

Integration of Social Media into Engineering Education: A Comparative Study on Perceptions of Faculty and Students*

CIGDEM TURHAN¹ and IBRAHIM AKMAN²

¹ Department of Software Engineering, Atilim University, Ankara, Turkey. E-mail: cigdem.turhan@atilim.edu.tr

² Department of Computer Engineering, Atilim University, Ankara, Turkey. E-mail: ibrahim.akman@atilim.edu.tr

For a number of years, the effects of incorporating social media into education systems has invoked the interest of researchers, academicians and students. Yet, the enthusiasm of students in utilizing social media for learning is met with reluctance on the faculty's part in abandoning the traditional ways of teaching. This study compares the students' and faculty's acceptance of the utilization of social media in engineering education from different perspectives. A survey approach has been used for this purpose and 57 faculty and 85 students from the engineering faculties participated in the study. The research model used was tested using the least square regression technique. The results show existence of significant diversity between the faculty and students in the factors affecting the ethical usage. Concerning the general usage, this diversity exists in only the awareness. These results are expected to provide insight into the issues that act as barriers towards a more open, collaborative and learner-centered higher education platform.

Keywords: social media; engineering education; learning; ethics

1. Introduction

With social media becoming an essential component of people's lives for the past few decades, it has become inevitable to question whether this new technology can also be beneficial in the higher education environment. Social media is believed to provide an interactive, open and sociable platform for changing the ways of teaching and learning, providing collaboration, communication, information sharing and critical thinking between students and faculty, thereby creating an efficient learning atmosphere [1–3].

Even though academicians regularly use social media for personal, professional or learning purposes [4], many are reluctant, uncertain and even suspicious towards incorporating social media tools into their teaching strategies [1,5]. On the other hand, university students of today are considered to be 'digital natives'. Since having been introduced to the digital technology from an early age, they accept social media as part of their lives [2], whereas faculty members are considered to be 'digital visitors' who only use social media for specific purposes [6]. These different views bring about the idea of a 'generation gap' between faculty and students [7], causing the students to have a more positive attitude towards utilizing social media in the learning process compared to the members of the faculty.

Many previous research have focused on how to integrate social media into higher education; yet, only a few have examined the views of university faculty on the subject. Some of these studies are

presented as follows. Sobaih et al. [4] investigate the extent to which social media can be used in different settings in Egyptian institutions; Păuleț-Crăiniceanu [7] proposes a model to integrate Web 2.0 technologies in higher education; Ferrera-Santiago et al. [8] conduct social network research about engineering education; Chigne et al. [9] describe a learning environment framework based on social network analysis; Falahah and Rosmala [10] explore the usage of social media in three private universities in Indonesia; Manca and Ranieri [1] report the results of a survey conducted in Italian universities to identify the potentials and obstacles of using social media in teaching; Balakrishnan [3] focuses on the elements that motivate students to use social media for learning at universities; and Sánchez et al. [2] survey undergraduate students in Spain to identify the factors encouraging students to use, specifically, Facebook for educational purposes. All of these studies address some of the elements that affect the students in the adoption of social media in higher education, such as peer influence and ease of use, but disregard the attitude of faculty members who are actually the ones deciding to integrate social media into their lectures.

In the studies that compare the faculty and student utilization of social media, Brisson et al. [11] examine the differences in the use of social network sites (SNS) between medical students and faculty; Malesky and Peters [12] compare the appropriate professional behaviour for students and faculty on SNS; Robyler et al. [5] focus on Facebook to provide a comparison between faculty and stu-

dents in the perception of SNS; and Veletsianos [6] specifically investigates faculty utilization of Twitter. Most of these studies concentrate on specific social media tools, such as Facebook and Twitter, and only a few of them address the ethical viewpoints of the faculty or the students in their findings. In addition, previous research have not focused specifically on the attitudes of faculty and students of engineering.

In light of the above mentioned research, this study aims to determine the different factors that influence the utilization of social media in engineering education, providing a comparison between the views of student and faculty regarding ethical concerns. Moreover, the study attempts to understand why social media is not fully embraced as much by the faculty as the students in engineering faculties even though the awareness and utilization levels of engineering faculty is reasonably high. The findings will hopefully shed light on the reasons behind the faculty's reluctance and students' enthusiasm towards a change from a traditional teacher-oriented learning to a learner-centered platform by integrating social media into engineering education.

2. Research model

With the rising popularity of social media, the educators started to struggle with the predominant attitude to utilize social media for education [5]. A recent study indicates that 90% of college students utilize social media, and that they have been found to support this technology for educational activities [13]. Additionally, as noted by Elkaseh et al. [14], social media is becoming popular among students and teachers and they show more enthusiasm and excitement in using this technology in higher education. However, currently available studies are not necessarily conclusive. For example, according to Roblyer et al. [5] the leaning attitude was observed to be towards non-adoption of new technologies in higher education institutions since their faculty prefer to remain indifferent to the subject. A report on educational technology use in teacher education programs concluded that one of the critical issues for efficient integration of technology in education appears to be faculty unwillingness [15]. Furthermore, it has been observed that number of learners, who are taking full advantage of educational technologies in their learning activities is not many at all [16]. Similarly, Greenhow and Robelia [17] also reported that most of the students fail to perceive the relationship between online and learning activities. Additionally, the preceding literature generally recognizes only the obstacles and challenges of adopting social media in education [14], and does not pay much attention to stake-

holders' behavioral differences in higher education. Therefore, this study examines the existence of diversity between faculty and students in social media adoption regarding their educational activities. Fig. 1 shows causal effects to be tested between predictor and dependent variables for faculty and students. These causalities are then hypothesized in terms of faculty and student interactions, accordingly.

According to the widely used motivational conceptual models, namely Technology Acceptance Model, Theory of Reasoned Action, and Theory Planned Behaviour, intention appears to be an immediate predictor of any actual behaviour. In other words, the level of intention is proportional to the level of likelihood for performing a behaviour. The significance of intention has been validated in different research [5, 14, 18]. In their work, Mikalef et al. [18] reported that behavioural intention appears to be a significant predictor of actual use in the adoption of online media for different purposes. In a very recent study, Dumpit and Fernandez [19] analyzed the drivers of educational social media adoption in higher education and concluded that in especially private higher education institutions usage intention translates to actual behaviour. Although, based on its interaction and collaboration advantages, social media has important benefits in education, intention literature for social media adoption is still immature and needs further investigation [4,19]. Therefore this study uses behavioural intention (GBI) to be one of the central variables in the research model (Fig. 1).

Ethical issues, such as what counts right or wrong, good or bad, moral or immoral, have been one of the primary concerns in the field of Information systems (IS) academically and professionally. This is because perceptions regarding ethics appears to be a critical component for the adoption of information technology. The literature contains studies stressing the importance of ethical perception and its influence in the use of information systems. For example, Santana and Wood [20] focused on social and ethical consequences of lack of transparency in Wikipedia for especially students in higher education in general and analyze some critical social and ethical issues regarding online learning media. They pointed that ethics approaches are life and-consciousness-centered and are moral reasoning and action. In their study, Henderson et al. [21] explored the ethical issues and concluded that educators should not ignore the ethical concerns. They also suggest that students should go beyond ethical guidelines and consider their ethical relationship with "others" such as friends. The students of higher education are witnessing an era of decline in public ethical

perceptions, which is likely to affect their attitudes about ethical behavior and the ethical issues are consistent in the use of Information Technology (IT) in teaching and learning [22]. According to Brown [22], all of the ethical problems faced in the general usage of internet technologies are also valid in online education, with two major additions regarding the learning quality and engagement in the learning process both of which address teachers' and students' ethical behavioural intentions. Ethical issues such as ensuring academic integrity, honesty and freedom become especially important in social media adoption for educational purposes. Despite the theoretical and practical relevance of different ethical issues, there is a dearth of research in the quality of web based research [22] and ethics has rarely been a main interest in IS research [23]. Therefore, the influence of individuals' personal ethical intentions on their actual behaviour needs to be explored further, and consequently, the intention for ethical usage in social media in education (EBI) has been chosen as a central variable of the present study (Fig. 1).

Perceived Ease of Use (PEU) and Perceived Social Pressure and Perceived Awareness have been extensively studied as predictors of behavioural intention in the literature and therefore are used as the independent variables of this study. To be in line with the available literature, they were adapted from prior literature according to the purpose of this study.

The justification for the empirical factors—ease of use, social pressure, awareness and actual behavior—and their hypotheses are given below.

2.1 Ease of use

Social media is becoming popular in higher education institutions, and researchers have only recently started to investigate the educational usage of social media [14]. In order to develop effective strategies for implementation and adoption of such technologies in education, there is a need to investigate the

nature of the influence of attitudinal factors [14]. Perceived Ease of Use is defined as “the degree to which a person believes that using a technology will be free from effort” [24] and refers to the degree of user's perception that their continued educational use of social media is free of effort in this study. Since its introduction [24], the perceived ease-of-use has been one of the high-priority attitudinal cognitive factors in empirical studies for exploring the acceptance of information technologies, including social media [14]. Available literature provides evidences that PEU is associated with continuance intention in the context of adoption of online learning and therefore this behaviour leads to a need for testing its influence on behavioral intentions towards the adoption of social networks [25]. Against this backdrop, we postulate the below hypotheses:

H1₁: There is no diversity between faculty and students regarding the influence of the Perceived Ease of Use (PEU) on the Behavioral Intention for the General (GBI) use of social media in education.

H1₂: There is no diversity between faculty and student regarding the influence of the Perceived Ease of Use (PEU) on the Behavioural Intention for the Ethical (EBI) use of social media in education.

2.2 Social pressure

Venkatesh et al. [26] define ‘social norm’ as pressure from others to use new technology which is represented by the variable ‘social pressure’ in this research. Social pressure is used to conceptualize social aspects in the adoption of information systems. According to Yoon and Rolland [27], social pressure is significantly related to the continuation of usage intention. Although social pressure is a core variable in conceptual models in studying the individuals' behaviours [27], it has not gained much attention in explaining the adoption of social media

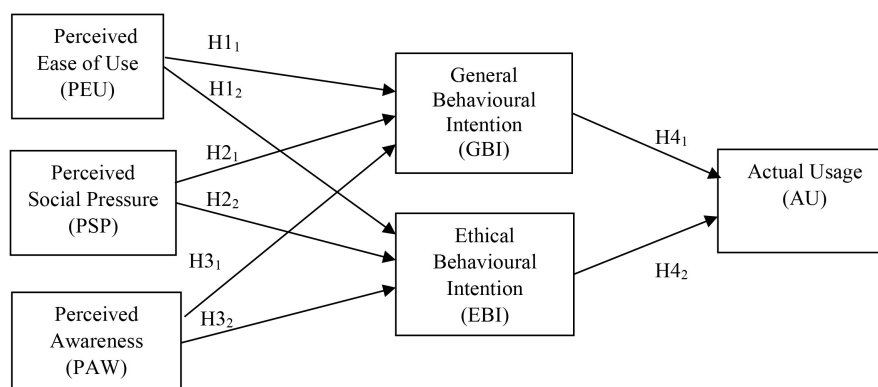


Fig. 1. Research Model for Educational Social Media Adoption of Faculty and Students.

in education, and further research is encouraged for precise understanding of the usage intentions for this technology [28]. All these lead to the following hypotheses.

H2₁: There is no diversity between faculty and students regarding the influence of the Perceived Social Pressure (PSP) on the Behavioral Intention for the General (GBI) use of social media in education.

H2₂: There is no diversity between faculty and students regarding the influence of the Perceived Social Pressure (PSP) on the Behavioral Intention for the Ethical (EBI) use of social media in education.

2.3 Awareness

In spite of the extensive growth in the use of social networks worldwide, research shows a significant divide between users. The use of social networks, especially in developing countries, is still at its infancy as a result of lack of awareness [29]. Bexheti et al. [30] examined the case of social media in teaching and supported the existence of differences in social media adoption for teaching depending on the level of teachers' awareness. Bjorn et al. [31] have also shown that awareness has a significant role in social media acceptance for supporting cooperation between individuals. They also stated that further research is needed to confirm the significance of social media awareness. Furthermore, in their work, Sayeed and Gill [32] suggested further research to underline the differences in the effects of professionals' social network awareness on its adoption. Therefore, the following hypotheses were developed.

H3₁: There is no diversity between faculty and students regarding the influence of the Perceived Awareness (PAW) on the Behavioral Intention for the General (GBI) use of social media in education.

H3₂: There is no diversity between faculty and students regarding the influence of the Perceived Awareness (PAW) on the Behavioral Intention for the Ethical (EBI) use of social media in education.

2.4 Actual behavior

Recent literature contains research on the relationship between behavioral intention and actual usage within the framework of social media sites for different purposes [33]. These studies mostly indicate the existence of such a relationship. As social networking technologies become widely available, their pedagogical potential increases since users of these technologies may share ideas, construct solutions, and collaborate on projects for learning or

teaching purposes [34]. Therefore, from an ethical standpoint, it is necessary to acknowledge the ethical issues concerning such technologies for using social media in education [22]. Brown [22] also reported that teachers and learners should be attentive regarding the ethical use of social media for learning and teaching since it has an impact on the actual use of these technologies. Ethical issues related to actions, objects, groups and ways of interaction all come together in the process of social networking, and it is critical to trace the overall intentions to use such networks [35]. Based on the arguments in this section, the following are proposed:

H4₁: There is no diversity between faculty and students regarding the influence of the General Behavioral Intention (GBI) on the Actual Use (AU) of social media in education.

H4₂: There is no diversity between faculty and students regarding the influence of the Ethical Behavioral Intention (EBI) on the Actual Use (AU) of social media in education.

3. Research design

The data was collected during the 2nd International Engineering Education Conference, the 29th National Information Convention, and from various academicians and university students from the engineering faculties of various universities. The research data were obtained by using questionnaire containing 14 items. A pilot version of the questionnaire was face-validated and revised based on the suggestions from a group of IT professionals. Except gender and age, the remaining items were grouped under 6 constructs. Each of these constructs reflect a discrete variable, as given in Table 1, along with their definitions. A five-point Likert Scale (5 = strongly agree, 4 = agree, 3 = average, 2 = disagree, 1 = strongly disagree) was used for collecting the data for the research variables (Table 1). At the beginning of the questionnaire two descriptive variables (gender and age) are given. The sample was limited to groups of faculty and students from the engineering faculties of various universities since these groups are expected to have reasonable awareness regarding concepts of social media usage in education. A total of 142 completed responses were returned at the end of the survey.

Regression is a powerful technique to represent the direction and amount of relationships between the dependent and independent variables of interest. It is frequently used in statistical analysis in empirical research for confirmatory and exploratory purposes. In this study, to test the effect of the independent variables on the dependent one, uni-

Table 1. Summary of research questions, constructs/variables and their factor loadings

Construct/ Variable	Item	Factor Loadings
Gender	Gender? (Male, female)	–
Age	Age (years)? (21–30, 31–40, 41–50, >50, 61 or more)	–
Perceived Ease of Use (PEU)	It is easy for me to learn how to use social media for my learning/teaching activities. I never face problems in using social media for my learning/ teaching activities.	0.944
Perceived Social Pressure (PSP)	Most people who are important to me expect me to use social media for my learning/ teaching activities. Most people who are important to me use social media for their learning/teaching activities.	0.923
Perceived Awareness (PAW)	I am familiar with online learning/teaching issues. I am familiar with the issues in learning/teaching using social media.	0.962
Behavioral Intention for the General use of social media in education (GBI)	I always intend to use social media for learning/teaching purposes on a regular basis. I intend to use social media for learning/teaching activities in the future.	0.893
Behavioral Intention for the Ethical use of social media in education (EBI)	I intend to practice ethical use of social media for learning/teaching purposes in the future. I always intend to practice ethical use of social media for learning/teaching purposes on a regular basis.	0.989
Actual Usage (AU)	I currently use social media for learning/teaching purposes. I use ICT for learning/teaching purposes.	0.921

variate regression method was used separately for the groups of faculty and students. Then, the significance of these effects were compared for each variable in the groups in order to decide the existence of diversity (Table 3). This study also uses chi-square analysis to test relationships between categorical variables whenever needed.

The Cronbach's alpha, which shows the overall internal reliability was found to be 0.737 which exhibits adequate reliability for research data. The factor loadings of multi-item constructs are given in Table 1. These loadings were observed to range from 0.893 to 0.989, which can be used as an evidence of the fact that all the items in the test exhibit high reliability and measure the same concept. Additionally, high construct loadings are indicators of existence of construct validity.

4. Results

The notation “p-value” corresponds to significance level for the tests for coefficients in regression analysis and chi-square test results in this section. Additionally, the abbreviations coeff. and DF stand for “regression coefficient” and “degrees of freedom” for the chi-square test, respectively.

4.1 Descriptive results

Before addressing the research model, descriptive results of the samples of faculty and students are provided in Table 2, separately.

The distribution of gender is similar for faculty

and students. In other words, the male respondents appear to be more for faculty (77.1%) and students (64.7%). The distribution of age was accumulated to 41 years or higher (56.2%) for faculty as expected. This percentage for students, who are less than 31 years of age was observed to be 87.1%. In spite of the fact that the percentage of the faculty, who are using social media in education more than average (29.7%) appears to be less than that of students' (48.2%), the relationships between academic position and educational usage of social media was not found to be significant (Chi-square = 4.870; DF = 4; p-value = 0.301). From another perspective, the percentage of using social media in education more than average is 32.3% for males and (54.8%) for females. The chi-square test results support this observation since the relationship between gender groups and, social learning and teaching usage was found significant (Chi-square = 9.535; DF = 4; p-value = 0.049). A similar observation was made regarding ethical use of social media for education. In other words, considering ethics more than average in educational usage of social media is high for each gender and their relationships show high significance (Chi-square = 11.927; DF = 3; p-value = 0.008). Interestingly, the distribution of the faculty and students was also found to be significantly related (Chi-square = 8.219; DF = 3; p-value = 0.042) in this respect. These show that, regardless of their gender, the groups of faculty and students are sensitive about ethical issues in adoption of social media in their educational activities.

Table 2. Profile of respondents

Variable-description	Cases	Code	Faculty (N = 57)		Student (N = 85)	
			N	Percent.	N	Percent.
Gender	Male	1	44	100.0 77.1	55	100.0 64.7
	Female	2	13	22.9	30	35.3
Age	0-31	1	6	10.5 100.0	74	87.1 100.0
	31-40	2	19	33.3	7	8.2
	41-50	3	21	36.9	3	3.5
	> 50	4	11	19.3	1	1.2
Actual use of social media in education	Strongly disagree	1	16	18.1 100.0	10	11.8 100.0
	Disagree	2	12	21.1	14	16.5
	Average	3	12	21.1	20	23.5
	Agree	4	10	17.5	19	22.3
	Strongly agree	5	7	12.2	22	25.9
Practicing ethical use of social media in education	Strongly disagree	1	3	5.3 100.0	4	4.7 100.0
	Disagree	2	2	3.5	5	5.9
	Average	3	3	5.3	16	18.8
	Agree	4	21	36.8	24	28.2
	Strongly agree	5	28	49.1	36	42.4

4.2 Test results

The collected data were analyzed to test the proposed hypotheses using least square regression technique, and the overall results are summarized for each empirical factor in Table 3.

4.3 Ease of use

The findings from the inspection of p-values (Table 3) are as follows:

- In H1₁, it is proposed that there is no diversity between faculty and students and the results support this claim since the p-values for faculty (p-value = 0.000) and students (p-value = 0.017) are both found to be significant. Therefore, H1₁ is accepted. This means that faculty and students

both perceive social media to be easy to use for their learning and teaching activities. Additionally, the inspection of Table 3 shows that the ease of use has positive effect on intention to use such systems for both groups (coeff. = 0.679 for faculty and coeff. = 0.363 for students). In other words, the more familiarity they have with social media issues, the more intention that they show toward actual usage.

- Surprisingly, the regression test results (Table 3) revealed different significance levels for the impact of ease-of-use against ‘ethical usage intention’ for faculty (coeff. = 0.423, p-value = 0.005) and students (coeff. = 0.188, p-value = 0.182) and, hence H1₂ is rejected. This means that PEU has a significant influence on the ‘ethical usage inten-

Table 3. Test results for diversity between faculty and students for social media adoption in education

Empiric. factors	Central var.	Hyp.	Faculty (F)		Student (S)			Diversity	
			Coeff.	p-val.*	Coeff.	p-val.*	Significance		
Perceived Ease of Use	General Intention	H1 ₁	0.679	0.000	Significant	0.363	0.017	Significant	No diversity
	Ethical Intention	H1 ₂	0.423	0.005	Significant	0.188	0.182	Insignificant	Diversity
Perceived Social Pressure	General Intention	H2 ₁	0.511	0.000	Significant	0.724	0.000	Significant	No diversity
	Ethical Intention	H2 ₂	0.096	0.376	Insignificant	0.284	0.008	Significant	Diversity
Perceived Aware.	General Intention	H3 ₁	0.282	0.109	Insignificant	0.520	0.001	Significant	Diversity
	Ethical Intention	H3 ₂	-0.018	0.902	Insignificant	0.261	0.030	Significant	Diversity
Actual Behaviour	General Intention	H4 ₁	0.404	0.000	Significant	0.536	0.000	Significant	No diversity
	Ethical Intention	H4 ₂	0.360	0.041	Significant	0.161	0.189	Insignificant	Diversity

tion' for faculty but not for students. In other words, faculty is responsive to unethical use of social media for education depending on their level of easiness perception. This shows a disagreement on risks perceptions for unethical usage in learning/teaching activities relating to the intention for actual behavior between faculty and students.

4.4 Social pressure

The tests results for this group are as follows:

- The test results (p-values) reveal that the influence of 'perceived social pressure' on the intention of social media usage in education is significant for both the faculty (coeff. = 0.511; p-value = 0.000) and students (coeff. = 0.724; p-value = 0.000). This implies that there is no diversity in terms of the significance of the results for the predictive effect of perceived social pressure and H₂₁, as such, is accepted. Both groups agree on the positive effect of social pressure on the intention to use social media for learning and teaching activities.
- Interestingly, examining p-values for ethical social media usage intention in education (Table 3) reveals that the significance for the variable 'social pressure' shows different nature for faculty (coeff. = 0.096, p-value = 0.376) and students (coeff. = 0.284, p-value = 0.008). Therefore, H₂₂ is accepted. This can be interpreted as the faculty does not feel any social pressure for their ethical usage of social network sites for learning/teaching activities, whereas students' perception is entirely opposite in this respect.

4.5 Awareness

The test results for this empirical factor are given below:

- The p-values in Table 3 indicates diversity for the variable 'awareness' for academic social media usage intention since the regression test results show a difference between the faculty (coeff. = 0.282; p-value = 0.109) and students (coeff. = 0.520; p-value = 0.001). Thus, H₃₁ is not accepted. This, interestingly, means that awareness is not perceived as a factor in developing an attitude in favor of using social media for learning and teaching activities of faculty. However, this observation is entirely opposite for the students.
- H₃₂ is also rejected because we observe different levels of significance (Table 3) in the test results between the faculty (coeff. = -0.018, p-value = 0.902) and students (coeff. = 0.261, p-value = 0.030). In other words, the faculty and students have differing views regarding the impact of awareness of ethical social media usage in educa-

tion on the intention. More specifically, for students, the level of awareness is significantly important and for the faculty, this is not the case.

4.6 Actual behavior

The test results for the influence of central variables "Behavioral Intention for the General use of social learning/teaching (GBI)" and "Behavioral Intention for the ethical use of social learning/teaching (EBI)" on the actual use are given below:

- The p-values in Table 3 show significance for both the faculty (coeff. = 0.404, p-value = 0.000) and students (coeff. = 0.536, p-value = 0.000) and that there is no diversity between these groups in terms of the impact of variable GBI on actual usage of social learning and teaching, and we accept H₄₁ as a result. This may also be interpreted as GBI is a significant central factor of PEU, PSP and PAW for the actual usage of social media in education.
- Contrary to the finding of GBI, EBI was found to be significant for the faculty (coeff. = 0.404, p-value = 0.041) but not for students (coeff. = 0.161, p-value = 0.189). Thus, we reject H₄₂. A plausible interpretation of this result may be that the ethical usage intention of faculty for social learning and teaching has a significant impact on its actual usage, whereas such usage is not influenced by the students' intention for social learning and teaching.

5. Discussion

This study aims to investigate how different factors affect the utilization of social media in engineering education by providing a comparison between the faculty and students in terms of their general and ethical behaviour. Specifically, the effects of social pressure as well as the perceived ease of use and the awareness levels of social media on the intention to use such media in the classroom are investigated for both groups.

5.1 Ease-of-use

As expected, our findings indicate that both faculty and students believe social media to be easy-to-use which positively affects their intention to use this platform for their educational activities. Similarly, Sánchez et al. [2] have found that PEU positively affects the students' Facebook adoption for academic purposes since they feel that Facebook would ease their mental and physical undertakings in the learning process. Balakrishnan [3] also states that younger users' familiarity with social media decreases the amount of effort they need to make in their academic activities. Parallel to students, faculty members also feel comfortable with using

social media regularly, mostly for personal, entertainment, professional or learning purposes [4].

Yet, our findings show that faculty and students do not share the same views from the ethical standpoint. According to the American Association of University Professors (AAUP) Statement on Professional Ethics [12], professors need to act in the “best scholarly and ethical standards of their discipline” involving fostering “honest academic conduct” among students, respecting the “confidential nature of the relationship between professor and student”, and protecting their “academic freedom”. These ethical concerns are some of the reasons why faculty members are reluctant to incorporate social media into their curriculum since they believe that with such an open, free and easy-to-use platform, they would lose their proper role as an intellectual guide for students and, thus, cannot enforce honest academic conduct among the students in their lectures, or maintain the confidentiality level with their students. Even though students do not share the same ethical concerns with the faculty, many of them feel uncomfortable with having their instructors as ‘friends’ on Facebook [3] and prefer to keep their social and academic lives separate [2].

5.2 Social pressure

Furthermore, the results of our study reflect that both students and faculty believe that social pressure plays a considerable role on their intention to use social media for academic purposes. Our findings are consistent with the results of Balakrishnan’s study [3], which states that students are affected by peer influence and decide to use social media just because their friends use this technology. Similarly, according to Sánchez et al.’s [2] results, peer influence is the most important factor motivating toward adopting Facebook for educational purposes. On the other hand, Cao et al., [36] have found that external pressure is one of the main factors affecting the social media use by the faculty for instructional activities. Even though both faculty and students are affected by social pressure, their views on the ethical usage of social network sites in this respect differ in our findings. For faculty members, external pressure does not raise ethical concerns in the usage of social media, whereas students are more concerned with ethical behaviour due to social pressure. An explanation for this result could be that in using social media for educational activities, students are directly influenced by their instructors to behave ethically in order to maintain the desired level of academic integrity within the classroom.

5.3 Awareness

Another factor that has been analyzed in this study

is how the faculty and students’ awareness levels of social media affects the intention to use this technology for academic purposes. Our findings indicate that for faculty members, the awareness level is not perceived as a factor that affects their intention to use such systems; whereas, the students’ opinions differ in this respect. According to a study by Pew Research Center in 2015, 90% of young adults between the ages of 18–29 and 76% of individuals who are college graduates or hold higher degrees use social media regularly. These figures prove that both students and faculty are well aware of the social media technologies and have already incorporated them into their lives. Yet, students being the ‘digital natives’, grew up with this technology and, thus, are more inclined to utilize social media in their learning activities since it is a significant part of their lives already [2, 5]. Yet, faculty members who are considered to be only ‘digital visitors’ are not as enthusiastic as students in this respect, and prefer to continue with the traditional face-to-face teaching practices, and rely more on the university-established Learning Management Systems (LMS) systems to communicate with students. The few that choose to integrate social media into their curriculum are mostly limiting themselves to *accessing* the existing resources rather than *publishing* new content [1] or establishing a one-way communication with students to post slides, homeworks, etc. about their lectures [4], thereby not reaping the full benefits of setting up an open and free platform for collaboration, communication and sharing with students.

The effect of the awareness levels of social media on the ethical behaviour of students and faculty also differ in our findings. Interestingly, students raise more ethical concerns as the awareness level increases when compared to the faculty members. This result is contrary to the outcomes of the study by Brisson et al. [11], who reported that students were four times more likely to overlook harmful material posted by a peer than the faculty, and believe that it is the responsibility of the individual to control his/her online behaviour. Similarly, Aliyu et al. [37] found that students with a higher IT background would be more familiar with Internet ethics, but are found to be more likely to engage in unethical behaviour. The authors feel that even though students are expected to behave more unethically as shown by the previous studies, when a group including the instructor is formed on social media for educational purposes, the students’ behavior dramatically changes and, aware of the possible consequences of their unethical actions, they would become more cautious in their conduct. The faculty’s main concern is not their own behaviour on the social media platform, but mainly the students’

activities; therefore they are not as affected as students.

5.4 Actual usage

Lastly, our findings show that for both students and faculty, the intention to use social media within academic environments directly affects their actual usage. These results are parallel with the studies by Lee et al. [38] and Balakrishnan [3], both of whom agree that generally the users' intention to use a system predicts the actual usage. Yet, from the ethical standpoint, the ethical concerns of the faculty are found to directly influence the actual utilization of social media systems for academic purposes, while students are found to be unaffected in this respect. The instructors are uncertain and reluctant to utilize social media in their lectures since such an open and free platform can lead to awkward or unwanted forms of interaction among the students as well as with the faculty [12]. In addition, instructors feel that it would be more difficult to control the academic conduct of students which could threaten the academic integrity of the lecture.

6. Conclusions

In this study, the existence of diversities between faculty and students in the use of social media technologies in engineering faculties was analyzed. For this purpose, a research model was adopted. From the ethical standpoint, the findings show significant diversity between faculty and students for all of the empirical factors, namely, perceived ease of use, perceived social pressure and perceived awareness towards actual behavior. It is important to note here that, as expected, faculty significantly focuses on the ethical usage of social media for educational purposes which is one of the main arguments behind their reluctance to use such systems in their teaching activities. This obviously concludes that ethical issues should be considered by developers for the educational utilization of these systems. In addition, according to the test results, faculty and students only show diversity in their general educational usage of social media for the perceived awareness factor. Surprisingly, students' awareness of the educational usage of social media affects their intention to use these systems, whereas this is not true for the faculty.

Because of the familiarity with social media, the utilization of such a technology in university lectures would improve the interactions and collaborations between lecturer-student and student-student, thereby increasing the motivation and participation levels of the students in the classroom. Consequently, developers of such systems as well as

higher education institutions need to address and resolve the issues behind faculty's reluctance in adopting social media into their lectures. Furthermore, faculty members can rethink their traditional teaching strategies to establish a more creative, interactive and sociable learning platform with the help of social media.

There are certain limitations to this study that need to be addressed. For example, this research explored social media adoption in education using a limited number of variables. Future research may include different dimensions relating to educational adoption of social media including socio-demographics and cultural affects and their implications. Such studies may provide valuable feedback to strategists in these institutions. Also, larger samples with more factors may provide additional insights.

As for further research, an inspection can be suggested as to the effect of using social media for educational purposes on student's learning for different branches in higher education other than engineering. This would be especially interesting since the reluctance level of faculty in other subjects could increase even further. Also, studies comparing the differences in the functionalities of social networking sites and their influence on learning activities may provide valuable contribution to the literature. Finally, platforms for integrating social media into teaching activities could be proposed which aim to reduce the factors contributing to the faculty reluctance.

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Cigdem Turhan is currently an Assistant Professor in the Department of Software Engineering, Atilim University, Ankara, Turkey. She has a PhD degree in computer engineering from the Middle East Technical University, Ankara, Turkey. She is the author of a number text books in the area of programming. Her research interests include natural language processing, machine translation, semantic web technologies and engineering education.

Ibrahim Akman is the chairman of Computer Engineering Dept. and the director of Graduate School of Natural and Applied Sciences at Atilim University, Turkey. His research interests lie in software engineering and human behaviour related issues including social media, education, ethics and security in adopting information and communication technologies. Prof. Akman has authored more than 120 publications.