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INVESTIGATING THE EFFECT OF USING SOCIAL NETWORKS IN VIRTUAL EDUCATION

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ABSTRACT:

The social network is a social structure that consists of multiple nodes and these nodes can be individuals or organizations. These nodes, by one or more particular types of affiliation, are connected. In this paper we propose to examined the impact of social networks on learning technical and vocational college students. Assumptions based on communication, collaboration, sharing of resources, usefulness, access frequency, and flexible technologies were to help design. The population in this study consisted of all university students and technical professionals across the country. The number of students is over 175,000 people. The sample was a stratified random sample of 384 students were selected from 5 provinces and universities and the questionnaire required information through the web-based application Google Docs has been collected. To ensure reliability, a scale, Cronbach's alpha was used. Check validity well as the opinions of experts specialized in management science are used. To evaluate and analyze the data SPSS software is used. The results showed that the impact of social networking on virtual education with the help of factors: communication, collaboration, sharing of resources, usefulness, and flexible technologies direct and effective relationship and access frequency is not effective. Given the demographic characteristic variables: College, major, and GPA, these variables do not have a significant impact on the potential use of social networks to reach their educational goals. But variables such as gender, age, education, residence significantly impact the potential use of social networks to reach have educational goals, and these variables and can be a deterrent.

Keywords: Virtual training (E-learning), Communication, Collaboration, Access frequency, flexible technology.

INTRODUCTION:

The advent of technology in the field of information and the emergence of information technology (IT) changed all aspects of human life. Today, the process of doing general affairs has changed both qualitatively and quantitatively compared to the recent past, and as a result of these changes, universities and educational centers have faced new developments as educational technology (educational technology). Both in real and virtual space. The evolution of teaching tools and methods is in the direction that each person at any time and any place can learn with her/his facilities and at a time that she/he determines. This type of education is the foundation of the application of technology, communication, psychological, professional, and academic concepts based on common criteria and standards that take a special shape according to the existing goals, needs, and realities of

societies. Education with the help of new technologies has been able to transform educational methods on a very large scale in the short time that has passed since its inception. In addition, there are specific social networks that focus on a specific topic. For example, Last.FM is one of the most famous ones that has gathered music lovers, or GoodReads, which is a social network for book lovers (Jeffries, 2008). According to a 2009 report by the Nelson Research Institute on Social Networking Sites and Blogs, two-thirds of the population of Internet users in the countries surveyed visit social networks or blogs.

Bill Gates, the first CEO and founder of Microsoft, believes that under the influence of new cyberspace in which televisions and computers are connected to a global smart grid, human behavioral elements will be formed and these networks will form the backbone of our social structure. The Internet determines the form and conditions of social action and human experience around the world (Dahlberg, 1998). Anna Dowinski has designed an app for smart devices made by Apple that shares the special course she teaches at Pennsylvania State University for all students for free. Also, students who are interested in participating in this classroom through this application, share their homework via Twitter and often help each other in solving academic problems. Also, to encourage students to supervise each other's affairs, this university professor has provided conditions for each student to supervise and grade another student's work. It is interesting to know that Ms. Dowinski's app now has more than 58,000 users. All of them are connected using the free platform of social networks and have formed a vast virtual community. Edmoo is an online service that allows you to conduct a full classroom in a virtual environment. For example, you can evaluate students or share photos and educational materials with them. The service now has more than 17 million users and is one of the most successful websites in the world (Ekici, 2017). Social networks have led to a new form of interpersonal communication as opposed to traditional methods. Although this can have disadvantages, it has in itself expanded the scope of communication between individuals and can undoubtedly have an important ability to share ideas in communication. Ultimately, multidimensionality contributes to the intellectual growth and collective development of users (Cheung et al., 2011). In some countries, this level of education has even reached school textbooks, and citizens have been equipped with media literacy weapons since childhood and adolescence(McDougall et al., 2018).

Teaching and learning processes have faced challenges with the advent of the knowledge-based society and the information society, including the adaptation to information and communication technologies. With globalization, all boundaries have been crossed and the time and space gap has disappeared (Becla, 2012). With appropriate capacities, it creates the conditions for development in all social, economic, cultural, educational, and political dimensions, and relying on its hypertext capacity of collecting, organizing, storing, and publishing information in the form of audio, video, and use text and numbers based on computer and telecommunication tools (Vergeer et al., 2013). E-learning Utilization of new information and communication technologies such as the Internet and multimedia systems, by providing facilities for easy access to educational resources and providing mechanisms such as interaction and cooperation (Chang, 2016).

Virtual education takes place in a way other than traditional and face-to-face methods. The contents of the lessons are transferred from the Internet, cable or satellite TVs, CDs, DVDs, videotapes, or a combination of the above. A virtual learning system provides a virtual

environment so that the learner can learn the material without the need for the presence of a tutor (Benitez-Saza et al., 2018). Virtual education also makes learning faster and less expensive. In addition, it provides access to education for all and for everyone to participate in the learning process (Benitez-Saza et al., 2018, Aziz et al., 2019).

Correspondence education became widespread using the postal system, and schools and other qualified institutions provided e-learning through the mail and established written communication between teachers and students (Krishnan et al., 2021, Holmberg, 1995).

The e-learning plan was first proposed by the United Kingdom, but the Americans practically introduced it. He stated that the first step in the field of virtual education is to create a culture of trust and belief of the people towards the high quality of education and its degree. Types of virtual education in terms of users and audiences of higher education (Brabazon, 2002).

This industry has three sections(Markova et al., 2019, Kim and Cho, 2012):

1- technology, 2- contents, and 3- services

Technology	Learning management system	
	Electronic content management system	
	Tools for producing and editing electronic content	
	Virtual education delivery systems Resource Planning Organizations	
	Application service providers	
	Live electronic learning tools	
	Video streaming and video conferencing	
	Assessment tools	
Contents	Simple texts with pictures	A large part of virtual education consists of producers and suppliers of electronic content and contents in the form of courses or training courses, which include the following: Providers of e-content: publishers of books and magazines, organizations, universities and educational institutions, schools, e-learning portals, and IT companies.
	Audio files on lesson text	
	Web powerpoint with audio	
	Animation Flash with audio	
	Interactive animation	
	Etc.	
Services	Organizations such as organizational information portals	
	Corporate training departments	
	Educational service providers	
	Consulting departments	
	Online educational ınstitutions	

The instructor also has the tools to teach, take exams, and enter students' test scores(Cornford, 2000). Due to the transformation of traditional society into modern society and the increasing importance of cyberspace and facilitated education using this technology, many scientists in this field have conducted extensive research. Brien published a study in 2012 entitled "Facebook and other applications of the Internet" which examined the use of the Internet and Facebook by undergraduate students about its effects on study time and academic performance and the results showed a relationship between use He has not seen virtual social networks and students' study hours, and also the use of Facebook and other Internet activities has no effect on the average of all people and their main effect is on the rate of learning (O'Brien, 2011). In 2012, Buzzetto et al. conducted a study on

"Social Networks on Undergraduate Education" at the University of Maryland, USA. Information, the information business, in which two courses were conducted entirely online and the third course was a combination of methods, and the results indicated that social media complemented teaching and enhanced education (Buzzetto-More, 2012). In 2011, Vatsov et al. Conducted a study entitled "Using Social Networks in the Education Process" to review other research. the results showed that teaching is a purposeful process of mutual activities of teacher and student in the transfer and absorption of knowledge that cyberspace plays a key role (Vatsov, 2011). A 2013 study by Alvarez entitled "Learning through Social Media at the Autonomous University of Barcelona, Spain" reviewed the studies of others, and the results showed that if teachers and students become familiar with social media practices, this network Will be a good environment for exchanging experiences, information and improving the quality of education (Alvarez and Olivera-Smith, 2013). According to a study in 2019, there was a positive effect of e-learning system quality, computer self-efficacy, and computer-playable games on students' interest in using e-learning systems. In addition, the quality of information, enjoyment, and continuous access has positively affected the ease of understanding of students and the perceived usefulness of e-learning systems. Also, the usefulness and ease of using e-learning systems have made students more inclined to use e-learning systems (Salloum et al., 2019). Some studies have reported conflicting results regarding e-learning satisfaction, but some studies have shown a greater degree of dissatisfaction with online courses than regular courses(Chen et al., 2020). By introducing virtual and e-learning, examining the situation of e-learning in countries, and stating that in the third millennium, e-learning is no longer just an alternative, but a necessity. It should pay more attention to educational designers and planners and take a small step towards establishing the necessary infrastructure to provide a cultural context for moving towards virtualization.

In this paper, the relationship between virtual education and social networks and e-learning has been investigated by considering various parameters such as residence, place of study, gender of students, etc.

MATERIALS AND METHODS:

In this research, the model presented by Stanko is considered as the theoretical framework, which can be seen in Figure (1).

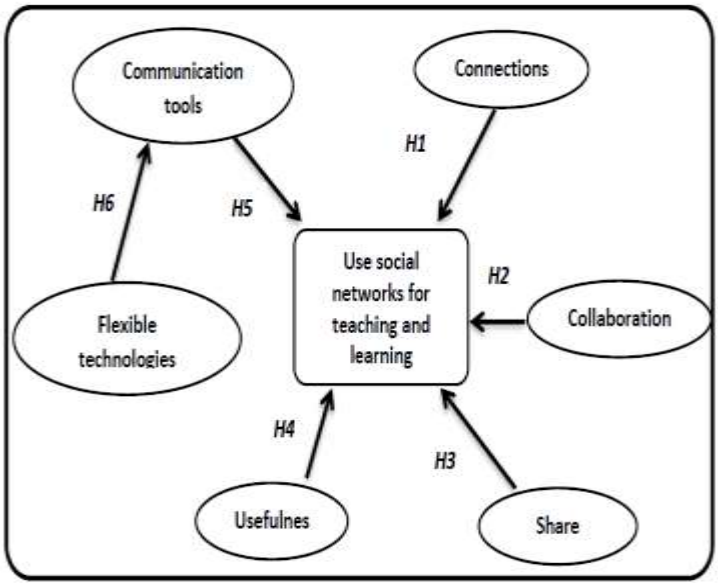

Fig. 1- Conceptual model of research (Stanciu et al., 2012)

The main research hypothesis is the use of social networks has a significant impact on the virtual education of students in technical universities and BSBI to achieve educational goals.And we have some Sub-hypotheses as: 1- Communication in social networks has a significant impact on students' virtual education to achieve educational goals. 2- Collaboration in social networks has a significant impact on students' virtual education to achieve educational goals. 3- Resource sharing in social networks has a significant impact on students' virtual education to achieve educational goals.

4- Utility in social networks has a significant impact on students' virtual education to achieve educational goals. 5- Communication tools in social networks have a significant impact on students' virtual education to achieve educational goals.

6- New flexible technologies with the help of communication tools in social networks have a significant impact on students' virtual education to achieve educational goals.

Our population is all faculties affiliated to the Technical Universities (The university consists of 167 faculties that train technical and skilled technicians) and BSBI (Berlin School of Business and Innovation was founded in 2018 by the Netherlands-based for-profit education company Global University Systems (GUS)) in 2021.

It is a kind of social structure in which people are related to each other in terms of science, society, business, administration, citizenship, cooperation, etc. The demographic characteristics of students in this study refer to gender, age, the main residence of the student, and the college of study.

The assessment tool of the present study is a questionnaire made by the researcher. The questionnaire consists of 40 questions with demographic characteristics of students.

The statistical population of the study is 175,000 students. In this research, a stratified random sampling method has been used. Thus, by referring to the students of the Technical University of the country in 5 provinces, they were randomly sampled.

Cochran's formula for the size of an unknown community: $n = \frac{pqZ^2}{d^2}$ (1)

Cochran's formula for a known community size: $n = \frac{pqNZ^2}{Z^2pq+(N-1)d^2}$ (2)

In these formulas, N, n, z, p, and q are community size, sample size, Normal value of the standard unit variable (at the 95% confidence level it is equal to 1.96), the value of the attribute ratio in the community (if it is not available, it can be considered 0.5) and percentage of people who do not have that trait in society, respectively.

$n=\frac{(0.5)(0.5)(1.96)^2}{(0.05)^2} = 384.16$ (3)

The sample size was 384 people. The questionnaires were uploaded to the web platform through the Google Docs program, and after informing the colleges and colleges of the 5 provinces of the country, the obtained answers were called from the web platform to perform statistical work.

This research contains 40 questions and is prepared based on the Likert scale. The compatibility of the questionnaire questions with the research hypotheses is shown in Table 2.

Table 2-The compatibility of the questionnaire questions with the research hypotheses:

No	Hypotheses	Item and question number
1	Communication has a significant impact on the use of social networks to achieve educational goals.	1-2-3-4-5-6-7-8-9-10-11-12
2	Collaboration has a significant impact on the use of social networks to achieve educational goals.	13-14-15-16
3	Resource sharing has a significant impact on the use of social networks to achieve educational goals.	17-18-19-20-21-22
4	Usefulness has a significant impact on the use of social networks to achieve educational goals.	23-24-25-26-27-28-29-30-31-32-33
5	Communication tools have a significant impact on the use of social networks to achieve educational goals. (Communication tools include e-mail, chat rooms, etc.)	34-35-36-37
6	New flexible technologies with the help of communication tools have a significant impact on the use of social networks to achieve educational goals. (Flexible technologies include smartphones, Tablets, etc.)	38-39-40

The questionnaire questions were uploaded on the web platform through the

Google Docs program and then the students of BSBI and the technical colleges of 4 provinces in Iran were answered. The number and percent of students are shown in 3 and 4, respectively.

Table 3- the number of students of each province/ university

No	Province/University	Number of students
1	East Azarbaijan	9800
2	Esfahan	16500
3	Khorasan Razavi	15200
4	Fars	14300
5	BSBI	2700
	Total students of 5 province/University	63000

Table 4- the percent of students of each province/ university

No	Title	East Azarbaijan	Esfahan	Khorasan Razavi	Fars	BSBI
1	Total students of 4 provinces and BSBI	63000				
2	Students percentage in each province and BSBI	15.5%	26%	24%	23%	11.5%
3	Responding students (people)	60	100	93	87	44

Due to the nature of the hypotheses and the type of variables, the average for examining and comparing the information collected through a questionnaire has been used. In the inferential statistics section, correlation and regression tests were used to test the hypotheses, two-sample t-test and analysis of variance were used to compare the mean response of independent groups. Finally, the SPSS 20 software was used to analyze and apply these tests.

RESULTS:

In this study, statistical programs such as SPSS software were used to analyze the data.

Table 5- Frequency and percentage of faculty variables

Study variables	Faculty	Frequency	Percentage
Type of faculty	Technical	364	94.8
	Agriculture	20	5.2

Table (5) shows the percentage of technical and vocational students is 94.8% and the percentage of agricultural students is 5.2%.

Table 6- Frequencies and percentages of gender variables

Study variables	Gender	Frequency	Percentage
Gender	Male	300	78.2
	Female	84	21.8

Table (6) shows the percentage of sample women is 21.8 and the percentage of men is 78.2.

Table 7- Frequency and percentage of age variables

Study variables	Age	Frequency	Percentage
Age categories	Under 20	227	59.2
	Between 21 and 25	127	33.0
	Between 26 and 30	18	4.7
	Above 30	12	3.1

Table (7) shows the percentage of people aged under 20, between 21 to 25, between 26 to 30, and above 30 are equal to 59.2, 33, 4.7, and 3.1, respectively.

Table 8- Frequency and percentage of education variables

Study variables	Education	Frequency	Percentage
Level of education	Undergraduate	292	76.1
	Graduate	92	23.9

Table (8) shows the percentage of undergraduate students is 76.1 and the

percentage of graduate students is 23.9.

Table 9- Frequency and percentage of the variable of the study field

Study variables	Field of Study	Frequency	Percentage
Field of Study	Computer-related	98	25.5
	Other	286	74.5

Table (9) shows the percentage of students in computer-related fields is 25.5 and the percentage of other fields is 74.5.

Table 10- Frequency and percentage of semester variables

Study variables	Semester	Frequency	Percentage
Semester	1	53	13.8
	2	114	29.9
	3	77	20.0
	4	86	22.3
	5	54	14

Table (10) shows the percentage of students in semester 1, semester 2, semester 3, semester 4, and semester 5 are 13.8, 29.9, 20, 22.3, and 14, respectively.

Table 11- Frequency and percentage of the average variable

Study variables	Average grade	Frequency	Percentage
The average grade of students	Between 10 and 14	72	18.7
	Between 14 and 17	265	69.1
	Above 17	47	12.2

Table (11) shows the percentage of students with a grade point average of 10 to 14, between 14 to 17, and above 17 is equal to 18.7, 69.1, and 12.2, respectively.

Table 12- Frequency and percentage of Habitation variables

Study variables	Habitation	Frequency	Percentage
Habitation	Metropolis	97	25.2
	City	253	66.0
	Village	34	8.8

Table (12) shows the percentage of people living in metropolitan, urban and rural areas is 25.2, 66, and 8.8, respectively.

In Table 13, descriptive statistics related to each variable such as mean scores, variance, and standard deviation are given.

Table 13- Descriptive statistics of research variables

Variables	Variance	Standard deviation	Average score
Connections	0.53	0.73	3.77
Cooperation	0.51	0.72	3.78
Resource sharing	0.63	0.79	3.72
Utility	0.60	0.77	3.53
Communication tools	0.34	0.58	4.05
New flexible technologies	0.45	0.67	3.84
Use of social networks	0.19	0.44	3.38

The average scores of the variables of communication, collaboration, resource sharing, utility, communication tools, new flexible technologies, and the use of social networks are 3.77, 3.78, 3.72, 3.53, 4.05, 3.84, and 3.38, respectively.

To check the normality of data distribution, the Kolmogorov-Smirnov test was used. Hypothesis H0 and H1 hypothesis in Kolmogorov-Smirnov test are as follows.

H_0: the data has a normal distribution.

H_1: Data is not normally distributed.

The Kolmogorov-Smirnov test was performed for the research variables and the results are given in the Table below.

Table 14- Comparison of the distribution of research variables with the normal distribution

Variables	Statistics	Significance level
Connections	0.06	1.942
Cooperation	0.164	1.118
Resource sharing	0.178	1.588
Utility	0.059	1.327
Communication tools	0.279	0.992
New flexible technologies	0.337	0.943
Use of social networks	0.495	0.83

The results of the Kolmogorov-Smirnov test in Table (14) show that the significance level for the variables of this study is more than 0.05, so the Smirnov statistic for variables at the level of 0.05 error is not significant and therefore the opposite assumption is rejected. Therefore the distribution of variables is normal. Then we did the assumtion test for different hypothesis that we explained earlier.

Sub-hypothesis: Students' demographic characteristics have a significant impact on the use of social networks to achieve educational goals.

H_0: the demographic characteristics of students do not have a significant impact on the use of social networks to achieve educational goals.

H_1: the demographic characteristics of students have a significant impact on the use of social networks to achieve educational goals.

To test the effect of students' demographic characteristics on the use of social networks, t-test and analysis of variance are used.

Table 15- Statistical test to examine the relationship between demographic characteristics and the use of social networks

		Average	Standard deviation	Test statistics	Significance level
College	Technical	3.39	0.44	1.286	0.199
	Agriculture	3.26	0.28		
Gender	Male	3.41	0.45	2.74	0.006
	Female	3.26	0.32		
Age	Under 20	3.44	0.41	8.6	0.001
	Between 21 and 25	3.32	0.39		
	Between 26 and 30	2.95	0.71		
	Above 30	3.39	0.34		
Education	Undergraduate	3.41	0.45	2.954	0.003
	Graduate	3.26	0.34		
Field of Study	Related to computer	3.35	0.36	0.668	0.504
	Other	3.39	0.45		
Semester	Semester 1	3.33	0.31	11.15	0.001
	Semester 2	3.58	0.46		
	Semester 3	3.35	0.34		
	Semester 4	3.3	0.35		
	Semester 5	3.16	0.54		
Grade point average	Between 10 and 14	3.44	0.36	1.124	0.326
	Between 14 and 17	3.36	0.46		
	Above 17	3.39	0.35		
Habitation	Metropolis	3.45	0.38	7.008	0.001
	City	3.39	0.45		
	Village	3.13	0.31		

As can be seen in Table (39), the level of significance in the variables of college, major, and grade point average is greater than 0.05 (amount of error level), so these variables have a significant impact on the use of social networks to achieve goals. They have no education. But in the variables of gender, age, education, semester, and residence, the level of significance is less than 0.05, so these variables have a significant impact on the use of social networks to achieve educational goals.

CONCLUSION:

In this research, as expected, the hypothesis of a relationship between the factors affecting the use of social networks in e-learning was confirmed. By confirming this hypothesis and the statistical results obtained from other hypotheses and previous studies and researches, other researchers obtained similar results in this regard (Kirschner et al., 2011, Jonnavithula and Tretiakov, 2012, O'Brien, 2011, Brady et al., 2010, Alvarez and Olivera-Smith, 2013). This confirms that the implementation of social networks and the provision of virtual education in this way are welcomed by students.

In the field of communication, the results

obtained indicate the existence and strong relationship between communication through social networks to achieve educational goals that the results of previous research (Dawson, 2008) are in line with the research It is ready to emphasize the role of electronic communications and its impact on organizational processes.

In the field of cooperation, the results confirm the meaning of cooperation with social networks to achieve educational goals, which in previous research (Rodrigues et al., 2011) also emphasizes the role of cooperation in scientific cooperation and is in line with the results of the present study.

In the field of resource sharing, the results confirm a positive and significant relationship between resource sharing and social networks to achieve educational goals, which in previous research (Liccardi et al., 2007) also on the role of sharing Knowledge transfer among university faculty members is emphasized and is in line with the results of the present study.

In terms of usefulness, the results confirm the significance of usefulness with social networks to achieve educational goals, which in previous research (Smyth, 2004) also emphasizes the role of perceived usefulness in students' academic achievement and is in line with the results of the present study.

In the field of communication tools, the results of the present study do not confirm the relationship between communication tools and social networks to achieve educational goals, rejection of this hypothesis despite the confirmation of this hypothesis in the previous study, it can be said that in the previous study, several conditions were applied but in the present study, these conditions were not set (Froment et al., 2017).

In the field of flexible technologies with the help of communication tools, the results confirm the meaningful use of flexible technologies with social networks to achieve educational goals. In previous researches, the role of mobile phone accessories in students' use for daily affairs and education is emphasized and is in line with the results of the present study (Balakrishnan, 2014, Grishnova et al., 2019). There is a relationship between gender and social networks, virtual education, and educational goals that have been consistent with the other studies (Tariq et al., 2012). Given that the level of significance about social networks on virtual education concerning age, education, and the semester is equal to 0.001, 0.002, and 0.001, respectively, the relationship between age, education, and semester of students with the network There are social studies, virtual education and educational goals that have been in line with the study (Kosinski et al., 2014).

Considering the significant level of social networks on virtual education, which is equal to 0.199 based on the type of college where students study, which shows that there is no relationship between the college and social networks, virtual education, and educational goals. This means that e-learning can be implemented in any faculty through social networks, which is also consistent with the 2013 study by Titus (Titus and Mselle, 2015). The level of significance to social networks on virtual education is determined according to the grade point average and field of study of students, which is equal to 0.326 and 0.504, respectively, so the relationship between students' grade point average and field of study there is no social, virtual education and educational goals. Which is not in line with the results of a study by other researchers (Kirschner et al., 2011, Junco, 2012). Rejection of this hypothesis despite the confirmation of these hypotheses in previous research can be attributed to various factors such as cultural differences in different countries, differences due to periods of research, or errors in the

measurement tool.

The level of significance to social networks on virtual education is equal to 0.001 according to the type of student accommodation. As a result, there is a link between students' main residences and social media, virtual education, and educational goals. According to studies, the existence of a relationship between social networks and the main place of residence of students in previous research, no significant results have been obtained. However, the confirmation of this hypothesis in this study can be justified by the fact that cultural differences, lack of facilities, and lack of Internet access in rural areas have caused a significant difference.

One of the most important goals of the development of information technology in scientific and educational centers is to increase educational services and reduce costs. Social networks are one of the new branches in the field of information technology that has a great impact on virtual education. However, the present research examines the impact of using social networks on students' virtual education. As expected, the hypothesis of a relationship between the factors affecting the use of social networks in virtual education was confirmed.

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