently, age accounts for an addition 0.4% when combined with academic impairment due to Facebook, likely as it is also a predictor of academic impairment due to Facebook. However, heteroscedasticity again limits the generalisability of the results.

In conclusion, the correlation and regression analysis aimed to address identified gaps in the research, particularly, the impact of intensive Facebook use and compulsive Facebook use on the satisfaction with life and academic performance (operationalised as grade average and academic impairment due to Facebook use) of UNAM first year students. However, no significant relationships were identified between either IFU nor CFU with life satisfaction or grade average. Instead, the study found that men, as well smartphone users, tend to use Facebook more intensively. The study also found that the more intensively Facebook is used, the more likely users are to also use Facebook compulsively and, consequently, to experience academic impairment due to Facebook use, especially for younger participants. In turn, participants who are experiencing academic impairment due to their Facebook use are also more likely to have lower grade averages and are less satisfied with their lives.

CHAPTER 6: CONCLUSION, LIMITATIONS, RECOMMENDATIONS

The final chapter offers a summary of the conclusions that can be drawn from the results, as well as any limitations applicable to the study and, finally, recommendations for future research and a discussion of the practical implications of the study.

6.1. Conclusion

The Facebook user profile reveals that Facebook use amongst first year students in UNAM appears to be following regional and global usage trends with regards to the activity levels, frequency and length of Facebook use. However, the amount of Facebook friends reported by the participants in the study is higher than reported elsewhere. While 17% of the students do check Facebook in class, the use of smartphones was not found to lead to higher levels academic impairment due to Facebook use or to lower grade averages.

Students in Namibia appear to be as satisfied with life, but tend use to Facebook less intensively than their peers in South Africa. However, compulsive Facebook use appears to have prevalence rates similar to the Internet addiction rates recorded in Europe, the USA and South-Africa which furthermore also corresponds to the rates of gambling and substance addiction (Cash et al., 2012). However, without clear cut-off points and consistency in the use of measuring instruments, it is not currently possible to say with certainty what the problematic Facebook use prevalence rates are or to compare the results across studies. Additionally, 9% of the participants reported often or always experiencing academic impairment due to Facebook use indicated by changing sleeping patterns, reduced communication with peers as a result of social withdrawal and absenteeism from class.

The study aimed to address some of the gaps in contemporary research, specifically the impact of excessive Facebook use (IFU and CFU) on the academic performance (grade average and academic impairment due to Facebook use) and satisfaction with life of Facebook users. However, the study found no relationship between Facebook use (IFU or CFU) and either grade average or satisfaction with life. Instead, it was found that gender (being male) and smartphone use leads to more intensive Facebook use, which again impacts on CFU with a moderate effect.

Both IFU and CFU significantly predict academic impairment due to Facebook. However, when controlling for covariance with CFU, the impact of IFU on academic impairment due to Facebook is greatly diminished. Thus students who compulsively use Facebook are more likely to also experience altered sleeping patterns, absenteeism, and social isolation. The relationship between CFU and academic impairment due to Facebook is furthermore highly significant with a large effect and CFU appears to be a strong predictor of academic impairment due to Facebook.

Instead of relating to IFU or CFU, both life satisfaction and grade average related to academic impairment due to Facebook, although the effects are small. Still, higher levels of academic impairment due to Facebook significantly predictor of lower grade averages as well as lower levels of life satisfaction. Younger participants are also more likely to be academically impaired as a result of their Facebook use, but more satisfied with their lives than the older participants, even though the effect was small.

These findings contribute significantly to the existing body of Facebook-related research in that very little contemporary research exists internationally and almost no data exists locally regarding Facebook as a unique platform and the consequences of using this platform. Furthermore, this is the first study to describe Facebook use in Namibia, which offers future researchers a basis for comparison when doing similar research and enables Namibia to participate in the global debate about Facebook use. This study is also one of the few contemporary studies to differentiate between IFU and CFU and is the first study to report a relationship between gender and the intensity of Facebook use. It is also the first study to consider the relationship between CFU and academic impairment due to Facebook use and how academic impairment due to Facebook use can lead to a decrement in grade average as well satisfaction with life. The study furthermore confirmed findings that smartphone use leads to higher levels of IFU and that IFU is a precursor to CFU. Consequently, these findings address gaps in both international and local research.

Ultimately, it is hoped that the results of this study raises awareness of the impact of excessive Facebook use and enable students who may be experiencing the problems related to CFU to seek the psychological help they may need. The results of this study can furthermore inform any policies regarding smartphone use and Facebook use at the University of Namibia, especially during class and in study halls.

6.2. Limitations

The limitations of this study include the limited availability of contemporary, longitudinal research on Facebook and appropriate measuring instruments, the use of self-report questionnaires for data collection, and, finally, the representativeness and generalisability of the data.

As the study of Facebook is a relatively new area of study, few Facebook-specific studies have been completed that can be used to guide the research questions. Consequently, research findings on Internet addiction, and SNS in general, have been included in the literature review for context and comparison. There is therefore a lot of variability in the concepts, methodologies and measurement instruments included in the review. While these various studies help to contextualise the current study, the lack of consistency limits the direct comparability of results between studies. A final limitation resultant from Facebook being a new field of study is that longitudinal research is not available and true causal inferences are limited in cross-sectional research designs. Subsequently, as the current study also employs a cross-sectional research design, any causal inferences made are limited and should be confirmed by future studies. Another consequence of Facebook being a relatively new field of study is that few trialled and tested measuring instruments are available with which to measure the selected variables that have also been validated for use in Namibia. To mitigate this limitation, the psychometric properties of the measuring instruments were assessed for appropriateness of use in the Namibian context prior to data analysis. Also, validated cut-off scores were not available for the scales used in this study, so as Andrew and Goolam (2005) state, the clinical diagnostic validity of these scales are limited.

Also, while the use of surveys allows for the collection of data from large numbers of participants, self-report questionnaires are prone to bias, including social desirability, common-method variance and defensive responses (Paulhus & Vazire, 2007).

Furthermore, only first year students were included, which is mainly comprised of a younger population than the general population. The data was also collected from only one of the universities in Windhoek and cannot be generalised to all tertiary students. Finally, tertiary students are also not representative of the Namibian population. Nevertheless, the socio-demographical data shows that the sample is comprised of students from all regions and most of the main language groups, which improves the representativeness of the data.

A final limitation is that some of the assumptions for the use of parametric tests, as well as assumptions specific to linear regression analysis, have not been met. In response, non-parametric and robust tests were used to optimise the soundness of the results. Still, when age was used as a predictor the assumptions of normalcy, linearity and/or homoscedasticity were not met. Consequently, any predictions based on analyses using age are limited. As such, the results must be interpreted with caution and not generalised beyond the study sample.

6.3. Recommendations

For future studies, some methodological recommendations as well as potential implications are suggested. Firstly, the study population should ideally be drawn from more than one tertiary institute to improve the representativeness, as well as from larger variety of groups than only first year students. Adolescents still in school could also be included, as there is likely to be a larger variance in the grade average scores than university students who have all achieved grade averages that are sufficiently high to be accepted into a tertiary education institute.

At the time of study, no standardised measures were available for measuring CFU or academic impairment due to Facebook use. Consequently, the Compulsive Internet Use Scale (Meerek et al., 2009) and selected survey items from the study by Kubey et al. (2001) were adjusted to measure “Facebook” instead of “the Internet”. Furthermore, most of the measuring instruments have never been used in Namibia, which necessitated psychometric analyses of appropriateness prior to data analysis. While the Facebook Intensity Scale, the Academic Impairment Due to Facebook Use Scale and the Satisfaction with Life Scale were found to measure only one component, the Compulsive Facebook Use Scale produced three components. While this rivals findings by Alavi et al. (2011), the majority of validations found only one component (Dhir et al., 2016). Also, no validated cut-off points were available for any of the measuring instruments used, which limits the diagnostic validity of the results. Considering the psychometric limitations, lack of cut-off points as well as the fact that some of the parametric assumptions were not met, the validity of the findings of this study should be reassessed in future studies through the use of standardised measures that allow for inter-study comparison.

As the prevalence rate of CFU appears to be comparable to that of substance and gambling addiction (Cash et al., 2012), CFU potentially constitutes a mental health risk amongst students. Consequently, awareness should be raised to enable students who may be experiencing the problems related to CFU to seek the psychological help they may need.

Furthermore, it would be in the interest of the University of Namibia to raise awareness amongst students of the potential consequences of excessive Facebook use and that certain symptomatic behaviours, like an inability to regulate Facebook use can lead to changing sleeping patterns, social withdrawal and absenteeism and, in turn, lowered academic performance and satisfaction with life.

Finally, some of the findings are unique to this study, including the impact of academic impairment due to Facebook use on the grade average and life satisfaction of students and the relationship between gender and the intensity of Facebook use. These results should, however, be corroborated by similar studies in future.

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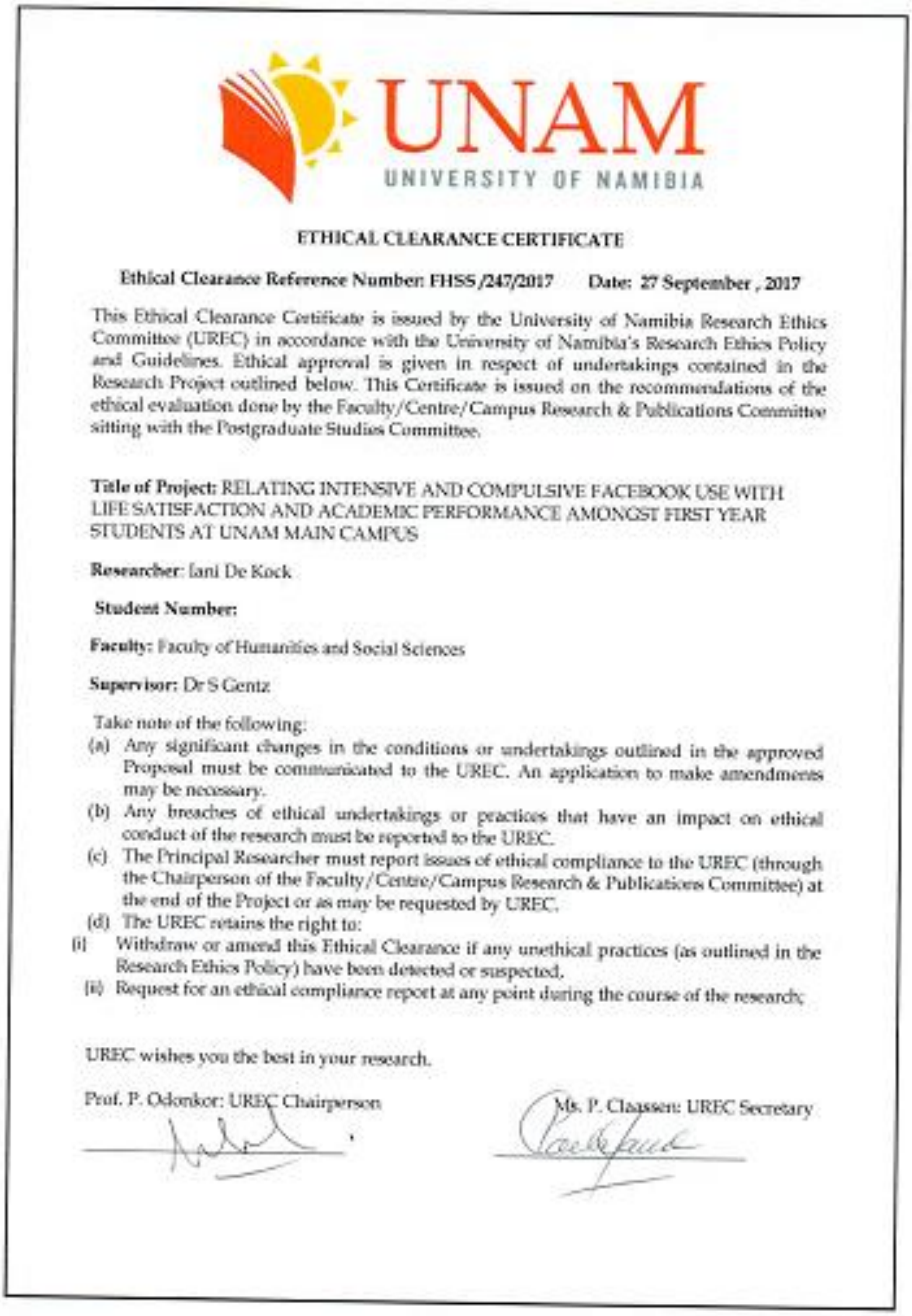
Annexure 1: Ethics clearance certificate

Figure 15: *Ethical clearance form*



UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: FHSS /247/2017 **Date: 27 September , 2017**

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: RELATING INTENSIVE AND COMPULSIVE FACEBOOK USE WITH LIFE SATISFACTION AND ACADEMIC PERFORMANCE AMONGST FIRST YEAR STUDENTS AT UNAM MAIN CAMPUS

Researcher: Iani De Kock

Student Number:

Faculty: Faculty of Humanities and Social Sciences

Supervisor: Dr S Gentz

Take note of the following:

(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
(d) The UREC retains the right to:
(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected.
(ii) Request for an ethical compliance report at any point during the course of the research;

UREC wishes you the best in your research.

Prof. P. Odonkor: UREC Chairperson

Ms. P. Claassen: UREC Secretary

Annexure 2: Consent form

UNIVERSITY OF NAMIBIA - FACEBOOK USE SURVEY 2017

Researcher: Iani de Kock

Study title: Relating Facebook use to academic performance and life satisfaction.

Purpose of the study: You are invited to take part in a research study on your Facebook usage. The questionnaire will ask you about your Facebook use and about how you feel about your academic performance and how satisfied you are with your life.

Study procedure: You will be asked to complete a questionnaire that takes about 20 minutes to complete in your classroom during a time that is convenient to you and your lecturer. The purpose of the study, your participant rights and instructions for the questionnaire will be explained by the researcher and there will be time to ask further questions.

Participation risks and benefits: There are no foreseeable risks nor any direct benefit for participation in this research study. However, your answers will help us understand the impact of Facebook use on the life satisfaction and academic performance of students who use Facebook. This information will be helpful to students and the university to know whether Facebook use habits are a concern that require intervention or not.

Procedures for maintaining confidentiality: Students will not be asked for their names, so the responses to the survey will be collected and reported anonymously. To ensure confidentiality, any hard copies of the data will be kept in a locked cabinet for a period of five years and the electronic data will be kept in a password protected folder to ensure that only the researcher has access to the data.

Research participants' rights: Participation in the research is voluntary. No benefits will be offered as an incentive for participation and no negative consequences will follow if you choose not to participate. You also have the right to withdraw from the study at any time. Finally, the participants also have the right to further information regarding the study, as well as to access of the findings of the study. To this end, they are free to contact the researcher electronically at ianidk@gmail.com or by phone at 081 7255 901.

Please indicate which of the following apply:

☐ I am older than 18 years.

☐ I have a Facebook account ☐ I do not have a Facebook account.

If you are younger than 18 and/or do not have a Facebook account, you do not meet the inclusion criteria.

By consenting to participate in this study, you agree that the purpose of the study has been satisfactorily explained in either a verbal or written form and that you understand the risks, benefits and procedures involved, as well as your participant rights.

I, __________________, understand the nature of the study and agree to participate.

____________________ ____________________ ____________________

Participant signature Date Researcher signature

Annexure 3: Questionnaire

Please read the questions carefully before answering. Answer with a tick (✔) or written answer where requested.

PART A: Questions about you

1. What field of study do you major in?

____

2. Age: _______ years old

3. Gender: ☐ male ☐ female

4. Region of origin:
☐ Erongo
☐ Hardap
☐ Karas
☐ Kavango East
☐ Kavango West
☐ Khomas
☐ Kunene
☐ Ohangwena
☐ Omaheke
☐ Omusati
☐ Oshana
☐ Oshikoto
☐ Otjozondjupa
☐ Zambezi
☐ Other, please specify _____________________________

5. Home language:
☐ Oshiwambo
☐ Otjiherero
☐ Kavango
☐ Nama/Damara
☐ Afrikaans
☐ English
☐ Other, please specify _____________________________

6. Faculty:
☐ Agriculture and Natural Resources
☐ Economic and Management Sciences
☐ Education
☐ Engineering and Information Technology
☐ Medicine
☐ Nursing and Public Health
☐ School of Pharmacy
☐ Humanities and Social Sciences
☐ Law
☐ Science

PART B: Questions about your Facebook activity

7. Rate your current Facebook activity.
☐ Very active ☐ Active ☐ Neutral ☐ Less active ☐ Don't use Facebook much.

8. On average, how much time do you actively spend on Facebook per day?
☐ 0-30 minutes (0.5 hour)
☐ 31-60 minutes (0.5 to 1 hour)
☐ 61 - 90 minutes (1 to 1.5 hours)
☐ 91 - 120 minutes (1.5 to 2 hours)
☐ 121 - 150 minutes (2 to 2.5 hours)
☐ 151 - 180 minutes (2.5 to 3 hours)
☐ 181 - 210 minutes (3.5 to 4 hours)
☐ 211 - 240 minutes (3.5 to 4 hours)
☐ More than 4 hours

9. How frequently do you use Facebook?
☐ Many times daily ☐ Almost every day ☐ Once in 2-3 days ☐ Once a week ☐ Once a month

10. On which devices do you access your Facebook account? Select ALL the devices that apply.
☐ A desktop computer
☐ A tablet
☐ A smart TV
☐ A laptop
☐ A smartphone
☐ Other: ________________________

11. Do you use Facebook Messenger to chat? ☐ yes ☐ no

Part C: Facebook use	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly agree (5)**
12. Facebook is part of my everyday activity.					
13. I am proud to tell people I'm on Facebook.					
14. Facebook has become part of my daily routine.					
15. I feel out of touch when I haven't logged onto Facebook for a while.					
16. I feel I am part of the Facebook community.					
17. I would be sorry if Facebook shut down.					

Part D: Using Facebook to network

18. How many friends do you have on Facebook?
☐ Fewer than 50
☐ Between 51 and 100
☐ Between 101 and 200
☐ Between 201 and 300
☐ Between 301 and 400
☐ Between 401 and 500
☐ Between 501 and 1000
☐ More than 1000

Part E: The impact Facebook use	**Never (1)**	**Rarely (2)**	**Sometimes (3)**	**Often (4)**	**Always (5)**
19. How often do you find it difficult to stop using the Facebook when you are online?					
20. How often do you continue to use Facebook despite your intention to stop?					
21. How often do others (e.g. partner, children, parents, friends) say you should use Facebook less?					
22. How often do you prefer to use Facebook instead of spending time with others (e.g. partner, children, parents, friends)?					
23. How often are you short of sleep because of Facebook?					
24. How often do you think about the Facebook, even when not online?					
25. How often do you look forward to your next Facebook session?					
26. How often do you think you should use Facebook less often?					
27. How often have you unsuccessfully tried to spend less time on Facebook?					
28. How often do you rush through your (home) work in order to go on Facebook?					
29. How often do you neglect your daily obligations (school or family life) because you prefer to go on Facebook?					
30. How often do you go on Facebook when you are feeling down?					
31. How often do you use Facebook to escape from your sorrows or get relief from negative feelings?					
32. How often do you feel restless, frustrated, or irritated when you cannot use Facebook?					

Part F: Feelings about your life.	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly agree (5)**
33. In most ways my life is close to my ideal.					
34. The conditions of my life are excellent.					
35. I am satisfied with life.					
36. So far I have gotten the important things I want in life.					
37. If I could live my life over, I would change almost nothing.					

Part G: Your academic life

38. What was your academic average during the last exams?

- ☐ Less than 40%
- ☐ 40%- 50%
- ☐ 50%-59%
- ☐ 60%-69%
- ☐ 70%-79%
- ☐ 80-89%
- ☐ More than 90%

Part H: Your academic life and Facebook	**Never (1)**	**Rarely (2)**	**Neutral (3)**	**Often (4)**	**Always (5)**
39. How often has your studying been hurt because of the time you spend on Facebook?					
40. How often do you sleep late because of using Facebook?					
41. How often do you feel too tired to go to class the next day because you spend too much time on Facebook?					
42. How often has your university grade or percentages been hurt because of the time you spend on Facebook?					
43. How often did you not complete your work or studies because of the time spent on Facebook?					
44. How often do you find it difficult to stop using Facebook when you are online?					
45. How often do you use Facebook during class?					
46. How often do you check in on Facebook while you study?					

47. Do you belong to any UNAM Facebook forums or academic groups for study purposes?

☐ yes ☐ no

Which ones? ____

Annexure 4: Exploratory Factor Analysis

Table 24: *Factor analysis tests for adequate sampling size and variance*

	KMO	Bartlett's Test of Sphericity		
		Approx. Chi-Square	Df	Sig.
Facebook Intensity Scale	.845	1127.13	15	0.000
Compulsive Facebook Use Scale	.911	3255.101	91	0.000
Satisfaction with Life Scale	.803	962.04	10	0.000
Academic impairment due to Facebook use Scale	.861	1840.35	15	0.000

Table 25: *Communalities*

Scale	Initial	Extraction
Facebook Intensity Scale		
IFU1	1.000	.636
IFU2	1.000	.353
IFU3	1.000	.667
IFU4	1.000	.535
IFU5	1.000	.580
IFU6	1.000	.554
Compulsive Facebook Use Scale		
CFU1	1.000	.744
CFU2	1.000	.702
CFU3	1.000	.539
CFU4	1.000	.508
CFU5	1.000	.547
CFU6	1.000	.600
CFU7	1.000	.583
CFU8	1.000	.589
CFU9	1.000	.666
CFU10	1.000	.463
CFU11	1.000	.471
CFU12	1.000	.664
CFU13	1.000	.638
CFU14	1.000	.601
Satisfaction with Life Scale		
SWL1	1.000	.393
SWL2	1.000	.646
SWL3	1.000	.739
SWL4	1.000	.604
SWL5	1.000	.498
Academic Impairment Due to FU Scale		
AIDFU1	1.000	.575
AIDFU 2	1.000	.610
AIDFU 3	1.000	.684
AIDFU 4	1.000	.707
AIDFU 5	1.000	.766
AIDFU 6	1.000	.545

Annexure 5: Tests of parametric assumptions

Table 26: *Parametric tests of homogeneity of variance and normalcy*

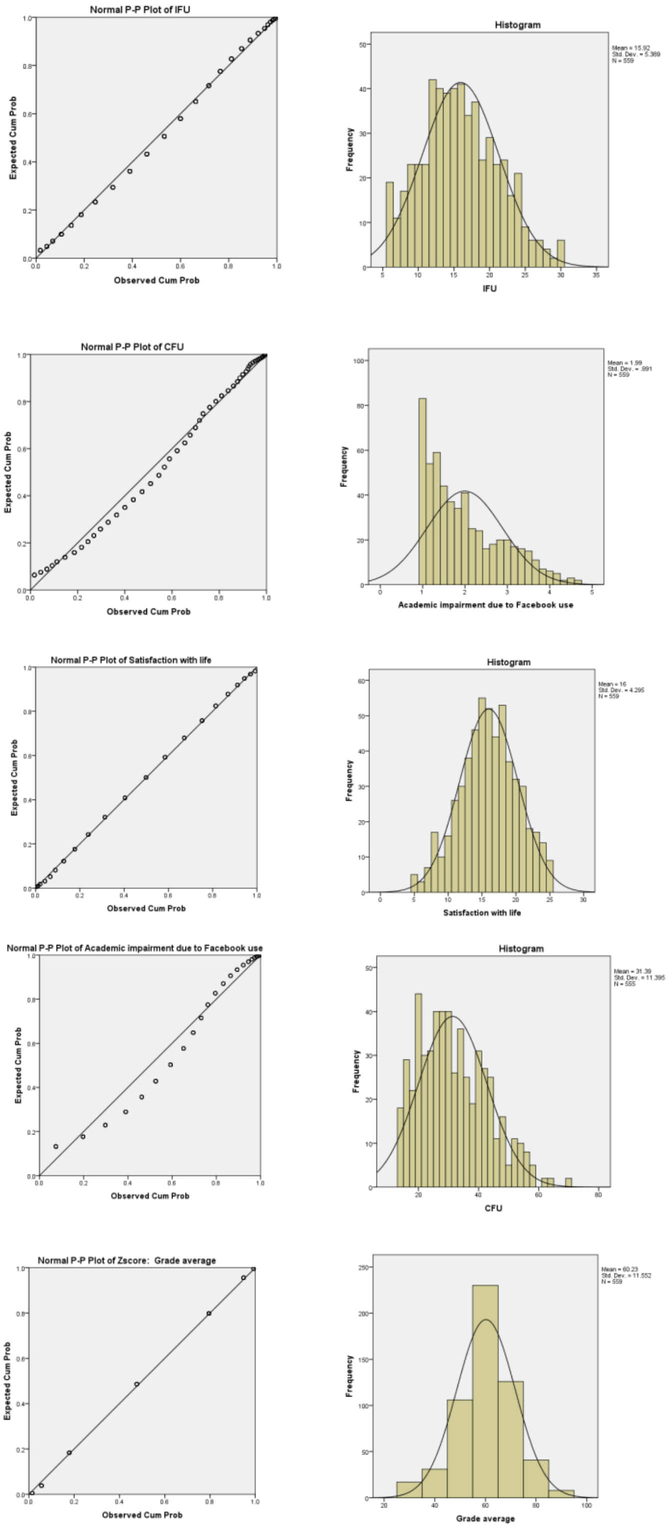
Levene's Statistic Test of Homogeneity of Variances				
	Levene Statistic	**df1**	**df2**	**Sig.**
IFU	0.893	3	553	.445
CFU	0.828	3	549	.479
SWL	1.454	3	553	.226
AIDFU	1.904	3	553	.128

Kolmogorov_Smirov and Shapiro-Wilk Tests of Normalcy						
	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	*Df*	*Sig.*	*Statistic*	*Df*	*Sig.*
IFU	.076	553	.000	.980	553	.000
CFU	.079	553	.000	.964	553	.000
SWL	.072	553	.000	.986	553	.000
AIDFU	.145	553	.000	.901	553	.000

a. Lilliefors Significance Correction

Scale score P-P plots and histograms

Figure 16: *P-P Plots and histograms*



Annexure 6: Tests of parametric assumptions for regression analysis

Table 27: *Linear regression tests of assumptions*

Dependent variable	**Independent variable(s)**	**Independence of errors**	**Multicollinearity**
		Durbin–Watson statistic	*VIF*
IFU	Gender	1.837	1.000
IFU	Smartphone use	1.841	1.000
IFU	Gender, Smartphone use	1.857	1.000
CFU	IFU	1.87	1.000
AIDFU	CFU	1.705	1.000
AIDFU	IFU	1.870	1.000
AIDFU	Age	1.959	1.000
AIDFU	CFU, IFU, Age	1.983	1.023
Grade average	AIDFU	1.949	1.000
SWL	Age	1.963	1.000
SWL	AIDFU, age	1.921	1.187
Grade average	AIDFU	1.967	1.000

Dependent variable	**Independent variable**	**Normality of errors**	**Linearity**	**Homoscedasticity**
IFU	Gender	Yes	Yes	Yes
IFU	Smartphone use	Yes	Yes	Yes
IFU	Gender, smartphone use	Yes	Yes	Yes
CFU	IFU	Yes	Yes	Yes
SWL	AIDFU	Yes	Yes	No
SWL	Age	Yes	Yes	No
SWL	AIDFU, age	Yes	Yes	No
AIDFU	CFU	Yes	Yes	Yes
AIDFU	IFU	Yes	Yes	Yes
AIDFU	Age	No	No	No
AIDFU	CFU, IFU, age	Yes	Yes	No
Grade average	AIDFU, age	Yes	Yes	Yes

Annexure 7: Histograms, P-P Plots and Scatterplots of residuals

IFU as dependent variable

Figure 17: *Gender as a predictor of IFU*

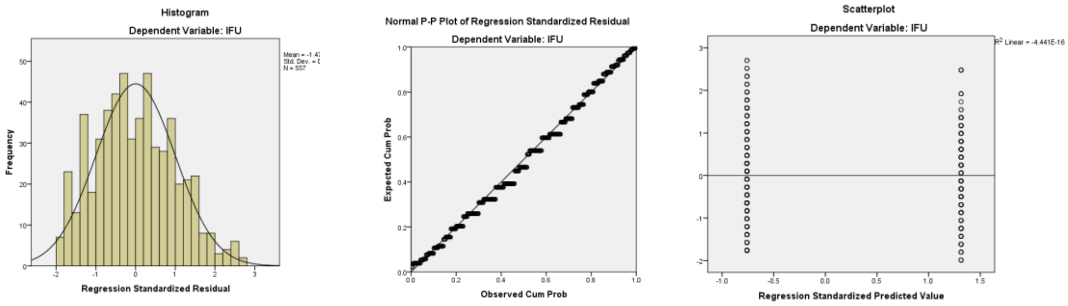
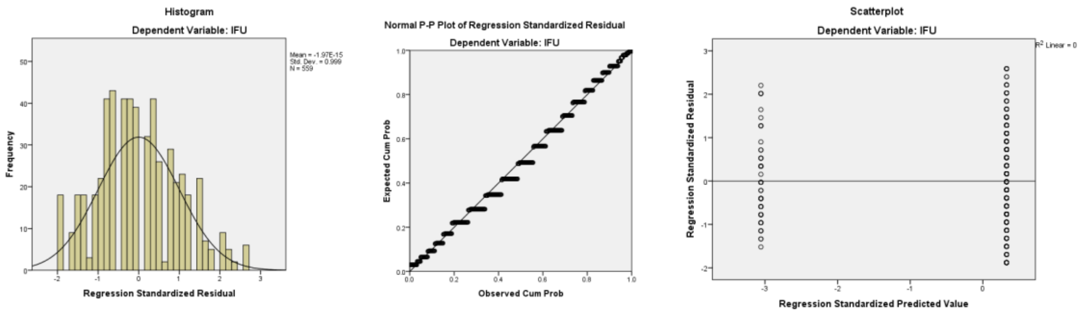
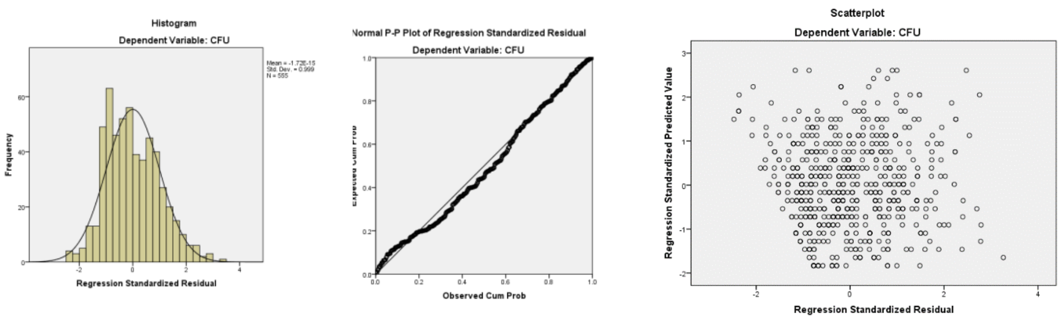


Figure 18: *Smartphone use as a predictor of IFU*



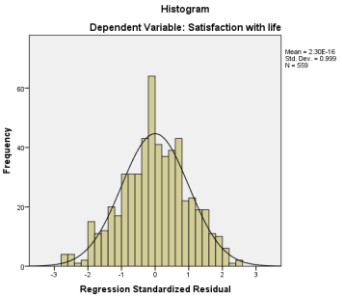
CFU as dependent variable

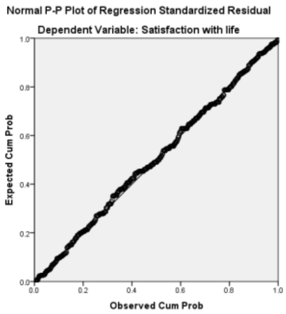
Figure 19: *IFU as a predictor of CFU*



Satisfaction with life as dependent variable

Figure 20: *AIDFU as a predictor of CFU*





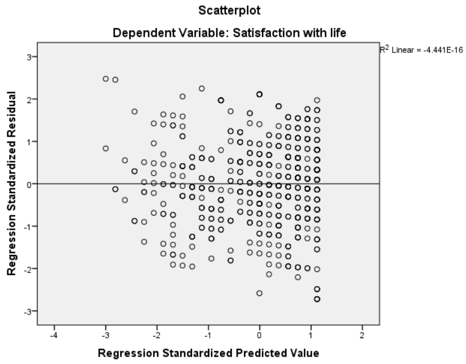
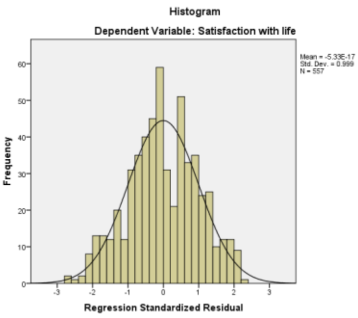
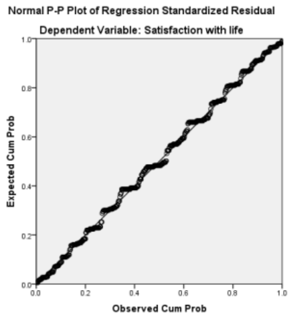
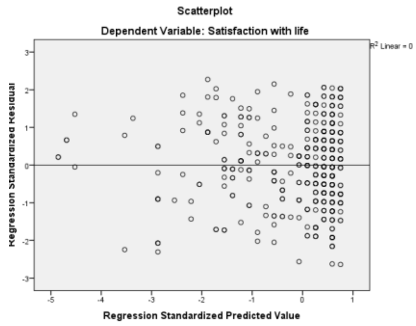


Figure 21: *Age as predictor of SWL*

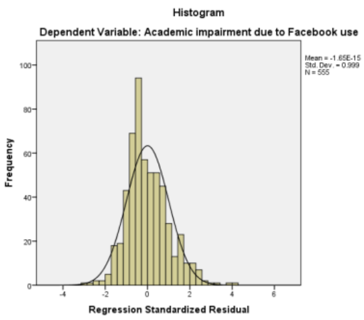


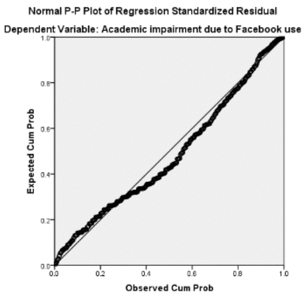




Academic impairment due to Facebook use as dependent variable

Figure 22: *CFU as a predictor of AIDFU*





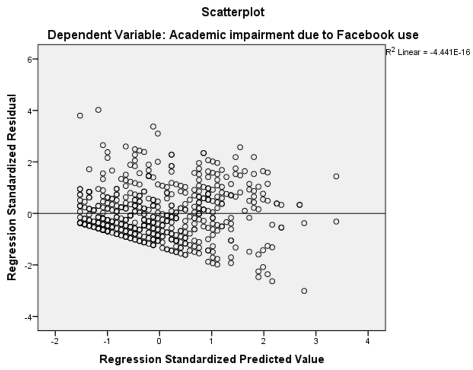


Figure 23: *IFU as a predictor of AIDFU*

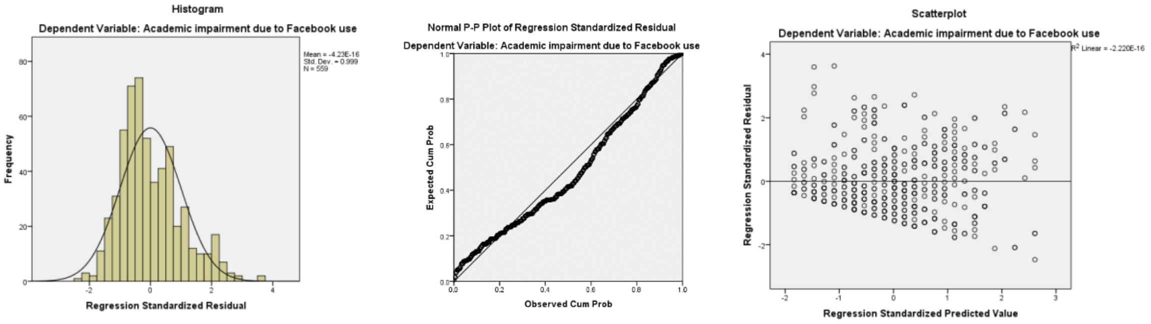
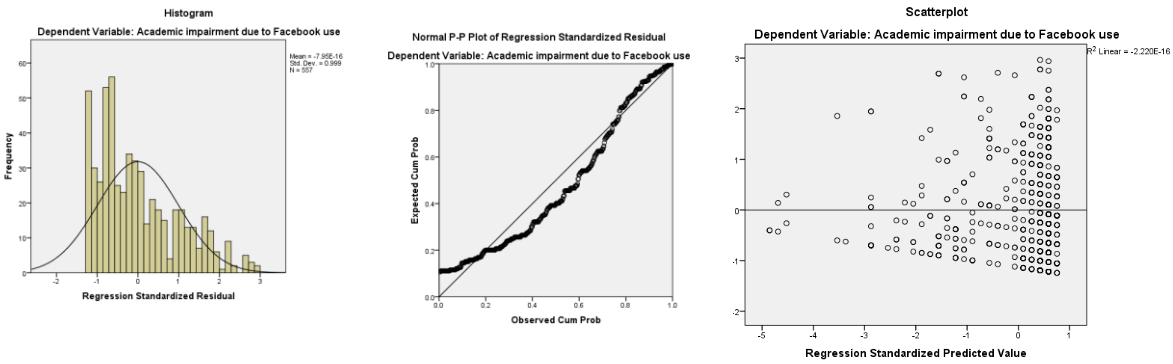
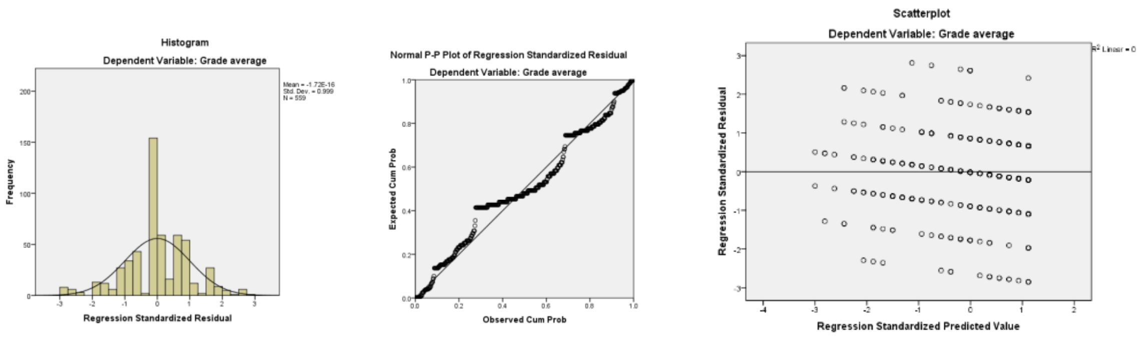


Figure 24: *Age as a predictor of AIDFU*



Grade average as dependent variable

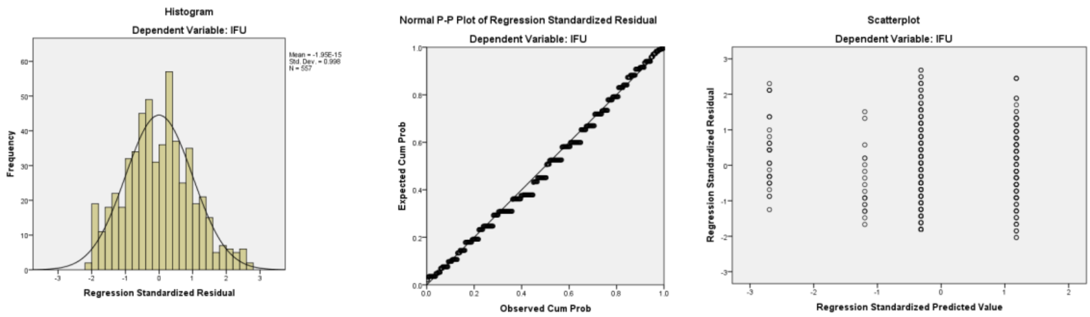
Figure 25: *AIDFU as predictor of grade average*



Annexure 8: Hierarchical regression analysis

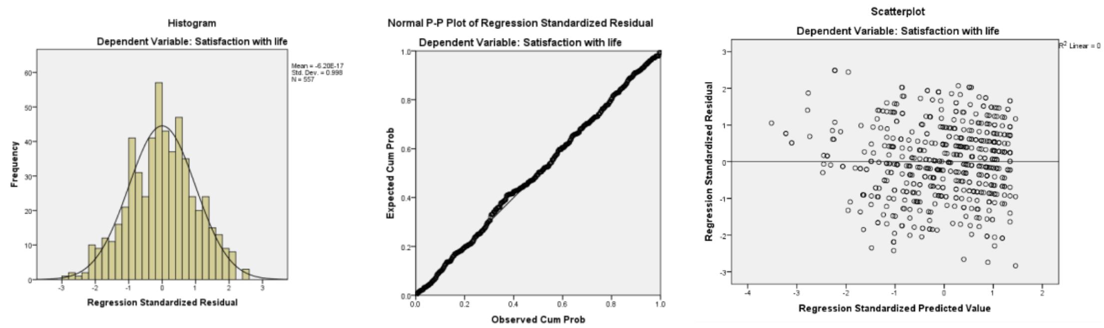
IFU as dependent variable

Figure 26: *Gender and smartphone use as predictor of IFU*



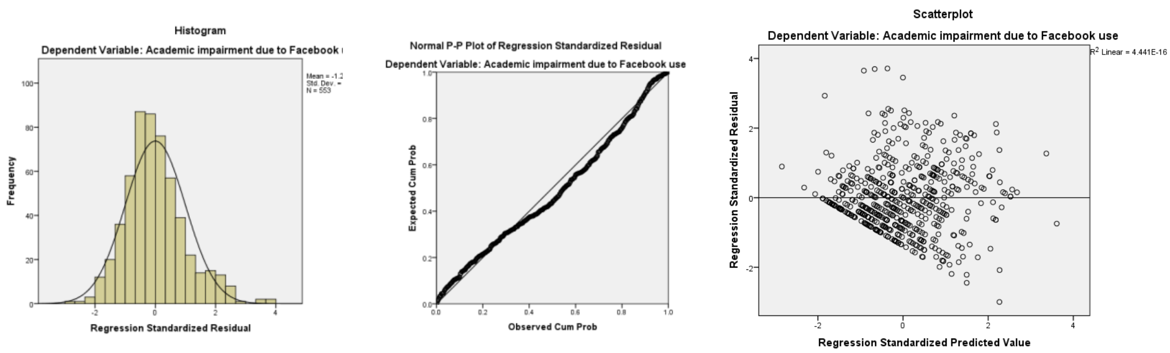
Satisfaction with life as dependent variable

Figure 27: *AIDFU and age as predictor of SWL*



Academic impairment due to Facebook use as dependent variable

Figure 28: *AIDFU as predictor of grade average*



Annexure 8: Regression equation solutions

Predictors of IFU

The regression equation for IFU (DV) and gender (IV) was solved:

$Y\ (IFU) = \beta_0 + \beta_1\ (gender)\ X_1$

$Y\ (IFU) = 2.38 + 0.203$ (CI 95% [0.05, 0.36])

$Y\ (IFU) = 2.58$ (CI 95% [2.42, 2.73])

Next, the regression equation for IFU (DV) and smartphone use (IV) was solved:

$Y\ (IFU) = \beta_0 + \beta_1\ (smartphone\ use)\ X_2$

$Y\ (IFU) = 2.36 + 0.32$ (CI 95% [0.071, 0.574])

$Y\ (IFU) = 2.68$ (CI 95% [2.43, 2.94])

Both variables were then entered into a hierarchical regression equation and solved:

$Y\ (IFU) = \beta_0 + \beta_1\ (gender)x_1 + \beta_2\ (smartphone\ use)x_2$

$Y\ (IFU) = 2.07 + 0.21$ (CI 95% [0.53, 0.36]) $+ 0.32$ (CI 95% [0.78, 0.60])

$Y\ (IFU) = 2.61$ (CI 95% [2.21, 3.02])

Predictors of CFU

The regression equation for CFU (DV) and IFU (IV) was then solved:

$(CFU) = \beta_0 + \beta_1\ (IFU)$

$Y\ (CFU) = 1.15 + 0.41$ (CI 95% [0.34, 0.48])

$Y\ (CFU) = 1.56$ (CI 95% [1.50, 1.63])

Predictors of satisfaction with life

The regression equation for satisfaction with life (DV) and Academic impairment due to Facebook use (IV) was then solved below:

Y (SWL) = $\beta_0 + \beta_1$ (AIDFU)

Y (SWL) = 3.44 - 0.12 (CI 95% [-0.20, -0.04])

Y (SWL) = 3.32 (CI 95% [3.24, 3.40])

Subsequently, the regression equation for satisfaction with life (DV) and age (IV) was also solved:

Y (SWL) = $\beta_0 + \beta_1$ (age)

Y (SWL) = 3.50 - 0.01 (CI 95% [-0.25, -0.00])

Y (SWL) = 3.48 (CI 95% [3.25, 3.50])

Both variables were then entered into a hierarchical regression equation based on the regression equation below:

Y (SWL) = $\beta_0 + \beta_1$ (AIDFU) $X_1 + \beta_2$ (age)X_2

Y (SWL) = 3.84 - 0.13 (CI 95% [-0.21, -0.05]) - 0.02 (CI 95% [-0.28, -0.00])

Y (SWL) = 3.68 (CI 95% [3.33, 3.77])

Predictors of academic impairment due to Facebook use

The regression equation for Academic impairment due to Facebook use (DV) and CFU (IV) was then solved below.

Y (AIDFU) = $\beta_0 + \beta_1$ (CFU)

Y (AIDFU) = 0.71 + 0.57 (CI 95% [0.50, 0.65])

Y (AIDFU) = 1.28 (CI 95% [1.20, 1.36])

Next, the regression equation for Academic impairment due to Facebook use (DV) and IFU (IV) was solved.

Y (AIDFU) = $\beta_0 + \beta_1$ (IFU)

Y (AIDFU) = 0.87 + 0.42 (CI 95% [0.35, 0.45])

Y (AIDFU) = 1.29 (CI 95% [1.22, 1.37)

Then the regression equation for academic impairment due to Facebook use (DV) and age (IV) was solved.

Y (AIDFU) = $\beta_0 + \beta_1$ (age)

Y (AIDFU) = 2.49 -.02 (CI 95% [-0.03, -0.01])

Y (AIDFU) = 2.47 (CI 95% [2.46, 2.48])

All three variables were then entered into a hierarchical linear regression equation, which was solved below:

Y (a AIDFU) = $\beta_0 + \beta_1$ (CFU) + β_2 (IFU)+ β_3 (age)

Y (AIDFU) = 0.81 + 0.47 (CI 95% [0.39, 0.56]) + 0.22 (CI 95% [0.14, 0.29]) - 0.02 (CI 95% [-0.03, -0.01])

Y (AIDFU) = 1.47 (CI 95% [1.30, 1.65)

Predictors of grade average

The regression equation for grade average (DV) and academic impairment due to Facebook use (IV) was then solved:

Y (grade average) = $\beta_0 + \beta_1$ (AIDFU)

Y (grade average) = 64.71 -.2.25 (CI 95% [-3.31, -1.18])

Y (grade average) = 62.46 (CI 95% [61.40, 63.53])