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Perceived Usefulness of Social Media Tools in Research: A Survey of University LIS Postgraduate Students

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Abstract

The intense penetration of ICT through the application of social media in society, particularly in communications, has altered the ways of social interaction, business, education and research. Being a bandwagon concept, postgraduate (PG) students are also heavily influenced by the use of SMTs in their research. Thus, the present study assesses the extent and perceived usefulness of SMTs for communication, collaboration and, multimedia/Interactive media services in addition to find influential factors to use SMTs in research. The study has employed census taking enumerative approach to collect data on a structured questionnaire from the LIS postgraduate students (M.Phil. and Ph.D.) enrolled during previous five years (2015 – 2020) at Minhaj University, Lahore (MUL), Pakistan. The findings indicate that SMTs are frequently used by the LIS postgraduate students in performing their research works. The participants spend their maximum time to use SMTs through laptops and mobiles in order to carry out different activities. The findings reveal that SMTs are helpful for identifying in research opportunities, collecting, organizing and analysing research data, providing advance ways to participate in research activities, securing support in research [from others or peers] and disseminating research findings. The study also reveals that SMTs play a vital role in academic research communication, collaboration, presentations and sharing files. Thus, SMTs are perceived as integral in academic research activities. The study reports the vital influencing factors such as "academic societies, supervisors, others using technology, faculty members, social distancing, trainings and developments, peers, library staff, media or learning centers" to use SMTs in research. This study may be helpful for practitioners, administrators and policy makers to make social media literacy as an integral part of curriculum and research development programs.

*Keywords***:** Academic use of social media tools; Social networking sites; LIS research student

Introduction

The proliferation of ICT, internet and social media emergence have transformed the styles of living, thinking, leading and communication of people. Especially the innovation of social media has changed the forms of communications as it provides the opportunity of

content creating, sharing globally and consuming it instantly on a large scale unlike the print and mass media. The intense penetration of ICT in society particularly in communications has altered the ways of social interaction, business, education and research through the application of social media tools. Being a bandwagon concept, postgraduate students are also greatly influenced by the use of social media tools (SMTs) in their research activities (Makhdoomi, Nazir, & Jahangir, 2017; Mngwengwe & Dlamini, 2020).

As a key tool for disseminating, discussing, sharing and even unfolding new research results, SMTs are vitally used by researchers and academics. Nowadays, SMTs are widely exploited in all the educational and research-oriented disciplines such as pure and applied sciences, social sciences, engineering, medicine, agriculture etc. Not only this, vibrant communities are built up for supportive and energetic collaboration using a variety of SMTs that allow for unprecedented interactive skills, friendships, camaraderie and provide unique opportunities for creative engagements to everyone for moving forward (Deeken, Mukhopadhyay, & Jiang, 2020). Several widespread SMTs are extensively used in facilitating instant messaging and social networking (including Facebook, Google Hangouts, Messenger, WhatsApp, Viber etc.); micro-blogging (such as Twitter, Yammer, etc.); professional and academic purposes (such as LinkedIn, Academia.edu, ResearchGate); RSS feeds (e-mail subscriptions, alerting services, mailing lists, etc.); and blogging (WordPress, Blogger etc.).

Similarly, since the introduction, SMTs also have fundamentally changed the way of sharing and discussing the works of researchers. Especially the extensive use of real-time technologies such as "Google Docs, Skype and Dropbox has facilitated the researchers to communicate collaboratively, exchange their information instantly, create new knowledge and distribute their research outcomes in real time. Thus, the SMTs are increasingly used by academic researchers and implemented in research work environments as the means of sharing knowledge to address diverse type of users, professionals, audiences and researchers. Moreover, these technologies have taken hold across higher educational institutes i.e. universities as an important tools of teaching, learning and educating students and accomplish research works as well (Alshalaan, Tiwari, & Turner, 2017).

Correspondingly, the plans of learning and teaching activities are putting real concerns towards the implementation of SMTs in education. The postgraduate students are also urged to use SMTs in their academic research activities due to dramatic increase in the variety of these tools (Aleryani et al., 2017). Although literature is available on the use of SMTs by scholars for the purpose of teaching, learning and general purposes instead of

research; however, the full potential is untapped and the usage of SMTs could not be extensively explored by academic scholars such as postgraduate students (Duman, 2015) particularly by LIS postgraduate students of developing countries.

So far as the local context is concerned, there is also a scarcity of research that has addressed the use of SMTs by postgraduate students of library and information science (LIS) in Pakistan. Therefore, this study has focused on the perceived usefulness of SMTs in research by LIS postgraduate students of Minhaj University Lahore, Pakistan. The study may help in understanding the emerging trends of scholarly uses of SMTs in education and research activities of LIS postgraduate students in Pakistan. Moreover, the study may play a role in implementing the critical success factors of SMTs within the higher educational institutes.

Objectives

The study has addressed the following objectives:

1. To determine the extent of using SMTs in research through different type of devices/ gadgets among LIS postgraduate (PG) students

2. To assess the perceived usefulness of SMTs for "communication, collaboration and multimedia/interactive media services" in research among LIS PG students.

3. To find the influential factors for taking decision to use of SMTs in research.

Hypotheses

H$_1$: The SMTs are perceived useful in communication, collaboration and multimedia/interactive services for research

Literature Review

Currently, the use of social media tools (SMTs) is dramatically increased for communicating, conducting research, receiving, sharing and disseminating information among researchers through the support of famous platforms including Facebook, ResearchGate, Academia.edu, Twitter, SlideShare etc. (Madhusudhan, 2012). Additionally, the social networking sites (SNSs) have become a gateway that enables researchers to spread their ideas, experience, and knowledge with other researchers across the world. Previous research reports that several postgraduate students present their papers, profiles, projects and communicate with other researchers through academic SNSs (i.e. ResearchGate, adademia.edu etc.) and become more famous in the academic research world (Aleryani et al., 2017). The study of Nandez & Borrego (2013) reveals that postgraduate students have used SNSs to get in touch with other scholars and disseminate research results. With the help of

Social media, scientists can communicate their research quickly and efficiently (Van Eperen & Marincola, 2011).

A cross-sectional study of Chakraborty (2012) examined the reasons why the postgraduate students of North Eastern Hill University (NEHU) used SNSs. The study found that the SNSs were not only used for entertainment purposes but also in research and educational activities by research students. Similarly, another research study reported that social media was found to be helpful in face to face collaborative learning and in developing self-confidence among the students of higher education (Voorn & Kommers, 2013).

The findings of a qualitative study also indicated that SMTs such as Twitter were used for "sharing information, resources, professional practices, information about students and classroom, providing support and suggestions for others, engagement with social commentary, engagement with digital identification, connecting with others and participating in online networks" by postgraduate students (Veletsianos, 2012). Another mixed-method research by See Yin Lim et al. (2014) investigated the perceptions, acceptance, usage and access to social media by students and academics of informatics programs in Malaysia. The results indicated same acceptance and usage patterns by informatics and non-informatics students in engaging with institution, peers as well as in teaching and learning activities. Besides, the SMTs were used by research students in their daily life as well as in higher education according to their beliefs and skills especially in teaching and learning (Duman, 2015). Likewise, the quantitative study of Ashraf & Mohamed Haneefa (2016) reported the scholarly use of social media particularly in locating academic content and keeping current awareness by doctoral students and research students at the University of Calicut, Kerala.

Conversely, a couple of studies examined the effects of SMTs and SNS on education and students. This study identified social media as an additional element for students and a waste of time as its negative use was destroying their future (Tariq, Mehboob, & Khan, 2012). However, the study of I. Ali & Yousaf (2017) reported that the youngsters were the best users of SM among Pakistani university students for acquiring and using information relevant to current issues especially local news social media.

In the current social distant environment of COVID-19 pandemic, a recent study asserted that digital technologies facilitated the postgraduate students in accessing published research, writing their dissertations, and communicating with their supervisors. Moreover, these digital technologies helped students to be aware of their personal research needs and become problem-centered and tolerate uncertainty caused by COVID-19 pandemic (Sokhulu, 2020). Similarly, the study of Al-Sabaawi et al. (2021) pointed out that social media could

provide huge potential for academic researchers for intellectual activities and it had gained a huge acceptance from all and sundry.

So far as the LIS postgraduate students are conserned, Kjellberg et al. (2013) investigated the use of SNSs and reported the use of SMTs as an essential tool in scholars' life with some disciplinary differences. Similarly, a local study by Shafique et al. (2010) investigated the trends of using social media among the students of Islamia University of Bahawalpur. The study reported that students mostly used SMSs including "CiteULike, Technorati, Connotea, Blogger, Twitter and Wikis for sharing information, research work, online education and contacting with people. Another quantitative local study carried out by Khan (2018) to examine information behavior of LIS postgraduate students from online information resources and to measure the influence of online collaborative social media on researchers in Pakistan. The study found SMTs as helpful tool for seeking and sharing information in a collaborative environment.

A recent study by Mngwengwe & Dlamini (2020) explored the use of social media tools for sharing scholarly knowledge by students of Information Studies, University of Zululand using technology acceptance model (TAM). The study found that the availability of social media tools has transformed the lives of students academically and showed that the advent of social media tools provides a good platform for sharing scholarly knowledge.

Perceived usefulness is defined as the degree to which the individuals believe that using a particular technology would enhance their job performance (Davis et al., 1989). Hence, in the context of this study, perceived usefulness can be explained to be the extent to which a prospective users believe that they will get benefit from using SMTs. In this regard, previous research found that the extent of using SMTs had positive impact on perceived usefulness of SMTs users (Dzandu, Boateng, Agyemang & Quansah, 2016; Sago, 2013). However, the study of Lee et al. (2007) among business students determined that perceived usefulness had insignificant impact on using SMTs for instant messaging. Not on this, Lu et al. (2009) confirmed that students needed to find SMTs as a useful tool in improving their communication efficiency and convenience. Hamade (2013) noted the effective role of SMTs in communication and social networking among university students. Nevertheless, SMTs provided huge potential and accepted on large scale for intellectual activities by postgraduate students. However, there is lack of research on why LIS postgraduate students failed to accept SM in scholarly learning (Al-Sabaawi et al., 2021). Therefore, the present study intended to explore the perceived usefulness of SMTs by LIS postgraduate students in their research.

Methodology

The present study used quantitative research based on survey method to achieve the research objectives. The population framework consisted of LIS postgraduate students/research scholars (including M.Phil. and Ph.D.) of Minhaj University, Lahore (MUL), Pakistan enrolled since previous five years (2015 – 2020). An ethical clearance was sought from Advanced Studies and Research Board (ASRB) of MUL. This paper is the part of Ph.D research activity. This study used census taking (enumerative) sampling technique to collect data from all the members of selected population. A census taking or enumerative approach is a complete enumeration used to collect data from every unit or member in a population. This approach is selected due to small group based population, limited number of events or members in a group or when resources are limited (Baffour, King, & Valente, 2013).

A pre-tested structured questionnaire (Table 1) was formulated and distributed among the participants. Data were collected through administering online (on Google Docs) survey during September 2020 to January 2021. A complete list of M.Phil. and Ph.D. students' names and E-mail addresses enrolled during last fivers were acquired from the admission office of the Department of Library and Information School of MUL. An online questionnaire link was also shared on SMTs and E-mails to get adequate response.

Table 1. *Measurement Tool*

SN	Domains	Items	Scale used	CA*
1	Demography (gender, age, program, session)	4	Categorical	--
2	Extent of using SMTs in research	2	Categorical	--
3	Devices/gadgets used for SMTs among LIS PGS	2	Categorical	--
4	Perceived usefulness of SMTs in research	10	5-points Likert-type scale	0.96
5	Use of SMTs for Communication in research	8	5-points Likert-type scale	0.90
6	Use of SMTs for Collaboration in research	4	5-points Likert-type scale	0.83
7	Use of SMTs for Multi/Interactive Media Services in research	5	5-points Likert-type scale	0.83

* CA= Crone batch alpha

Content, face and construct validity of the survey instrument were ensured with the help of library professionals and experts of the field. Furthermore, Cronbach's alpha (CA) reliability test was applied to observe internal consistency and reliability of five domains consisting of 36 scaled items. The results indicated CA>0.80 which was reasonable rate

(George & Mallery, 2014) for internal consistency and reliability of the survey tool. The collected data were analyzed using SPSS v. 22.

Results

The characteristics of the demographic variables are presented in Table 2. The gender distribution showed that the male respondents n=42(58.3%) are in greater majority than female respondents n=30(41.7%). Additionally, the most of the respondents n=44(61.1%) are falling within the age group of 30-39 years, followed by the age group of 40-49 years n=13(18.1%). The results of the educational program revealed that majority of the responses n=66(91.7%) received from MS/M.Phil students. The findings of the "session intakes" showed that most of the respondents n=25(34.7%) are enrolled in 2018, followed by 2019 n=22(30.6%).

Table 2. *Demographic characteristics of the participants*

Groups	Frequency	Percentage (%)
Gender		
Male	42	58.3
Female	30	41.7
Age		
20-29 years	12	16.7
30-39 years	44	61.1
40-49 years	13	18.1
50-59 years	2	2.8
60 years & above	1	1.4
Program		
MS/M. Phil	66	91.7
PhD	6	8.3
Session Intakes		
2015	4	5.6
2016	9	12.5
2017	12	16.7
2018	25	34.7
2019	22	30.6

Extent of using SMTs in research. Participants were asked to respond how much the postgraduate students had been spending their time on SMTs for their research works and general works. The findings showed (Table 3) that majority of the students (n=23) used SMTs for 1-2 hours in a day for their research work, followed by the respondents (n=16) who spent 2-3 hours on SMTs in a day. Moreover, the study revealed that the participants (n=20) used SMTs for 3 and more hours in a day to perform their general work, followed by the participants (n=18) who spent 1-2 hours on SMTs in a day for general work.

Table 3. *Extent of using social media tools in research*

SN	Items: I use SMTs	<1 Hour	1 Hour	1-2 Hours	2-3 Hours	> 3 hours
1	For research work	12	8	23	16	13
2	For general work	4	16	18	14	20

Devices/ gadgets used. The postgraduate students were asked to rate what type of devices or gadgets are used in their research on the given scale (Table 4). The results revealed that majority of the respondents (n=40) had always used desktop computers/laptop in their research. Furthermore, only few (n=20) of the respondents always used mobile devices in their research. It can be concluded that performing research activities are more easy and friendly on desktops/laptops than on mobile devices.

Table 4. *Devices/ gadgets used*

SN	Items	M	SD
1	Desktop Computer/Laptop/Netbook	4.22	1.08
2	Mobile Device	3.54	1.21

Scale: 1=Never,2= Rarely, =3Sometimes, 4=Very often, 5=Always

Perceived usefulness of SMTs in research. The postgraduate students were asked about the perceived usefulness of SMTs in their research works. The findings (Table 5) showed that SMTs were found helpful in collecting research data (M=3.90±SD=1.19); providing advance ways to participate in research activities (M=3.79±SD=1.13), identifying research opportunities (M=3.74±SD=1.08); securing support in research (M=3.74±SD=1.08) [from others or peers], disseminating research findings (M=3.72±SD=1.14), managing research process (M=3.58±SD=1.17), organizing research data (M=3.51±SD=1.08), reviewing the literature (M=3.43±SD=1.16) and analysing research data M=3.39±SD=1.19). Moreover, the postgraduate students perceived SMTs as integral to conduct research works (M=3.61±SD=1.16) in this digital society.

Table 5. *Perceived usefulness of SMTs in research*

SN	Statements: SMTs are highly useful in	Mean	SD
1	Collecting Research Data	3.90	1.19
2	Participating Research Activities	3.79	1.13
3	Identifying Research Opportunities	3.74	1.08
4	Securing Support in Research	3.74	1.08
5	Disseminating Research Findings	3.72	1.14
6	Integral to Conduct Research	3.61	1.16
7	Managing Research Process	3.58	1.17
8	Organizing Research Data	3.51	1.08
9	Reviewing the Literature	3.43	1.16
10	Analysing Research Data	3.39	1.19

Scale: 1=Strongly disagree,2= Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

Use of SMTs for Communication. The participants of the study were asked that how much actively they used SM tools in their research for communication (Table 6). The findings revealed that majority of the respondents actively used instant messaging SM tools (M=3.93±SD=1.053) such as Google Hangout, Facebook Messengers, WhatsApp and Viber in their research communication, followed by the Mailing Lists (M=3.72±SD=1.103). Moreover, academic SMTs including Academia.Edu, ResearchGate were found to be used by the postgraduate very often (M=3.56±SD=1.005). Whereas, Blogging (WordPress and Blogger) and Microblogging SM tools (Twitter, Yammer) found to be less actively used in research communication as it got the mean score of 2.93 and 2.75 respectively.

Table 6. *Use of SMTs for Communication in research*

SN	Items: SMTs are helpful in	Mean	SD
1	Instant Messaging (Google Hangouts, Facebook, WhatsApp, Viber)	3.93	1.05
2	Mailing Lists	3.72	1.10
3	Academic SNS (Academia.Edu, ResearchGate)	3.56	1.01
4	SNS (Facebook, LinkedIn)	3.49	1.16
5	Internet Discussion Forums	3.22	1.16
6	RSS Feeds (E-Mail Subscriptions, Alerting Services)	3.13	1.28
7	Blogging (WordPress, Blogger)	2.93	1.28
8	Micro Blogging (Twitter, Yammer)	2.75	1.21

Scale: 1=Never,2= Rarely, 3=Sometimes, 4=Very often, 5=Always

Use of SMTs for Collaboration. The respondents of this research study were asked about the SMTs they used in their research for collaboration. As evident from the Table 7, majority of the participants used collaborative writing tools i.e. Google Docs (M=3.49±SD=1.245), followed by the videoconferencing tools including Skype, Zoom, MS Team and Google Meet (M=3.24±SD=1.25).

Table 7: *Use of SMTs for Collaboration in research*

SN	Items: SMTs are helpful in	Mean	SD
1	Collaborative Writing Tools (Google Docs)	3.49	1.25
2	Videoconferencing (Skype, Zoom, MS Teem, Google Meet)	3.24	1.25
3	Wikis (Wikipedia, PBworks)	3.00	1.30
4	Social Bookmarking (Delicious, Connotea, Evernote)	2.67	1.23

Scale: 1=Never,2= Rarely, =3Sometimes, 4=Very often, 5=Always

Use of SMTs for Multi/Interactive Media Services. The participants were questioned about the SMTs they used actively in research for multi/interactive media services. The findings showed (Table 8) that most of the respondents always used file services including Dropbox SkyDrive and Google Drive (M=3.58±SD=1.135), followed by the presentation services including SlideShare and Prezi (M=3.54±SD=1.125). Moreover, photo services (M=2.92±SD=1.23) and Audio podcasting services (M=2.56±SD=1.232) were used less actively by the respondents.

Table 8*: Use of SMTs for Multi/Interactive Media Services in research*

SN	Items: SMTs are helpful in	Mean	SD
1	File Services (Dropbox SkyDrive, Google Drive)	3.58	1.14
2	Presentation Services (SlideShare, Prezi)	3.54	1.13
3	Video Services (YouTube, Vimeo)	3.47	1.15
4	Photo Services (Instagram Flicker, Picasa)	2.92	1.23
5	Audio Podcasting Services (iTunes, Podomatic)	2.56	1.23

Scale: 1=Never,2= Rarely, =3Sometimes, 4=Very often, 5=Always

Perceived Usefulness of SMTs in Research. "To assess the perceived usefulness of SMTs for "Communication, Collaboration and Multimedia/Interactive media services" in research of LIS PG students, a bivariate correlation analysis for Pearson product-moment was carried out to achieve this objective of the study. The bivariate results (Figure 1) demonstrates that the correlation coefficients for four variables. The results indicates that each variable regarding use of SMTs is perfectly correlated with itself (as Pearson's r=1) as

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presented in Figure 1. Furthermore, the results show that all variables including communication (r=0. 223), collaboration (r=0. 234) and multimedia services (r=0. 215) are significantly and positively associated with perceived usefulness of SMTs in research of LIS PG students at the significance level of p≤0.01. Thus, the study concludes that SMTs are perceived highly useful in communication, collaboration and multimedia services for academic research among LIS postgraduate students. Therefore, the hypothesis "SMTs are perceived useful in communication, collaboration and multimedia/interactive services for research" was accepted.

Figure 1: Perceived Usefulness of SMTs in Research
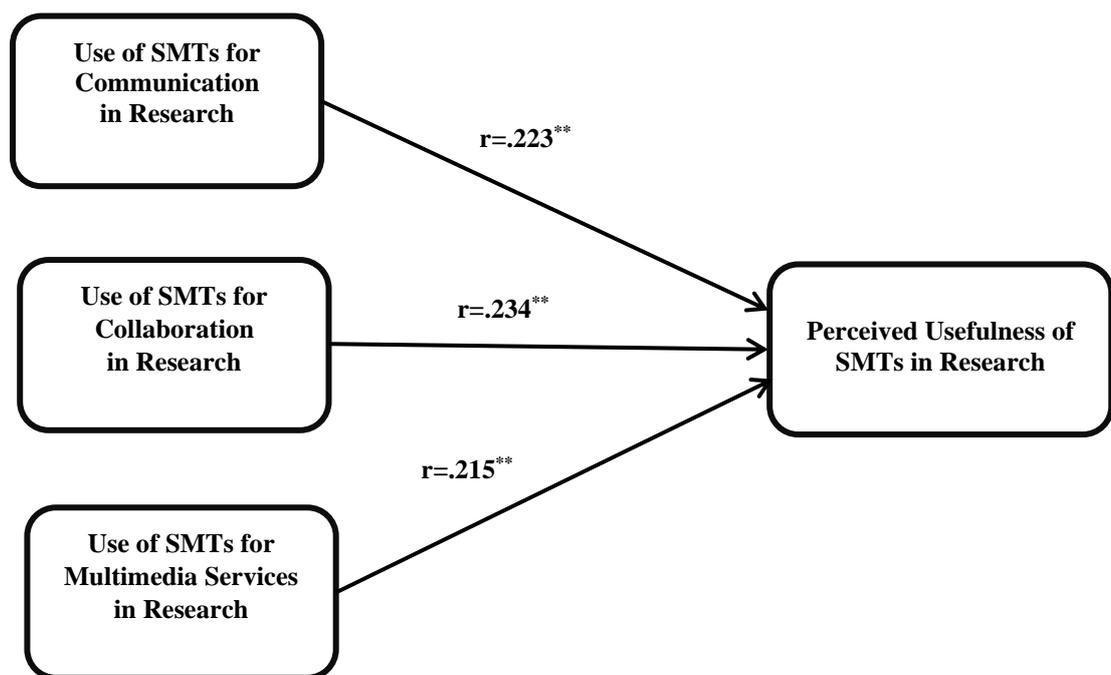
**. Correlation is significant at the 0.01 level (2-tailed).

Influential Factors to Use SMTs in Research. The sample of this study was inquired about the influencing factors for taking decision to use SMTs in research work. The results (Table 9) revealed that majority of the respondents considered academic societies (M=3.88±SD=0.99) as the most influential factor in taking decision to use SMTs in research work followed by the supervisor (M=3.83±SD=1.13). Furthermore, Demonstrations/Others Using the Technology (M=3.78±SD=0.97) and Faculty/Instructors (M=3.76±SD=0.97) were also the influential factors to use SMTs in research work. Whereas, the participants considered social distancing (M=3.54±SD=1.08) and media or learning centres

(M=3.43±SD=0.99) as the less influencing factor in taking decision to use SMTs in research work.

Table 9: *Influential factors to use SMTs in research*

SN	Items	M	SD
1	Academic Societies (E.G. Research Communities)	3.88	0.99
2	Your supervisor	3.83	1.13
3	Demonstrations/Others Using the Technology	3.78	0.97
4	Your Faculty/Instructors	3.76	0.97
5	Training/Seminar/Workshops	3.72	0.99
6	Peers	3.61	0.93
7	Library Staff	3.60	0.97
8	Social Distancing	3.54	1.08
9	Media or Leaning Centers/Labs	3.43	0.99

Scale: 1=Strongly disagree,2= Disagree, 3=Neutral, 4=Agree, 5=Strongly agree

Discussion

The current study attempted to measure the use of SMTs for research by LIS postgraduate students in Minhaj University Lahore. The findings of this study revealed that male LIS research (MS/M.Phil. and Ph.D.) scholars were found more habitual to use SMTs for research as compared to their female counterparts with mean age of 35 years.

The LIS postgraduate students found differed in spending their time on SMTs; however, the majority spent their times on using SMTs more than three hours in a day for performing their research and general works. The findings of our study also corroborated by the study of Ali et al. (2017). These authors had also indicated that a same amount of time spent on SMTs was not found by the students as they differed in their commitments. Similarly, another study tallied that pointed out that the amount of time spent daily on SNSs varied greatly among the participants as depending upon individual's other commitments (Oswusu-Acheaw, 2016). Moreover, our study is also similar with the study of Khan (2017). The author found that majority of LIS postgraduate students in Pakistan spent their time using social media tools from 2 to 6 h daily respectively.

Our study exhibited that although the participants were found using mobile devices for SMTs; however, the LIS postgraduate students always used SMTs on desktop computers or laptops to perform their research works. The study of Stephen et al. (2020) reported the more use of desktop computers and laptops than mobile devices by LIS professionals while using academic SNSs. Similarly, the study of Darko-Adjei & Ankrah (2020) found that

although students use smartphones in their academic activities but some inhibiting factors intruding calls, unstable internet connectivity, freezing learning moments and small screen and key sizes, laptops/computers were comfortable for learning as compared to smart [mobile] devices. Another study conducted among LIS students exhibited a vast use of mobile devices than Laptops. However, mobile devices were found uncomfortable due to poor networks, costly and slow speed of internet for academic learning (Sharma & Madhusudhan, 2017).

The results of this study revealed that SMTs were found helpful in collecting research data, providing advance ways to participate research activities, identifying research opportunities, securing support in research [from others or peers], disseminating research findings, managing research process, organizing research data reviewing the literature and analysing research data. Additionally, the postgraduate students perceived SMTs as integral to conduct research works in this digital society. The study of Mngwengwe & Dlamini (2020) also reported that availability of SMTs transformed the lives of students academically as the students were using these tools in sharing scholarly knowledge. Another study showed that academic SNSs offered a novel way to communicate and collaborate with researchers through connecting to other academicians across the world, joining discussion forums, reading practical case studies, and updating them about current research works (Stephen et al., 2020).

The findings of present study revealed that majority of the respondents actively used instant messaging such as Google Hangout, Facebook Messengers, WhatsApp, Viber,Mailing Lists, academic SMTs including Academia.Edu, ResearchGate, Blogging (WordPress and Blogger) and Microblogging SMTs (Twitter, Yammer) for their research communication. Similarly, the meta-analysis conducted by Manca (2018) indicated that ResearchGate and Academia achieved growing acceptance of SMTs. The results of our study also correspond with the findings of earlier studies such as (Asmi & Margam, 2018) as they had also reported that ResearchGate and Academia.edu were the most used SMTs by the postgraduate students. Similarly, another study identified popular platforms such as ResearchGate, Academia.edu and Google Scholar that had gained popularity as academic SNSs in the last decades for collaborative communication (Stephen et al., 2020).

As evident from the findings of our study, majority of LIS postgraduate students actively used SMTs for collaborating research work including Google Docs, Skype, Zoom, MS Team and Google Meet for videoconferencing. Furthermore, most of the respondents always used file services including Dropbox, SkyDrive, Google Drive, SlideShare and Prezi

for presentations and sharing files for their research activities. Besides, photo services and audio podcasting services were also used for research. The findings of our study were found in line with the results of See Yin Lim et al. (2014) as they also reported that SMTs including Facebook, Wikipedia, YouTube and Dropbox were mostly used by students to support their academic activities. Similarly, another study discussed that SMTs had facilitated collaborative learning, interaction with colleagues and teachers, transferring the resources and upgrading knowledge by the university students (Ansari & Khan, 2020).

The present study confirmed that the SMTs would highly useful in communication, collaboration and multimedia/interactive services in the research of LIS postgraduate students. Thus, the study concluded that use of SMTs had become integral part of academic research among LIS postgraduate students. Similarly, the advantages of SMTs for individuals and organisations had have been recognized in previous literature (van Slyke, 2007). Another study identified that research students used SMTs for their self-gratification, communication, information seeking and sharing (Subramanian et al., 2014). Moreover, users adopted SMTs as they facilitated in learning, interaction and SMTs perceived as prestigious technology (Dzandu et al., 2016).

In our study, the factors such as "academic societies, supervisors, demonstrations, others using technology, faculty/ instructors, social distancing, trainings/ seminars/ workshops, peers, library staff, media or learning centres" were identified as the influencing factors in taking decision to use SMTs in research work by LIS postgraduate students. The study of Athukorala, (2018) also reported that university students used SMTs due to new learning and living environment, research needs and digital environment of their daily life (Athukorala, 2018).

Suggestions

The study suggests that due to widespread use of SMTs by university students particularly by LIS postgraduate students in their learning and research works as well as in their daily lives, it is essential to integrate social media literacy education into academic curriculum. Moreover, the provision of development programs for social media literacy needs to be tailored accordingly as per requirements of academia by focusing on differences of gender, age, discipline and language proficiency to help the students in making the most of the social media tools in their academic and research activities.

Conclusion

The study concluded that the SMTs helped LIS postgraduate students for identifying research opportunities, collecting, organizing and analysing research data, providing advance

ways to participate in research activities, securing support in research and disseminating research findings. The LIS postgraduate students perceived SMTs as highly useful in communication, collaboration and multimedia/interactive services in their research. The respondents identified the most important influencing factors including "academic societies, supervisors, demonstrations/ others using technology, faculty members, social distancing, trainings, peers, library staff, media or learning centres" that stimulated them to use SMTs in their research.

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