Can Informal Learning and Academic Engagement Mediate The Negative Impact of Social Networking on Academic Performance?

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ABSTRACT

College students are the prominent users of social networking sites. Some studies revealed negative effect of social networking on academic performance, so finding some variables which can mediate this negative effect is important. This descriptive-correlational study examined the mediating role of informal learning and engagement in relationship between social networking and academic performance. To this aim, 380 university students were selected using cluster sampling. Social Network Sites Usage, Student's Engagement in School Scale, perceived educational outcome of social networks and student self-reported GPA were used as instruments. Findings from path analysis revealed that the direct effect of social networking on academic performance and engagement was negative but its impact on informal learning was positive. Path analysis showed neither informal learning nor academic engagement can mediate negative effect of social networking on academic performance.

Keywords: Social networks, Informal learning, Academic engagement, Academic performance,

INTRODUCTION

Technology in the 21st century has affected all aspects of human life. In this context, the role of information and communication technology and emerging technologies associated with it is very prominent. Social networking is the most influential contemporary technology which has affected the different areas of industry and services, especially education, in last decade.

"A social networking service is an online service, platform, or site that focuses on facilitating the building of social networks or social relations among people who, for example, share interests, activities, backgrounds, or real-life connections" (Srivastava, 2012, p. 12). Social media are web-based infrastructure that individuals and communities produce, share, discuss, and modify user-generated content (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011).

According to Kemp (2018) more than 4 billion people around the world using the internet.

More than 3 billion use social media each month, with 9 in 10 of those users accessing their chosen platforms via mobile devices. Because of their age and study requirements, university students are the most prominent users of social networks. Herein, the result of Sponcil and Gitimu's (2013) indicates that all university students use at least one kind of social media. Lenhart, Purcell, Smith, and Zickuhr (2010, as cited in Tess, 2013) report 72% of social networks users are 18-29 year olds compared to 39% who are older than 29. Generally, observations and studies like Hansen, Childress, and Trujillo (2010) indicate that students use social media for non- educational purposes. According to Chen and Bryer (2012), a low percentage of students and instructors use social media for educational purposes. In South Africa, the study of Wiid, Cant, and Nell (2014) found that social media are mostly used by students for social purposes rather than for educational purposes.

The benefits of using social networks on students communication with family and friends and their self-concept were reported in the study of Sponcil and Gitimu (2013). According to Ferdig (2007), from educational perspective, social media can support active learning, social learning, and student publication (as cited in Gülbahar, 2014). Collaboration, knowledge sharing, common interests, active participation, and reflective thinking were reported as another advantages of social networks in educational context (Mazman & Usluel, 2009).

In contrast to advantages, disadvantages of social media regarding students' achievement are listed by Srivastava (2012). Some of them include but not limited to: accessibility to all kinds of information, multitasking or lack of concentration, negative publicity, time consuming, net addiction, and negligence of grammar and spelling.

In addition to pros and cons, a number of researchers from different fields using different research methods investigated the effect of social networks on students' performance (Akbari, Eghtesad, & Simons, 2012; Al-Rahmi & Othman, 2013; Alwagait, Shahzad, & Alim, 2015; Cho, Gay, Davidson, & Ingraffea, 2007; Schroeder & Greenbowe, 2009; Sobaih, Moustafa, Ghandforoush, & Khan, 2016; Stewart, 2008; Tess, 2013). With regard to existing reports; "Little research has paid close attention to the educational outcomes of social media" (Cao, Ajjan, & Hong, 2013, p. 581). In addition, the number of studies is very low in the developing countries such as the Iranian context. It should be noted that the results of above mentioned studies are inconsistent and need more study from different perspective in different cultures. Furthermore, this study aims to examine this inconsistency in terms of mediating role of academic engagement and informal learning. Accordingly, this study aims to investigate the direct effect of social networking in students' academic performance in the context of IRAN; furthermore it estimate the mediating role of academic engagement and informal learning in relationship between social networking and academic performance.

Social Networking and Academic performance

Academic performance or academic achievement generally represented by course grade or GPA is the main concern of educational researchers in the field of social media research. Some past studies have reported positive effects of social media on student learning. Based on the finding of Cao et al. (2013) "social media use has a positive effect on student's learning outcomes and their satisfaction"(p. 581). A study in Pakistan revealed a positive and significant relationship between the use of social networking sites and students' academic performance with social networking sites explaining 15% of student's academic performance variance in their study (Hameed, Maqbool, Aslam, Hassan, & Anwar, 2013). Likewise, in Iran a study which used Facebook for learning English language, found that students' positive attitudes towards the usefulness of social networks increased after using Facebook in their course (Akbari et al., 2012).

In the context of hospitality and tourist with especial attention to instructor opinion, the results of Sobaih et al. (2016) conclude that "social media have a great value for academic-related purposes, particularly as a teaching and learning tool; however, the actual use by faculty was at a minimal level"(p. 296). In the study of Eid and Al-Jabri (2016) chatting and file sharing leads to increased knowledge sharing and knowledge sharing leads to increased student learning. With focus to collaborative learning, Al-Rahmi and Othman (2013) reported that social media through interactivity with peers, teachers, and engagement had impact on students' academic performance. Finally, Eid and Al-Jabri (2016) found that increasing enjoyment and entertainment in social networks leads to increased learning.

Despite positive effects, some negative effects also have been reported. Finding of Lau (2017) revealed "using social media for academic purposes was not a significant predictor of academic performance as measured by cumulative grade point average, whereas using social media for non-academic purposes (video gaming in particular) and social media multitasking significantly negatively predicted academic performance"(p. 286). Junco (2012b) revealed negative correlation and Alwagait et al. (2015) explained that there was no linear relationship between social media usage in a week and GPA score.

Based on the context of the current study in Iran that students use social networks for entertainments and recent reports like Lau (2017), the hypothesis of this study about social networks and academic performance is:

H1. *Social networks usage negatively affects academic performance.*

Social Networking and informal learning

Alongside formal learning, informal learning is the most important and most neglected outcome of academic settings. "As students' progress from high school to college and graduate schools, the role of informal learning becomes more and more important because learning can happen anywhere at any time"(Chen & Bryer, 2012, p. 89). These researchers report "Activities on social media are largely informal, open, and self-regulated"(ibid, p. 95). The informal role of social media is emphasized by Bull et al. (2008).

The above mentioned comments and statements have been confirmed by empirical studies. For example, correlation analyses from Song and Lee (2014) showed a positive relationship between Web 2.0 features and informal learning website ratings. The informal role of social media for communication and knowledge sharing among college students has been reported in Turkey (Gülbahar, 2014). In the context of museum, Russo, Watkins, and Groundwater-Smith (2009) reported that social media through transformations in digital literacy and informal learning make young learner active and cultural participants. The qualitative study of Chen and Bryer (2012) verifies the positive role of social media on informal learning from the perspective of instructors. Madge, Meek, Wellens, and Hooley (2009) in UK also found that students sometimes used social media informally for learning purposes.

Since, "there are few empirical studies that support the claim that this technology facilitates informal learning" (Song & Lee, 2014, p. 511), therefore, it is necessary to investigate the effect of social networks on informal learning especially in the context of developing countries like Iran. According to existing literature, this study formulates following hypothesis for informal learning variable:

H2. *Social networks usage positively affects students' informal learning.*

Social Networking and academic engagement

Academic engagement is an important factor that is related to students' learning and performance. It refers to the extent of student active involvement in learning activity or in school (Veiga, Reeve, Wentzel, & Robu, 2014). With especial attention to the importance of academic engagement and with widespread use of social networks, some research has been conducted in this field.

The experimental study of Junco, Heiberger, and Loken (2011) revealed that "the experimental group who used Twitter had a significantly greater increase in engagement than the control group, as well as higher semester grade point averages"(p. 119). Desselle (2017) found "Student perceptions of the Twitter assignment were quite favourable, with highest favour related to facets regarding the construction of their own learning and continuation of engagement throughout the course"(p. 185). Similarly, Hansen et al. (2010) found that students use of SNs or traditional technologies are positively related to the level of academic engagement. In its literature review, Tarantino, McDonough, and Hua (2013) proclaimed that using social media as an educational tool can improve student academic engagement.

Although most existing literature theoretically and in some cases empirically supports the position that social media increase academic engagement, there are some studies that reported otherwise, for example in a study with large number of college students, Junco (2012a) found that Facebook use was negatively correlated with engagement scale scores.

It is necessary to distinguish between academic and non-academic usage of social networks. Although the effect of using social networks for academic purposes in academic engagement is positive but it is very hard to accept this positive effects for non-academic usage. So the hypothesis for academic engagement was formulated as follow:

H3. *Social networks usage positively effects students' academic engagement.*

Social networking, academic performance, engagement and informal learning.

Existing research has examined the direct relationship between social networks usage and academic performance. Yet the relationship between social network usage and academic performance is often complicated and intertwined. To understand the role of social networks in students learning and performance, it is necessary to investigate its complex direct and indirect effects.

There is no any empirical study which examines social networks, informal learning, academic engagement, and academic performance simultaneously. However, some statements and assumptions have been made in this regard. For instance, about informal learning Bull et al. (2008) stated that "Informal learning that occurs in the context of participatory media offers significant opportunities for increased student engagement in formal learning settings"(p. 106) or engagement with social media increases student connections with peers and shapes virtual community and finally it increases student learning (Tarantino et al., 2013).

In a research closer to the goals of this study, Alshuaibi (2015) found that there is no direct relationship between social media usage and academic performance but there is an indirect effect and this effect mediated by agentic and behavioural engagement.

Inconsistency in the literature on the role of social networks in academic performance, engagement, and informal learning on the one side and necessity to examine mediating role of

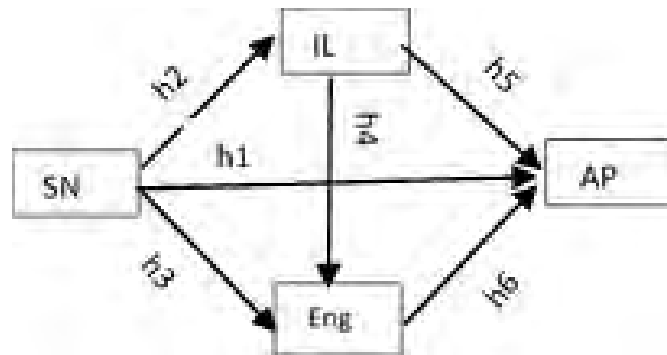academic engagement and informal learning on the other side, this study proposed the following path model:

Figure 1: model and hypothesis

H4: Informal learning positively affects academic engagement.

H5: Informal learning positively affects academic performance.

H6: Academic engagement positively affects academic performance.

H7: informal learning mediates the effect of social networks on academic performance

H8: Academic engagement mediates the effect of social networks on academic performance

RESEARCH METHOD

Design and Data Collection Procedures

Quantitative approach was used to achieve study aims. Among various quantitative research designs, descriptive-correlational research design was chosen. The study was conducted in two phases: 1) instrumentation phase to determine validity and reliability of the research instrument, and 2) main phase, for hypotheses testing with correlational and path analyses. To ensure participants' anonymity, there were no identity related questions such as requesting students' number or name and family identification in the questionnaire. Data were collected using printed version of instruments in both phases.

In order to study mediating role of variables, path analyses were used. Based on Baron and Kenny's (1986) study for examining mediating role, three paths must be significant; (1) Path 'a' between the independent variable (herein social networking) and the mediator (herein informal learning and academic engagement), (2) Path 'b' between the mediator and the outcome variable (herein academic performance), (3) the path 'c' between the predictor and the outcome variable (Baron & Kenny, 1986).

Participants

The population of this study included all students of public university in Birjand –the central city of South Khorasan Province in Iran-. The population consists of 37239 students in 2016-2017 school year. The sample for the main research phase was 380 students which were selected using cluster sampling. The sample was made up of 215(56.6%) males and 165(43.4%) female students. In the sample, 268(70.5%) were undergraduate and 112(29.5%) were graduate students. In terms of study disciplines, 192(50.5%) were humanity students, 88 (23.2%) were engineering students, and 100 (26.3%) were science students.

Data Collection Tool

Social Network Sites (SNSs) Usage Questionnaire

Social Networks Sites Usage Questionnaire developed by Shi, Luo, Yang, Liu, and Cai (2014) was used to gather data about student social networks usage. This instrument includes two subscales; featured and affective experiences. SNSs featured usage scale, includes 13 items such as updating one's status and visiting friends' homepages (α = 0.82). This subscale has 3 factors including a) basic usage; b) Interact usage, and 3) display usage. According to the developers of questionnaire the frequency and duration of using SNSs, and the number of friends refers to basic usage; this factor has three items. Interactive usage consists of 6 items which includes questions about frequently of updating status, sending private message and writings notes. Display usage includes 4 items which contains questions about updating photos and updating notes. In the current study, the questionnaire was translated into Persian considering process recommended by Sperber (2004); accordingly, the questionnaire was forward translated by researcher and then it was checked by a linguist expert and then it was back translated into English by an independent blinded translator then two English version was compared; in third phase instrument pilot tested among 30 students of target population. After pilot test the instrument administrated to a sample of 180 students from the research population to determine its reliability and validity using confirmatory factor analysis (CFA). CFA was performed on the all 21-item five-factor model. The results revealed an acceptable model fit [χ^2/df =2.063, RMSEA= 0.076]. Model diagram is displayed in Figure 2. The Cronbach alpha estimated for 21 items was 0.801 which met the recommended level of reliability of Persian version of questionnaire.
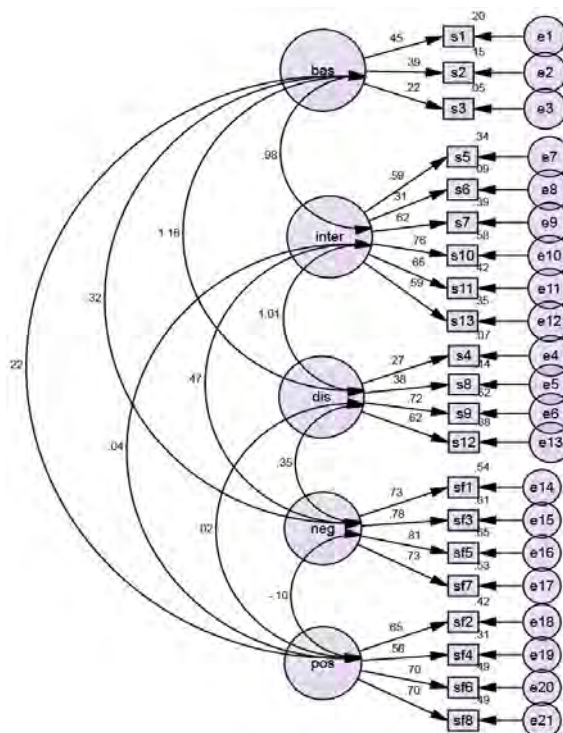
Figure 2: confirmatory factor analysis of SNs Usage questionnaire

Student Engagement in School - Four Dimensional Scale (SES-4DS)

For estimating student academic engagement, the English version of Student Engagement in School-Four-Dimensional Scale (SES-4DS) developed by Veiga (2013) was translated into Persian. Like SNS usage questionnaire in the translation process, forward and backward translation recommended by Sperber (2004) considered and piloted for validity and reliability. This measure consists of 20 items and uses a Likert-type scale ranging from 1 (total disagreement) to 6 (total agreement); and the questionnaire has four dimensions of cognitive, affective, behavioural, and agentic constructs (Veiga et al., 2014).

To confirm validity, confirmatory factor analysis was conducted for the Persian version of questionnaire in an initial study. Because of low factor load of one item (My school is a place where I feel excluded), this item removed from Persian version. After removing one Item from affective dimension, Persian version revealed an acceptable model fit [χ^2/df =2.012, RMSEA= 0.074]. The Cronbach alpha estimated for 19 items was 0.711 which met the recommended level of reliability.

Informal learning in social networks

The most complicated part of current study is related to assessing students' informal learning experience in social networks. A review of the literature failed to find a research instrument for assessing informal learning. Therefore, this study constructed an instrument including 28 items which assess Perceived Academic Outcome of Social Networks. All items were six-point Likert-type, ranging from 1 (strongly disagree) to 6 (strongly agree). These items were generated from focus group by interviews with seven graduate students in university of Birjand who were actively using social networks for academic and non-academic purpose.

Using exploratory factor analysis (EFA), the items that had low factor load were removed from the questionnaire. Finally, 19 items remained that explained 61.49% of the variance   of academic outcomes of social networks. Exploratory factor analysis extracted four factor named 1) perceived informal learning outcomes (explained 20.19% of variance), 2) perceived motivational outcomes (explained 16.75% of variance), 3) perceived negative academic outcome (explained 14.68% of variance), 4) perceived formal learning outcomes (explained 9.87% of variance). The Cronbach alpha (0.84) was found to be acceptable.   For the purpose of the current study, data of perceived informal learning outcomes of social networks were used. Perceived informal learning outcome scale included items   like *I gain informative announcements in social networks.*

Academic performance

Like most common studies in this field, and as mentioned before to ensure participants' anonymity, no name and no students number asked from student so academic performance was assessed with a single question in demographic section of administrated questionnaire. The students were asked to provide their cumulative Grade Point Average (GPA) which ranges from 0-20 in Iran. Before reporting the results, it is necessary to explain that all data was analyzed by SPSS 18 and Amos22 software .

FINDINGS

Descriptive statistics of the major variables

Findings about student's membership in social networks revealed that all of them (100%) are at least a member of one of the social networks, telegrams users (36.3%), Instagram (24.2%), WhatsApp (12.1%), Line (12.1%), and 15% were the users of other applications.

 The frequencies of basic social networks usage are reported in Table 1. As it shown in Table 1, the majority of students (72.4%) use social networks multiple times a day.

As   shown in

Table **2**,   based on Iranian grading scale, students' mean cumulative self-reported GPA was 16.13(SD=1.55) . The mean of   students' academic engagement with range from 1-6 was 3.86 (SD=0.58); implying that student's engagement is average. Students informal learning in social networks also with ranged from 1-6 was 4.26(SD=1.01); indicating that informal learning in social networks is above average. On social networks basic usage subscale with ranged from 1 to 7, the mean was 3.83(SD=0.97); indicating that social networks usage is around average.

Correlation coefficient in

Table **2** implies that there was a significant positive correlation between academic performance and engagement, significant negative correlation between academic performance and social networks usage, and significant positive correlation between SNs usage and informal learning. In addition, there was no significant correlation between SNs usage and academic engagement although this coefficient is negative.

Table 1: Basic social networks usage frequencies

How frequently do you use SNSs?						
Never	Yearly	Monthly	Weekly	Multiple times a week	Daily	Multiple times a day
8(2.1%)	1(0.3%)	12(3.2%)	9(2.4%)	23(6.1%)	52(13.7%)	275(72.4%)
On average, each time you visit SNS, how long would you spend on it?						
15min or Less	15-30min	0.5-1h3	1-2h4	2-3h5	3-4h6	More than 4h
93(24.5%)	87(22.9%)	44(11.6%)	54(14.2%)	34(8.9%)	66(17.4%)	2(0.5)
In your favourite SNSs, how many friends do you have?						
1-50	50-100	100-200	200-300	300-400	400-500	More than 500
210(55.3%)	82(21.6%)	42(11.1%)	21(5.5%)	10(2.6%)	3(8%)	12(3.2%)

Table 2: Descriptive statistics of and inter correlations between the major variables

	Mean	SD	Academic performance	Academic engagement	Informal learning	SNs basic usage
1. Academic performance	16.13	1.55	1			
2. Academic engagement	3.89	0.57	.122[*]	1		
3. Informal learning	4.26	1.01	-.037	.183[**]	1	
4. SNs basic usage	3.83	0.97	-.112[*]	-.021	.211[**]	1

 In addition to the linearity of relationship between variable which reported in

Table **2**, normality of variables estimated using Skewness and Kurtosis analysis. Alongside means and standard deviations and other descriptive statistics, these two values reported in Table 3.

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Table 3: descriptive study and normality test

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | | Kurtosis | |
						Statistic	Std. Error	Statistic	Std. Error
SNs basic usage	380	1.33	6.67	3.83	.97	.32	.12	.62	.25
Informal learning	380	1.29	6.00	4.26	1.01	-.61	.12	.12	.25
Academic engagement	380	2.31	5.20	3.89	.57	-.33	.12	-.28	.25
Academic performance	380	13.00	19.94	16.14	1.5d	.10	.12	-.72	.25

As can be seen in Table 3 The values of Skewness and kurtosis is between -2 and +2, therefore these values are acceptable in order to prove normality of data in the current study.

Path analysis for hypothesis testing

Although correlational analysis and coefficients reported in

Table **2** are related to hypotheses 1 to 3, path analysis is required for estimating the effect size. **Error! Reference source not found.** shows the direct standard effect of major variables of this study.

In response to hypothesis 1, (*Social networks usage negatively effects student's academic performance);* as can be seen in **Error! Reference source not found.**, the direct effect of social networks usage on academic performance was -0.10. This value means that the effect was negative but the p-value (0.052) in Table 4 indicated that this relationship was not significant.

Regarding hypothesis 2, (*Social networks usage positively effects student's informal learning)* **Error! Reference source not found.** demonstrates that the direct effect of social networks usage on informal learning was 0.21. This regression weight means that the effect was positive and furthermore, the p-value in Table 4 indicates that this relationship was significant.

Concerning hypothesis 3, (*Social networks usage positively effects student's academic engagement)* **Error! Reference source not found.**shows that the direct effect of social networks usage on academic engagement was -0.06. It meant that the relationship was negative but the p-value (0.223) in Table 4 indicated that this relationship was not significant.

In relation to the hypothesis 4 (*Informal learning will be positively effects academic engagement),* **Error! Reference source not found.**, shows that the direct effect of informal learning on academic engagement was 0.20. It means that the effect was positive and p-value in Table 4 shows that this effect was significant.

For hypothesis 5 (Informal *learning will be positively effects academic performance)* **Error! Reference source not found.** illustrates that the direct effect of informal learning on academic performance was -0.04. It meant that the effect was negative but the p-value (0.458) in Table 4 shows that this effect was not significant.

Related to hypothesis 6 (that *Academic engagement will be positively effects academic performance);*

Error! Reference source not found. demonstrates that the direct effect of academic engagement on academic performance was 0.13.It meant that the effect was positive and the p-value (0.014) in Table 4 indicates that this effect was significant.
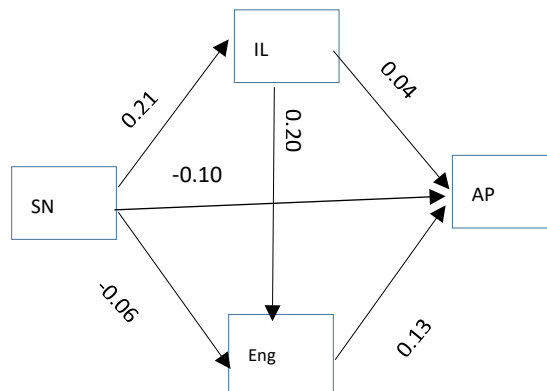

Figure 3: Model for direct effects for major variables

Table 4: unstandardized Regression Weights of major variable in model

			Estimate	S.E.	C.R.	P	Label
Informal learning	<---	Social networks	.221	.053	4.198	***	par_1
Academic engagement	<---	Informal learning	.111	.029	3.808	***	par_2
Academic engagement	<---	Social networks	-.037	.031	-1.219	.223	par_4
Academic performance	<---	Social networks	-.161	.083	-1.942	.052	par_3
Academic performance	<---	Informal learning	-.060	.080	-.742	.458	par_5
Academic performance	<---	Academic engagement	.343	.139	2.463	.014	par_6

To estimate Hypothesis 7 , (*informal learning mediates the effect of social networks on academic performance);* as can be seen in Table 4, based on Baron and Kenny (1986) for examining mediation role, Path "b"(correlation between informal learning and academic performance) and path "c"(correlation between social networks and academic performance) was not significant. So the preconditions have not been met with research data.

In relation to the hypothesis 8 (*Academic engagement mediate the effect of social networks on academic performance);* the conditions for mediating analysis are not provided because path "c" which is related to correlation between social networks and academic performance was significant. Path "a" which is related to significant relationship between predictor (herein social networks) and mediator (herein academic engagement) was not significant.

Finally, in order to assess model fit a number of indices was used. first most popular indicate is χ^2/df; the value of this indicator for 3.73. Although this value was not less than 3 but it was less than 5 so it can

permissible model. Root mean square error of approximation (RMSEA) value for the current model is 0.08; this value does not represent good model fit because it is not less than 0.05 but it represents moderate model fit in the current study. Another indicates are comparative fit index (CFI) with a value of equal to or more than 0.90 indicate an acceptable level of model fit. The CFI value was 0.92 for current model which represents moderate model fit. As a result, in general, it can be summarized that represented model fit was not good but it's fitness was acceptable.

Table 5 summarized the relationship between independent and dependent variables in current study.

Table 5 :Summary of relationship between Independent(IV) and Dependent (DV) variables

IV	DV	Effect	Result
Social networks	Informal learning	Positive direct effect	**Significant**
Informal learning	Academic engagement	Positive direct effect	**Significant**
Social networks	Academic engagement	Negative direct effect	Insignificant
Social networks	Academic performance	Negative direct effect	Insignificant
Informal learning	Academic performance	Negative direct effect	Insignificant
Academic engagement	Academic performance	Positive direct effect	**Significant**

DISCUSSION AND CONCLUSION

The main aim of the current study was to examine the effect of social networks usage on academic performance with especial attention to mediation role of academic engagement and informal learning. To some extent, it seems obvious that non-academic usage of social media negatively affects academic performance, some new reports like Rostaminezhad, Porshafei, and Ahamdi (2018) ,Lau (2017), Alwagait et al. (2015) and Junco (2012b) confirm this negative effect. This study in its direct effect analysis repeatedly confirmed this negative effect in the Iranian context.In relation to this hypothesis, it can be discussed that the amount of time students spent on instant messaging has been found to be significantly related to multitasking (Lau, 2017) so it can result in distraction form academic tasks (Levine, Waite, & Bowman, 2007).

This study looked at informal learning and academic engagement in investigating the effect of using social networks effects on academic life. In the case of informal learning, the findings of this study indicated that use of social networks had a positive effect on informal learning as reported in previously published research (Chen & Bryer, 2012; Gülbahar, 2014; Madge et al., 2009; Russo et al., 2009; Song & Lee, 2014). Despite the direct and positive effects of social networking on informal learning, the effect of informal learning on academic performance was not significant and its value was negative in current study. Although there is no solid research evidence for comparing the result of current study in the context of social media but it is inconsistent with the result of studies like Klein and Moore (2016), indication using informal strategy in general facilitate learning and enhance performance. The finding of current study is also inconsistent with other studies (Chen & Bryer, 2012; Gülbahar, 2014; Russo et al., 2009; Song & Lee, 2014). The reason for this inconsistency can be the context of research and student differences in using social networks; although more comparative study needs to resolve this inconsistency.

Academic engagement is an important construct in educational studies. In contrast to the findings of other research like Desselle (2017), Hansen et al. (2010), Junco et al. (2011), and Tarantino et al. (2013), this study did not find a significant correlation between social networks and academic engagement, although the value of effects was negative. However, this finding concurred with the findings reported in Junco (2012a) that found Facebook use as negatively correlated with engagement. This finding is justifiable because if the effect of using social networks on academic engagement was positive, it was also expected that the effect of the social networks on academic performance would be positive; because theoretically and empirically the

effect of academic engagement on academic performance is positive and significant. As it can be seen in the current study the effect of social networks usage on academic performance was negative similar to its effect on academic engagement.

Limitations

This study was carried out in Iran and its findings may not be generalizable to other countries, especially developed countries. Using self- report instrument for student GPA was another limitation of the study, although due to the anonymity of the respondents, there was no choice except for using the self-reporting approach. There was no standardized questionnaire for informal learning in social networks available in the literature, thus the researcher had to develop a questionnaire for assessing student's informal learning.

Conclusion and future work

In the present digital age, a significant amount of young people and students spend their time on social networks. The use of social networks should be managed in such a way that it does negatively affect their academic performance. The results of the current study as well as those in the literature indicate that non-educational use of social networks has a negative effect on academic performance. It has been suggested that it is necessary to direct the non-educational use of social networks to those of educational benefits. In this regard, one of the issues is that students and teachers are unaware of the educational potential of social media (Gülbahar, 2014); and Tess (2013) concludes that teachers are slow to make use of social media for educational purposes. In the study of Sobaih et al. (2016) in the context of developing countries, this concern has also been raised. To achieve this goal, teachers' attitudes should be changed. As Guo and Stevens (2011) reported that perceived usefulness of Wikis as a social media is strongly influenced by teachers' attitudes towards the technology (Guo & Stevens, 2011).

The issue of academic usage of social networks should also be considered from the students' view point because keeping students engaged in technology-mediated learning is challenging (Veiga et al., 2014). Students' social media usage is affected by their communication style (Cho et al., 2007). The negative effect of social media on student's achievement can be affected by student's personality. Findings of Rosen and Kluemper's (2008) study showed that personality traits can be important predictors of ease of use and usefulness of social networks. The study of Rouis, Limayem, and Salehi-Sangari (2011) revealed that "extensive use of Facebook by student with extraverted personalities leads to poor academic performance"(p. 962). However, the effect of social media on academic performance maybe reciprocal. For example, Michikyan, Subrahmanyam, and Dennis (2015) found that "academic performance may determine college students' Facebook use, rather than the reverse"(p. 265).

For educational use of social networks, students should become familiar with this technology. Findings of Rodríguez-Tejedo, Lara, Zárraga-Rodríguez, and Rodríguez-Chacón (2012) suggest that, "although students are in general attracted by the idea of using SNS in class-related team work, the introduction of a tool they are not familiar with may hamper their self-perceived level of competence in a number of skills"(p. 1616).

Although educational use of social networks is an attractive and useful idea, as mentioned above, it may depend on many variables, some of them related to teacher, some to students, and some of them related to context and culture. Furthermore, it has also been reported that most part of social networks usage is related to non-educational usage such as entertainment and communications. This study examined this hypothesis that non-educational social media usage can improve academic engagement; it was revealed that in the context of Iranian society, the use of social networks did not improve academic engagement. In Iran, a significant part of the students' time in the social networks is spent for entertainment purposes. The findings of Erfanian, Javadinia, Abedini, and Bijari (2013) confirms this claim because they found majority of students use Social networks for communicating with old friends (0.55%) followed by entertainment (35.2%). Therefore, educational administration can positively affect students' academic engagement by designing edutainment groups, channels, and apps.

Social media can be considered as a bridge that connects informal learning to formal learning. Although this study revealed that social networks had positive effect on informal learning, but there was no correlation

between informal learning experiences and academic performance. This finding implies the fact that there is no connection between formal and informal learning experiences. This problem is not limited to Iran; as in an another study it has also been reported that students did not perceive a connection between their online activities and learning in classrooms (Greenhow & Robelia, 2009).

Based on the study of Dabbagh and Kitsantas (2012), using Personal Learning Environments, social media, and self-regulated learning can connect formal to informal learning. Bull et al. (2008) pay especial attention to digital video for integrating informal and formal learning experiences. So designing and developing a software that fosters informal learning in social media platform, like the software reported in the work of Ravenscroft, Schmidt, Cook, and Bradley (2012), is also recommended for connecting formal and informal learning. Although the above mentioned solutions are practical, connecting informal learning to formal learning experiences in social networks needs further research and is highly recommended to the researchers. Other recommendations for future work include the development and validation of the questionnaire for measuring student's informal learning experience in social networks. Another possible research topic arising from this study is comparing the effects of using social networks in informal learning with another traditional instructional media or environment.

Finally, it is recommended to the university teachers to find most effective informal learning experience in social networks. Also, it is recommended to the policy maker that identify which kind of social networking negatively affect academic performance and adopt the right policies to reduce this kind of social networking. To the researcher in addition to the above mentioned recommendations, it is recommended to repeat current study using replicated research method to find out the reliability of the results of this study.

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