UNRAVELING THE IMPACT OF FACEBOOK ADDICTION ON EFL STUDENTS: A DUAL LENS ON SELF-ESTEEM AND ACADEMIC ACHIEVEMENT

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Abstract
The aim of this quantitative research was to examine the impact of Facebook addiction on EFL students' self-esteem and course learning at the higher education level. Facebook addiction, EFL students' self-esteem, and course learning are pressing issues at higher education institutions. University students face significant challenges due to various factors that negatively affect their self-esteem and course learning, with Facebook addiction being a particularly influential factor that has been largely unexplored. This study focuses on EFL students from the Department of Education at two public sector general universities in Karachi, Sindh, Pakistan. Data were collected through a survey-based questionnaire using systematic random sampling, resulting in a usable sample size of n = 337 respondents. The data were analyzed using SPSS v.22, and Smart PLS 4 was employed for Partial Least Squares Structural Equation Modeling (PLS-SEM). Initially, the measurement model was established, followed by hypothesis testing. The findings reveal that Facebook addiction has a significant and negative impact on EFL students' self-esteem, as well as on their course learning at the higher education level. These results highlight the detrimental effects of excessive Facebook use on students' academic performance and psychological well-being. Limitations and directions for future research are also discussed.
Key words: *Facebook addiction; EFL students' self-esteem; students' course learning*

1. INTRODUCTION

One of the top online social networks (OSN), Facebook has grown quickly over the years, becoming a well-liked and frequently used platform. Approximately 1.45 billion users were active on Facebook during the first quarter of 2018, which is a 13 percent increase from the same period last year (Facebook, 2018). Young individuals now regularly engage actively on OSNs, particularly Facebook (Casale and Fioravanti, 2018). In other words, according to Bachnio and Przepiorka (2019), young individuals feel that their days would be incomplete without spending hours on Facebook and engaging with its material. According to Kirschner and Karpinski (2010), social media is becoming a crucial component of contemporary communication and social interaction. Facebook is one of the most well-liked and often utilised social media sites by college students (Pempek et al., 2009). Thoughts have been expressed regarding the potential detrimental effects of excessive Facebook use on academic performance and psychological well-being, notably among Education as a Foreign Language (EFL) students in higher education (Yang & Brown, 2013).

Due to the lack of prior research on EFL students in higher education context, more empirical research needs to be conducted towards exploring the relationships between students. Yet more research is required to understand how EFL students become addicted to Facebook, and how these causes lead to lowered academic performance and highlighted psychological issues; theoretically, there are numerous known frameworks predicting the negative effects of Facebook addiction on

academic and psychological results (Kirschner & Karpinski, 2010; Vogel et al. , 2014). This research will therefore focus on Education major students of a higher learning institution for the purpose of analysing impacts of Facebook addiction on the self-esteem and performance of EFL students. While there are earlier studies on the accessibility, availability, and convenience of social media that also consider the possibility of negative effects of social media use among college students (Al-Menayes, 2015), there is little research on EFL students, particularly in the context of this study. Because of cultural and linguistic barriers EFL students may encounter certain challenges and complications when using social media especially Facebook, which may affect their social relationships/interactions and psychological health/ welfare (Yang and Brown, 2013).

Therefore, according to Giunchigilia et al. (2018), it is through smartphone usage that various OSNs are easily accessed, with students' active time on Facebook being more than the time they spend on books. In their study, Brailovskaia et al. (2018) posited that the existing literature revealed that students who engage in an extreme level of OSN such as Facebook experience compulsive use of the application, thus affecting their academic performance. Some of the implications that scholars have identified as worthy of study because of the need to focus on OSN use include the dual impacts on students' academic performance. And, only 4 percent of the studies, that were done, had detected any positive interaction linked with the utilization of OSN, while over 61 percent of the related research work recorded significant negative impacts (Doleck & Lajoie, 2018). As a result of this, Andreassen Cecilie and Schou (2018) and Doleck and Lajoie (2018) argue that there is still need for more research on this field, especially on the addictive behaviour and its consequences.

The consequences related to the use of social networks for learning strongly affect the academic success of students and have caused a lot of interest in scientific research (Brailovskaia Schillack & Margraf, 2018). However, the earlier findings have been inconclusive in their results where some have demonstrated the use of Facebook as a learning tool (Bosch, 2009), to the other part that showed the degrading use of Facebook as a distraction to learning. More research is needed because there is still an association between Facebook addiction and academic production that is not yet clarified. More empirical works should be conducted concerning addictive behaviour since current bibliometric studies reveal that this field of study is quite underdeveloped (Andreassen). (2015). Cecilie Schou. The central objective of this research is to assess the impact of Facebook addiction in students' learning outcomes, and self-esteem [based on Hong & Chiu, 2016]. Fifty college and university students working on Facebook were considered as a sample, regarding the evaluation of the theoretical model by Huang (2018). Hence there is no study from this region that has contributed fresh data toward the effects of Facebook addiction on students' performance, this study will advance the body of knowledge in the area in question. Furthermore, it provides new, empirical insights into the relationship between, achievement motivation, Facebook addiction and self-esteem (Sani, 2017). Yet, to some extent, this research has also aimed at filling a gap in the literature: to analyze the influence of Facebook addiction on EFL students' self-esteem as well as their learning outcomes at the higher education level. This study was relevant because although prior studies established the impact of Facebook on students' academic performance, no prior studies examined the impact of Facebook addiction to academic learning. This study will try to address these research gaps by investigating the effects of Facebook addiction on the EFL students' self-esteem and course learning and by exploring the possibilities of creating healthy and positive patterns of social media usage in learning settings.

1.1 Research Questions

1. What is the impact of Facebook addiction on EFL students' self-esteem at higher education level?
2. What is the impact of Facebook addiction on students' course learning at higher education level?

2. Theoretical Background

Facebook addiction has been a major point of interest in recent years, and this paper seeks to explore the effects of this social vice on the EFL student's academic performance and self-esteem among the students taking Education in institutions of higher learning. In an effort to examine the multiple correlations between Facebook addiction, self-esteem, and course learning, multiple theories existent in this field relevant to this case are used, which include the self-determination

theory, social comparison theory, self-efficacy theory, and cognitive load theory. The following hypotheses can help understand the reasons for developing Facebook addiction and its impact on the psychological state and academic results of EFL students. It will be possible to enrich the knowledge about such consequences and precursors by proving the hypothesis concerning the correlation between Facebook addiction and the enumerated factors so that to offer guidelines for the development of useful and relevant interventive and preventive strategies aimed at promoting effective usage of social networks in learning contexts.

It is evident that nowadays, the frequent usage of social networking sites is a focus of attention for researchers and educators mainly due to college students' frequent presence in social media. College students today are among a unique generation of users of social networking sites particularly Facebook for interaction, socialisation and for exchanging information. Skepticisms have been raised about the negative impacts of Facebook usage on the learners' academic performance and psychological well-being especially among the EFL learners due to the increased usage of Facebook. From the number of relevant theories, we are able to adopt self determination theory, social comparison theory, self efficacy theory, and cognitive load theory elaborated to understand more of the complicated relationships between Facebook addiction, self esteem and course learning. These theories explain more on the factors that result in motivation on Facebook among EFL students and the impact that motivation has on their psychological wellbeing and performance.

2.1 Self-Determination Theory

Based on the self-determination theory (SDT) (Deci & Ryan, 1985), such psychological needs as autonomy, competence, and relatedness are innate. The level of facebook addiction may also mean that EFL students may go specifically to the social site to find friends and seek social support for this need. But it is possible that their excessive use of Facebook decreases their need for autonomy and competence regarding their academic work. From the previous literature (Pasek et al. , 2009; Wang et al. , 2011), it has been found that students engaging in excessive use of Facebook may get poor performance, low academic self–efficiency, and less inclination towards academics. Consequently, Based on the premise of SDT, the present study aims at explaining why EFL students become addicted to Facebook and how it impacts their psychological states and learning achievements.

2.2 Social Comparison Theory

Stemming from these backgrounds, it is upon this theory by Festinger (1954) called the Social Comparison Theory that the measurements of the qualities and viewpoints of different individuals will be compared. Regarding the second hypothesis, it may be argued that EFL students utilize Facebook to compare themselves to their friends in the sense of Facebook addiction which leads them to suffer from low self-esteem and deeming themselves as inferior. Research evidence shows that addictive use of Facebook particularly by the young adults, is associated with poor self-esteem and self-image (Vogel et al. , 2014). Furthermore, social comparison influences EFL students' academic self-confidence to a certain degree because it makes them to compete with others and develop higher perceptions of ability. SCT may thus explain the potentially destructive effects that maybe occasioned by Facebook addiction on the self-esteem and academic self notion of EFL students.

2.3 Self-Efficacy Theory

This proposed that appraisal or people's perceived abilities affect their tenacity, accomplishment, and motivation as outlined in the self efficacy theory (Bandura, 1997). The negative characteristics of over-dependent EFL students on Facebook increase their perceived dependency, which in turn will reduce their self-efficacy and resultant academic performance. According to prior research, low self efficacy has been related to low academic accomplishment such as motivation, persistence and performance (Chemolli & Gagné, 2014). It may therefore elucidate the extent of damage that is likely to be caused by Facebook addiction on the academic achievement and efficacy of EFL students.

2.4 Cognitive Load Theory

CLT postulates that the amount and kind of cognitive processing that are required when learning influences the knowledge acquired (Sweller, 1988). Potentially, the EFL students can have greater cognitive load so they try to combine Facebook use and academic schoolwork in the framework of the Facebook addiction that leads to the poor academic achievement. In prior research, it was established that incorporating social media may cause a rise in cognitive load since they can distract learners and take up a lot of cognition (Rosen et al. , 2013). The negative impact of impaired working memory on academic performance might stem from the fact that this higher cognitive load interferes with the pupils' ability to expand and consolidate new knowledge. Hence, this study posits that the application of CLT may shed light on the possible negative consequences of Facebook addiction on the cognitive load and academic achievement of EFL students.

This theoretical background part of the paper has reviewed the main hypotheses concerning the analysis of Facebook addiction, self-esteem and course academic achievement among EFL college students. The theories mentioned include self determination theory, social comparison theory, self efficacy theory and cognitive theory of load. With the help of these theories it is possible to find out more specific connections between the level of Facebook addiction, self-esteem and course learning process of EFL students. Educational application of social media: Social media has produced benefits as well as harms in the context of education. To facilitate the creation of interventions and methods that can be used for the proper utilization of social media, these pieces of information can assist. The subsequent segment of the article contains the literature review after which the study's methods and approach used to examine the effects of Facebook addiction on the EFL learners' self-esteem and course mastery are described. Presentation of data is also added followed by Data Analysis and finally the Results. However, the discussion part will also exploration of the study's limitations and potential areas for further research, and such results' relevance in the context of educational practice and future research.

3. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

4.1 Facebook addiction and Students' Self-esteem

Facebook is one of the biggest social networking sites globally and has permeated almost all facets of people's lives (Kuss & Griffiths, 2017). Facebook usage is associated with negative psychological impacts, particularly on self-esteem as the website's regular use has been noted (Wang et al. , 2017). According to Nayak (2018), the word 'addiction', in the past, was co-related with alcohol, narcotics, and even gambling. addiction caused by technology leaped from the mid of 1990s to become a social issue as computer visibility increases as well as fast growth of internet usage. A quantity of studious works, exploring the phenomenon of internet addiction, already exist (Al-Yafi et al. , 2018). Out of all the available websites online today, one that has been manually identified as being on the internet more than any other website is Facebook. Referring to psychological research, Kimberly indicated that EFL students with addiction issue: spend long time on Facebook; they cannot control their utilization of Facebook (2009); Tang et al also stated the same findings (2016). To what extent such findings are statistically valid and whether they hold currents in the present body of literature, and conclusions that can be made from such findings, are provided below: Armstrong, Phillips, & Saling (2000) highlighted that students' self-esteem is positively related to internet addiction Bozoglan, Demirer, & Sahin (2013). The research by Malik and Khan (2015) has pointed out that students with low self-esteem are more likely to get addicted to Facebook since the environment they experience is safer.

Facebook usage has an inverse relationship with users' self-esteem. Although findings are mixed, it seems that, as a result of SPC and the comparison with the idealized representations of others' lives within the network (Andreassen et al. , 2012; Vogel et al. , 2014). Facebook addicts may have a lower level of self-esteem compared to non-addicts (Appel et al. , 2016; Tiggemann & Slater, 2014). Further, excessive use of Facebook can lead to fewer physical interactions with other people and feelings of loneliness and isolation which further decrease the level of self-esteem (Lee et al. , 2014; Rosen et al. , 2013). In the same regard, De Cock et al. (2014) asserted that there is a

significant correlation being identified between self-esteem and Facebook addiction. They also said in the same study that Facebook addiction reduces students' self-esteem as caused by academic failure. Andreassen et al. (2012) assert that previous research has considered six dimensions to address the issue of reducing people's self-esteem Six characteristics of OSNs like Facebook, for instance, have been identified to signify different aspects of addiction; these are salience, tolerance, mood, relapse, conflict and withdrawal (Liu, Kirschner, and Karpinski, 2017). Furthermore, the cross-sectional study may influence gender differences regarding the relationship of FAD and self-esteem. This is supported by several research work that was done by McLean et al. , (2015) and Pantic et al. , (2012) who highlighted that female student experience a bigger negative impact on their self-esteem more than male students. Such may be due to societal norms and expectations regarding appearance, and social comparisons specific to women and social approval, most of which arise from social media usage (Perloff, 2014). They have earned that, based on the findings by Al-Menayes (2015) and Andreassen, Torsheim, Bjureberg, & Pallesen (2016), the amount of time spent on the site might partially buffers the negative impact of Facebook addiction on self-esteem.

Facebook addiction has been observed to be prevalent among the learners especially in schools colleges and universities, but it is also very rampant in workplaces (Malik & Khan, 2015). Facebook can lead to anxiety, sadness, low self-esteem, loneliness and poor communication skills and other issues such as psychological and social aspects of life (McKinney, Kelly & Duran, 2012). Facebook addiction also has a large impact on academic performance. From the different articles that have been conducted, there is sufficient evidence that shows that low self esteem is a direct cause of Facebook addiction. For instance, De Cock et al. (2014) established that Facebook addiction range high with those with low self-esteem. Therefore, native students who get hooked on to Facebook would face a reduction in their self-esteem. Furthermore, other works demonstrated that Facebook addiction might lead to a decrease in college students' self-esteem and academic achievement (Bachnio et al. , 2013; Junco, 2012). It is still uncertain how severe the addiction level of Facebook influences the EFL students' self-esteem level and academic results. For this reason, aggravated by the challenges of undergoing a different language and culture, EFL students can be considered vulnerable to the detrimental effects of Facebook addiction as defined by Yang and Brown (2013).

However, some people tend to assume more of high self-esteem. In their statistical research, Bachnio et al. (2016) found out that, Facebook addiction was related to low self-esteem levels. Kim & Koh (2018) also identified the interrelation between students' smartphone addiction, anxiety and self-esteem. Low self-esteem and Facebook addiction has been evidenced in many a study (Baturay and Toker, 2017). The above levels of self-esteem are either positively or negatively correlated with Facebook addiction such as where the students' self-esteem is low, that in turn is equivalent to Facebook addiction or where one can say that low self-esteem and Facebook dependency are intertwined (Błachnio et al. , (2016). Kim and Koh (2018) tried to seek the correlation between quantitative research using statistics and low self-esteem due to Facebook addiction. They also noted that students get obsessed with smartphones which lead to poor self-esteem, and anxiety. The following theories are, therefore, postulated based on the literature reviewed above.

H_{A1}: Facebook addiction has a significant impact on EFL students' self-esteem at higher education level.

4.2 Facebook addiction and Students' Course Learning

Specific worries as to how the problem of Facebook dependency hinders students' performance in academic courses are beginning to arise. Li et al. , in our literature review also described course learning as the accumulation of knowledge about a particular subject, course or the act of acquiring the knowledge. On the effects of Facebook addiction on academic performance, existing scholarly work reveals what the researcher noticed during the literature study: no past studies specifically investigated the impact of Facebook addiction on course learning. However, in order to form hypotheses, the researcher referred to studies looking at impacts of Facebook addiction on academic performance. One must note that additional research on this topic regarding the relation of Facebook usage to academic success has provided conflicting and inconclusive results (Young et

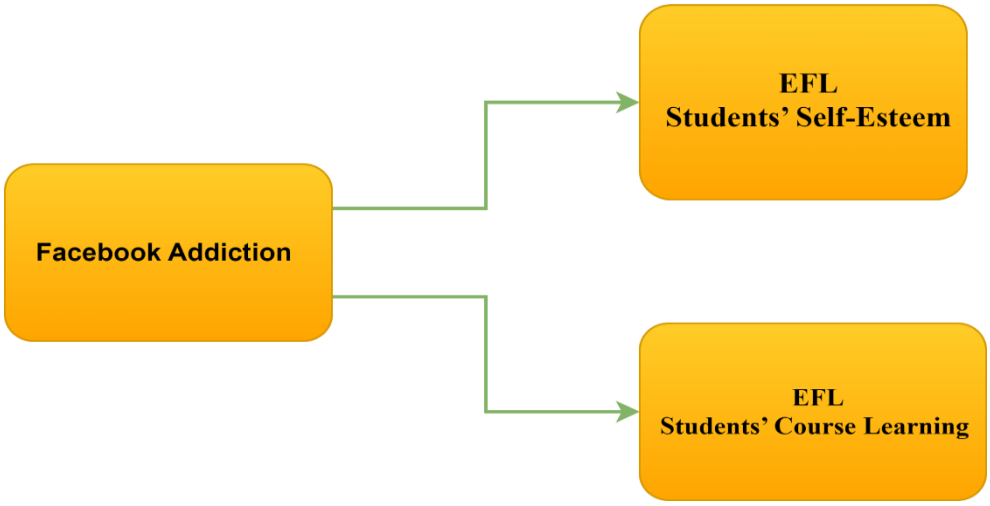
al., 2017; Khoso et al., 2024). Many studies that have generated varied findings have given insights as to the relationship between time spent on Facebook and students' performance. For instance, a Malaysian study in 2017 said and concluded that Facebook could enhance students' academic performance and that it ought to be utilized for that very purpose. Three student groups were recognised in a recent study by Alyafi et al. (2018) that looked at online social network usage profiles: in particular they are described as passive, engaged, and addicted. It was revealed that enthusiastic users attained higher academic levels significantly than the inactive and hooked users (Paul, Baker, and Cochran, 2012).

Several meta-analysis studies have revealed that students' academic achievement is significantly reduced by online social networking (Huang, 2018; Liu, Khazaie, Noroozi, & Mousavi, 2017). In light of this, the findings of this study suggest a correlation between the level of academic achievement and Facebook addiction of the students. Further, the current cross-sectional studies have established that increased daily Facebook use is associated with increased reliance among students (Bachnio et al. , 2016; Brailovskaia et al. , 2018). In addition, Navarro and Gallardo (2015) examined that a number of factors concerning students learning in a course, including the approach to course delivery, social media usage, and quality of the input made by students, are related with course learning. This include the following; clear instructional plans, the appropriate use of the internet and the social media, high quality lecturers, and the appropriate integration of multimedia with the online resources. Some of the findings emphasized how essential these components are in promoting a conducive learning atmosphere in higher learning institutions for teaching to take place.

Arguably, the speculation of various negative implications of social media platforms on the college students' performance has been sparked by the fact that the social media platform Facebook in particular has been widely used by the college students, which raises questions of negative impact on academic performance and course learning as proposed by Kirschner and Karpinski (2010). Research studies analyzing the correlation between students' tendency towards Facebook addiction and the effectiveness of the students' course knowledge has provided insight into the positive and negative facets of Facebook utilization in educational settings. Some studies, therefore, suggested that education is perhaps feasible through Facebook because it facilitates students' interaction, cooperation, and sharing of information (Junco, 2012; Madge et al. , 2009; Khoso et al., 2022). Through the Facebook groups or pages, the students can make use of the option of sharing study materials, discussing contents of the course or get explanation from fellow students or teachers (Junco, 2012). Kirschner and Karpinski (2010), as well as Roblyer et al (2010), stated that active utilization of Facebook improves the performance and course satisfaction levels. On the other hand, the following studies have postulated possible negative impacts of Facebook addiction on students' course learning outcomes: Based on the research studies of Pasek and al. , (2009) and Wang and al. , (2011) prove that high level of Facebook usage can lead to several drawbacks such as distractions, poor time management and limited involvement in academic work. Hence, grades decrease, we experience a reduction in the time spent studying, and academic outcomes are affected (Kirschner & Karpinski, 2010; Junco, 2012 Rosen et al. , 2013).

However, the readers should be mindful of the fact that the educational context under study and the nature of the courses that were taken might influence the impact that Facebook addiction has on students' achievements. For instance, Kirschner and Karpinski (2010) and Roblyer et al. , (2010) pointed out that; the level of interaction between the student and instructor, the nature of the online learning environment and adoption of social networks in teaching activities can reduce the effect of facebook addiction on the learning process. The status of Facebook addiction as a mediator that influences the level of academic performance can be partially mitigated by certain personality traits. Executive skills such as self-regulation for instance, are crucial in regulating the internet temptations and focus on academic work (Kirschner & Karpinski, 2010). According to the above literature following hypothesis is proposed.

H_{A2}: Facebook addiction has a significant impact on the students' course learning at the higher education level.



Source: Authors' Key contribution

Figure 1. Conceptual Framework

4. RESEARCH METHODOLOGY

4.1 Research Design

This study adopted a quantitative research design to unravel the impact of Facebook addiction on EFL students' self-esteem and academic achievement. A cross-sectional survey method was used, whereby data were collected from a sample of EFL students at two public universities in Karachi, Sindh, Pakistan. The research employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the relationships between the key variables of interest Facebook addiction, self-esteem, and course learning. The focus on these variables is grounded in existing literature, which suggests that excessive use of social media platforms like Facebook can have detrimental effects on both psychological well-being and academic performance, particularly in language learners.

4.2 Sample Size and Sampling

The useable sample size for this study was n = 337, selected from an initial target population of 360 undergraduate EFL students. To ensure adequate representation and statistical power, the sample size was determined based on Daniel Sooper's (2020) guidelines, ensuring a minimum sample size appropriate for structural equation modeling. A systematic random sampling technique was employed to select participants, ensuring randomness and representativeness within the target population. Data collection occurred in the students' natural academic environments. Before administering the survey, consent was obtained, and participants were provided with a detailed explanation of the study's purpose and their role in it.

Figure 2. Daniel Sooper Calculator Results

4.2.1 Sample and Procedure

By maintaining a minimum 10:1 ratio, or one item for every ten respondents, data for the current study were gathered from n=360 undergraduate students from the Department of Education alone (Jackson, 2003; Kyriazos, 2018). The students of two public universities in Karachi, Sindh, Pakistan, provided the data. The investigators adhered to all ethical standards as advised by Bryman (2016). All students received informed consent forms, and it was made sure that the participants in the current study would not suffer any real or imagined damage. This was done in accordance with Ruane's (2016) criteria. Participants in the study were guaranteed their secrecy and anonymity (Babbie, 2020).

4.3 Measures

Three latent variables were used in the current empirical research study, and data were gathered

using a five-point Likert scale with a scale from 1 (strongly disagree) to 5 (strongly agree). The second-order reflective-reflective construct of Facebook addiction, which was derived from Andreassen et al. (2012), had six dimensions: salience, tolerance, mood alteration, relapse, withdrawal, and conflict. Furthermore, the Self-Esteem, which is second order reflective-reflective construct, developed by Rosenberg (1965) and adapted from Kielkiewicz, Mathúna, and McLaughlin, (2020). Students' Course learning, which is first order reflective construct, developed by Pace (1979) and was adapted from (Laanan, 2004).

Table 1 Variables used in Research Model

Constructs (Type of Constructs)	Item codes	One Sample Item	Mean (SD) of variable	No. of Items	α	Rating scale	Source
FAR	FAR1	Experienced that others have told you to reduce your use of Facebook but not listened to them.	3.3373 - 0.91255	3	0.735	Five-point Likert scale: (1) strongly disagree to (5) strongly agree.	Andreassen, Torsheim, Brunborg, & Pallesen, (2012)
FAT	FAT1	Spent more time on Facebook than initially intended.	3.3037 - 0.94707	3	0.741	Five-point Likert scale: (1) strongly disagree to (5) strongly agree.	Andreassen, Torsheim, Brunborg, & Pallesen, (2012)
FAC	FAC1	Used Facebook so much that it has had a negative impact on your job/studies.	2.9219 - 1.018	3	0.769	Five-point Likert scale: (1) strongly disagree to (5) strongly agree.	Andreassen, Torsheim, Brunborg, & Pallesen, (2012)
FAM	FAM1	Used Facebook in order to forget about personal problems.	3.278 - 0.9225	3	0.795	Five-point Likert scale: (1) strongly disagree to (5) strongly agree.	Andreassen, Torsheim, Brunborg, & Pallesen, (2012)
FAW	FAW1	Become restless or troubled if you have been prohibited from using	3.1135	3	0.7	Five-point Likert scale: (1) strongly disagree to (5)	Andreassen, Torsheim, Brunborg, &

		Facebook.			92	strongly agree	Pallesen, (2012)
			-0.94606				
FAS	FAS1	Spent a lot of time thinking about Facebook or planned use of Facebook.	3.3111 -1.05105	3	0.826	Five-point Likert scale: (1) strongly disagree to (5) strongly agree	Andreassen, Torsheim, Brunborg, & Pallesen, (2012)
CL	CL1	Took detailed notes in class.	3.3628 -0.86978	8	0.887	Five-point Likert scale: (1) strongly disagree to (5) strongly agree	Laanan, (2004)
SEP	1-Sep	I take positive attitude towards myself.	3.504 -0.85392	5	0.827	Five-point Likert scale: (1) strongly disagree to (5) strongly agree	Kielkiewicz, Mathúna, & McLaughlin, (2020).
SEN	SEN1	I certainly feel useless at time.	3.5802 -0.88524	5	0.845	Five-point Likert scale: (1) strongly disagree to (5) strongly agree	Kielkiewicz, Mathúna, & McLaughlin, (2020).
Overall Instrument Reliability				36	0.955		

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Respondents' Profile

Table 2. *Descriptive statistics of respondents' profile (n = 337)*

S#	Variable	Categories	Frequency	Percentage
1	Gender	Male	137	40.70%
		Female	200	59.30%

2	Education	BS Education	279	82.80%
		MA Education	58	17.20%
3	Age	≤ 20 years	15	4.50%
		21-25 years	299	88.70%
		26-30 years	13	3.90%
		31 years and above	10	3.00%
4	Religiosity	Islam	290	86.10%
		Hindu	35	10.40%
		Christian	12	3.60%
5	Socio-economic Background	Lower Class	167	49.60%
		Middle Class	154	45.70%
		Elite/Upper Class	16	4.70%

Source: Author's estimation

4.4 Common Method Variance (CMV) Bias

The overall variation explained by Harman's single component in the current data set = 39.39%, which is less than 50%, hence there was no CMV bias issue. As a result, the researcher can continue with the data analysis because the data was acquired in an objective manner. According to Tehseen, Ramayah, and Sajilan (2017), the researcher also used full collinearity testing, and the outer model's VIF was FAR = 1.800, FAT = 2.098, FAC = 1.719, FAM = 2.400, FAW = 2.198, FAS = 1.942, CL = 2.882, SEP = 2.700, SEN = 2.474. This indicates that there is no CMV issue with the data set. The researcher can therefore carry out additional analysis at this point.

Correlation of research model constructs

Table 3 Descriptive statistics of Coorelations between constructs

S. #	Constructs	Mean	SD	Alpha	1	2	3	4	5	6	7	8	9
1	FAR	3.3373	.91255	.735	1								
2	FAT	3.3037	.94707	.741	.560**	1							
3	FAC	2.9219	1.01800	.769	.409**	.519**	1						
4	FAM	3.2780	.92250	.795	.555**	.633**	.548**	1					
5	FAW	3.1135	.94606	.792	.506**	.569**	.559**	.646**	1				
6	FAS	3.3111	1.05105	.826	.452**	.550**	.475**	.556**	.555**	1			
7	CL	3.3628	.86978	.887	.552**	.522**	.511**	.582**	.590**	.595**	1		
8	SEP	3.5040	.85392	.827	.530**	.489**	.449**	.555**	.535**	.527**	.717**	1	
9	SEN	3.5802	.88524	.845	.469**	.463**	.395**	.526**	.480**	.549**	.692**	.716**	1

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

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Table 4 Mardia's Coefficient

	Threshold Value	Mardia's Coefficient	z-Statistic	p-value
Skewness	+/-1	4.526262	881.86671	0.000
Kurtosis	+/-20	145.946356	28.63176	0.000

Source: Author's estimation

4.5 Ethical Considerations

The study adhered to strict ethical standards, ensuring that the research was conducted responsibly and with respect for the participants' rights. Ethical approval was obtained from the relevant university ethics committee prior to data collection. Informed consent was sought from all participants, who were assured that their participation was voluntary and that they could withdraw from the study at any time without consequence. Confidentiality and anonymity were maintained throughout the research process, with no identifying information being collected. Furthermore, the data was stored securely and was only accessible to the research team, in accordance with Babbie (2020) and Ruane (2016) guidelines for ethical research practices.

5. Data Analysis and Results

5.1 Measurement Model

Partial least squares structural equation modelling (PLS-SEM) was the data analysis technique used for the current inquiry. Prior to evaluating the hypotheses, the researchers had to develop the measurement model. PLS-SEM is commonly used to validate predictive models (Hair et al., 2016). The main objective in developing the measuring model was to evaluate the reliability and validity of each component. During the evaluation, researchers focused on internal consistency reliability, discriminant validity, and convergence validity. According to Hair et al. (2016), convergent validity depends on two key factors. Every path analysis component must have loadings larger than 0.5 to get started. The second requirement for convergent validity is that the average variance extracted (AVE), which must be greater than 0.5, is valid. A given construct's outer loading must also be greater than all of its cross-loading on other constructs because discriminant validity depends on the outer loading of all items. The basis for internal reliability is Composite Reliability (CR) and Cronbach's Alpha. According to Hair et al. (2016), Cronbach's Alpha should be greater than 0.7 and Composite reliability (CR) should be better than > 0.6. The results of the measuring model are shown in Tables 5 and 6.

Table 5. Outer model of first order reflective constructs (Measurement model results)

Constructs	Items	Loadings	Cronbach's Alpha	rho_A	CR	AVE	Outer VIF
FAC	FAC1	0.836	0.768	0.767	0.866	0.684	1.765
	FAC2	0.857					1.889
	FAC3	0.787					1.367
FAM	FAM1	0.809	0.796	0.798	0.88	0.711	1.582
	FAM2	0.881					2
	FAM3	0.837					1.695
FAR	FAR1	0.809	0.735	0.735	0.85	0.654	1.457
	FAR2	0.819					1.548
	FAR3	0.797					1.394
FAS	FAS1	0.874	0.827	0.829	0.897	0.745	2.257
	FAS2	0.902					2.489
	FAS3	0.81					1.562
FAT	FAT1	0.796	0.74	0.743	0.853	0.659	1.418

	FAT2	0.847					1.612
	FAT3	0.79					1.448
FAW	FAW1	0.838	0.792	0.793	0.878	0.707	1.665
	FAW2	0.841					1.688
	FAW3	0.844					1.665
SEN	SEN1	0.796	0.847	0.85	0.891	0.622	2.032
	SEN2	0.832					2.164
	SEN3	0.821					1.987
	SEN4	0.747					1.66
	SEN5	0.741					1.608
SEP	SEP1	0.755	0.827	0.832	0.879	0.593	1.757
	SEP2	0.826					2.061
	SEP3	0.789					1.775
	SEP4	0.779					1.712
	SEP5	0.695					1.489
CL	CL1	0.74	0.888	0.889	0.91	0.56	1.913
	CL2	0.767					2.054
	CL3	0.729					1.716
	CL4	0.764					2.09
	CL5	0.737					1.879
	CL6	0.743					1.862
	CL7	0.768					1.96
	CL8	0.735					1.756

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Table 5 shows that the loadings are greater than 0.70 and Composite Reliability (CR) also exceeds 0.70 and Average Variance Extracted (AVE) of all variables is greater than 0.50. It is evident that outer model is fit/established, and the researcher can go further to test the hypotheses.

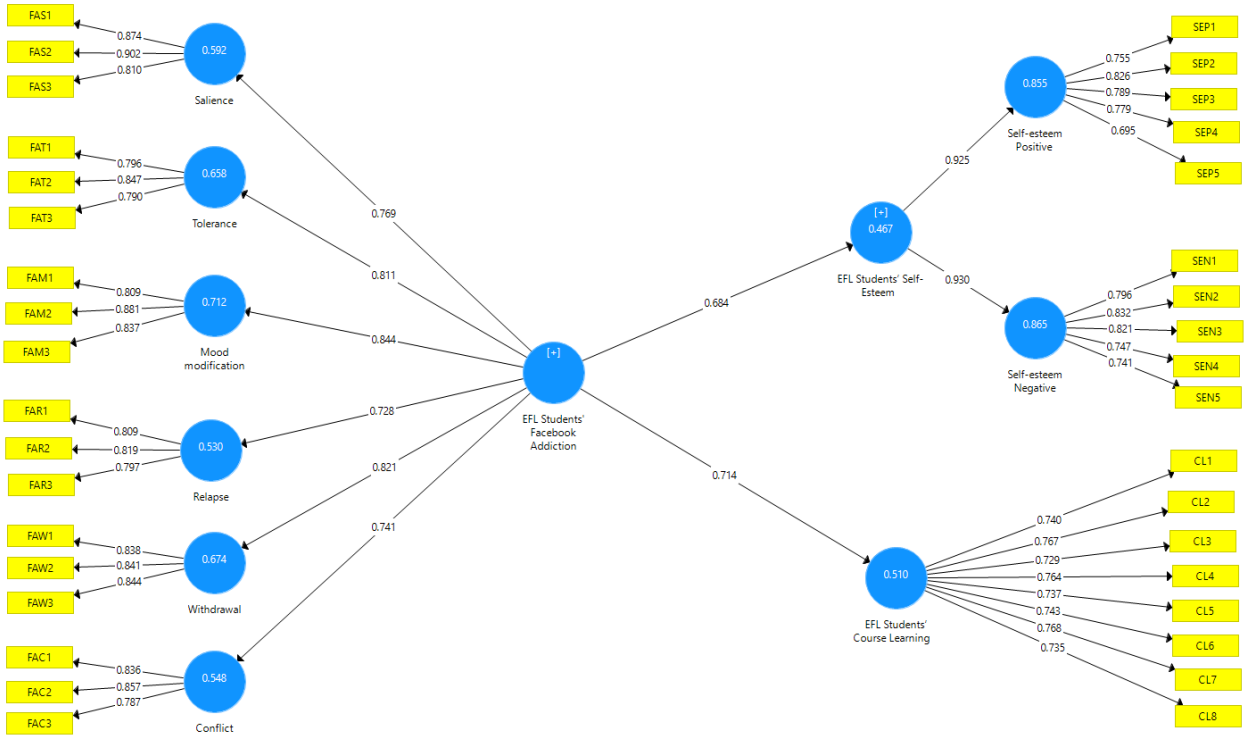
Table 6. Outer model of second order reflective-reflective constructs

Constructs	Items	Loadings	Cronbach's Alpha	rho_A	CR	AVE
EFL Students' Facebook Addiction	FAC	0.741	0.921	0.923	0.907	0.619
	FAM	0.844				
	FAR	0.728				
	FAS	0.769				
	FAT	0.811				
	FAW	0.821				
EFL Students' Self-Esteem	SEP	0.925	0.898	0.9	0.925	0.86
	SEN	0.93				

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Figure 3 Outer Model



Source: Author's estimation

Table 7: Discriminant Validity by Fornell-Larcker Criterion

No.	Constructs	1	2	3	4	5	6	7	8	9
1	FAC	**0.827**								
2	CL	0.515	**0.748**							
3	FAM	0.552	0.584	**0.843**						
4	FAR	0.413	0.553	0.555	**0.809**					
5	FAS	0.477	0.597	0.556	0.452	**0.863**				
6	SEN	0.394	0.691	0.527	0.469	0.55	**0.788**			
7	SEP	0.449	0.719	0.555	0.53	0.528	0.72	**0.77**		
8	FAT	0.523	0.525	0.634	0.562	0.551	0.462	0.491	**0.812**	
9	FAW	0.562	0.592	0.647	0.507	0.556	0.48	0.535	0.569	**0.841**

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Table 7. It may be argued that the Discriminant Validity by Fornell-Larcker Criterion is established in the current study since it demonstrates that the AVE of a latent variable is larger than the squared correlations between the latent variable and all other variables.

Table 8. Discriminant validity by Cross loading

Constructs	Items	FAC	CL	FAM	FAR	FAS	SEN	SEP	FAT	FAW

CL	CL1	0.419	**0.74**	0.429	0.421	0.49	0.498	0.55	0.4	0.479
	CL2	0.436	**0.767**	0.468	0.44	0.499	0.503	0.559	0.426	0.488
	CL3	0.384	**0.729**	0.458	0.441	0.401	0.51	0.56	0.423	0.453
	CL4	0.388	**0.764**	0.426	0.402	0.419	0.489	0.514	0.367	0.421
	CL5	0.353	**0.737**	0.419	0.368	0.396	0.513	0.484	0.355	0.407
	CL6	0.353	**0.743**	0.417	0.409	0.418	0.511	0.529	0.341	0.426
	CL7	0.385	**0.768**	0.446	0.423	0.495	0.579	0.568	0.411	0.442
	CL8	0.354	**0.735**	0.425	0.396	0.438	0.53	0.533	0.406	0.414
FAC	FAC1	**0.836**	0.439	0.45	0.327	0.403	0.367	0.39	0.419	0.451
	FAC2	**0.857**	0.399	0.418	0.314	0.378	0.272	0.334	0.407	0.463
	FAC3	**0.787**	0.438	0.498	0.379	0.4	0.335	0.388	0.469	0.478
FAM	FAM1	0.443	0.482	**0.809**	0.471	0.445	0.407	0.443	0.49	0.497
	FAM2	0.484	0.512	**0.881**	0.477	0.479	0.482	0.492	0.567	0.553
	FAM3	0.469	0.482	**0.837**	0.457	0.481	0.44	0.467	0.544	0.585
FAR	FAR1	0.364	0.491	0.451	**0.809**	0.414	0.442	0.479	0.441	0.388
	FAR2	0.312	0.429	0.423	**0.819**	0.326	0.339	0.383	0.422	0.402
	FAR3	0.323	0.419	0.472	**0.797**	0.353	0.353	0.421	0.496	0.439
FAS	FAS1	0.403	0.5	0.484	0.384	**0.874**	0.488	0.447	0.465	0.455
	FAS2	0.425	0.518	0.494	0.407	**0.902**	0.503	0.469	0.503	0.484
	FAS3	0.405	0.528	0.46	0.377	**0.81**	0.431	0.45	0.458	0.501
FAT	FAT1	0.413	0.418	0.491	0.476	0.521	0.384	0.418	**0.796**	0.416
	FAT2	0.446	0.447	0.564	0.461	0.447	0.41	0.414	**0.847**	0.51
	FAT3	0.414	0.411	0.486	0.429	0.371	0.327	0.361	**0.79**	0.459
FAW	FAW1	0.47	0.51	0.545	0.434	0.428	0.425	0.474	0.48	**0.838**
	FAW2	0.476	0.481	0.513	0.403	0.487	0.394	0.428	0.468	**0.841**
	FAW3	0.472	0.501	0.572	0.442	0.487	0.392	0.446	0.487	**0.844**
SEN	SEN1	0.308	0.549	0.432	0.409	0.475	**0.796**	0.589	0.365	0.409
	SEN2	0.33	0.549	0.447	0.381	0.457	**0.832**	0.605	0.363	0.388
	SEN3	0.282	0.559	0.408	0.372	0.444	**0.821**	0.587	0.366	0.391
	SEN4	0.311	0.53	0.382	0.338	0.381	**0.747**	0.52	0.345	0.352
	SEN5	0.325	0.536	0.405	0.345	0.407	**0.741**	0.532	0.383	0.349
SEP	SEP1	0.32	0.55	0.424	0.416	0.42	0.583	**0.755**	0.363	0.413
	SEP2	0.355	0.6	0.443	0.425	0.441	0.628	**0.826**	0.41	0.425
	SEP3	0.388	0.547	0.443	0.407	0.394	0.511	**0.789**	0.398	0.422
	SEP4	0.337	0.552	0.433	0.432	0.402	0.568	**0.779**	0.383	0.425
	SEP5	0.332	0.517	0.392	0.359	0.372	0.47	**0.695**	0.33	0.372

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Table 9: Discriminant Validity by $HTMT_{0.85}$

No.	Constructs	1	2	3	4	5	6	7	8	9
1	FAC									
2	CL	0.62								
3	FAM	0.704	0.694							

4	FAR	0.546	0.682	0.726						
5	FAS	0.598	0.694	0.685	0.578					
6	SEN	0.488	0.797	0.64	0.592	0.656				
7	SEP	0.564	0.837	0.684	0.678	0.638	0.836			
8	FAT	0.692	0.645	0.824	0.76	0.703	0.583	0.625		
9	FAW	0.719	0.703	0.814	0.663	0.688	0.586	0.661	0.743	

Source: Author's estimation

Note: Here FAR=Facebook Relapse, FAT=Facebook Tolearnce, FAC=Facebook Conflict, FAM=Facebook Mood modification, FAW=Facebook Withdrawal, FAS=Facebook Salience, CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

Table 9 shows that all the values in $HTMT_{0.85}$ are lower than 0.85 which is an stringent criterion to establish discriminant validity. Therefore, the researcher can proceed to test the hypotheses of current empirical study.

6.1 Hypotheses testing.

The inner model was established through reporting Collinearity (VIF) of endogenous constructs = 1.00 which is less than 3 and considered to be an ideal (Sarstedt et al., 2017). Further, in the process of hypotheses testing of structural model researcher used 5,000-sample re-sample in the bootstrapping procedure" (Ramayah et al. 2018).

Table 10.

Results of hypotheses testing (Direct Effects)

Hypotheses	Beta	SD	T Values	P Values						Adjusted	
					2.50%	97.50%	Decision	f^2	R^2	R^2	Q^2
FBA → SE							Supported	0.877	0.467	0.467	0.24
	-0.684	0.021	33.308	0.000	0.64	0.721					
FBA → CL							Supported	1.04	0.51	0.509	0.28
	-0.714	0.018	40.475	0.000	0.677	0.747					

Source: Author's estimation

Note: Here FBA=Facebook Addiction, SE=Self-esteem, CL=Course Learning.

Table 10 shows that Facebook addiction has a significant but negative impact on EFL students' self-esteem at higher education level because β = -0.684 and T values = 33.308. Secondly, Facebook addiction has a significant impact on the students' course learning at the higher education level because β = -0.714 and T values = 40.475. Furthermore, R^2 of self-esteem indicates that 46.7% change in endogenous variable i.e., self-esteem is because of facebook addiction. R^2 of course learning indicates that 51% change in endogenous variable i.e., course learning is because of facebook addiction. Therefore, facebook addiction is an important variable which alone predicts change in self-esteem and course learning to a great extent.

5.2 Results of Blindfolding Q^2

Table 11. Blindfolding Q^2

Endogenous Constructs	SSO	SSE	Q^2 (=1-SSE/SSO)
EFL Students' Course Learning	9352	6710.496	0.282
EFL Students' Self-Esteem	11690	8862.085	0.242

Source: Author's estimation

Table 8 shows that Q^2 of endogenous variables in the research model should be greater than zero ($Q^2 > 0$) which clearly indicates that the present model has predictive relevance (Cha, 1994).

5.2.1 Predictive Validity of Inner Model using PLSpredict

Table 12. PLSpredict

Items	Q^2_predict	PLS-SEM RMSE	LM RMSE	PLS-SEM-LM RMSE	Is RMSE (PLS-SEM) less than RMSE (LM)?	Decision
CL4	0.262	0.993	0.997	-0.004	Yes	Research Model of present study holds a medium Predictive Power (Shmueli et al., 2019).
CL8	0.265	1.02	1.013	0.007	No	
CL3	0.293	0.947	0.948	-0.001	Yes	
CL2	0.34	0.902	0.908	-0.006	Yes	
CL5	0.236	1.051	1.044	0.007	No	
CL6	0.25	1.005	1.014	-0.009	Yes	
CL7	0.304	0.924	0.928	-0.004	Yes	
CL1	0.312	1.016	1.029	-0.013	Yes	
SEN1	0.26	0.941	0.973	-0.032	Yes	
SEN3	0.23	0.928	0.95	-0.022	Yes	
SEN4	0.198	1.021	1.014	0.007	No	
SEN5	0.22	1.069	1.061	0.008	No	
SEN2	0.252	0.923	0.936	-0.013	Yes	
SEP2	0.28	0.918	0.919	-0.001	Yes	
SEP3	0.269	0.971	0.963	0.008	No	
SEP1	0.249	0.965	0.994	-0.029	Yes	
SEP4	0.26	0.924	0.922	0.002	No	
SEP5	0.208	1.013	1.004	0.009	No	

Source: Author's estimation

Note: Here CL=Course Learning, SEP=Self-esteem positive, SEN=Self-esteem negative.

According to Shmueli et al. (2019), Table 12 demonstrates that "majority of indicators of PLS-SEM (RMSE) were lower than LM (RMSE) which clearly manifests that the research model of present study holds a medium predictive power." As a result, the study's conclusions can be applied to the general population.

6. DISCUSSION

The goal of the current study was to find out how Facebook addiction affects the self-esteem and academic performance of EFL (Education as a Foreign Language) students in higher education. A p-value of 0.000 (0.5%) and B-value of -0.684 corroborated the empirical findings that there is a substantial and positive association between Facebook addiction and EFL students' self-esteem. These findings are consistent with those of earlier studies, such as Busalim, Masrom, and Zakaria (2019), Bachnio et al. (2016), Zeigler Hill et al. (2013), and Moorthy et al. (2019), which also presented related results. These studies have repeatedly shown that kids who are Facebook and internet addicts typically have worse self-esteem. The findings of the study also highlighted how crucial self-esteem is to kids' academic success. Facebook and other online social networking sites are used excessively, which is bad for self-esteem. The study's findings are consistent with the idea that self-esteem can serve as a barrier to the emergence of Facebook addiction in school-aged children (Bachnio et al., 2016). Higher self-esteem makes students less likely to struggle to cut back or control their Facebook use. Furthermore, Zeigler Hill et al. (2013) contend that lower undergraduate grades are linked to unstable self-esteem.

From the PLS-SEM analysis, the value of the p-value stands at 0. 000 (0. 5%) and B-value is -0. 714 supported the postulation that Facebook addiction positively influence college students' course learning. Thus, it is possible to state that the given evidence corresponds to this theory. These

Findings affirm previous works and journals that have stressed the importance of Facebook in learning in higher learning institutions. This is contrary to what Hwang and colleagues' study suggest; that Facebook addiction enhances students' learning outcomes of the course content. As Kanat-Maymon et al. (2018) or Bachnio et al. (2016) and also Baturay & Toker (2017) also pointed out Internet use and social media applications in reference with course learning. Although, previous studies have shown that teaching with the help of Facebook is effective (Moorthy et al. , 2019). In view of these observations, it discerned that colleges and other academicians must escalate their efforts in creating awareness of facebook addiction and other ill- effects of social network sites. This can be done through awareness creation among children and caregivers on the impact of excessive use of Facebook on the performance of pupils in school through crusades, awareness creation meetings, and student seminars.

6.1 Limitations and further research

The present study had some limitations as well; the first limitation was that the data for this study were collected from two public sector universities, whereas further research can expand the survey and can collect the data from more public sector universities, private universities, and colleges and then compare the results accordingly. Furthermore, the present study is purely quantitative, which investigated the impact of Facebook addiction on EFL students' self-esteem and course learning at the higher education level. In addition, further research can collect the data in the form of interviews and surveys to understand the phenomena better.

6.2 CONCLUSION

The percentage of people who are addicted to Facebook has highly raised up in the recent past especially among the youths. Facebook: As for many students it became a daily ritual to wade through the Facebook pages and friends' profiles. As various authors noted based on many studies (Hong et al. , 2014, Koc and Gulyagci 2013) it has huge impact on Students' learning behavior where they exhibits higher levels of anxiety and sadness. The goal of this research was to investigate relationship between Facebook dependency, self-estim and college students' course acquisition. The result of the study presented in this paper described a significant reduction in self-esteem resulting from Facebook dependency. This shows that participants concurring that through the above study the use of Facebook by students has a negative impact on their self-esteem hence performance.

The results of this study also confirm that Facebook use is appropriate in regard to the activities related to courses and disclosed that Facebook addiction does not have an influence on students' performance concerning the learning of the courses. Indeed, there is no impact on a student's learning due to growing up with technology, which enhances learning. . Therefore, the result of this study extends the existing research literature on Facebook addiction in terms of describing the extent to which it damages the academic success and self-esteem of students. The outcomes assist in addressing earlier conflicting information regarding the correlation of Facebook dependency and academic learning. The study also steams on the subject of people's self- image specifically in relation to their learning process and activities. Students' academic performance is positively correlated with self-esteem, which is overshadowed by Facebook drawbacks and inconsiderable for users. To the best knowledge of the researcher, this study, which examines the effect of Facebook addiction on students' self-esteem and class learning in the area of ELT at the higher education level in Pakistan, is among the first empirical studies of its type in this country.

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