

# Facebook Addiction among Afghan University Students: A Structural Equation Modelling



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**Abstract:** *The current research intends to evaluate the validity and reliability of the adopted model-BFAS, and investigate relationship between the motives and Facebook addiction in Afghanistan. The adopted instrument were online distributed to undergraduate and postgraduate students and only 431 responded across the country to determine their intentions for using Facebook. The software of RStudio used for descriptive analysis and SEM-PLS approach was applied to hypothesis the relationship between the constructs. Results showed that the BFAS measures intensity of Facebook addiction, although measurement model was reliable and structural model has discriminate validity. Further, the results show that students use Facebook for communication, social interaction and entertainment, and these motives positively predicted Facebook addiction. Based on the results, authors believe that the Facebook addiction is a phenomenon that exists across the countries, and greater use of Facebook would tend to create problem of addiction. In sum up, this research would help parents, serves provider, policy makers, current Facebook users, and students to control their excessive use of Facebook.*

**Keywords:** Facebook; Addiction; SEM; Motives

## I. INTRODUCTION

Facebook created by two college students which are named Mark Zuckerberg along with Edward Saverin, and it's began in February of 2004. Nowadays, after 17 years of existing, Facebook has become the largest user friendly social network website and global phenomenon [1], [2]. Currently, there are over 2.8 billion monthly users worldwide are active participants in the communities (Facebook, 2021) as of

March, 2021. It is broadly using worldwide for many different reasons like; using for academic purposes and it is a machine learning tools [3], [4], it is a dynamic marketing and business tools [5], [6], it is an intensive social communication tools for finding ways to connect with friends, family members, classmates, scholars and so on [7], and it is one of the best places where we can find manifestation of feelings [8]. Nowadays, the learning process increasingly involves informal learning by information technology, and Facebook endure to excite scholars and educators to explore its educational use [9]. In terms of social reason, the users of Facebook have communities and groups of people that they are able to create a public or semipublic profile, chatting, create groups, send private messaging, and share posts, among others in order to keep in touch with family members, friends, classmates and world happenings [10]–[13]. As for as marketing and business tools, many organizations, companies, and institutions created Facebook accounts to promote for their trade, industries and businesses among the target populations [10], [13]. Nowadays Facebook has become a global phenomenon and being one of the best and greatest importance communication tools among students and youth generation. According to Zarmohzzabieh [14] university students being logged in Facebook for entertainment, maintaining existing relationship, and passing time. The finding show that the Facebook user has increased the scope of higher education [15], research methods [16] and friendship facilitation over the past years [17]. In college and university, the students are the most prolific social network user [18]. According to Allen [19] Facebook user get huge attention due to the educational emphasis on technology, and it is indeed a valid research tools to administer the social, health psychometric and so on researches [20], [21]. Further, Facebook is the best platform for training and contact with friends and scholars [10], [11], [17]. Although Facebook can promoted active learning [22], enhance students' engagement [23], support knowledge structure [24], [25], and be used as a communication tool consistent with the favorite of today students [26]–[29]. Many studies stated that more than 92% of students using Facebook and spending her/his time to be logged on this site [9], [15], [19], and [27]. The finding of many studies shows that there are five main academic use of Facebook which are: (1) Support class discussions and helping students engage in collaborative learning; (2) Developing content; (3)

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Sharing educational resources; (4) Delivering content to expose students to extra-curricular resources; and (5) To support self-managed learning [15], [19], [23], [27], [30], [31].

Further, it's also reported that students can use Facebook for other purposes like improvement in English language knowledge such as writhing, reading, speaking and vocabulary [27], [32].

As reported by Social Media Stats in Afghanistan-March 2021, the number of Internet and social media users in the Afghanistan is forecast to increase to approximately (17 %) of Afghanistan population [23] and the most social media user was in big cities. Facebook is by far the most popular social media website in the Afghanistan, and approximately (87.56 %) of the Afghan social media user were using Facebook [33]–[35], followed by Twitter (4.30 %), YouTube (3.49%), Pinterest (2.80 %), Instagram (0.30 %), Google+ (0.28 %) and so on. According to [33] Afghans students have more access Internet to use Facebook in libraries, learning centers, cultural centers, bookstores and universities campuses [35], [36]. Likewise it's founded that the students and youth generations Facebook user experienced some negative effects of excessive Facebook usage and already captured "Addiction". Although, abuse and excessive usage of Facebook is significant public health problems globally [9], [14], and the use of Facebook has now become a dominant discourse among Afghan university students [35]–[38]. Although, the large number of Afghan university students and youth engagement use Facebook and their quantity of his/her time that they are spending for cyberspace, spending leisure time for online gaming, share the information and other interaction activities [35], [36], [39].

In recent years, it has been recognized that the Facebook Addiction has become the considerably more important. Several studies have been conducted on this topic [12], [17], [28], [40], [41], [41], [42]. It is reported that Facebook addiction has become a universal concern and considered as a health issue [43], although it has been a worldwide problem among university students and youth generation [2], [10], [17], [28], [40], [42], [44]. It is clear that the symptoms of Facebook addiction can be exhibited in attitudes [45], cognition [46], physical and emotional reaction [47], and interpersonal and psychological problems [7], [34], [44], [48]. Although, those who addicted in Facebook and other social media facing with many challenges such as skipping sleep, feeling anxiety, stressed, ignoring family responsibilities, showing up late in academic performance and professional works [34], [40], [44]. Further, these are evidences of physical and psychological disorder which meet up with the criteria for impulse control disorder, mental illness characterized by an uncontrollable desire to perform behavior [17], [40], and [42]. Moreover, there are very limited studies conducted regarding Facebook addiction in Afghanistan; therefore, it is important to conduct a study in order to fill this gap. So, it is expected this work tries to explore Facebook addiction model and its predictor among Afghan university students and youth engagement via

Structural Equation Modeling (SEM) approach. Further, this research is aimed to evaluate the validity and reliability of the adopted model-BFAS, with in Afghan student's sample. The objective of the study is to investigate the motives that encourage Afghan students to fulfill their desires through Facebook addiction.

## II. LITERATURE AND HYPOTHESES DEVELOPING

### A. Facebook User

There are many reasons why students and youth generations use Facebook. Facebook user population worldwide has increased dramatically from 100 million in 2008 to 2.8 billion monthly active users as and Approximately 1.85 billion daily active users on average for March 2021 (Facebook, 2021). According to Facebook newsroom in 2021, about 4.45 million Facebook monthly active user in Afghanistan which accounted for 11.4% of its entire population. According to [27] of all social media users, 92% use Facebook, while 71% of all adult internet users use Facebook. A number of studies have founded many motives to visit Facebook which are professional advancement [4], [31], [49], [50], entertainment and relaxing [10], [51], social interaction with existing friends and family [10], [52], relationship maintenance [53], virtual community and communication [10], companionship [54], escapism [55], meeting new people [30], [56], expressive information sharing and getting information about any events [57], and so on. Afghan students also have used Facebook for different purposes such as personal life, passing time, learning, sharing information, political arena and so forth [33], [37], [38]. The finding of studies show that students spend a huge partial of their daily time on Facebook and other social media rather than concentrating on their academic activities [35], [37], [38].

### B. Facebook Addiction

Facebook have become extremely and increasingly popular among learners. The excessive use by individuals has led to the emergence of the concepts of Facebook addiction [41], [42], [42], feeling anxious [43], [58], got depression [59], [60], body image and disordered eating [61], drinking cognition and alcohol use [62]. The concept of addiction is not easy to define, but central to it is dependence on a substance or daily activities. Dependence is characterized by overindulgence, tolerance, withdrawal, craving, and loss of control [34]. Several studies have reported that the Facebook addiction is a common problem among students and youth generations [24], [24], [40], [42], [44]. Although, Facebook addiction had received slightly consideration in the literature and founded that Facebook addiction have positive correlation with Facebook motives such as entertainment, communication and social interaction [10], [17], [40], [44], [58], [63], [64].



Further, it is argued that the Facebook addiction is related with being male, being a heavy Facebook user [65], being in a higher year level at university [24]. The finding of [10] showed that the three constructs such as social interaction, entertainment and communication were predictors of Facebook addiction.

### C. Facebook as a Communication tools

Facebook operates primarily as a tool for communication among university students and youth engagement in Afghanistan [33], [35], [36]. By using the Facebook, the students are able to share any information regarding their academic activities [4], [15], [19], class notes and assignments [56]. Although, the results of many research show that communication professionals appreciate social media, particularly Facebook for the ease and speed with which information can be accessed and delivered [66]–[68]. Although, communication motives encourage users to stay in touch to post a comment on his/her friend's wall, send messages to friends, sharing information on his/her wall, chat with friends, build network with others, and get gossip about others [44], [63], [69]. Communication was found to be a motive for using Facebook among students and was the strong predictor of Facebook addiction [10], [63], [70], [71]. Further, it can be inferred that communication motives will influence the Facebook addiction, social interaction and entertainment, because communication was the most frequently cited motive for using Facebook. Thus, we hypothesize that:

*H1: Communication will have a positive effect on Facebook Addiction.*

*H2: Communication will have a positive effect on Social interaction.*

*H3: Communication will have a positive effect on entertainment.*

### D. Facebook as an Entertainment tools

Another important motive for massive use of Facebook is entertainment. They were numerous of interactive features offered by Facebook such as games, notes, photographs, videos available on Facebook which enable users to relax and have fun [25], [63], [69]. Although, literature shows that most of students use Facebook for fun and entertainment [10], [24], [69]. However, entertainment and passing time were most frequently used for Facebook use to share fun and enjoyable [24], content and photo sharing [72], upload materials and social relations [10], [24]. The findings of studies carried out that entertainment motives were significantly and positively predicted Facebook addiction [10], [25], and [63]. Thus, we hypothesize that:

*H4: Entertainment will have a positive effect on Facebook addiction.*

*H5: Entertainment will have a positive effect on social interaction.*

### E. Facebook as tool for Social Interaction

As founded that Facebook is an effective socialization tool rather than social media. Many students used Facebook to stay in touch and build social ties in terms of maintaining old and existing friendships, share recent activities with friends,

checking invitation wedding party and birthday from friends [65], [73], [74]. According to [69] the social interaction motives encourage students to excessively use Facebook for personal self-disclosure. Although, excessive users may be partly relapsed and attributed to an increasing overdependence on Facebook as meaningful social interaction and may increase the risk of addiction [72]. Several studies found that the social interaction motive to be a major for using the Facebook and it has a significant relationship with Facebook addiction [10], [63]. Thus, we hypothesize that:

*H6: Social interaction will have a positive effect on Facebook addiction.*

## III. METHODS

### A. Sampling

To achieve the study objectives, a quantitative method via online survey was conducted to collect data on the relevant information related to the issues of the study. Google Form was used to collect data, and the link of the survey was shared on Facebook walls and other social media groups. The feature of the current study required data to be collected from present and graduated students inside and outside of Afghanistan. The sample was selected on the basis of a convenient sampling method between November and December 2020. Data was collected from 431 individuals, aged from 18 to 38 years. Most participants were males (76%), and the majority of individuals' status were single (52%), having completed their bachelor's degree (60%), Masters (35%), and Ph.D (5%), (see Table 1). The current sample was considered sufficient which the application SEM approach to address the research objective and testing the hypotheses [75]–[77].

### B. Measurement

Specifically, the instrument designed for the current study included three parts which are: first, sociodemographic characteristics gender, age, status, background and level of study, and GPA. Second, the constructs of communication, entertainment, and social interaction which consist of 17 items were adopted from [10], [69], and [78] to investigate students' motives for Facebook use. And third, the widely used Bergen Facebook Addiction Scale (BFAS) developed by [79] is used to measure an individual's level of Facebook addiction. The adopted BFAS includes six constructs (conflict, mood-modification, relapse, salience, tolerance, and withdrawal) with 18-item self-report inventory which covers the problems created by excessive use of Facebook, each item is scored on a five-point Likert scale from (1= Very rarely to 5= Very often); and asked from participants to indicate their agreement/disagreement on these items. The higher scores indicate greater Facebook addiction. The instrument has acceptable reliability ( $\alpha=0.74$ ) for the targeted population (see Table 2).



C. Statistical Analysis

The collected data was analyzed with regard to the objectives of the study using RStudio-1.3.1093 for descriptive analysis and SmartPLS-3 software was used to test the hypothesis model using Structural Equation Model- Partial Least Squares (SEM-PLS) [76]. To test the measure model (validity and reliability of measures), next by an examination of the structural relationships between the existing constructs (testing the hypothesized relationship) [76], [80], [81]. As well, the significance of path coefficients and the loading a bootstrapping method (5000 resamples) was used [76], [81], and [82].

IV. RESULTS

Based on the objectives of the current study, the SEM-PLS statistical approach were employed for testing the hypotheses. This section will presents and discusses the finding and tabulate the results.

A. Reliability and Validity of Measurement Model

Relationship between the motives constructs, Facebook addiction scales and indicators were assessed for the reliability and validity of measurement model using PLS approach [76], [80], and [83]. In this case, four common measures recommended by

Table 1: Participant’s demographic characteristics by Gender

Factors	Levels	Total (n=431)	Males (76%)	Females (24%)
Age (years)	18-22	83 (19%)	57 (13%)	26 (6%)
	23-28	173(40%)	120 (28%)	53(12%)
	29-33	87 (20%)	69 (16%)	18 (4%)
	33-38	88 (21%)	82 (19%)	6 (2%)
Status	Married	208(48%)	183 (42%)	25 (6%)
	Single	223(52%)	145 (34%)	78 (18)
Universities	Abroad University	111(26%)	87(20%)	24(6%)
	Bamyan University	105(24%)	78(18%)	27(6%)
	Shahid-Rabani-University	16(4%)	12(3%)	4(1%)
	Kabul-Polytechich University	10(2%)	9(2%)	1
	Kabul University	73(17%)	50(12%)	23(5%)
	Nangarhar University	17(4%)	14(3%)	3(1%)
	Takhar University	7(2%)	7(2%)	0
	Others Universities	92(21%)	71(16%)	21(5%)
Discipline Studied	Science and Technology	230(53%)	170(39%)	60(14%)
	Social Science	201(47%)	158(37%)	43(10%)
Level of Study	Bachelor's Degree	259(60%)	185(43%)	74(17%)
	Master's Degree	149(35%)	122(28%)	27(6%)
	Philosophy	23(5%)	21(4%)	2(1%)

Table 2: Constructs Reliability and validity

Constructs	Items	Factor Loading	Cronbach's Alpha	CR	AVE
Communication	Q2-Com2	0.64	0.72	0.82	0.47
	Q4-Com4	0.57			
	Q5-Com5	0.72			
	Q6-Com6	0.76			
	Q7-Com7	0.72			
	Q13-S-In1	0.66			
	Q14-S-In2	0.7			
Social Interaction	Q15-S-In3	0.69	0.69	0.8	0.45
	Q16-S-In4	0.71			
	Q17-S-In5	0.59			
	Q8-Ent1	0.67			
	Q9-Ent2	0.77			
Entertainment	Q10-En3	0.81	0.72	0.82	0.48
	Q11-Ent4	0.54			
	Q12-Ent5	0.62			
	Conflict	0.75			
	M-Modification	0.67			
	Relapse	0.76			
	Salience	0.74			
	Tolerance	0.8			
Facebook Addiction	Withdrawal	0.73	0.84	0.88	0.55



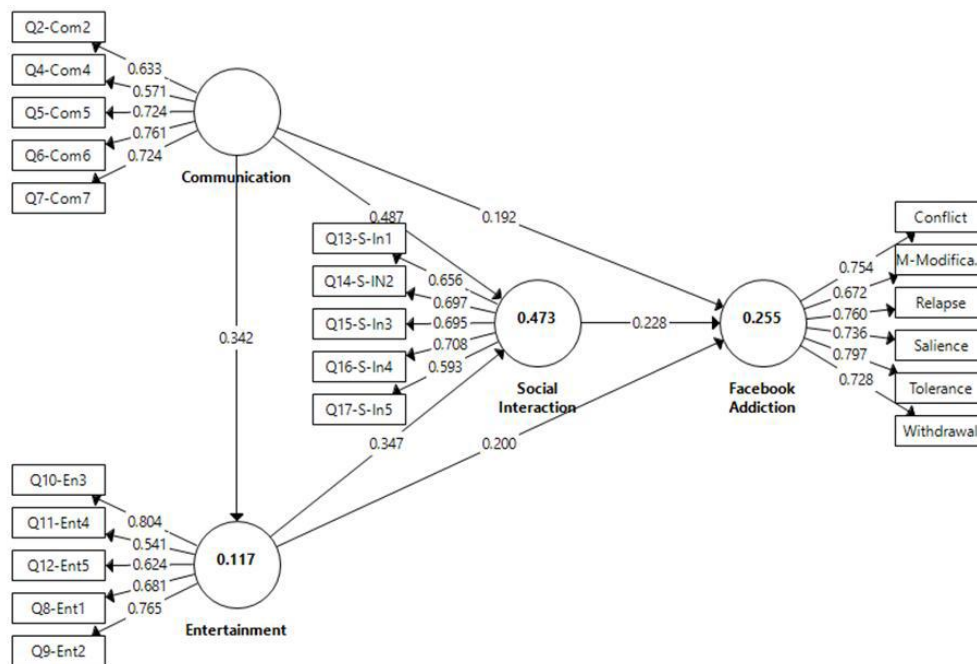


Fig.1. Measurement Model

- [76], [80], [83] which are; factor loadings, Cronbach's Alpha, composite reliability (CR), and average variance extracted (AVE).

The under investigated constructs validity of the adopted model assessed by examining the respective factor loading, while it has been recommended the cut-off value for factor loading is higher than 0.50, and it is considered significant [76], [84], [85]. As shown in Table 2 and Figure 2, the factor loading of observed items which are measuring the particular constructs are gather than recommended cut-off value and ranged from (0.54 to 0.81), thus confirming constructs validity.

Further, the most common measurements Cronbach alpha and CR were used to examine the reliability based on the interrelationship between the observed constructs [76], [80], [83], [84]. In PLS-SEM, the values of Cronbach alpha and CR between (0.60 to 0.70), are acceptable [83], [84]. In order to increase the values of CR in the reflected constructs of measurement model two items form Communication (Q1-Com1, Q3-Com3) were deleted [83]. After the deletion, the CR for all the constructs are greater than the recommended cut-off values (see Table 2).

Furthermore, by way of mentioned above, the convergent validity was assessed in terms of AVE and the value should be exceed 0.50, that adequate for convergent validity [80], [84]. It is reported that the high values shows that the constructs are measuring the predicted concept [80]. In this case, Table 2 shows that the only one construct (Facebook addiction) score of AVE were above 0.50 except for others; communication, social interaction and entertainment constructs (0.47, 0.45, and 0.48; respectively). Thus, it can be not too much concern to say that there are no validity problems, because the mentioned values almost 0.50. Finally, it is confirming that the measurement model has a convergent validity.

**B. Discriminant validity**

In this case, the criterion of Fornell-Lacker has used to assess discriminant validity (DV) [86]. This approach compares the

square root of AVE with the correlation between the measures of potential latent constructs [84], [85]. According to Dhaha [10], the DV is achieved when AVE is greater than the square of correlation between the two latent constructs. The output of correlation coefficients between the latent constructs has been shows in Table 3. Referring to Table 3, all the values of square root of AVE (values in bold) and correlations between constructs (off-diagonal) are greater than the correlations in the relevant columns and rows. Overall, it is easy to say that the current measurement model demonstrated acceptable discriminant validity.

Table 3: Discriminant validity

Latent Constructs	AVE	A	B	C	D
Communication (A)	0.47	<b>0.69</b>			
Entertainment(B)	0.48	0.34	<b>0.69</b>		
Facebook Addiction (C)	0.55	0.40	0.38	<b>0.74</b>	
Social Interaction (D)	0.45	0.60	0.51	0.45	<b>0.67</b>

**C. Hypothesis Testing**

To assess this structural model for examining the hypothesized model between latent constructs has been suggested by Hair et al. (2020) to looking the standardized beta coefficient ( $\beta$ ), coefficient of determination( $R^2$ ), and path coefficient (t-value) via a bootstrapping method with resampling of 5000 [81]. The  $\beta$  compares the strength of the effect of each individual independent construct to the dependent construct [37], [82]. As asserted by [82], while  $R^2$  are used in order to find the amount of variance in each endogenous latent construct, which are described by the model. The others measures such predictive relevance ( $Q^2$ ) and effect sizes ( $f^2$ ) should be report by researchers as well.



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In PLS-SEM approach,  $Q^2$  obtained by blindfolding calculation and it is a synthesis of function fitting and cross-validation, and  $Q^2$  greater than zero are considered that the structural model have predictive relevance. As stated by many studies that the statistical significance (p-value), and substantive significance ( $f^2$ ) are used to measure the changes in  $R^2$  to understand that the dependent and independent constructs have practical impact [80]–[82]. As suggested that the effect is large when  $f^2=0.35$ , medium when  $f^2=0.15$ , and small when  $f^2=0.03$ .

Table 4 and Figure 2 present that the communication ( $\beta =0.49$ ,  $t =13.19$ ,  $p<0.05$ ,  $R^2=0.473$ ) and entertainment ( $\beta =0.35$ ,  $t =8.09$ ,  $p<0.05$ ,  $R^2=0.473$ ) positively influenced social interaction, which implies that 47.3% social interaction predicted by communication and entertainment. This gives support for H2, and H5. Further, communication ( $\beta =0.34$ ,  $t =7.37$ ,  $p<0.05$ ,  $R^2=0.117$ ) were

significant, while communication explaining 11.7% of the variance in entertainment and H3 supported. Next we looked at the predictive effects of the Facebook addiction. Furthermore, the Communication ( $\beta =0.19$ ,  $t =3.57$ ,  $p<0.05$ ,  $R^2=0.255$ ), social interaction ( $\beta =0.23$ ,  $t =3.57$ ,  $p<0.05$ ,  $R^2=0.255$ ), and entertainment ( $\beta =0.20$ ,  $t =4.09$ ,  $p<0.05$ ,  $R^2=0.255$ ) were the significant predictors of Facebook addiction and explaining 25.5% of the variance in addiction. The findings support H1, H4, and H6. From this analysis, all hypothesized relationship are supported at ( $p<0.05$ ).

The result indicated  $Q^2 > 0$ , thus the adopted model must be able to provide a prediction of endogenous constructs. Table 4 shows that communication on Facebook addiction has large effect; while entertainment on social interaction has medium effect, and others have small effect on the adopted mode.

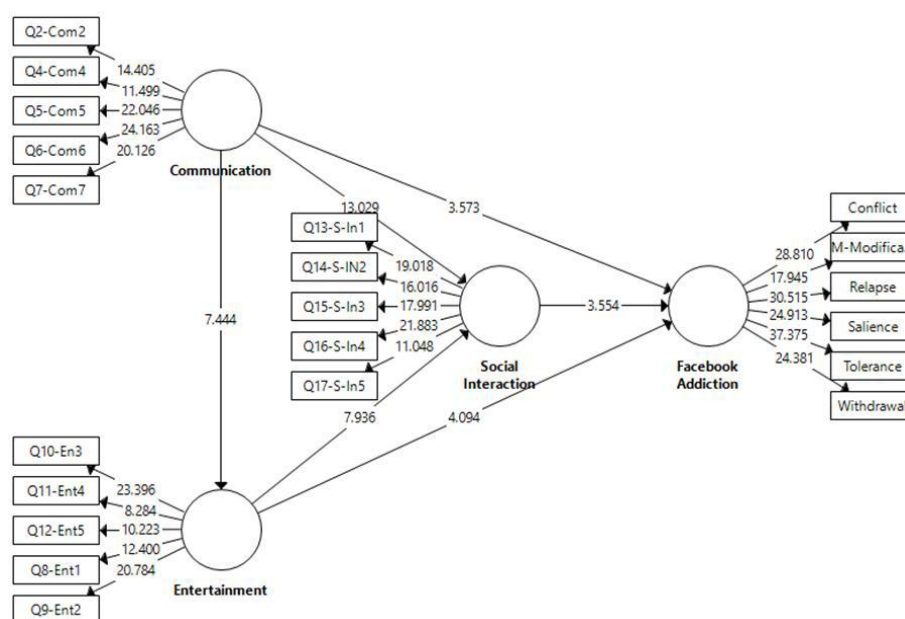


Fig.2.Structural Model

Table 4: Results of hypotheses testing

Hypothesis	Relationship	$\beta$	SE	T-Value	Decision	$R^2$	$Q^2$	$f^2$
H1	Comm -> FA	0.19	0.05	3.55	Supported	0.255	0.13	0.03
H2	Comm -> So-In	0.49	0.04	13.19	Supported	0.473	0.21	0.4
H3	Comm->Ente	0.34	0.05	7.37	Supported	0.117		0.13
H4	Ente -> FA	0.2	0.05	4.09	Supported			0.04
H5	Ente -> So-In	0.35	0.04	8.09	Supported			0.2
H6	So-In -> FA	0.23	0.07	3.54	Supported			0.04

## V. DISCUSSION AND CONCLUSION

To sum up, Afghan students' motives for Facebook use have become the important influences to Facebook addiction. Likewise, Afghan students extremely used Facebook for these three following motives; communication, social interaction, and entertainment. Although, this study is required to determine the three above mentioned motives effect on Facebook addiction. Our finding show that the mentioned motives predicting Facebook addiction and

interrelationship between endogenous constructs are statistically significant. Generally, this finding is supported and similar with other earlier studies [10], [48], [63], and contrary with finding of the study of [87].



The result of this study carried out that the communication motive predicted the Facebook addiction, social interaction, and entertainment; and the interrelationship between the constructs is statistically significant. This finding supported by [88] who found that the correlations between communication and Facebook addiction is statistically significant; on the other hand this study is not similar with finding of [10] who founded that communication motive did not predict Facebook addiction; and have significant negative relationship with Facebook addiction [87]. Further, this confirms that the relationship between entertainment motive; and Facebook addiction and social interaction motive are positively significant, respectively. This finding is similar with previous studies that found entertainment to be a predictor of Facebook addiction and social interaction [10], [24], [68], [89], [90]. Social interaction motive positively predicted Facebook addiction. This is similar with previous literatures [10], and also contrary with [63] who found that social interaction motive did not predict Facebook addiction among her sampling.

As a conclusion, this study approve that BFAS is acceptable instrument to use SEM-PLS and has adequate properties in terms of converging and discernment validity, internal consistency and reliability. The most important contribution of the current study is to deliver and empirical evidence of increasing problem of Facebook addiction among youth engagement and students in Afghanistan. Based on the results, authors believe that the Facebook addiction is a phenomenon that exists across the countries, and greater use of Facebook would tend to create problem of addiction. Although, we suggest to service providers and policy makers that the young generation and students should be aware on any danger in terms of excessive user of social media, especially Facebook. Further, there is a need for appropriate academic agencies to do more research and focus on these emerging addiction problems associated with social media.

**Limitations of study:** This study has several limitations too. In this study, the data were collected by online survey via non probability sampling. It is recommended that in the future studies data should be collect through probability sampling and increase the sample size. In addition, the study focusing only on the motives as predictors of Facebook addiction, it-should be address any other moderating constructs to look at the moderation effects of demographic characteristics such as gender, level of study, academic performance and so on.

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