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LINKING EXCESSIVE USE OF SOCIAL MEDIA WITH ACADEMIC PERFORMANCE: A STUDY OF UNDERGRADUATE STUDENTS IN PUBLIC SECTOR UNIVERSITIES OF PAKISTAN

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ABSTRACT

The fundamental purpose of this study was to check the impact of excessive use of social media on academic performance by introducing technostress as a mediator and tie strength as a moderator between excessive use of social media and academic performance. Cross-sectional study was conducted through questionnaire from 294 university students in Pakistan about their usage of social media. Findings showed that social media negatively impacts the performance of the students. Usage of social media impacted positively to technostress, which cause technological stress among students. While technostress also negatively affected academic performance of students. There was no evidence found that tie strength moderates between excessive use of social media and academic performance. This research would be helpful for parents to understand adverting effects of social media usage on their children. This research would also be helpful to organizations- public, private and non-profit to understand the adverse effects of excessive use of social media. This study has extended the amount of literature in the field of social media and academic performance.

Keywords*: Excessive use of social media, Academic performance, Technostress, Tie Strength, CGPA*

Introduction

Academic performance is resultant of education, the degree through which a student, teacher and institution achieve their educational objectives. Academic performance is usually measured by constant valuation. However, there is no universal contract that how it is best prove or which facets are vital for technical knowledge such as skills or abilities(Ward, Stoker, & Murray-Ward, 1996).There is a direct association between use of social media and academic performance of undergraduates(Osharive, 2015a).According to research, people who use social media excessively perform poorly in general(Bolton et al., 2013; Demircioglu & Chen, 2019). Employees who use social media excessively for work reasons may believe that their skill diversity and task relevance are insufficient, resulting in a lack of work meaning and perceived competence(Demircioglu & Chen, 2019).

In this study, overuse of social media, tie strength, and technostress were studied as factors effecting the academic performance. In addition, these problems can help to recognize high or low academic achievement. The cumulative grade point average as a benchmark of academic

performance is used in universities in Pakistan and many universities around the globe (Blue et al., 2000; James & Chilvers, 2001; Burger, 1992;Svanum & Zody, 2001; Nguyen et al., 2005).In general, technostress is instigated by stressors, which are inducements experienced by folks, and stress is the mental response of individuals to stressors (Ayyagari, Grover, & Purvis, 2011). Technostress overload as a typical stressor and tiredness as a form of stress have been extensively used to apprehend the technical stress of information and communication technologies workforce(Yu, Cao, Liu, & Wang, 2018). When they use social media excessively, individuals may face unnecessary information, everyday communications, and relentless social demands.

Consequently, the impression of social ties is significant and has been taken into account in this research. Tie strength should be measured when examining social media's impacts as social media permit undergraduates to connect online in social websites, and social tie is a critical aspect in these social websites. Individuals with close ties are expressively interdependent and generally reciprocally helpful. It is also believed that close ties are very operative in undertaking complex missions(Hansen, 1999)and creating groups for disseminating information (Strauss, & Shi, Adamic, 2007).They help each other in completing class assignments and projects, which improve their academic performance. The purpose of this study is to explore the key subjects, problems, and the new encounters in Pakistan. Three public sector universities of Islamabad, Pakistan were selected for fulfilling the purpose of the study.

The fundamental aim of this study is to explore the consequences of excessive use of social media on the academic performance of students pursuing their undergraduate studies in public sector universities in Rawalpindi and Islamabad, by inducing technostress as mediator and tie strength as moderator. As endorsed by the previous literature (Qi, 2019), tie strength is used to enhance the communication, but it could be useful enhancing the performance of particular person.

Literature Review

Excessive use of social media and academic performance

Social media is becoming popular with the rise of its agendas. The cooperative nature of online surroundings has spread to societal networks. The connection via social networks began as a small area activity, though time is very important. Sites are used in numerous customs such as metropolitan areas progress, conversation, blogs, etc. In addition, various institutions are still emerging groups on numerous sites (Mehmood & Taswir, 2013). The better use of sites has turned out to be a global phenomenon for about while. Employee productivity and performance have both been connected to social media use, as well as workplace bullying, inappropriate behavior, and lost time. Indeed, some research has found that social networking has a negative influence on employee performance and workplace privacy(Demircioglu, 2018).

What initiated as an interest for many computer scientists has become a societal custom and lifestyle for people from one place to another(Ellison, Steinfield, & Lampe, 2007).Adolescents have particularly recognized the ability of these websites to reach their colleagues, share material, reinvent their dispositions and present their

societal breathes (Ellison et al., 2007).While intensifying use of technology is useful for meeting with other people and for being recognized on internet sites an action that is primarily completed on the website (Coyle & Vaughn, 2008). Users of social media frequently spend more time, and results in lower academic performance. Likewise, it is stated that social media is adversely related with student academic performance and is much further important than its benefits (Englander, Terregrossa, & Wang, 2010).

Theory of social information processing is related to interpersonal communication, which suggests development of interactive relationships on websites. This might need additional time than face-to-face interactions. However, once established, it has the identical impact as face-to-face relationships. It means that undergraduates use social media, the more it affects students' readiness to study, as social media friends will start to influence each other. Following this logic, we hypothesized that:

H1: Excessive use of social media has a significant and negative impact on academic performance.

Technostress as mediator between excessive use of social media and academic performance

Social media users often lose more time and their academic performance turns poor (Osharive, 2015a). Likewise, a researcher believes that social media is negatively related with the academic performance of students.It is much important than benefits (Englander et al., 2010).Technostress is generally defined as a stressor experience of a computer user after using technologies (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008).The transactional theory of stress and coping(Lazarus, 1966; Lazarus & Folkman, 1987) is extensively used as a foundation for getting know-how of technological stress in information and communication technologies research. This clarifies the vision of stress as a deal between an individual and his setting (Lazarus & Folkman, 1987). Furthermore, users are strained by technical stresses, which are inducements, actions or demands induced by technology (Ragu-Nathan et al., 2008; Ayyagari et al., 2011). These stressors related with technostress are called originators of technostress (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007), that causes responses in folks usually termed as strains (Tarafdar et al., 2010; Ayyagari et al., 2011).Technostress needs additional vigor to pact with social media, possibly captivating time from undergraduates' inclined errands essential for accomplishing improved academic performance. Undergraduates with technostress are expected to be incapable to answer properly to inclined necessities, as it is hard to gain/establish an equilibrium amongst technology usage and education(Yu, Shi, & Cao, 2019).Though, excessive use of social media impacts technostress positively, and technostress impacts academic performance negatively. Following this logic, we hypothesize that:

H2: Technostress mediates and the relationship between excessive use of social media and academic performance.

Tie Strength as moderator between excessive use of social media and academic performance

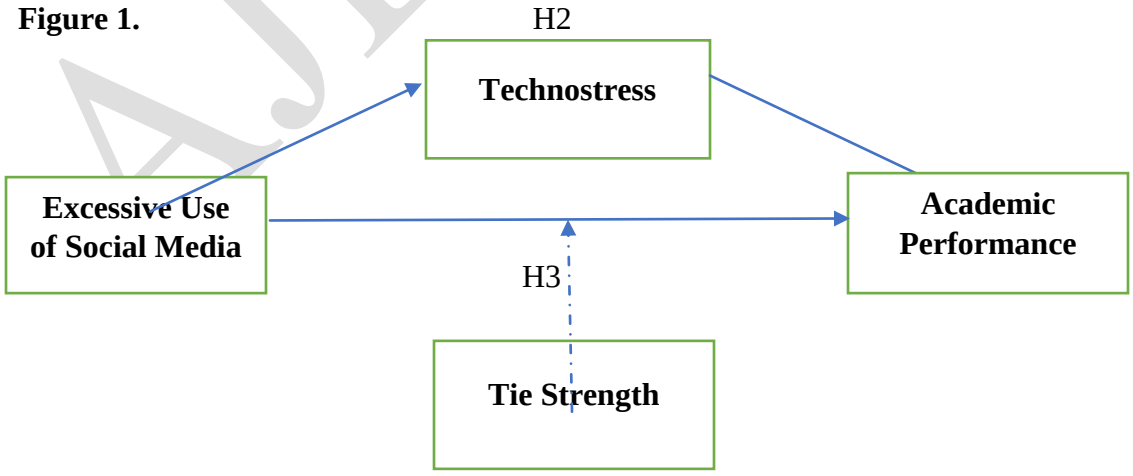
The expressive care provided by communal ties can affect the academic performance of undergraduates as well. For instance, the logic of engagement derived from peer associations can outgrowth association and capability, leading to enhanced academic

results(Fass & Tubman, 2002).Numerous researchers have similarly revealed that communal ties somewhat back to academic accomplishment over the ‘‘peer effect’’ and that a constructive connection exists among regular peer academic performance and distinct performance(Mayer & Puller, 2008;Lyle, 2007; Poldin et al., 2015).By providing information management systems, social interaction platforms, and cost-effective software solutions, social media use encourages relationships among people(Khan & Khan, 2019).Preceding scholars have examined effect of social media and socialties in educational setting. Though, several pedagogical studies have looked at the impact of social media use, with the majority of them focusing on the social effects or the process of using social media, which includes involvement, collaboration, and communication(Faizi, El Afia, & Chiheb, 2013).Individuals with solid ties are expressively inter-reliant and characteristically offer belief and expressive care to each other. Strong ties are likewise supposed to be extremely operative in handling complex assignments(Hansen, 1999)and creating teams to disseminate information(Shi et al., 2007).Nominal consideration has been dedicated to the education of the effect of social media on academic outcomes, such as job performance, knowledge outcomes, and scores(Mingle & Adams, 2015).The theory of social constructivism proposes that learning is a social course and that constructing information in a social setting is helpful as of the bulky volume of facts in groups. Following this logic, we hypothesize that:

H3: Tie Strength moderates and buffers the relationship between Excessive use of social media and academic performance.

Conceptual diagram

Figure 1.



Note: Excessive use of social media is IV, Technostress is mediator, Academic Performance is DV, and Tie Strength is moderator.

Figure 1 summarizes H1 through H3 and provides a better understanding of the current study. H1 shows the relation of independent variable with the dependent variable. H2 depicts the establishment the mediation link of technostress between excessive use of social media and academic

performance. H3 denotes the moderation link of tie strength between IV and DV.

Research Method

Research design is a process that takes the results of a wide range of assumptions into comprehensive methods of data collection and analysis. Research is design according to the nature of the problem (Quinlan, Babin, Carr, & Griffin, 2019). The purpose of this study is to test the hypothesis of a causal relationship among variables. Study analyses the excessive use of social media impact on academic performance with technostress as mediator and tie strength as moderator. For examining this relationship different statistical tests were used. In the proposed study population frame consists of the undergraduates from all the public sector universities in Pakistan. When the total target population is unknown, we use non-probability sampling techniques. Purposive sampling is best suited for this study. A purposive sample is a non-probability sample size chosen based on the features of a populace and the purpose of the work. It is also called subjective or choosy sampling. The terms purposive sampling and convenience sampling are often used interchangeably, but they do not mean the similar thing. Convenience sampling is being used, when researchers exploit individuals who can be identified and approached with the least possible effort. They are often individuals geographically close to researchers. Purposive sampling is being used, when researchers think in depth about, how they will form a sample of the population, even if it is not statistically representative of the larger population. Although the results of purposive sampling do not always have to be statistically representative of the population of greatest interest, they are qualitatively generalizable. The more information researchers have about their communities of interest, the better the sample they will select. We constructed the sample by the common cited 10 times rule(Barclay, Thompson,& Higgins, 1995). This rule of thumb is equal to proverb that smallest sample size must be 10 times the maximum number of arrowheads directing at a latent variable anywhere in the PLS path model. As, in this research model six arrowheads are pointing to dependent variable. According to the rule of thumb the least sample size to conduct this research is 60, but we have collected the data from 294 undergraduate students of 4^{th}, 5^{th} and 6^{th} semester. We collected the data from three public sector universities located in Islamabad. We selected COMSATS University Islamabad, International Islamic University of Islamabad, and Bahria University Islamabad, for the data collection purpose. These universities were selected on the basis of their good reputation and maximum number of students in Rawalpindi and Islamabad. This included 216 males and 78 females. The mean age of respondents was 21.07 (SD=0.77), with an age range of 20 to 22 years. All participation was voluntary. After informed consent was confirmed, the students were directed to a self-administered questionnaire.

To measure the excessive use of social media, the measure was adapted from Caplan (2002) and Caplan and High (2006). It consists of 3 items. For example, for excessive use of social media, this type of question is asked of the public, ESMU1: "I think that the time I spend daily using social media is excessive". Technostress scale is taken from (Popoola & Olalude, 2013). For example, for technostress, this type of question is put to the audience, T1: “Do you feel frustrated when you use social media?".

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Tie Strength scale is adopted from(Gilbert & Karahalios, 2009). For example, for Tie strength, this type of question is put to the audience, "I have a strong relationship with most of my group Members". While academic performance is measured by asking students on their CGPA, that "What is your CGPA?". It was measured on the basis of 5-point Likert scale from 1 to 5. And age and gender has been used as control variables. For the data collection, questionnaires were used. As questionnaire is an inexpensive means of collecting data and provides numerical results that are easy to analyse and interpret later (Sekaran & Bougie, 2016).A questionnaire is an arranged and standardized questions for which the respondent gives his or her answers of his or her choice (Norman, Conner, & Bell, 1999). The questionnaire is also considered as a "technique by which different groups of respondents answer a series of questions. This research used a "closed" questionnaire for data collection. After data collection, the participant's responses are entered into the SPSS by assigning the highest value (5) to "strongly disagree", the lowest value (1) to "strongly agree". This study is quantitative in nature and SPSS version 23.0 and SmartPLS3.2.9 are used for data analysis. Responses using quantitative data were coded differently. The data collected and analyzed to obtain the results. The following statistical techniques were used for quantitative analysis.Data Screening,Normality Analysis, Multicollinearity,Reliability Analysis, Correlation Analysis, Factor Analysis. On the basis of psychological theories and empirical evidences hypotheses have been developed in this study. After the development of hypotheses, we got relevant data and after collecting the data we analyzed that data using different techniques. And according to the results we accept or reject the hypothesis.

Presentation of Results

Structural Equation Modelling Results: We used structural equation modelling (SEM) for estimation and data analysis. The software program SmartPLS 3.2.9 was used to estimate the measurement model and structural model to assess the predicted hypotheses.

Measurement Model: The measurement models signify the associations amongst variables and their conforming indicator constructs (generally called the outer models in PLS-SEM). The foundation for defining these associations is measurement theory. A comprehensive measurement theory is an essential situation to attain valuable outcomes from PLS-SEM. Hypothesis examinations concerning the structural associations amongst variables will be only as consistent or effective as the measurement models are clearing up how these variables are measured.

In detail, practically most social science researchers today use established measurement approaches published in preceding studies or scale manuals that performed well(Ramirez, David, & Brusco, 2013). In some situations, however, the scholar is confronted with the absence of a recognized measurement approach and must propose a new set of measures (or considerably adapt a prevailing approach). A description of the general process for developing indicators to measure a construct can be long and detailed. Hair, J. F., Ringle, C. M., and Sarstedt, M.(2011) described essentials of this process. PLS is also widely adopted by business researchers. Measurement model examine the internal

consistency and the validity of the instruments (Wixom & Todd, 2005). In order to assess the measurement model, CFA was conducted and results are shown in the Table 2. It can be seen that the Cronbach alpha, CR estimates and AVE were higher than the cut-off values of 0.7 and 0.5 respectively. Cronbach's alpha was calculated for technostress after construct authentication was calculated and was 0.980, and composite reliability was 0.983, which designates a high correlation amongst the objects and the scale is consistent.

Descriptive Statistics

Table 1.

Variables	Mean	Std. Deviation
Academic performance	2.6871	.81624
Excessive use of social media	3.4365	1.17534
Technostress	3.4350	1.16824
Tie strength	3.3529	1.22263

It can be seen from Table 1 that for the dependent variable Academic performance, the mean is 2.6871 and standard deviation is .81624. The highest mean value was of Excessive use of social media i.e. 3.4365 with corresponding standard deviation of 1.17534.

Convergent Validity

Table 2

Latent Variable	Indicator's	Loadings	Composite Reliability	AVE	Convergent validity
Excessive use of social media	EUSM_1	0.924			
	EUSM_2	0.945	0.942	0.843	Yes
	EUSM_3	0.885			
Technostress	T_2	0.922			
	T_3	0.906			
	T_4	0.925			
	T_7	0.922	0.983	0.837	Yes
	T_8	0.906			
	T_9	0.953			
	T_10	0.951			
	T_11	0.944			
	T_12	0.910			
	T_13	0.863			
	T_14	0.859			
Tie Strength	TS_1	0.890			
	TS_2	0.911	0.947	0.818	Yes
	TS_3	0.899			

	TS_4	0.918			
Academic performance	AP_1	1.00	1.00	1.00	Yes

Discriminant validity was evaluated by comparing the AVE of individual construct with correlations and shared variances between it and all the other constructs(Fornell & Larcker, 1981). In discriminant validity it is required that the square root of AVE values should be higher than the correlation values of all other constructs and it as well. As shown in Table 3, the square root of the AVE (bold) scores for constructs of EUSM (0.918), T (0.915), TS (0.904), AP (1.00),were greater than the correlation scores between each construct and all other constructs. The analysis results showed that discriminant validity is being satisfied.

Discriminant Validity
Table 3.

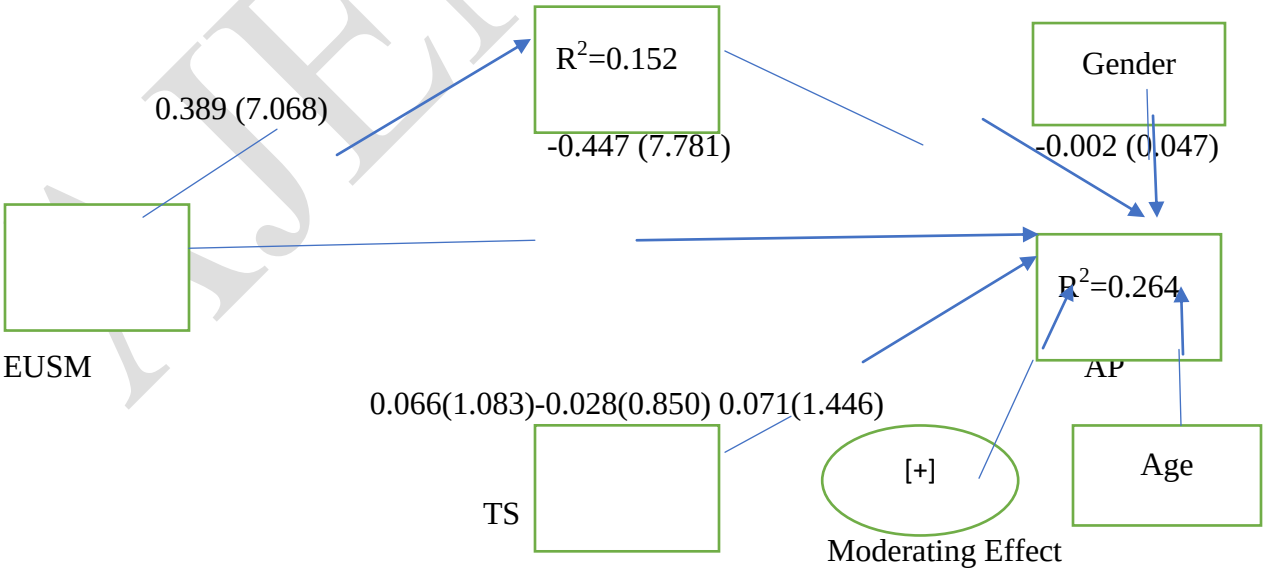
Variables	Mean	Std.Dev	EUSM	T	T. S	A. P
EUSM	2.55	1.25	**0.918**			
T	2.75	1.27	0.389**	**0.915**		
T. S	2.84	1.22	0.557**	0.323**	**0.904**	
A. P	2.57	0.78	0.294**	0.489**	0.147*	**1.00**

Diagonal values in bold are square root of the AVEs and off-diagonal values arecorrelations between the constructs.
Note: EUSM = Excessive use of social media, T = Technostress, T.S = Tie Strength,A.P = Academic Performance.
**p <.05, **p <.01*

Structural Model: The structural model was estimated through the bootstrapping approach in SmartPLS (500 resamples),which estimated standardized Beta coefficients and R^2 values of the model. Figure 2shows the results of the hypothesized model assessment, confirmed with the variance described (R^2 value) of the dependent variable, significant path coefficients (*) andt-value of the paths. Excessive use of social media explained approximately 15 per cent of total variance in creating Technostress in undergraduate students. Similarly,26 percent of total variance in academic performance was explained by Excessive use of social media in the presence of Technostress. As indicated by the path loadings and consistent

with the literature, Excessive use of social media had a direct and significant impact on Academic performance (b=-0.138, p=0.044).Likewise, Excessive use of social media had a significant impact on Technostress (b=0.389, p=0.000).In addition, Technostress also had a significant impact on Academic performance (b=-0.443, p=0.000). Technostress partially mediates between the Excessive use of social media and Academic performance (b=-0.174, p=0.000).Tie strength does not moderate between Excessive use of social media and Academic performance (b=-0.025, p=0.448). As, in the previous study it shows that, tie strength does not have good effect if broadcasted messages are the source of communication between friends (Burke & Kraut, 2014). The results indicated that H1, H2, were supported, and H3, was not supported.

Beta values and T values
Figure 2



Note: AP= Academic performance, EUSM= Excessive use of social media, T= Technostress, TS= Tie Strength.

Results Summary
RQ1: What is the impact of Excessive use of social media on Academic performance?

By testing the H1: "Excessive use of social media has a negative impact on Academic performance" we answered the research question 1. There is a negative significant relationship between EUSM and AP with a

path coefficient=-0.138, t-value=2.096, and p-value=0.044, which is significant at 95% confidence interval level. It implies when students use more social media, it will negatively affect academic performance. Thus, H1 is accepted.

RQ2: What is the mediating impact of Technostress in the relationship between Excessive use of social media and Academic performance?

By testing the H2: "Technostress mediates in the relationship between Excessive use of social media and Academic performance" we answered the research question 2. There is a significant mediating effect of Technostress in the relationship between EUSM and AP with a path coefficient=-0.174, t-value=5.409, and p-value=0.000, which is significant at 95% confidence interval level. It implies when students use more social media, there would be more Technostress among the students, and it will negatively affect academic performance. Thus, H2 is accepted.

RQ3: What is the moderating impact of Tie strength in the relationship between Excessive use of social media and Academic performance?

By testing the H3: "Tie strength moderates in the relationship between Excessive use of social media and Academic performance" we answered the research question 3. There is no effect of Tie strength in the relationship between EUSM and AP with a path coefficient=-0.028, t-value=0.850, and p-value=0.448, which is not significant at 95% confidence interval level. It implies that Tie strength does not play any role in weakening the effect of EUSM on AP. Thus, H3 is rejected.

Discussion of Findings

The present study examined excessive use of social media and academic performance in the public sector universities of Pakistan. A sample of 294 participants was selected from the public sector universities in Pakistan. A purposive sampling technique was used to for the selection of the participants. The data collected were analyzed by using SPSS (23.0) and Smart PLS (3).

In the present study, the impact of excessive use of social media on academic performance was being checked. According to the results the excessive use of social media has a negative impact on academic performance of undergraduate students in public sector universities of Pakistan. As a lot of students use social media and it has negative effect on their academic performance. There are some studies which provide empirical evidences to support our study (Osharive, 2015b). These studies were conducted in the different context, and presenting the same results as the researcher has found in this study. Social media negatively influences the academic performance of the students (Osharive, 2015a).

The negative relationship of excessive use of social media and academic performance was proposed in the current study and it happens to be true in the proposed setting. So, there is the need to educate the students about the influences of social media on academic performance. Students should be supervised by the parents and the teachers on the usage of the social media.

Technostress is a type of a stress which causes stress and depression in those who are using social media excessively. As the users will use more social media it will

cause more technostress. And according to the participants of the study, students who have an age of 22 years use more social media and they have more symptoms of technostress. Thus, to eliminate the symptoms of technostress, it is the need of the hour for parents and teachers to educate the students about the adverse effects of over usage of social media. More stress and depression always result in dropping the performance of the students. More stress and depression always result in dropping the performance of the students. As the relationship was proposed that technostress has a negative impact on academic performance. So, according to the results, technostress has a significant negative impact on the academic performance of the students. Thus, to avoid this type of situation, healthy activities should be conducted in the class rooms to stabilize the students mentally. Parents also play an important role in reducing the stress and depression by supporting them emotionally.

Technostress is used as mediator between excessive use of social media and academic performance in the current study. Though, according to the results there is a partial mediation in the study. There is a medium size effect of technostress as the f^2=0.219. So, the results of the proposed relationship are also significant as p=0.000, which is in a specific range. Thus, it could be proposed that using social media excessively, will increase technostress eventually (Yu et al., 2018) and academic performance of the students would be decreased. While seeing the results of the present study, it could be suggested that there is a need to educate our children in their classroom and their homes to avoid the usage of social media, and focus on their studies.

Social ties in a society play an important role to get something done. As Pichai (2018) the CEO of google shared a story of his interview of getting hired as CEO of google. He said that "if you want to make success you should have the ties with those people who are close to you". So, tie strength does matter while communicating to the colleagues and peers (Qi, 2019). The relationship was proposed in this study was that, Tie strength moderates between excessive use of social media and academic performance. As of the findings of this research we found that tie strength does not moderate in the proposed context. It may moderate in the different context like private sector universities in Pakistan.

Thus, future studies in the new cultural context will help to assess the generalizability of excessive use of social media. This study is conducted in the public sector universities in Pakistan and may not be generalizable to other regions; therefore, replication of this study in the future in other developing countries will be important to determine to what extent the results can be generalizable to other developed and underdeveloped countries and by testing this attempt at conceptual modelling of Excessive use of social media, and how it triggers the academic performance of students. Parental support could also be used as moderator in the relationship between excessive use of social media and technostress to mitigate the amount of stress in individuals.

Conclusion

According to the results of this study, it is stated that excessive use of social media negatively effects the academic performance of the undergraduate students. Students use social media excessively as they don't know

the negative effects of the social media applications. For example, students can use these social media applications to take information from the pages which are specifically providing regarding their studies.

The independent variable excessive use of social media impacting the dependent variable, academic performance, negatively as it effects the performance of students. Technostress mediates between Excessive use of social media and Academic performance, which means there is technological stress among the students. Tie strength does not play any role in weakening the relationship between excessive use of social media and academic performance. This study provides insightful inclination to the students, teachers and the parents to act responsibly, in rapidly changing technology environment, which is causing decline in the academic performance of the students.

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