WILEY | Hindawi

Research Article

Development and Validation of a Scale for Measuring Motivations to Use Facebook: Results of Second-Order Confirmatory Factor Analysis

Qaisar Khalid Mahmood [ID],[1] **Muhammad Babar Akram,**[2] **Muhammad Siddique Akbar,**[3] **and Muhammad Ishaq**[4]

[1]*Department of Gender Studies, University of the Punjab, Lahore, Pakistan*
[2]*International Islamic University, Islamabad, Pakistan*
[3]*Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan*
[4]*Brannfjell Skole, Oslo, Norway*

Correspondence should be addressed to Qaisar Khalid Mahmood; qaisar.dgs@pu.edu.pk

This study is aimed at investigating the motivational needs of Pakistani Facebook users and intended to develop a scale to measure motivation to use Facebook among Pakistani users. Opting uses and gratifications theory and reviewing the relevant literature, the researchers developed a scale comprised of six motivations. A cross-sectional survey was conducted with the university students, and 1245 university students participated in this study. The results of first- and second-order confirmatory analyses indicate that the scale was reliable and had construct validity as well. This scale confirmed six motivations as motivational needs of Pakistani Facebook users. This scale covers both social and personal needs. The findings of this study confirm that Facebook users utilize Facebook for various purposes.

1. Introduction

In the last two decades, people have witnessed widespread adoption of social networking sites (SNSs) across the globe. These SNSs enable individuals to connect and interact with one another [1, 2]. Primarily, people use SNSs to develop new social ties and to maintain offline friendships [3–5]. SNSs also allow users to network with those people with whom they share similar interests or concerns [6]. SNSs are quite popular in each age group and every segment of the society [7], but young people are most vivid users of these websites [8]. In present times, the youth prefer to use SNSs for managing their social life [9]. Among the youth, university students are more inclined to use SNSs in routine life [10, 11]. Previous research indicates that 80 to 99% of young people anywhere are SNS users and the majority of them are university students [12–15]. University students

spent around three hours every day on SNSs. They use SNSs excessively because they are considered "forerunners in the adoption of new communication technologies" [16].

Globally, Facebook has become a leading social networking site (SNS) because of its more than one billion active users [17, 18] and global user base [19, 20]. People from all over the world, belonging to the different cultures and geographical settings, are now utilizing this platform with diverse motives and gratifications [21, 22]. Due to its versatile users, the researchers have investigated multipurpose use of Facebook [23–25]. Likewise, like other SNSs, the majority of Facebook users are adolescents and young adults [26]. Facebook is one of the most popular social networking sites among university students [27].

Facebook was primarily designed to foster social interaction among university students and to provide a platform for information sharing and development of relationships with

each other [28]. Scholars argue that university students use Facebook for different purposes (e.g., informational, recreational, communicative, and entertainment), but it entirely depends upon their gratifications of how they make use of it [29]. In previous research, some scholars highlighted that students' motives of using Facebook differed because they belonged to different cultures and social backgrounds [30].

1.1. Facebook Use among Pakistani University Students.
Pakistan is represented as a country of young generation and also stepped into a digital culture. Official estimates reveal that there are more than 120 million Internet users [31] and 40-60 percent users are young people [32]. Among these Internet users, 43.55 million people use Facebook [33], the most accessed SNS in the country. Likewise, young people are the most active users of SNSs [34]. The Pakistani youth use Facebook in their routine life [35]. This becomes more significant for university students. At one side, the scholars examined the Facebook use among university students as a negative activity. They believed that Facebook use had bad outcomes for young people [36]. University students spent a lot of time on Facebook; therefore, they were considered obsessed with Facebook [37]. They primarily used this platform for entertainment and leisure activities [38, 39] and did not give proper time to their studies [36]. Besides gigantic claims made in these studies, these studies had theoretical ambiguities, lacked representative samples, and were based on descriptive analysis. On the other hand, the researchers contend that university students used Facebook in a positive manner [40]. They used Facebook for maintaining and developing social relationship [41], and they also used this platform for information seeking [42]. In addition, a relationship was also found between intensity of Facebook use and manifestation of social capital [43, 44].

1.2. Rationale of Current Study.
Though the literature on Facebook use among the Pakistani youth is growing, no rigorous efforts have been made to understand the uses and gratifications (U&G) perspectives of young Pakistani Facebook users. As Dhir [45] reported, most of the studies investigating university students' motives for Facebook use were conducted in the USA and other western societies. Therefore, there is possibility that cultural differences may exist in using Facebook among university students of other countries [30]. Keeping this in view, a scientific inquiry is required in order to examine the motivational needs of young Pakistani Facebook users in general and university students in particular. This study is aimed at developing a model of motivational needs for young Pakistani Facebook users studying at the university.

1.3. Literature Review

1.3.1. Uses and Gratifications (U&G) Theory.
U&G theory, a leading paradigm to explain media usage, assumes that people actively make use of media with certain objectives [46]. Unlike conventional approaches that focus on the effects of media exposure on audiences, this theory asks to study what people do with media [47]. This theory provides an explanation why users use a specific medium and what kinds of functions that medium serves for them [48]. Over the years,

the researcher used U&G theory to study conventional mass media [49], interpersonal communication [50], and Internet [51, 52]. Therefore, scholars consider U&G theory "a cutting edge approach" to locate motives of using communication technologies like SNSs [53]. Papacharissi [54] noted that U&G theory was frequently used to explore the social and psychological antecedents (i.e., individual differences), media use motives, and media use effects or consequences. According to U&G theory, users seek gratifications from various kinds of communicational technologies, and these gratifications represent users' needs or motivations [55]. As U&G theory posits its users as active users, therefore, gratifications sought from media and communication technologies are goal-oriented and utility-driven for its users [56, 57]. Leung [58] suggest that goal-oriented and utility-driven use of communication technologies determines the motivations behind the use of any communication technology. This particular study used U&G theory to explain what utility-driven and goal-directed gratifications Pakistani students attained through Facebook use at university level.

1.4. Motivations to Use SNSs and Facebook.
In order to explain gratifications sought from Facebook and other SNSs, various studies have been conducted over the period of time. The authors did a systematic review (see Table 1) of these studies to find out key motivations that young people reported for their Facebook use. The literature was searched on Google Scholar with various search terms. These search terms included "motives to use Facebook", "users' gratifications from Facebook", "Pakistani youth motivations to use Facebook", and "motivations to use social media in Pakistan". In earlier research, studies reported that Facebook users primarily use Facebook for sustaining their offline friendships and for finding new friends through this platform [15, 59–64]. Young people believe that Facebook is a good source for information seeking and sharing. Thus, they utilize this platform for information seeking and sharing [65–70].

They also spend time on Facebook for their leisure and recreational activities. Recent research also indicates that young Facebook users utilize this website for expressing their selves and document their life events on Facebook. In addition, other motivations have also been reported for Facebook use among the youth. In this study, the authors used a five-factor motivational model to explain the use of Facebook among university students. The motivations were making new social ties, maintaining existing social ties, seeking and sharing information, recreation and entertainment, and self-expression and self-documentation. This model fulfils the assumption of U&G theory that these motivations reflect utility-driven and goal-directed use of Facebook among the Pakistani youth. This study was a part of doctoral research project done by the principal author. The research project was approved by the advanced studies research board (ASRB), University of the Punjab, Lahore [71].

2. Methods

2.1. Data Collection.
A cross-sectional survey was conducted with university students. These students were enrolled in

TABLE 1: Review of the studies.

Year	Authors	Motivations to use Facebook
2008	Foregger	Pass time, connection, sexual attraction, utilities and upkeeps, establish/maintain old ties, accumulation, social comparison, and channel use and networking
2008	Joinson	Connection, shared identities, photographs, content, social investigation, social network and surfing, and status updating
2008	Raacke & Bonds-Raacke	Keep in touch with old friends, keep in touch with current friends, post/look at pictures, make new friends, locate old friends, learn about events, post social functions, feel connected, share information about oneself, and for academic purposes and/or dating purposes
2008	Sheldon	Relationship maintenance, passing time, virtual community, entertainment, coolness, and companionship
2009	Urista, Dong & Day	Efficient communication, convenient communication, curiosity about others, popularity, and relationship formation reinforcement
2010	Bonds-Raacke & Raacke	Information, friendship, and connection
2010	Gülnar, Balcı and Çakı	Narcissism and self-expression, media drenching and performance, passing time, information seeking, personal status, relationship maintenance, and entertainment
2010	Quan-Haase & Young	Pastime, affection, fashion, share problems, sociability, and social information
2010	Kim, Kim & Nam	Social motivation and non-social motivation
2011	Baek et al.	Information sharing, convenience and entertainment, pass time, interpersonal utility, and control
2011	Cheung, Chiu & Lee	Social identify, purpose value, self-discovery, maintaining interpersonal interconnectivity, social enhancement, entertainment value, and social presence
2011	Hew	Maintain existing relationships, meet new people, fun, make oneself more popular, pass time, express or present oneself, learning, task management tool, and activism
2011	Kim, Sohn & Choi	Seeking friends, social support, entertainment, information, and convenience
2011	Zhang, Tang & Leung	Social surveillance, entertainment, recognition, emotional support, network extension, and maintenance
2012	Alhabash et al.	Social connection, shared identities, photographs, contents, social investigation, social network surfing, and status updates
2012	Gadekar, Krishnatray & Gaur	Relationship maintenance, user-friendliness, relaxation, connecting with old friends, and social interaction
2012	Hew & Cheung	Keeping in touch with friends, entertainment, broadening the social network, expressing emotions, following the trend/crowd, and for fun/for the sake of having a Facebook account
2012	Hunt, Atkin & Krishnan	Interpersonal utility, self-expression, entertainment, and passing time
2012	Tosun	Maintain long-distance relationships, game playing/entertainment, active forms of photo-related activities, organizing social activities, passive observations, establishing new friendships, and initiating and/or terminating romantic relationships
2012	Wang, Tchernev & Solloway	Emotional needs, cognitive needs, social needs, and habitual needs
2012	Xu et al.	Coordination, disclosure, escape, immediate access, leisure, and stylishness
2013	Alemdar & Köke	Social surveillance, recognition, emotional support, social connectivity, entertainment, narcissism and self-expression, ease to use, freedom and courage, and adaptation to new challenges
2013	Balakrishnan & Shamim	Social networking, psychological benefits, entertainment, self-presentation, and skill enhancement
2013	Chigona	Keeping in touch with friends, diversion (escape) and entertainment and pass time, find friends from past relationships by using the friends search function, voyeurism, self-expressing, and social utility
2013	Dhaha & Igale	Virtual companionship and escape, interpersonal entertainment, self-description of own country, self-expression, information seeking, and passing time
2013	Ku, Chen & Zhang	Information, entertainment, fashion, sociability, and relationship maintenance
2013	Kwon, D'Angelo & McLeo	Information seeking, entertainment, communication, social relations, escape, and Facebook applications
2013	Jackson & Wang	Keeping in touch with parents and other family members, keeping in touch with friends, connecting with people known but rarely seen, meeting new people, and obtaining information
2013	Pai & Arnott	Belonging, hedonism, self-esteem, and reciprocity
2013	Patra, Gadekar & Krishnatray	Relationship maintenance, user-friendliness, relaxation, and connecting with old friends

TABLE 1: Continued.

Year	Authors	Motivations to use Facebook
2013	Whiting & Williams	Social interaction, information seeking, pass time, entertainment, relaxation, communicatory utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge about
2013	Yang & Brown	Relationship formation and relationship maintenance
2014	Alhabash, Chiang & Huang	Information sharing, self-documentation, social interaction, entertainment, passing time, self-expression, and medium appeal
2014	Karimi et al.	Interpersonal utility, pass time, entertainment, information seeking, and convenience
2014	Huang, Hsieh & Wu	Social gratifications
2014	Luchman, Bergstrom & Krulikowski	Information seeking, focused entertainment, purposive driven fun, and socially driven fun
2014	Giota & Kleftaras	Interpersonal utility, information seeking, entertainment, escape, and convenience
2014	Park & Lee	Entertainment, relationship maintenance, self-expression, and communication
2015	Basilisco & Cha	Seeking friends, entertainment, information, and convenience
2015	Antoniadis, Koukoulis & Serdaris	Debating, socializing, expression, and entertainment
2015	Rae & Lonborg	Information, friendship, and connection
2015	Ahmad, Mustafa & Ullah	Communication and interaction, outward looking, and self-actualization
2016	Briones & Janoske	Keeping in touch with others, help with work, and improving general knowledge
2016	Goktalay & Ozdilek	Gaining knowledge, communication, acquire acquaintances, and be environment friendly
2016	Ifinedo	Social enhancement, maintaining interpersonal interconnectivity, entertainment value, self-discovery value, and purposive value

eight universities of Lahore, the second largest city of Pakistan. The selected universities were University of Engineering and Technology, University of the Punjab, University of Education, University of Central Punjab, Government College University, University of Lahore, Lahore School of Economics, and University of Sargodha Lahore Campus. A total of 1245 students voluntarily participated in the survey, and they were randomly selected.

2.2. Instrument. Based on a comprehensive literature review that examined the gratification needs of Internet and social networking site users, a scale comprised of six motivations was developed to evaluate the students' motivation to use Facebook in their daily lives. These motivations are Facebook use for maintaining existing social ties, Facebook use for making new social tie, seeking and sharing information, recreation and entertainment, and self-documentation and self-expression.

2.3. Analysis. The purpose of this study was to validate a model of motivational needs for young Pakistani Facebook users attending university. For this purpose, confirmatory factor analysis (CFA) was performed using SPSS Amos. The reason for using CFA was that the researchers had already developed a model of motivational needs that was based on users' gratification theory and a literature review. CFA also provides a single-factor structure of the model. CFA was performed with a maximum likelihood model with standardized estimates and squared multiple correlations. To analyze the model fitness of the data, the p value of the chi-square test, the goodness of fit index (GFI), the alternative goodness of fit index (AGFI), the comparative fit indices (CFI), the nonnormed fit index (NFI), the root mean square error of approximation (RMSEA), and the standardized root

mean square residual (RMR) were computed. Furthermore, average variance extracted (AVE) and composite reliability (CR) were also computed to validate the results.

3. Findings

Fewer than half of the 1245 respondents (48.2%, $n = 600$) were enrolled in the discipline of economics and management sciences. The majority of respondents (74.1%, $n = 923$) had completed 14 years of education. The majority of users (22%, $n = 274$) had a Facebook account for the last three years, while slightly less than the majority (20.6%, $n = 257$) had a Facebook account for the last four years. The students spent 90 minutes (one and a half hours) per day on Facebook. They had an average of 250 friends on their network, of which 99 were actual or close friends [35].

CFA was performed to assess the single-factor structure of motivations to use Facebook (Table 2). The results show that fit indices are all within the acceptable limit (RMR = 0.052, RMSEA = 0.051, GFI = 0.962, AGFI = 0.946, CFI = 0.958, and NFI = 0.946). The factor loadings of the Urdu version of the FCV-19S were found to be statistically significant, ranging from 0.59 to 0.80. We also calculated AVE and CR, and the values of AVE = 0.465 and CR = 0.835 indicate an evidence of construct reliability (Figure 1).

Table 3 indicates that observed variables, Facebook use for making new social ties ($\beta = 0.62$, $R^2 = 0.38$, $p < 0.001$), Facebook use to maintain existing social ties ($\beta = 0.59$, $R^2 = 0.35$, $p < 0.001$), Facebook use for seeking and sharing information ($\beta = 0.65$, $R^2 = 0.42$, $p < 0.001$), and Facebook use for recreation and entertainment ($\beta = 0.58$, $R^2 = 0.34$, $p < 0.001$; $\beta = 0.82$, $R^2 = 0.67$, $p < 0.001$), were significant and successfully loaded on the latent variable.

TABLE 2: Model fit indices of confirmatory factor analysis.

Model fit indices	Good fit	Acceptable fit	Model values
Normed chi square (X^2/d)	$X^2/d < 3$	$3 < X^2/d < 5$	4.38
GFI	$0.95 \leq \text{GFI} \leq 1$	$0.90 \leq \text{GFI} \leq 0.95$	0.962
AGFI	$0.95 \leq \text{AGFI} \leq 1$	$0.90 \leq \text{AGFI} \leq 0.95$	0.946
CFI	$0.95 \leq \text{CFI} \leq 1$	$0.90 \leq \text{CFI} \leq 0.95$	0.958
NFI	$0.95 \leq \text{NFI} \leq 1$	$0.90 \leq \text{NFI} \leq 0.95$	0.946
RMSEA	$0 < \text{RMSEA} < 0.05$	$0.05 < \text{RMSEA} < 0.08$	0.052
RMR	$0 < \text{RMR} < 0.05$	$0.05 < \text{RMR} < 0.08$	0.051

Goodness of fit index (GFI), alternative goodness of fit index (AGFI), comparative fit indices (CFI), nonnormed fit index (NFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (RMR).
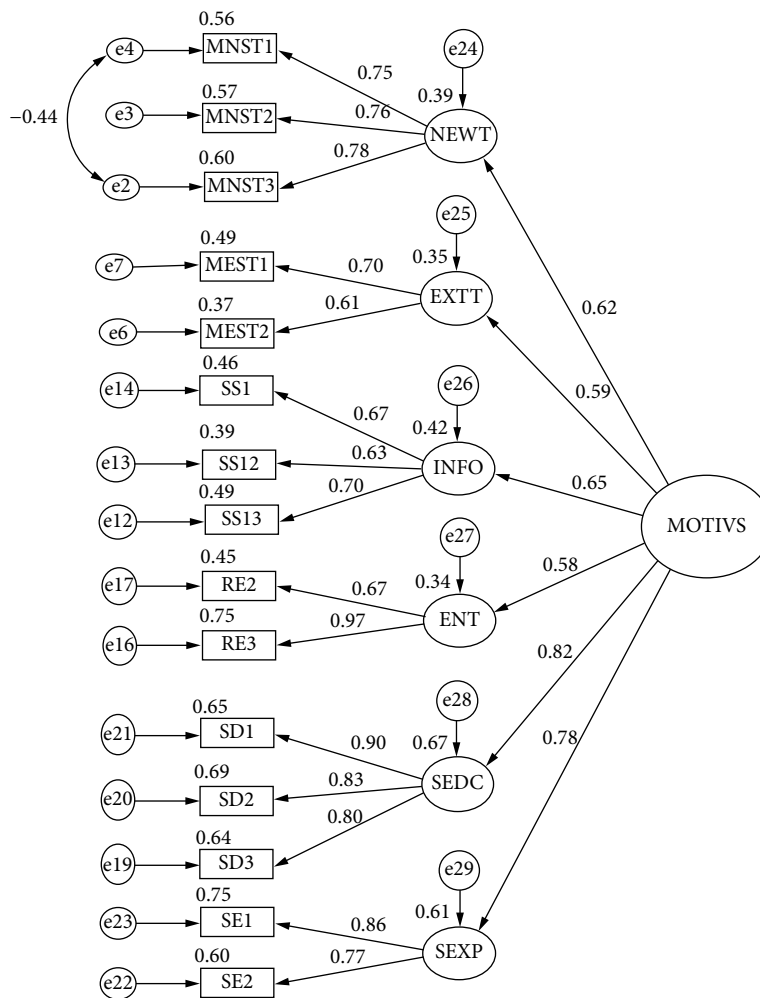

FIGURE 1: Structure of motivations to Facebook. MOTIVS: motivation, NEWT: new ties, EXTT: existing ties, INFO: information, ENT: entertainment, SEDC: self-documentation, SEXP: self-expression.

Table 4 indicates that all the items were loaded on their relevant constructs. The values of standardized estimates range from 0.61 to 0.87. These values were significant and well above than the threshold value of 0.050.

4. Discussion

The scale used to measure the motivational requirements of young Pakistani Facebook users was created using the

TABLE 3

Latent variable	Observed variable	Path coefficients (β)	(R^2)
	Making new social ties	0.62***	0.38
	Maintain existing social ties	0.59***	0.35
	Seeking & sharing information	0.65***	0.42
Motives for using Facebook	Recreation & entertainment	0.58***	0.34
	Self-documentation	0.82***	0.67
	Self-expression	0.78***	0.61

Note: ***$p < 0.001$.

TABLE 4: Standardized estimates of the scale items.

Loadings of the items on relevant constructs	Estimates
I use Facebook	
To make a lot of new friends through this platform ← make new social ties	0.75
To add friends of friends as new friends ← make new social ties	0.76
To allow strangers to add me as a friend ← make new social ties	0.78
To communicate with my existing friends ← make existing social ties	0.70
To find old friends with whom I have lost contact ← make existing social ties	0.61
To access and share information on social issues ← seeking & sharing information	0.67
To access and share academic information ← seeking & sharing information	0.63
To access and share sports information ← seeking & sharing information	0.70
To read and post jokes ← recreation & entertainment	0.67
To watch and share funny videos ← recreation & entertainment	0.87
To record what I do in life ← self-documentation	0.80
To record what I have learned ← self-documentation	0.83
To record where I have been ← self-documentation	0.80
To show my personality ← self-expression	0.86
To tell others about myself ← self-expression	0.77

findings of second-order confirmatory analysis, which are presented in this paper. The purpose of this study is to advance uses and gratifications theory by analyzing the gratification needs of Pakistani university students who use Facebook. Numerous gratification needs related to Facebook use have been identified. But it is still not clear what kind of motivations drives people to use Facebook [72]. Social needs are regarded by some academics as a key driving force behind Facebook usage. These needs are the development of new social ties, the maintenance of current social relationships, and the seeking of information through Facebook. However, the researchers assert that Facebook is primarily used by individuals for personal reasons. These needs are entertainment, self-expression, and self-documentation. In this study, both kinds of gratification needs were chosen as motivations to use Facebook on the part of Pakistani users. The authors created a motivational model for Pakistani Facebook users after conducting a systematic literature review. The social and personal needs of Pakistani students using Facebook were addressed by this model. In order to comprehend users' gratification needs related to Facebook

use, this research presented more thorough results and enriched the existing uses and gratifications research.

The findings of the study implied that Pakistani university students made use of Facebook for both social and personal purposes. In other words, they had a multipurpose use of Facebook. Through Facebook, they were quite successful in creating new connections and keeping up with their old social networks. Facebook was a useful source for seeking and sharing information among university students. They could express themselves freely on this platform in front of other Facebook users. Facebook served as a source of entertainment for them as well. In order to evaluate the motivational requirements of Facebook users, the majority of the studies in the current literature used western populations as their samples. The sample in this study is non-Western. The findings asserted that non-western users also used Facebook for similar purposes as those employed by western users [73].

There are some limitations to this study as well. Because the current study was cross-sectional in nature, more research is needed to generalize the findings. The data for

this study was gathered from university students. Future research could be conducted with both college students and those who are not pursuing higher education in Pakistan.

Data Availability

The data will be available upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] D. M. Boyd and N. B. Ellison, "Social network sites: definition, history, and scholarship," *Journal of Computer-Mediated Communication*, vol. 13, no. 1, pp. 210–230, 2008.

[2] C. Chiu, H. Cheng, H. Huang, and C. Chen, "Exploring individuals' subjective well-being and loyalty towards social network sites from the perspective of network externalities: The Facebook case," *International Journal of Information Management*, vol. 33, no. 3, pp. 539–552, 2013.

[3] A. L. Kavanaugh, D. D. Reese, J. M. Carroll, and M. B. Rosson, "Weak ties in networked communities," *The Information Society*, vol. 21, no. 2, pp. 119–131, 2005.

[4] N. Park, K. F. Kee, and S. Valenzuela, "Being immersed in social networking environment: Facebook groups, uses and gratifications, and social outcomes," *CyberPsychology& Behavior*, vol. 12, no. 6, pp. 729–733, 2009.

[5] A. Nadkarni and S. G. Hofmann, "Why do people use Facebook?," *Personality and Individual Differences*, vol. 52, no. 3, pp. 243–249, 2012.

[6] S. Goswami, F. Köbler, J. M. Leimeister, and H. Krcmar, "Using Online Social Networking to Enhance Social Connectedness and Social Support for the Elderly," in *ICIS 2010 Proceedings*, vol. 109, St. Louis, 2010.

[7] G. Governatori and R. Iannella, "A modelling and reasoning framework for social networks policies," *Enterprise Information Systems*, vol. 5, no. 1, pp. 145–167, 2011.

[8] C. Di Gennaro and W. Dutton, "The Internet and the public: online and offline political participation in the United Kingdom," *Parliamentary Affairs*, vol. 59, no. 2, pp. 299–313, 2006.

[9] A. Lenhart, M. Madden, and P. Hitlin, "Teens and technology: youth are leading the transition to a fully wired and mobile nation," in *Pew Internet & American Life Project*, Washington, DC, 2005.

[10] T. Ryan, A. Chester, J. Reece, and S. Xenos, "The uses and abuses of Facebook: a review of Facebook addiction," *Journal of Behavioral Addictions*, vol. 3, no. 3, pp. 133–148, 2014.

[11] R. Junco, "The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement," *Computers & Education*, vol. 58, no. 1, pp. 162–171, 2012.

[12] M. Madden, "Privacy management on social media sites," *Pew Internet Report*, vol. 24, pp. 1–20, 2012, https://www.pewresearch.org/internet/wp-content/uploads/sites/9/media/Files/Reports/2012/PIP_Privacy_management_on_social_media_sites_022412.pdf.

[13] S. Jones and S. Fox, "Generations online in 2009 Data memo," Pew Internet and American Life Project, Washington, DC, 2009, March 7, 2010, from. https://www.pewresearch.org/internet/2009/01/28/generations-online-in-2009/.

[14] M. Matney and K. Borland, "Facebook, blogs, tweets: how staff and units can use social networking to enhance student learning," Presentation at the annual meeting of the National Association for Student Personnel Administrators, Seattle, WA, 2009.

[15] J. Raacke and J. Bonds-Raacke, "MySpace and Facebook: applying the uses and gratifications theory to exploring friend-networking sites," *CyberPsychology& Behavior*, vol. 11, no. 2, pp. 169–174, 2008.

[16] K. Lewis, J. Kaufman, and N. Christakis, "The taste for privacy: an analysis of college student privacy settings in an online social network," *Journal of Computer-Mediated Communication*, vol. 14, no. 1, pp. 79–100, 2008.

[17] A. Dhir, G. M. Chen, and S. Chen, "Why do we tag photographs on Facebook? Proposing a new gratifications scale," *New Media & Society*, vol. 19, no. 4, pp. 502–521, 2017.

[18] A. Lenhart, "Teens, technology and friendships," Pew Research Center: Internet, Science & Tech, 2015.

[19] K. Hampton, L. S. Goulet, L. Rainie, and K. Purcell, "Social networking sites and our lives," vol. 1, Pew Internet & American Life Project, Washington, DC, 2011.

[20] M. H. Nierhoff, "Facebook country statistics May 2013–rough estimates or something?," vol. 14, p. 2014, 2013, http://www.quintly.com/blog/2013/05/facebook-country-statistics-may-2013/.

[21] A. Dhir, S. Pallesen, T. Torsheim, and C. S. Andreassen, "Do age and gender differences exist in selfie-related behaviours?," *Computers in Human Behavior*, vol. 63, pp. 549–555, 2016.

[22] A. Dhir, P. Kaur, K. Lonka, and M. Nieminen, "Why do adolescents untag photos on Facebook?," *Computers in Human Behavior*, vol. 55, pp. 1106–1115, 2016.

[23] E. M. Bryant and J. Marmo, "The rules of Facebook friendship," *Journal of Social and Personal Relationships*, vol. 29, no. 8, pp. 1013–1035, 2012.

[24] J. Vitak, "Facebook makes the heart grow fonder: relationship maintenance strategies among geographically dispersed and communication-restricted connections," in *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*, pp. 842–853, Baltimore, Maryland, USA, 2014.

[25] L. Barkhuus and J. Tashiro, "Student socialization in the age of Facebook," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 133–142, Atlanta, Georgia, USA, 2010.

[26] B. Hofstra, R. Corten, and F. Van Tubergen, "Understanding the privacy behavior of adolescents on Facebook: the role of peers, popularity and trust," *Computers in Human Behavior*, vol. 60, pp. 611–621, 2016.

[27] R. Junco and S. R. Cotten, "Perceived academic effects of instant messaging use," *Computers & Education*, vol. 56, no. 2, pp. 370–378, 2011.

[28] L. P. Tosun, "Motives for Facebook use and expressing "true self" on the Internet," *Computers in Human Behavior*, vol. 28, no. 4, pp. 1510–1517, 2012.

[29] J. W. Treem and P. M. Leonardi, "Social media use in organizations: exploring the affordances of visibility, editability, persistence, and association," in *Communication Yearbook, 36*, pp. 143–189, Routledge, 2012.

[30] S. Alhabash, H. Park, A. Kononova, Y. H. Chiang, and K. Wise, "Exploring the motivations of Facebook use in Taiwan," *Cyberpsychology, Behavior and Social Networking*, vol. 15, no. 6, pp. 304–311, 2012.

[31] Pakistan Telecommunication Authority, "Telecom Indicators," 2022, https://www.pta.gov.pk//en/telecom-indicators.

[32] ITU, "Statistics," 2013, http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx.

[33] STATISTA, "Leading countries based on Facebook audience size as of January 2022," 2022, https://www.statista.com/statistics/268136/top-15-countries-based-on-number-of-facebook-users/.

[34] E. Qureshi-Hurst, "Anxiety, alienation, and estrangement in the context of social media," *Religious Studies*, vol. 58, no. 3, pp. 522–533, 2022.

[35] Q. K. Mahmood, R. Zakar, and M. Z. Zakar, "Role of Facebook use in predicting bridging and bonding social capital of Pakistani university students," *Journal of Human Behavior in the Social Environment*, vol. 28, no. 7, pp. 856–873, 2018.

[36] H. Farooqi, H. Patel, H. M. Aslam et al., "Effect of Facebook on the life of medical university students," *International Archives of Medicine*, vol. 6, no. 1, pp. 40–48, 2013.

[37] N. Saleem, A. Ali, and A. Hanan, "Influence of social networking sites on interaction patterns of youth: a Pakistan case," *Pakistan Vision*, vol. 15, no. 1, p. 40, 2014.

[38] S. Khan, "Impact of social networking websites on students," *Abasyn Journal of Social Sciences*, vol. 5, no. 2, pp. 56–77, 2012.

[39] I. Ahmed and T. F. Qazi, "Deciphering the social costs of social networking sites (SNSs) for university students," *African Journal of Business Management*, vol. 5, no. 14, p. 5664, 2011.

[40] A. Tariq, D. Muñoz Sáez, and S. R. Khan, "Social media use and family connectedness: a systematic review of quantitative literature," *New Media & Society*, vol. 24, no. 3, pp. 815–832, 2022.

[41] A. Haq and S. Chand, "Pattern of Facebook usage and its impact on academic performance of university students: a gender based comparison," *Bulletin of Education & Research*, vol. 34, no. 2, pp. 19–28, 2012.

[42] A. R. Chhachhar, G. M. Khushk, A. A. Chachar, and B. Qureshi, "Internet usage among university students in Pakistan," *Journal of Basic and Applied Scientific Research*, vol. 3, no. 9, pp. 31–35, 2013.

[43] S. A. Raza, W. Qazi, and A. Umer, "Facebook is a source of social capital building among university students: evidence from a developing country," *Journal of Educational Computing Research*, vol. 55, no. 3, pp. 295–322, 2017.

[44] S. Ahmad, M. Mustafa, and A. Ullah, "Association of demographics, motives and intensity of using social networking sites with the formation of bonding and bridging social capital in Pakistan," *Computers in Human Behavior*, vol. 57, pp. 107–114, 2016.

[45] A. Dhir, "Exploring online self-presentation in computer-mediated environments-motives and reasons for photo-tagging and untagging, [Ph.D. theis]," Aalto University, 2016.

[46] X. Luo, "Uses and gratifications theory and e-consumer behaviors," *Journal of Interactive Advertising*, vol. 2, no. 2, pp. 34–41, 2002.

[47] R. L. Nabi and M. B. Oliver, "Uses and gratifications," in *The SAGE handbook of media processes and effects*, pp. 147–159, SAGE, 2009.

[48] P. Katerattanakul, "Framework of effective web site design for business-to-consumer internet commerce," *INFOR: Information Systems and Operational Research*, vol. 40, no. 1, pp. 57–70, 2002.

[49] K. Rosengren, L. Wenner, and P. Palmgreen, Eds., "Uses and gratifications research: the past ten years," in *Media Gratifications Research*, pp. 11–37, SAGE, Beverly Hills, CA, 1985.

[50] R. A. Rubin, E. Perse, and C. Barbato, "Conceptualization and measurement of interpersonal communication motives," *Human Communication Research*, vol. 14, no. 4, pp. 602–628, 1988.

[51] T. Charney and B. Greenberg, "Uses and gratifications of the internet," in *Communication, Technology and Society: New Media Adoption and Uses*, C. Lin and D. Atkin, Eds., pp. 383–406, Hampton, Cresskill, NJ, 2001.

[52] J. Dimmick, S. Kline, and L. Stafford, "The gratification niches of personal e-mail and the telephone," *Communication Research*, vol. 27, no. 2, pp. 227–248, 2000.

[53] T. E. Ruggiero, "Uses and gratifications theory in the 21st century," *Mass Communication and Society*, vol. 3, no. 1, pp. 3–37, 2000.

[54] Z. Papacharissi, "Uses and gratifications," in *An integrated approach to communication theory and research*, D. W. Stacks and M. B. Salwen, Eds., pp. 151–166, Routledge, 2014.

[55] S. Okazaki, "Social influence model and electronic word of mouth," *International Journal of Advertising*, vol. 28, no. 3, pp. 439–472, 2009.

[56] S. Alhabash, Y. H. Chiang, and K. Huang, "MAM & U&G in Taiwan: differences in the uses and gratifications of Facebook as a function of motivational reactivity," *Computers in Human Behavior*, vol. 35, pp. 423–430, 2014.

[57] P. Palmgreen and J. D. Rayburn, "Uses and gratifications and exposure to public television," *Communication Research*, vol. 6, no. 2, pp. 155–179, 1979.

[58] Y. Zhang and L. Leung, "A review of social networking service (SNS) research in communication journals from 2006 to 2011," *New Media & Society*, vol. 17, no. 7, pp. 1007–1024, 2015.

[59] P. Sheldon, "Student favorite: Facebook and motives for its use," *Southwestern Mass Communication Journal*, vol. 23, no. 2, pp. 39–53, 2008.

[60] A. Quan-Haase and A. L. Young, "Uses and gratifications of social media: a comparison of Facebook and instant messaging," *Bulletin of Science, Technology & Society*, vol. 30, no. 5, pp. 350–361, 2010.

[61] K. F. Hew, "Students' and teachers' use of Facebook," *Computers in Human Behavior*, vol. 27, no. 2, pp. 662–676, 2011.

[62] Y. Kim, D. Sohn, and S. M. Choi, "Cultural difference in motivations for using social network sites: a comparative study of American and Korean college students," *Computers in Human Behavior*, vol. 27, no. 1, pp. 365–372, 2011.

[63] Y. Zhang, L. S. T. Tang, and L. Leung, "Gratifications, collective self-esteem, online emotional openness, and trait like communication apprehension as predictors of Facebook uses," *Cyberpsychology, Behavior and Social Networking*, vol. 14, no. 12, pp. 733–739, 2011.

[64] A. Kononova, S. Alhabash, and F. Cropp, "The role of media in the process of socialization to American politics among international students," *International Communication Gazette*, vol. 73, no. 4, pp. 302–321, 2011.

[65] A. N. Joinson, "Looking at, looking up or keeping up with people?: motives and use of facebook," in *Proceedings of the SIG-CHI Conference on Human Factors in Computing Systems*, pp. 1027–1036, Florence, Italy, 2008.

[66] J. Bonds-Raacke and J. Raacke, "MySpace and Facebook: identifying dimensions of uses and gratifications for friend networking sites," *Individual Differences Research*, vol. 8, no. 1, 2010.

[67] M. W. Kwon, J. D'Angelo, and D. M. McLeod, "Facebook use and social capital," *Bulletin of Science, Technology & Society*, vol. 33, no. 1-2, pp. 35–43, 2013.

[68] J. N. Luchman, J. Bergstrom, and C. Krulikowski, "A motives framework of social media website use: a survey of young Americans," *Computers in Human Behavior*, vol. 38, pp. 136–141, 2014.

[69] J. R. Rae and S. D. Lonborg, "Do motivations for using Facebook moderate the association between Facebook use and psychological well-being?," *Frontiers in Psychology*, vol. 6, 2015.

[70] A. Musetti, V. Grazia, A. Alessandra, C. Franceschini, P. Corsano, and C. Marino, "Vulnerable narcissism and problematic social networking sites use: focusing the lens on specific motivations for social networking sites use," *Healthcare*, vol. 10, no. 9, p. 1719, 2022.

[71] Q. K. Mahmood, "Use of social network site as a source of social capital among youth: a cross sectional study of university students in Lahore, [Ph.D. thesis]," University of the Punjab, Lahore, Pakistan, 2017.

[72] Z. Papacharissi and A. Mendelson, "Toward a new(er) sociability: uses, gratifications, and social capital on Facebook," in *Media perspectives for the 21st century*, pp. 225–243, Routledge, 2010.

[73] S. A. Aljasir, "An investigation of Facebook Usage by university Students in Saudi Arabia, [M.S. thesis]," Coventry University, 2015.