

The Presence of Medical Sciences Faculty Members on Academic Social Networks and Its Relationship with Citations to Their Articles

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Abstract

Academic Social Networks (ASNs) are significant in forming scientific interactions and increasing the visibility of researchers' scientific works. Considering the growing importance of ASNs, the current study aimed to investigate the presence of Lorestan University of Medical Sciences faculty members in ASNs and its relationship with citations in their articles. Scientometrics and survey methods were used in this study. The population comprised 291 faculty members at Lorestan University of Medical Sciences. A questionnaire and a data collection form were utilized to investigate the presence of faculty members on ResearchGate, Academia, and citation databases, including Web of Science and Scopus. Descriptive (mean, variance) and analytical statistics (chi-square, Pearson, and Independent Samples T-test at a significance level of 0.05) were used to analyze the data using SPSS software. Academics of the faculty of medicine were the most active members of ResearchGate. Associate professors had the highest RG score compared to other academic ranks. However, the highest frequency of membership belonged to assistant professors. Following other researchers' activities and sharing articles were mentioned as advantages of joining ASNs. Isolation, staying away from the real social environment, and lack of information security were also disadvantages of ASNs. There was a positive correlation between scores of altmetrics indicators in ASNs and scientometrics indicators in citation databases. Concerning a positive

correlation between altmetrics and scientometrics indicators, ASNs increase the visibility of scientific works and hence increase their citation.

Keywords: Academic Social Networks, Citation, Citation Databases, Faculty Members, ResearchGate, Academia, Web of Science, Scopus, Medical Sciences, Lorestan University of Medical Sciences, Iran.

Introduction

The advent of information and communication technologies has removed much of traditional time and place limitations in communications. Social networking, a product of Web 2.0 technology, is a recent tool that facilitates communication. Since the advent of the first social network in 1997, many social networks have been created, and the number of their members has increased over time (Saadat, 2015). Academic social networks were created and embraced by scholars to meet the needs of their respective fields of study and scientific requirements; for instance, ResearchGate has more than 20 million members now ("ResearchGate," 2021), and Academia has more than 170 million active members with more than 31 million viewers monthly ("Academia," 2021). In addition to being aware of recent research findings, researchers can easily find and communicate with similar researchers worldwide. They can share their scientific works with other researchers, and their findings can quickly reach a wide-ranging audience (Ali & Richardson, 2018; Ebrahimzadeh, Rezaei Sharifabadi, Karbala Aghaie Kamran & Dalkir, 2020; Hailu & Wu, 2021; Ortega, 2016; Safori, 2018; Stephen & Yadav, 2020). This is of high importance for medical sciences, which are growing exponentially. Accordingly, using social media can increase the visibility, impact, and use of medical sciences research and, consequently, obtain more citations (Ali, 2021). A study on shared articles in Academia showed that these articles are cited more than 16 percent after a year and 51 percent after five years (Niyazov et al., 2016).

On the other hand, to raise the quality level of scientific outputs of universities, it is necessary to investigate the status of their scientific products and provide a basis for comparison and evaluation of university research (Moed, 2008). Faculty members are considered leading researchers and the productive force of science in any country. Moreover, they have an educational mission to nurture future researchers.

Citation databases are one of the main resources for evaluating researchers' scientific works. Altmetrics indicators have additionally provided constant monitoring of researchers' scientific communication and show the close relationship between the impact of research and social networking (Dehghani, Hamidi, & Basirian Jahromi, 2019). Researchers' communicative behavior differs from that of their fellow researchers (Bardakcı, Arslan & Ünver, 2018; Yan, Zhang, Hu & Kudva, 2021). Identifying their behavioral patterns and attitudes toward academic social networks leads to improving scientific policies, identifying strengths and weaknesses of communication systems, and consequently, their improvement (Shekofteh & Hariri, 2013). Based on the university ranking released by The Research and Technology Development and Coordination Center of the Ministry of Health in 2019, Lorestan University of Medical Sciences (LUMS) was ranked as the 29th university with 291 faculty members. Concerning publishing scientific articles on the Web of Science and Scopus, Lorestan University ranks lower than top medical universities like Tehran University of Medical Sciences ("Scientometric system of faculty members of the Ministry of Health," 2019). The active presence of faculty members in

academic social networks and an increase in their virtual communications can decrease the scientific gap among universities.

Recognizing faculty members' reasons for membership and non-membership on academic social networks helps medical librarians to give effective instruction on academic social networks to professors, make them know more about the advantages of these networks, and find ways to facilitate their use (Ali & Richardson, 2018; Radford, Kitzie, Mikitish, Floegel, Radford & Connaway, 2020). Furthermore, an increase in the penetration rate of academic social networks among professors makes their works be seen and retrieved in public search engines more, and consequently, the global ranking of universities' webometrics will be promoted (Niazmand, Ebrahimi & Jowkar, 2016). Valizadeh-Haghi, Nasibi, Shekofteh and Rahmatizadeh (2022) conducted a study on the activities of Iranian medical scholars in ResearchGate. They found that most respondents had no activity in asking and answering questions. Their findings also revealed that all RG metrics positively correlated with Scopus indicators.

Doulani, Shabani and Baradar (2020) investigated the scientific works of Iranian information science faculty members on ResearchGate, Scopus, and Google Scholar. They indicated that the University of Isfahan, Tehran University of Medical Sciences, and the Shahid Chamran University of Ahvaz had the most active faculties on ResearchGate. In addition, a significant correlation was observed between the Altmetrics indicators of ResearchGate and the scientometric indicators of Scopus and Google Scholar. Nikkar, Alijani and Ghazizadeh Khalifeh (2017) conducted a case study on ResearchGate to investigate the presence of researchers in the field of surgery. The findings showed that 86.24% of the researchers were present in ResearchGate; moreover, a significant relationship existed between the presence in ResearchGate and the number of citations in Web of Science.

Corvello, Chimenti, Giglio and Verteramo (2020) performed a study investigating academic researchers' attitudes toward academic social networks. The analysis of 143 valid results indicated that the researchers implemented the knowledge available in academic social networks to enrich their research works and attain new qualifications. A study conducted by Chen, Yang and Zhang (2020) investigated the researchers' activities in a Chinese scientific social network, the activities of 1965 accounts in the "Science Net" social network were analyzed. They showed that the researchers who were affiliated with high-ranking and prestigious universities received more comments and suggestions compared to those from others. Ostermaier-Grabow and Linek (2019) conducted a case study using the qualitative method and focused on the researchers' communicative behavior on ResearchGate. Establishing scientific communications and interactions were among the most important reasons to use such networks.

In a nutshell, most studies were done on general social networks like Facebook (Thompson et al., 2008), and there are a few studies on faculty members' attitudes toward academic social networks and the role of these networks in disseminating and evaluating scientific outputs. Reviewing the related literature showed that most studies conducted to investigate academicians' presence in academic social networks focused on top-ranking universities; nevertheless, some studies need to be undertaken in low-ranking universities to improve their faculties' activities. Moreover, no analysis was found investigating the relationship between the presence of ResearchGate and Academia and its impact on citations. Most implemented altmetrics only, while the current study used a survey method to seek the faculty members'

opinions. This study aimed to investigate the presence of Lorestan University of Medical Science's faculty members on academic social networks, including ResearchGate and Academia, and its relation to the number of citations in citation databases.

Materials and Methods

The method implemented in the current study was a combination of survey and altmetrics methodologies. The study population consisted of all faculty members in Lorestan University of Medical Sciences (N = 291), including 56 lecturers, 188 assistant professors, 34 associate professors, and 13 professors in 9 schools. The data were collected by visiting ResearchGate and Academia social networks and Scopus and WOS citation databases. By searching the faculties' names on these networks and databases, information related to the faculties, including their RG scores, the number of cited documents, H-index, the number of visitors, the faculties' followers and followings, and the number of received citations, were collected from their profiles using the researcher-made data collection form. Next, the faculties' demographic information and attitudes toward membership in social networks and other matters were obtained by distributing questionnaires. Moreover, due to the COVID-19 pandemic, the electronic version of the questionnaire was also distributed using Google Forms, electronic mail, or instant messaging services like WhatsApp and Telegram.

The questionnaire was developed according to Ghorbani, Momeni, Ghorbani and Babalhavaeji (2018) and Satari and Javaheri (2005), who investigated faculties' attitudes towards social networks. A panel of experts from several faculties of Information Science and Knowledge Studies confirmed the validity of the questionnaire. Its reliability was confirmed by Cronbach's Alpha coefficient at 0.84.

The collected data were analyzed using IBM SPSS version 22 according to both descriptive (mean, variance, frequency tables) and inferential (paired-sample T-test, Chi-squared test, Spearman correlation test, or their non-parametric equivalents) statistical procedures at the significance level of 0.5.

Results

Investigating the presence of Lorestan University of Medical Sciences faculties in academic social networks showed that 238 people (81.8%) were members of ResearchGate. In contrast, 70 faculties (24.1%) had membership accounts in Academia, as shown in

Table 1. Moreover, the results showed that Academia's faculty members were also members of ResearchGate. In other words, out of the 291 university faculty members whose names were identified in scientific databases, 238 were active members of academic social networks; on the other hand, 53 had no activity in such networks. Out of the 238 identified faculties on social networks, it was determined that men had a more notable presence in academic social networks (45.36%). It was shown that the most significant membership in academic social networks belonged to the age range of 35-45. Implementing the Chi-squared test showed a significant difference between age ranges and membership in academic social networks ($\chi=13.56$, $P=0.001$), and the age range of 35-45 was identified as the most significant.

Table 1

The presence of the faculties of LUMS in academic social networks

	Academia	ResearchGate	Total
Membership status	Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Member	70 (24.1)	238 (81.8)	238 (81.8)
Non-member	221 (75.9)	53 (18.2)	53 (18.2)
The total population of the faculties	291		

Table 2 indicates that the faculties with 10 to 15 years of service (40 people) showed the most significant presence in academic social networks, while those employed for more than 20 years (5 people) had the most minor considerable activity. The Chi-squared test showed that the service record was a significant factor in the faculties' membership in academic social networks, and it had the most significance among the faculties with 10 to 15 years of service ($\chi=12.05$, $P=0.017$).

Table 2

The presence of the faculties of LUMS in academic social networks according to the length of their employment

		Members Frequency (percentage)	Non- members Frequency (percentage)	Chi-squared test	P-value
years of employment	Fewer than 5 years	14 (8.86)	14 (8.86)	12.05	0.017
	5 to 10 years	32 (20.25)	11 (6.96)		
	10 to 15 years	40 (25.31)	8 (5.06)		
	15 to 20 years	27 (17.08)	6 (3.79)		
	More than 20 years	5 (3.16)	1 (0.63)		
	Total	118	40		

As shown in Table 3, the Department of Parasitology and Mycology had the most significant membership (19 faculties, 6.52%). The Department of Periodontics showed the least significant membership (2 faculties, 0.68%) in academic social networks. The Chi-squared test showed a significant relationship between the faculties' departments in their membership in academic social networks ($\chi=41.07$, $P=0.004$). The majority of the faculties who were members of academic social networks were employed for 1-2 years (54 faculties), the results of the Chi-squared test showed that the membership history of faculty members on social networks is an important incentive factor in their membership on academic social networks

($\chi^2=143.83$, $P=0.001$).

Table 3

The presence of the faculties of LUMS in academic social networks according to the departments

		Members Frequency (percentage)	Non-members Frequency (percentage)	Chi- squared test	P-value
Department	Biostatistics and epidemiology	7 (2.4)	0	41.07	0.004
	Anatomy	4 (1.3)	1 (0.34)		
	Operating room and emergency	7 (2.4)	0		
	Pediatrics	8 (2.74)	2 (0.68)		
	Orthosis and prosthesis	5 (1.7)	0		
	Pharmaceutical economy and management	6 (2)	0		
	Parasitology and mycology	19 (6.52)	3 (1)		
	Immunology	9 (0.34)	0		
	Pathology	6 (2)	2 (0.68)		
	Occupational Health	8 (2.74)	1 (0.34)		
	Public health	6 (2)	1 (0.34)		
	Environmental health	6 (2)	2 (0.68)		
	Hygiene and nutrition	14 (4.8)	3 (1)		
	Biotechnology	4 (1.3)	0		
	Clinical biochemistry	5 (1.7)	0		
	Islamic education	0	3 (1)		
	Radiology	5 (1.7)	0		
	Medical physics	5 (1.7)	0		
	Nursing	15 (5.15)	10 (3.4)		
	Periodontics	2 (0.68)	0		
	Orthodontics	2 (0.68)	2 (0.68)		
	English language	4 (1.3)	1 (0.34)		
	Surgery	7(2.4)	1 (0.34)		
Internal medicine	13 (4.46)	4 (1.3)			
Pharmacology	4 (1.3)	2 (0.68)			

		Members Frequency (percentage)	Non-members Frequency (percentage)	Chi- squared test	P-value
	Dentistry	3 (1)	0		
	Gynecology	4 (1.3)	1 (0.34)		
	Medical biotechnology	6 (2)	2 (0.68)		
	Laboratory sciences	6 (2)	1 (0.34)		
	Anatomy science	4 (3.1)	0		
	Pharmacotherapy	5 (1.7)	0		
	Information technology	8 (2.74)	2 (0.68)		
	Physiology	5 (1.7)	0		
	Cardiology	3 (1)	2 (0.68)		
	Obstetrics	6 (2)	2 (0.68)		
	Microbiology	9 (3)	1 (0.34)		
	Persian literature	1 (0.34)	4 (1.3)		
	Anesthesiology	7 (2.7)	0		
	Total	238	53		

Table 4 shows that the Medical School of the university was the most active in membership in academic social networks (101 faculties, 34.7%), and the School of Nursery ranked second (46 faculties, 15.82%). The least significant activity was observed among the faculties of the School of Paramedics (6 faculties, 2.0%). The Chi-squared test results showed a significant difference between the faculties' membership in academic social networks according to their schools ($\chi=18.31$, $P=0.002$).

Table 4

The presence of the faculties of LUMS in academic social networks according to their schools

	Characteristics	Members (frequency percentage)	Non-member (frequency percentage)	P-value	Chi-squared test
Schools	Dentistry	20 (6.9)	9 (3.09)	0.002	18.31
	Hygiene and nutrition	31 (10.65)	2 (0.7)		
	Medical school	101 (34.7)	30 (10.31)		
	Nursery	46 (15.82)	8 (2.75)		
	Pharmacy	32 (11.02)	2 (0.7)		
	Paramedics	6 (2)	2 (0.7)		

According to

Table 5, assistant professors had the most significant membership in academic social networks (163 faculties, 67.39%). Moreover, the same faculties were the most significant non-members of academic social networks (33 faculties, 12.37%). The Chi-squared test showed that

faculties' academic rank had a significant relationship with their membership in academic social networks ($\chi=2.80$, $P=0.042$). The faculties with Ph.D. degrees had the most important presence in academic social networks (73.52%), and the ones with master's and postdoctoral degrees ranked next (32 and 31 faculties, respectively). According to the Chi-squared test results, the academic degree had no significant relationship with the faculties' presence in academic social networks ($\chi=0.65$, $P=0.723$).

Table 5

A comparison of the member and non-member faculties of LUMS in terms of their academic degrees and ranks

		Member (frequency percentage)	Non-member (frequency percentage)	P-value	Chi- Squared
Academic degree	Master's degree	32 (13.44)	12 (22.64)	0.723	0.649
	Ph.D.	175 (73.52)	29 (54.71)		
	Postdoctoral	31 (13.02)	12 (22.64)		
	Total	238	53		
Academic rank	Lecturer	32 (10.29)	12 (4.12)	0.042	2.804
	Assistant professor	163 (67.39)	33 (12.37)		
	Associate professor	32 (11.58)	6 (1.03)		
	Professor	11 (3.43)	2 (0.7)		
	Total	238	53		

118 faculty members were members of the investigated academic social networks (Table 6). The most frequent visits were recorded after receiving notifications or notices (45 faculties, 38.5%), and the faculties who visited the networks once or several times a year ranked next (34 faculties, 29.1%). Moreover, daily visits to the networks ranked last (3 faculties, 2.6%).

Table 6

The frequency of the visiting academic social networks by the faculties of LUMS

The interval between the two visits	Frequency	Percentage
Daily	3	2.6
Once or several times a week	11	9.4
Once or several times a month	25	20.5
Once or several times a year	34	29.1
When I receive a notification or notice from the social network	45	38.5
The total number of faculties present in the investigated networks	118	

Out of the 238 questionnaires distributed, 158 questionnaires were returned by the faculties. Moreover, out of the 118 faculty members who were members of social networks and returned the questionnaires, most (above 90%) had above-average satisfaction with such networks, as shown in Table 7. In other words, half of them reported high or very high satisfaction, and more than 40% showed average satisfaction.

Table 7

A comparison among the member and non-member faculties of LUMS according to their satisfaction with social networks (n=158)

Satisfaction level	Member (Frequency percentage)	Non-member (Frequency percentage)	Chi-squared test	P-value
Very low	2 (1.26)	8 (5.06)	74.39	P<0.001
Low	9 (5.69)	11 (6.96)		
Average	48 (30.37)	10 (6.32)		
High	54 (34.17)	1 (0.63)		
Very high	5 (3.16)	0		
Total	118	40		

According to Table 8, most respondents (above 90%) had above-average trust in social networks. In other words, half of them had high or very high trust, while more than 30% of the respondents had low or very high trust in such networks.

Table 8

The faculties' trust in the information presented in academic social networks (n=158)

Level of trust	Members' view (frequency percentage)	Non-members' view (frequency percentage)	Chi-squared test	P-value
Very low	5 (3.1)	8 (5.06)	21.85	<0.001
Low	20 (12.65)	14 (8.86)		
Average	52 (32.91)	15 (9.49)		
High	31 (19.62)	2 (1.26)		
Very high	10 (6.32)	1 (0.63)		
Total	118	40		

The majority of the respondents (above 90%) had not participated in the special workshops on academic social networks, and only 35 faculties (22.15%) of the total 158 respondents who were active in social networks had participated in them (Table 9). More than 50% of the respondents out of the 158 respondents considered that the effect of the workshops was above average.

Table 9

The participation of the member and non-member faculties of LUMS in the special workshops on academic social networks (n=158)

Participate in the workshops	Members (frequency)	Non-members	Total	Chi-squared test	P-value
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	percentage)	(frequency percentage)			
Yes	35 (22.15)	5 (3.16)	40 (25.31)	4.65	0.031
No	83 (52.53)	35 (22.15)	118 (74.68)		
Total	118	40	158		

According to Table 10, following other researchers' activities (58 faculties, 48.3%) and finding extra-organizational colleagues to perform research projects (55 faculties, 45.8%) had the highest frequency among the faculties' reasons to use academic social networks. On the other hand, using the networks for entertainment had the lowest frequency (7 faculties, 5.8%). In addition, 40 faculty members were not members of any academic social networks. Most non-members (19 faculties, 47.5%) reported unfamiliarity with the benefits of membership in academic social networks and their application as the main reasons. In addition, lack of time (9 faculties, 22.5%) and unawareness of academic social networks (4 faculties, 10%) ranked next.

Table 10

The reasons reported by the faculties of LUMS to use academic social networks (n=158)

Reasons	Frequency	Percentage
Making contact with other researchers	36	30
Sharing one's study results with others	39	32.5
Following other researchers' activities	58	48.3
Finding extra-organization colleagues for research projects	55	45.8
Sharing class materials like PowerPoint files	31	25.8
Finding information sources like articles and books	43	35.8
Managing resources and citations (self-archiving)	23	19.2
Finding the information related to conferences and seminars	28	23.3
Sharing photos and videos	18	15
Finding occupational information	19	15.8
Interacting and contacting without any time and space boundaries	39	32.5
Being a member of specialized groups related to one's research interest	35	29.2
Entertainment	7	5.8

According to Table 11, social networks' most significant problems and disadvantages were being isolated and away from actual social environments (58 faculties, 37.7%) and the lack of information security (53 faculties, 34.4%). On the other hand, ethical issues had the lowest frequency (32 faculties, 20.8%).

Table 11

The problems and disadvantages of academic social networks according to the faculties of LUMS (n=158)

The problems and disadvantages	Frequency	Frequency percentage

Getting used to them	49	31.8
Wasting one's time	36	23.4
The lack of information security	53	34.4
Ethical issues	32	20.8
Breaching one's privacy	45	29.2
Isolation and being away from actual social environments	58	37.7
Breaching the Copyright Law	37	24

As shown in Table 12, most member and non-member respondents (around 90%) believed that the effect of academic social networks on interaction and collaboration was above average, while approximately 20% out of the 158 respondents evaluated that effect as low and very low. The Chi-squared test results showed that academic social networks profoundly affected the faculties' interaction and collaboration ($\chi=34.02$, $P<0.001$).

Table 12

The effect of using academic social networks on the scientific interactions and collaboration of the faculties of LUMS (n=158)

The effect level	Members' view (frequency percentage)	Non-members' view (frequency percentage)	Total	Chi-squared test	P-value
Very low	4 (2.53)	6 (3.79)	10 (6.32)	34.02	<0.001
Low	6 (3.79)	16 (10.12)	22(13.92)		
Average	46 (29.11)	14 (8.86)	60 (37.97)		
High	53 (33.54)	4 (2.53)	57 (36.07)		
Very high	9 (5.69)	0	9 (5.69)		
Total	118	40	158		

According to the faculties' citations in the investigated citation databases, the medical school ranked first with the highest number of documents in Scopus and Web of Science (Table 13). In addition, the schools of hygiene and nutrition and nursery and midwifery ranked second and third. Moreover, regarding the mean received citations, the medical school ranked first (927.9), and the schools of hygiene and nutrition and nursery and midwifery ranked second and third. Regarding the H-index, the medical school ranked first, and the schools of hygiene and nutrition and nursery and midwifery ranked next.

Table 13

The scientific products of the faculties of LUMS in Web of Science and Scopus citation databases according to their schools

School	Web of Science			Scopus		
	Number of publications	Citation	H-index	Number of publications	Citation	H-index
Hygiene and nutrition	16.61	145	4.90	56.28	435.42	7.23
Aligoodarz School of Nursery	5	22.5	2	37.5	31	1.5
Boroujerd School of Nursery	0.33	0	0	16.83	9.16	1

Poldokhtar School of Nursery	0	0	0	12	3	0.66
Nursery and midwifery	13.93	101.56	4.12	34.96	46.04	2.16
Medical school	62.26	927.9	11.3	88.06	1096.4	12.4
Paramedics	5.32	27.64	1.42	23.5	44.8	2.7
Pharmacy	9.27	66.36	2.63	20.81	165.18	4.27
Dentistry	4	25.28	1.24	27.35	66.57	2.92
Total	116.72	1316.24	27.61	317.28	1897.57	34.84

Assistant professors had the most significant presence on Web of Science (890 documents and 12107 citations) and Scopus (1676 and 17643 citations). On the other hand, the least significant in Scopus (139 documents and 803 citations) and Web of Science (57 documents and 246 citations) were found in the case of lecturers (42 faculties) (Table 14).

Table 14

The scientific products cited in Scopus and Web of Science according to the faculties' scientific rank

Rank	Number of the faculty members	The total number of articles in the Web of Science	The total number of citations in Web of Science	The total number of articles in Scopus	The total number of citations in Scopus
Lecturer	42	57	246	139	803
Assistant professor	198	890	12107	1676	17643
Associate professor	38	385	3086	737	5730
Professor	13	285	3145	526	6365
Total	291	1617	15439	3078	30541

Investigating the relationship between the presence of the faculties of Lorestan University of Medical Sciences in social networks with their citations in Scopus and Web of Science showed that the faculties had a total of 3371 documents in ResearchGate with the RG score of 1088.55 and 28260 citations. According to Table 15, the medical school was found to be the most active school in terms of presence in ResearchGate by the RG score equal to 683.87, 24513 citations, and 129364 visits; on the other hand, Poldokhtar School of Nursery was the least active school by the RG score equal to 0, zero citations, and 491 visits.

Table 15

The presence of the faculties of LUMS in ResearchGate according to the visibility indicators of the networks

School	Members	Publications	RG score	Number of citations	Followers	Followings	Visits	Question	answer
Hygiene and nutrition	30	326	166.21	1804	639	345	25929	0	1
Aligoodarz nursery	7	9	11.33	41	22	28	774	0	2
Boroojerd nursery	7	4	5.11	3	33	35	114	3	0
Poldokhtar nursery	6	5	0	0	27	9	491	1	1

Nursery and midwifery	25	222	43.66	337	356	504	23846	0	3
Medical school	112	2368	683.87	24513	2619	1122	129364	0	117
Paramedics	19	172	54.96	374	372	235	13227	1	0
Pharmacy	12	161	78.18	1081	369	289	9777	0	3
Dentistry	20	104	45.23	107	133	158	6334	0	1
Total	238	3371	1088.55	28260	4570	2567	203522	5	128

The total number of faculty members in academia was 70, with 151 publications in the network (Table 16). The medical school showed the most significant presence (23 faculties, 58 documents), while the Poldokhtar School of Nursery had the least significant activity (1 faculty, no documents).

Table 16

The presence of the faculties of LUMS in Academia according to the visibility indicators of the social network

School	Members	Publications	Followers	Followings	Visits (views)
Hygiene and nutrition	11	5	7	3	58
Aligoodarz nursery	3	1	23	13	16
Boroojerd nursery	2	0	5	2	6
Poldokhtar nursery	1	0	3	0	8
Nursery and midwifery	15	34	55	25	115
Medical school	23	58	89	65	172
Paramedics	1	0	23	15	36
Pharmacy	11	46	59	14	87
Dentistry	2	7	16	0	28
Total	70	151	280	137	526

As the data were not normally distributed, non-parametric tests were implemented. As Table 17 shows, the results of the Spearman correlation test showed a significant correlation of visibility indicator (visit) in ResearchGate with the citations in Web of Science ($r=0.634$, $P<0.01$) and Scopus ($r=0.61$ and $P<0.01$), the significant correlation of the RG score with the citations in Web of Science ($r=0.628$, $P<0.01$) and Scopus ($r=0.601$, $P<0.01$), the significant correlation of the number of citations in ResearchGate with the citations in Web of Science ($r=0.578$, $P<0.01$) and Scopus ($r=0.512$, $P<0.01$), and the significant correlation of the number of publications with the citations in Web of Science ($r=0.514$, $P<0.01$) and Scopus ($r=0.502$, $P<0.01$). Thus, it was found that citations increased proportionately to the increase in the visibility indicators of ResearchGate. According to the above table, the significant correlations of the followers, followings, questions, and answers in ResearchGate were confirmed with the rate of citations in the investigated citation databases.

Table 17

The results of the Spearman correlation test between the indicators of social networks and the received citations in Web of Science and Scopus

Variables		Citation in Web of Science	Citation in Scopus	P-value
ResearchGate	Number of publications	0.514	0.502	P<0.001
	Visits (views)	0.634	0.615	
	Number of citations	0.578	0.512	
	Followers	0.324	0.303	
	Followings	0.369	0.316	
	RG score	0.628	0.601	
	Question and answer	0.281	0.211	
Scopus	Number of publications	0.248	0.227	
	Followers	0.102	0.090	
	Followings	0.100	0.078	
	Visits (views)	0.292	0.283	

Moreover, the correlation of visibility indicators in Academia with the citations in Web of Science ($r=0.292$, $P<0.01$) and Scopus ($r=0.283$, $P<0.01$) and the correlation of the number of publications with the index of citation in Web of Science ($r=0.248$, $P<0.01$) and Scopus (0.227 , $P<0.01$) was found to be significant. In other words, sharing articles in Academia increased the rate of citations. The followers and followings had less influence on the citation rate in citation databases than other indicators.

The results of the Spearman correlation test showed that sharing articles in Academia increased the rate of citations. In addition, the results showed that the indicators of ResearchGate had a significant correlation with citations ($r=0.4$, $P<0.01$), which was almost strong. Thus, it could be concluded that participating users were more inclined to share their content in ResearchGate rather than Academia. Consequently, as the rate of sharing one's materials in academic social networks increased, the rate of citations increased, as well.

Discussion

The findings showed that most of the Lorestan University of Medical Sciences faculties used ResearchGate more prevalently than Academia for their research purposes. This was in line with the findings of Madhusudhan (2012), Asnafi (2015), Ghazimirsaeed, Papi, Ramezani, YektaKooshali & Ramezani Pakpour Langroudi (2017), and Batooli, Janavi and Nadi Ravandi (2016) in terms of the popularity of ResearchGate among academics. On the other hand, the study of Haustein, Peters, Bar-Ilan, Priem, Shema and Terliesner (2014) showed that ResearchGate was the third most popular academic social network among users after LinkedIn and Academia, and only 21% of the specialists investigated in that study used ResearchGate to share their research findings. Furthermore, the findings of a survey by Gonzalez-Diaz, Iglesias Garcia and Codina (2015) indicated that some university faculties in Spain use academic social networks, and some universities reported zero presence in such networks. On the contrary, the faculties of Lorestan University of Medical Sciences showed an active presence in ResearchGate and Academia. The varying popularity of academic social networks among researchers can be attributed to different factors like different capabilities of the networks, scholars' differing attitudes towards scientific communications in the networks, and the cultural, social, and scientific contexts of societies.

According to this study, the faculties' satisfaction with social networks considerably influenced their presence in them. Moreover, the correlation between the faculties' trust in the

information presented in scientific networks and their presence in such networks was significant. Yaghoubi Malal, Jamali Mahmoei and Mansourian (2016) investigated scientists' motives and information interactions in ResearchGate and found that more than 85% of the users were satisfied with the network and considered its information valuable and reliable. This was in line with the current study's findings regarding trust and satisfaction.

According to the current study, following other researchers' works and finding extra-organizational colleagues for research projects were among the most significant reasons for using academic social networks. The most prevalent reason for absence in such networks was being unaware of the advantages of membership and the application of those networks. This was in line with the findings of Chakraborty (2012) regarding scientific collaboration and the search for extra-organizational colleagues. The study by Elsayed (2016) showed that 75% of Arab researchers used ResearchGate to share their scientific works with other researchers, which was not in line with the findings of the present study. Moreover, the study by Ali and Richardson (2018) showed that most of the university faculties in five universities in Karachi, Pakistan, intended to search articles and receive citations on social networks, but this was not in line with the present study's findings.

The majority of the members of academic social networks had doctoral degrees and were assistant professors. The findings showed that the faculty members' demographic characteristics influenced their membership in such networks. Saadat (2015) found a link between the gender, degree, and rank of academics and their use of virtual social networks. This agreed with the results of this study. It is included that the Iranian chemists enjoying higher education degrees, academic ranks, and scientific productivity are more likely to join the academic social networks. The faculty members of Lorestan University of Medical Sciences believed that holding workshops at the university to get more information about academic social networks was useful. This was in line with the study by Roodbari (2017), who investigated the effect of holding workshops to introduce social networks and Altmetrics at Urmia University, Iran.

The Medical School showed the largest number of documents and the highest mean of received citations in Scopus and Web of Science among the Lorestan University of Medical Sciences schools. This was in line with the findings of a scientometrics study by Nabavi (2013), who investigated the scientific products of the faculties of Zanjan University of Medical Sciences in the Islamic Worlds Science Citation Center (ISC) during 2001-10 and the study by Ghorbani et al., (2018) who studied the scientific products of the faculties of Semnan University of Medical Sciences in Scopus during 2010-16.

Moreover, the correlation of the number of citations with the number of visits, the total number of publications, answers, and the number of followers and followings in academic social networks was significant. In her dissertation, Salimi (2016) concluded that a significant correlation existed between the Altmetrics indicators of ResearchGate and a select set of indicators in Scopus. Moreover, this was in line with the findings of Ghazimirsaeed et al. (2017), Doulani, Zand and Baradar (2020), and Rahmani, Asnafi and Rajabi (2019).

Conclusion

The current study's findings showed that a quarter of the faculties had no presence in the investigated academic social networks. As holding workshops raise university faculties' awareness regarding such networks, it can be argued that holding more frequent and high-

quality workshops can significantly increase their presence. Moreover, the current study showed that academic social networks could positively impact the rate of citations to scientific articles' thus, the faculties of Lorestan University of Medical Sciences can use social networks to optimize their search for information and increase the citation of their scientific activities. As various social networks lead to more visibility and influence scientific interactions and effectiveness, researchers are recommended to share their scientific works to increase the accessibility of their publications and the number of their readers. This will, hence, improve their effectiveness and citations to their studies. As very few studies have been conducted on Iranian faculties' presence on academic social networks, performing similar studies on academic social networks in other universities is recommended. Moreover, conducting qualitative studies will make it possible to conduct more in-depth investigations concerning the reasons for using academic social networks and their benefits and challenges, according to university faculties.

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Conflict of Interests

The authors declare that they have no competing interests.

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