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Research article

Use of social networking in the Middle East: student perspectives in higher education

Tomayess Issa [a,*], Sulaiman Ghazi B. Alqahtani [a], Ibrahim Al-Oqily [b], Sehnaz Baltaci Goktalay [c], Utku Köse [d], Theodora Issa [a], Bilal Abu Salih [e], Waleed Khalid Almufaraj [a]

[a] School of Management and Marketing, Curtin University, Perth, WA, Australia
[b] Al Yammah University, Saudi Arabia
[c] Uludag University, Turkey
[d] Usak Computer Engineering, Suleyman Demirel University, Turkey
[e] The University of Jordan, Jordan

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ABSTRACT

This study aims to determine the benefits, risks, awareness, cultural factors, and sustainability, allied to social networking (SN) use in the higher education (HE) sector in Middle Eastern countries, namely Jordan, Saudi Arabia, and Turkey. Using an online survey, 1180 complete responses were collected and analyzed using the statistical confirmatory factor analysis method. The use of SN in the Middle Eastern HE sector has the capacity to promote and motivate students to acquire professional and personal skills for their studies and future workplace; however, the use of SN by tertiary students is also associated with several risks: isolation, depression, privacy, and security. Furthermore, culture is influenced by using SN use, since some countries shifted from one dimension to another based on Hofstede's cultural framework. The study new findings are based on a sample at a specific point in time within a culture. The study findings encourage academics to include SN in unit activities and assessments to reap the benefits of SN, while taking steps to mitigate any risks that SN poses to students. Although other studies in the Middle East examined the use of Learning Management System and Facebook in, HE as a means of engaging students in discussions and communications, however, this study contributes a better understanding of the benefits and risks, awareness, culture, and sustainability, associated with the use of SN in the HE sector in the Middle East. Finally, the paper concludes with an acknowledgment of the study limitations and suggestions for future research.

1. Introduction

Social networking (SN) is a sophisticated and virtual tool used by individuals and communities globally to communicate, collaborate, connect, and cooperate in order to exchange information and ideas, and to learn from different cultures. SN usage has increased worldwide as a result of the simple and inexpensive access to it provided by the Internet. The amount of knowledge and information made available to large sections of the population has risen exponentially, with the general public taking advantage of the Internet facility and the availability of devices such as mobile phones and tablet computers available at reasonable prices.

Moreover, SN has been integrated into the corporate operations of several sectors including business, government, health, and education, as it can be used as a communication, knowledge-sharing and decision-making tool. Currently, the majority of educational institutions are using social networking as a learning and teaching tool via a specific platform (i.e., Facebook, Twitter, Wiki, Blog, Discussion Board, etc.), especially for assessment purposes as a means of improving students' personal skills (i.e., motivation; leadership; negotiation, communication, problem solving, time management, reflection) and professional skills (i.e., reading, writing, research, critical thinking, decision making, digital oral presentation, graphic representations, and teamwork) to enhance students' learning and performance in their current studies and in the workforce in the future. Several studies (Al-Rawi, 2019; Chu et al., 2017; Issa, 2020; Issa and Isaias, 2016; Khoynaroud et al., 2020; Luo and Chea, 2020) have indicated that the integration of SN in higher education for the purpose of assessments and learning activities encourages critical

* Corresponding author.
E-mail address: Tomayess.Issa@cbs.curtin.edu.au (T. Issa).

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thinking, discussion, collaboration, communication, cooperation, brainstorming, and debate both among students and between students and the unit coordinator.

Other studies (Li, 2020; Tsvetkova et al., 2020) have found that SN can also help to determine whether students have acquired the necessary knowledge about the topics covered in the course. Moreover, SN encourages students to share their own views and to respect, comment upon and acknowledge the views of their colleagues and unit coordinator. Weaker students can be encouraged to participate in the weekly activities where they can clarify issues, ask questions, and share ideas with their colleagues and unit coordinator. Furthermore, students may be motivated to become independent learners as topics can be explored in greater depth by means of searching and researching using SN and the Internet.

Studies conducted by (Barbosa Granados and Amariles Jaramillo, 2019; Kaldo et al., 2015) indicate that SN has transformed educational systems in that classrooms have become more collaborative. This has helped to create a more relaxed atmosphere among students and their unit coordinator, since SN encourages students to contribute their comments, concept maps, PowerPoint slides and documents. However, the use of SN in the higher education sector has also been associated with several risks in terms of students' cognitive skills, socio-physical development, and security.

To the best of our knowledge, studies on the usage of SN in the Middle East are limited to investigating and assessing students' attitudes to Information and Communications Technology (ICT and Learning Management Systems (LMS); and Internet and Facebook usage of student work only (see Section 2). However, in this study, we sought to determine the benefits, risks, awareness, cultural factors, and sustainability associated with the use of SN by HE students in Middle Eastern countries, specifically Jordan, Saudi Arabia, and Turkey. To address the research questions and objectives, an online survey was designed based on a review of the current literature. The survey was distributed among Middle Eastern students in the aforementioned countries, and yielded 1180 valid responses. This study selected the three countries in the Middle East namely, Jordan, Saudi Arabia, and Turkey, since are located in the same region, and some countries are sharing the same culture and attitude.

This study is considered the second study from our social networking and education project using an online instrument, and ethics approval (HREC number IS-12-12) was obtained to collect the data from several countries in the Middle East. The data collection was done by country; thus, a separate platform (via Qualtrics XM), was established for each country. The first study was published as an article titled 'Asia-Pacific Students' Awareness and Behaviour Regarding Social Networking in the Education Sector' (Issa et al., 2019). This study was limited to Australia, Bhutan, India, Malaysia, Pakistan, and South Korea. The current study used the same online instrument for the data collection, albeit targeting students in Jordan, Turkey, and Saudi Arabia. Given that our social networking and education project used the same platform and was generated from the same literature review, it could be considered as somewhat overlapping. However, our current paper 'Use of Social Networking in the Middle East: Student Perspectives in Higher Education' has different research questions and approaches for different regions. Moreover, a new finding emerged that resulted in the inclusion of the term 'sustainability' in the discussion.

The study results indicated that the use of SN in the Middle Eastern HE sector has the potential to support, encourage and motivate students to acquire professional and personal skills for their studies and future workplace; however, this is not without various associated risks as it could lead to isolation, depression, and privacy and security issues. Furthermore, culture is influenced by the use of SN, since some countries have shifted from one dimension to another based on Hofstede's cultural framework. This paper is organized as follows: 1) Introduction; 2) Related Works; 3) Research Method and Questions; Survey Design; 4) Study Participants; 5) Results and Discussion; 6) New Theoretical, Practical Findings and Contribution; 7) Study Limitations and Future Research; and 8) Conclusion.

2. Related works

This section reviews social networking, cultural orientation, and sustainability from a Middle Eastern perspective. First, we examine SN in the Middle East together with its various advantages and risks, the cultural orientation of this region based on Hofstede's cultural framework, and the issue of sustainability.

2.1. Social networking in the Middle East and study problem statement

The implementation of SN in the higher education sector in the Middle East is still in the early stages, as students are primarily using this tool for social and personal communication (Al-Oqily and Alkhatib, 2016; Alqahtani, 2016; Alqahtani and Issa, 2018; Goktalay and Ozdilek, 2016; Habes et al., 2019). Hence, there is a need for further research on the integration of SN into the higher education curricula in the Middle East, and appropriate models must be chosen and implemented if the full benefits of SN are to be realized, and if the risks are to be minimized.

Recent statistics from February 2018 to March 2021 (Datareportal, 2020a, 2020b, 2020c; Fonteneau, 2019; Slideshare, 2019; Statista, 2019) reveal that a large portion of the Middle Eastern region is using the Internet, social networking sites and mobile devices. In Saudi Arabia, 25 million people in a population of 34,813,871 are using social networking; in Jordan, of 10,203,134 people, 5.7 million are connected on social media; and in Turkey, 54 million people are using social networking in a population of 84,339,067. In Saudi Arabia, several studies (Al-Qaysi et al., 2019; Almufaraj and Issa, 2018; Alqahtani, 2016; Bano and Zaman, 2020; Chen et al., 2019) indicate that Saudi Arabian universities are using social networking platforms for communication and collaboration between peers, and for sharing news with students and their parents.

However, little research is available regarding the integration of social networking in the Saudi Arabian higher education curriculum, particularly in regard to course delivery and pedagogical practices (Alanazi and Thompson, 2019; Alsuraihi et al., 2016). Several Jordanian studies (Alshurideh et al., 2019; Habes et al., 2020; Malak et al., 2017) have discussed the benefits and risks associated with students' use of ICT and the Internet, although none of this research has discussed the benefits or risks of social networking within the HE sector. Finally, Turkish studies (Fashakh et al., 2020; Gökalp et al., 2020; Goktalay and Ozdilek, 2016; Köse, 2016) have examined the use of LMS and Facebook in higher education as a means of increasing student involvement in discussions and communications with their peers and unit coordinators. However, to the best of our knowledge, none of the Middle Eastern studies, in Jordan, Saudi Arabia, and Turkey, has investigated the use of SN in relation to students' awareness of SN tools, the cultural impacts of the use of SN, and the issue of sustainability. Most studies were limited to examining students' attitudes to ICT, LMS, Internet and Facebook usage for study and work purposes. Furthermore, the online surveys reported in these studies tended to seek data related to only the constraints associated with the technology infrastructure and the Internet.

Since SN has become very popular among students in the Middle East, the aim of this study was to examine and assess these students' awareness and use of SN tools, in addition to discovering their attitudes toward the implementation of SN tools for academic purposes. Middle Eastern researchers have conducted several studies in collaboration with their Australian counterparts, with the latter being keen to implement the Social Networking and Education Model (SNEM) in the higher education system to improve students' personal and professional skills, and to increase the SN benefits and reduce the risks associated with SN (cognitive, social, and physical issues, and security) in the future. In general, the use of SN in the higher education sector in both the Middle East and globally, will benefit students as it can improve the skills that they require as students and as future employees. Worldwide, organizations are seeking

students with high levels of professional and personal skills, as well as technological expertise. The appropriate introduction and implementation of technology in tertiary institutions will ensure that students, unit coordinators and the administration will benefit, and that the associated risks will be mitigated. Finally, the findings from this study will make a substantial contribution to the current literature concerning the integration of SN in the higher education sector, in terms of benefits, risks, awareness, culture and sustainability.

2.2. Social networking – benefits and risks

In this section the authors will discuss the social networking benefits and risks in general and particularly in the Middle East countries based on the study aims.

2.2.1. Social networking benefits

Currently, social networking (SN) tools provide a web-based interface that allows students to communicate, collaborate, connect, and cooperate with their colleagues and unit coordinator in the HE sector. Through SN, users can also explore, share, communicate and provide views, arguments, and ideas on various topics. SN websites and services include MySpace, Facebook, YouTube, LinkedIn, Twitter, Wikis, Blogs and Podcasts, Instant Messaging, Mashups and Virtual World. Several studies (Chu et al., 2017; Hirci and Pisanski Peterlin, 2020; Issa, 2020) have indicated that the use of SN in the education sector, especially for assessments and learning activities, will encourage students to become independent learners, and enhance their skills, aptitudes, and knowledge, which is vital for their current studies and for their future employment. The SN interface can be easily navigated, allowing effortless interaction. Students can upload their work in different formats including Word documents, PowerPoint slides, concept maps, images, and videos. SN formats allow students to comment on and provide feedback regarding other students' content and presentations, thereby facilitating collaboration and cooperation between students themselves, and between students and the unit coordinator. This type of interaction will make the learning process more creative and innovative and, most importantly, more interesting and engaging.

Several studies (Hinojo-Lucena et al., 2020; Khoynaroud et al., 2020; Reinhardt, 2019) have found that SN applications encourage collaborative learning which helps students to establish a social network that enables them to share responsibilities, experiences, skills, and opinions. SN improves students' self-confidence, facilitates knowledge transfer, promotes problem-solving, and increases the efficacy of learning and teaching.

Therefore, given these benefits, academics should integrate technology into their assessments and learning/teaching activities. However, in order for SN tools to provide these benefits, academics should understand how to integrate this technology correctly by using learning theories, such as the social constructivist approach which is a sociological theory of knowledge, as human growth is socially motivated and knowledge is created through interaction with other users (Kiraly, 2014; Sivan, 1986; Williams and Burden, 1997), and models, such as the Social Networking Education Model (SNEM) (Issa et al., 2016b) to improve students' learning outcomes. Furthermore, several studies (Brar et al., 2019; Ng, 2016; Valdez et al., 2020) have indicated that SN will assist students to better communicate and engage with their peers and unit coordinators, to enhance their independent learning process, and increase their personal and professional skills in their studies, in the future workforce, and life in general.

Table 1 shows the benefits and risks associated with SN according to the literature (Al-Oqily and Alkhatib, 2016; Alqahtani, 2016; Benn et al., 2008; Fitzpatrick, 2010; Goktalay and Ozdilek, 2016; Issa et al., 2019; Jeri-Yabar et al., 2019; Kemp, 2015; Kimmons et al., 2017; Lalonde and Castro, 2015; Malak et al., 2017; Mccarroll and Curran, 2013; Sonnenwald and Pierce, 2000; Yadav et al., 2020; Zygmunt et al., 2020). These benefits include: the acquisition of cutting-edge knowledge, increased collaboration, independent learning, improved communication skills, increased awareness of environmentally friendly practices (i.e., be more sustainable people, provide reliable and scalable services, become "greener" in their activities, and reduce the carbon footprint) and the opportunity to make new acquaintances (i.e., friendships, romance, and work).

Table 1. SN benefits and risks (Prepared by the authors).

Benefits	Discussion
Cutting-edge knowledge	To obtain and learn up-to-date information and knowledge, both locally and globally. (Guo et al., 2020; Tyler Sr, 2020)
Collaboration	To allow more collaboration and communication with peers from different communities and universities. (Chauhan and Goel, 2020; Hinojo-Lucena et al., 2020; Ku et al., 2013)
Independent learning	Allow students to study independently, which can lead students to understand and solve study problems and examine their research easily. (Lim and Newby, 2020; Tsvetkova et al., 2020)
Communication skills	Using SN for education purpose developed students personal communication skills, and this will assist students in their studies and in the workforce in the future.(Kim et al., 2020; Shi et al., 2018)
Be environmentally friendly	Using SN in the education sector will make students more sustainable and greener, reduce carbon footprints and provide reliable and scalable services. (Montiel et al., 2020)
Acquire new acquaintances	Using SN in the education can acquire and attain new acquaintances i.e. friendship and romance. (Balaji and Murthy, 2019; Meret et al., 2019)
Risks	Discussion
Cognitive development	Cognitive effects include lack of concentration, distraction, poor memory, and attention, decreases their grammar, proofreading, and less deep-thinking skills. (Feng et al., 2019; Fox and Moreland, 2015)
Social development	Social development withdrawal from social activities, and becoming lazier, addicted to SN, depressed, bored and leading to sickness and being unhealthy. (Sirola et al., 2019; Vernon et al., 2017)
Physical development	Physical implications may be discouraging students from having a face-to-face meeting with family and friends, and preventing them from participating in other activities, such as shopping, watching television, and competing their work and study on time. (Fox and Moreland, 2015; Olsson et al., 2020)
Security and privacy	Using SN inappropriately will increase privacy and security concerns. (Sahoo and Gupta, 2019; Shin, 2010)

2.2.2. Social networking risks

However, the implementation of SN in the higher education sector can give rise to several risks or disadvantages regarding students' cognitive, social, and physical development, and their security and privacy. Table 1 shows the SN risks in detail based on the current literature (Al-Oqily and Alkhatib, 2016; Almufaraj and Issa, 2018; Alqahtani, 2016; Alqahtani and Issa, 2018; Chakraborty et al., 2016; Goktalay and Ozdilek, 2016; Issa et al., 2014, 2016a, 2019; Jeri-Yabar et al., 2019; Kircaburun, 2016; Krouska et al., 2019; Peris et al., 2020; Samad et al., 2019; Shi et al., 2018; Symons et al., 2020; Vernon et al., 2017; Woods and Scott, 2016).

These risks (see Table 1) are very serious and highly significant when SN is being considered as an integral part of the HE sector. In order to address and mitigate these risks, academics should use a recommended SN methodology for effectively integrating and assimilating SN use via assessments and activities, to assist students to be active and energetic in the class and develop essential personal and professional skills. The unit coordinator will play a major role in this regard, and needs to develop and generate activities and assessments related to the unit's aims and objectives and targeting specific skills which SN aims to promote in order to reduce these risks.

2.3. Middle East - cultural orientation based on Hofstede's cultural framework

Hofstede's cultural dimensions are examined to better understand the values of each country and establish whether these dimensions in Jordan, Saudi Arabia and Turkey will be influenced and changed by SN. Therefore, to determine the cultural orientation of the Middle Eastern countries chosen for this study, the authors applied Hofstede's cultural dimensions, namely: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence, using the Hofstede Insights (2020) website. The *power distance* depicted in Figure 1 indicates that Jordan, Saudi Arabia, and Turkey accept a hierarchical order as they rely on authority figures and rules. This structure is similar to that of a family unit, where the father is a patriarch to whom others submit (see Figure 1). As for the *individualism* dimension, Jordan, Saudi Arabia, and Turkey score 30, 25 and 37 respectively, indicating that they are collectivistic societies where people belong to particular groups that take care of them in exchange for loyalty.

As seen in Figure 1, in regard to the *masculinity* dimension, Jordan and Turkey have a low score of 45, meaning that these are considered to be 'feminine' societies that "work in order to live". However Saudi Arabia's score of 60 indicate that people "live in order to work". According to the Hofstede Insights (2020) website, Saudi Arabian managers are expected to be decisive and assertive; the emphasis is on equity, competition and performance, and conflicts are resolved by fighting them out. This led to what Hofstede defines as a 'masculine' society.

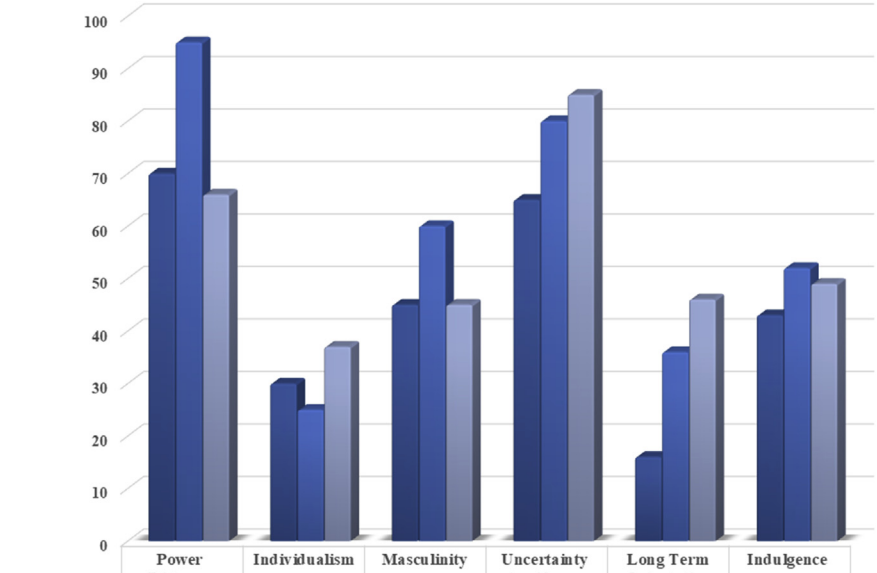
For the *uncertainty avoidance* dimension, Jordan, Saudi Arabia, and Turkey scored 65, 80 and 85, respectively. These countries need laws and rules to minimize anxiety. Innovation may be resisted, but security is an important element of individual motivation.

For the *long-term orientation* dimension, Jordan, Saudi Arabia, and Turkey scored 16, 35 and 46, respectively. Societies with low scores prefer to maintain time-honored behaviour and standards while regarding societal change with doubt (see Figure 1). These countries show great respect for traditions, value learning and productivity for the future, and place emphasis on achieving rapid results.

Finally, for the *indulgence* dimension, Jordan, Saudi Arabia, and Turkey scored 43, 53 and 49 individually. According to the Hofstede Insights (2018) website, Saudi Arabia and Turkey do not score a clear preference on this dimension. Jordan's low score of 44 indicates that Jordanian society is restrained; restrained societies do not place much emphasis on free time and prefer to control the indulgence of their desires. These people believe that their actions should be restrained by social norms (see Figure 1). This study investigated whether Middle Eastern students believe that SN will change the cultural orientation of their respective countries, according to Hofstede's cultural framework.

2.4. Sustainability

The word 'sustainability' is derived from the Latin "sustinere", which means to 'support' or 'withstand' (Thiele, 2016). Sustainability today refers to the conservation of resources in order to meet current demands and those of future generations. It requires that we maintain and sustain the planet's ecological systems (Curtis and Lehner, 2019; Gray, 2015). Sustainability was first invented in 1983 by Gro Harlem Brundtland at



	Power Distance	Individualism	Masculinity	Uncertainty Avoidance	Long Term Orientation	Indulgence
Jordan	70	30	45	65	16	43
Saudi Arabia	95	25	60	80	36	52
Turkey	66	37	45	85	46	49

Figure 1. Middle East – Cultural Orientation according to Hofstede's cultural framework based on Hofstede Insights (2020) website (Prepared by the Authors).

the World Commission on Environment and Development meetings. Based on Brundtland's report businesses and individuals encourage to progress toward economic development in a way that could be sustained without destroying the natural resources or the environment for the next generation. World Commission on Environment and Development (Scoones, 2007, p. 590) defined sustainability as "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

This suggests that businesses, individuals, academics, and students must protect the current environment so that it can be re-used by the next generation. Technology can significantly contribute to this goal in alignment with the United Nations Sustainable Development Goals (Ali et al., 2018; Hauschild et al., 2018) and the Millennium Development Goals (MDGs) (Mabuza, 2020; Nayyar, 2013). Currently, students in the HE sector in some parts of the world have no choice other than to use technology such as LMS (Blackboard and Moodle), Wiki, Blog for academic activities and to complete and submit assessment tasks (Michel, 2020; Park et al., 2009; Schaltegger and Wagner, 2017). Students can upload their assessment tasks to the LMS, without concerns about printing, paper jam, and the delivery process (i.e., delivering their hard copy to the university).

This technology can save time, costs, raw materials, and resources, reduce carbon emissions and, most importantly, it can increase students' awareness of the concept of "sustainability" (Isaias and Issa, 2013; Park et al., 2009; Schaltegger and Wagner, 2017). These savings contribute to the environmental and economic benefits produced by sustainability. Therefore, to confirm the literature, this study also intended to determine whether, according to Middle Eastern students, social networking is a sustainable tool.

3. Research method and questions; survey design

Two questions were addressed in this study:

RQ1: "What are the benefits, risks and awareness associated with social networking use in the Middle East's higher education sector?"

RQ2: "What new factors emerge for the effect, on culture and sustainability, of SN usage in the Middle East's higher education sector?"

The first question was intended to determine Middle Eastern students' level of awareness of SN tools, and in particular its associated benefits and risks. Secondly, the authors examined whether the use of SN has changed students' attitudes toward sustainability, and whether cultural dimensions have been changed.

The study participants were students from the Middle East aged 18 to 52. For the data, a confidence level of 95% with 0.5 standard deviations, and a margin error of 5% were the standard applied to determine the sample size using the Sample Size Calculator (Smith, 2013). The combined population of Jordan, Saudi Arabia, and Turkey is 119,152,938; hence, a minimum of 385 responses were required (Creative Research System, 2012). Several studies (Field, 2013; Tabachnick et al., 2007) suggest that at least 300 samples are required for factor analysis. We collected 1180 valid responses, considered highly adequate for obtaining high quality results.

To answer the research questions, an online survey questionnaire was devised based on a review of the current literature (see Section 2). The survey was conducted over a nine-month period, and comprised three sections. The items in the first section captured respondents' demographic data. The second section contained twenty-five items related to the benefits of SN such as: providing cutting-edge knowledge, collaboration, inter-crossing relationships, communication skills, being environmentally friendly and making new acquaintances. The items in the third section (contained thirty items) related to the risks associated with SN such as: the impact of SN on cognitive, social, and physical development, and the issue of privacy and security. A five-point Likert scale was used anchored by: Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree (Likert, 1932), and used only for the second and third sections of the online survey to "examine how strongly subjects agree or disagree with statements" (Sekaran, 2003, p. 197). Furthermore, a Likert scale can be used to assess participants' attitude about a particular topic (Gliem and Gliem, 2003a; Muthén and Kaplan, 1985), while allowing participants to respond with a degree of agreement and this makes question answering easier for the respondent (Lamarca, 2011). The questionnaire contained clear instructions at the top of the page and a progress bar along the bottom to indicate the proximity to the finishing point. Only three items were presented on each page to minimize

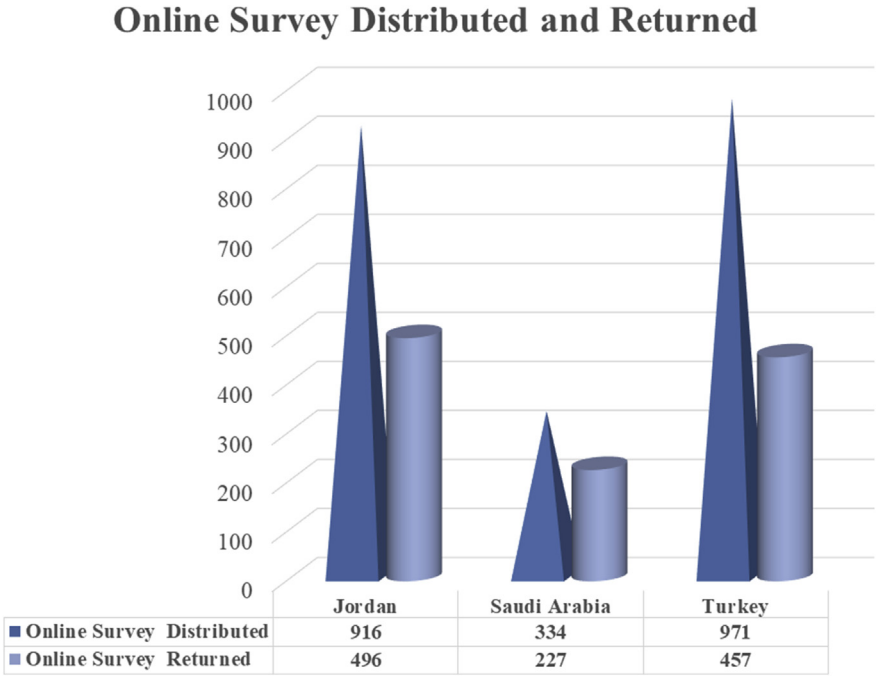


Figure 2. Online survey – number of distributed and returned questionnaires (Prepared by the authors).

scrolling. The questionnaire concluded with a message of thanks to acknowledge the respondents' generous participation.

The online survey has several advantages: it is inexpensive, the anonymity of respondents is preserved, and it is easy to manage and maintain. Several studies (Cho et al., 2011; Dillman et al., 2009, 2010; Dillman, 2017; Miller et al., 2020) indicate that the online survey is more reliable and sustainable than the paper-and-pencil survey. On the other hand, the online survey is susceptible to technical failure due to viruses and hacking, and these issues can decrease the response rate (Kocher, 2015; Nayak and Narayan, 2019). The survey received ethics approval from the main author's university, and was distributed to co-authors in Jordan, Saudi Arabia, and Turkey. The online survey was distributed via email, Facebook, WhatsApp, LinkedIn and the university portal system. The online survey data was collected for a period nine months from the ME countries. The online survey results were analyzed using SPSS version 27.

4. Study participants

In this section, the survey data is presented and includes the respondents' demographic information and their perceptions of the benefits and risks of SN. The online survey was distributed to 2221 students in Jordan, Saudi Arabia, and Turkey, and 1180 valid responses were received. The online survey response rates for Jordan, Saudi Arabia and Turkey were: 54%, 68% and 46% respectively (see Figure 2).

Figure 3 shows the statistics for gender, age, and qualifications, indicating that Jordan had the highest number of male participants (55%) and Turkey had the highest number of female participants (52%). Furthermore, the 18–22 years age had the highest number of participants: 735 from Jordan, 126 from Saudi Arabia and 652 from Turkey.

Regarding qualifications, the online survey results showed that a bachelor's degree was the highest qualification held by participants from Jordan and Saudi Arabia at 54% and 36% respectively. Higher secondary/pre-university, professional certificate and diploma were the highest for participants in Turkey at 19%, 38% and 10% respectively.

Responses indicated that a significant number of Jordanian, Turkish and Saudi Arabian participants (41%, 39% and 34%, respectively) spent up to 5 h daily on social networking, excluding email (see Figure 4).

5. Results and discussion

Figure 5 shows the results of Cronbach's Alpha, KMO and Bartlett's test for the social networking benefits. For the benefits section, the Cronbach's Alpha for all 25 variables was .934, .953 and .922 for Jordan, Saudi Arabia, and Turkey, respectively. The Alpha result indicates the excellent internal consistency of the items in the scale including the overall Alpha result for all countries which was .930 (Connelly, 2011; Tavakol and Dennick, 2011).

To test the construct validity, the Kaiser-Meyer-Olkin (KMO) and Bartlett tests were applied following varimax orthogonal rotation and factor analysis. Generally, the data is appropriate for factor analysis when the KMO value is above 0.7, and the p value of Bartlett's test is significant at the 0.05 level, and the correlation matrix of the sample has a shared factor (Wang et al., 2019; Zhang et al., 2018).

In this study, the KMO measure of sampling adequacy was .934, .919, and .915 for Jordan, Saudi Arabia, and Turkey, respectively. This measure indicates that a good sample size was obtained for the analysis and is interpreted as a 'marvellous' result (Frohlich and Westbrook, 2001; Hill, 2012). Finally, Bartlett's test of sphericity was highly significant for Jordan, Saudi Arabia and Turkey, as well as for all countries, as the questionnaire items were sufficiently correlated for factors to emerge (see Figure 5) (Schaefer et al., 2014; Tobias and Carlson, 1969).

For the third section pertaining to risks (see Figure 6), the Cronbach's Alpha for all 30 variables was .955, .960, .938 and .945, for Jordan, Saudi Arabia, Turkey and all countries, respectively; this indicated the excellent internal consistency of the items in this section (Bravo and Potvin, 1991; Gliem and Gliem, 2003b). For the construct validity testing factor analysis was conducted. During the factor analysis process, Kaiser-Meyer-Olkin (KMO) and Bartlett values are determined.

The KMO test is done to determine whether the partial correlations distribution is adequate for factor analysis. While the Bartlett test aims to

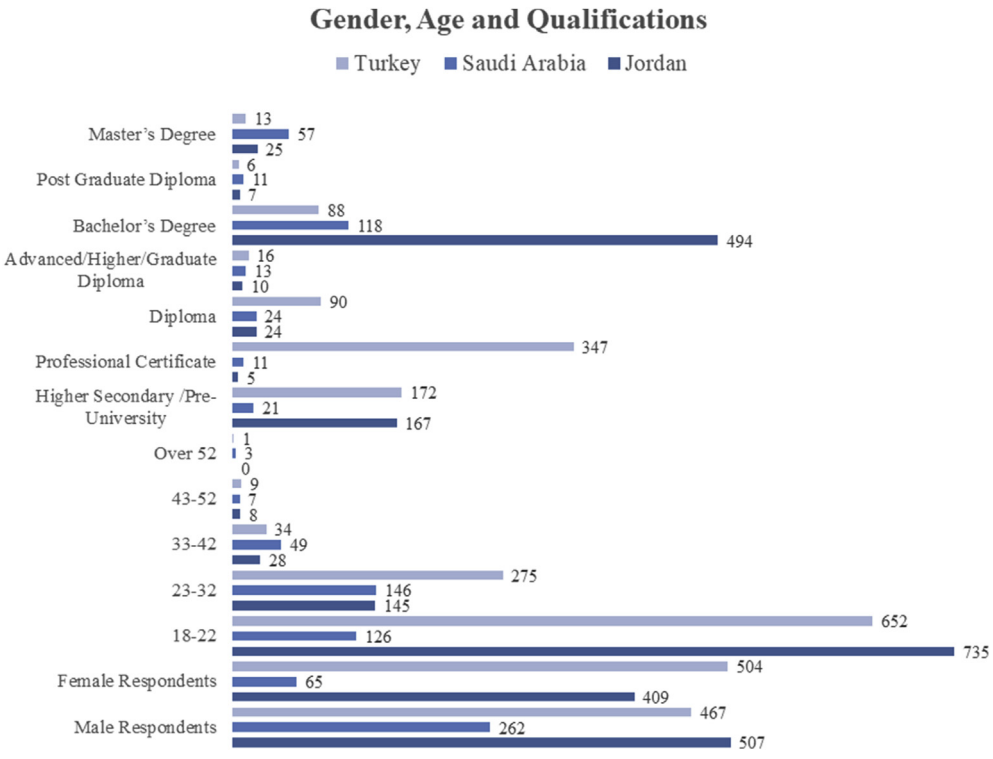


Figure 3. Online survey – gender, age and qualifications (Prepared by the authors).

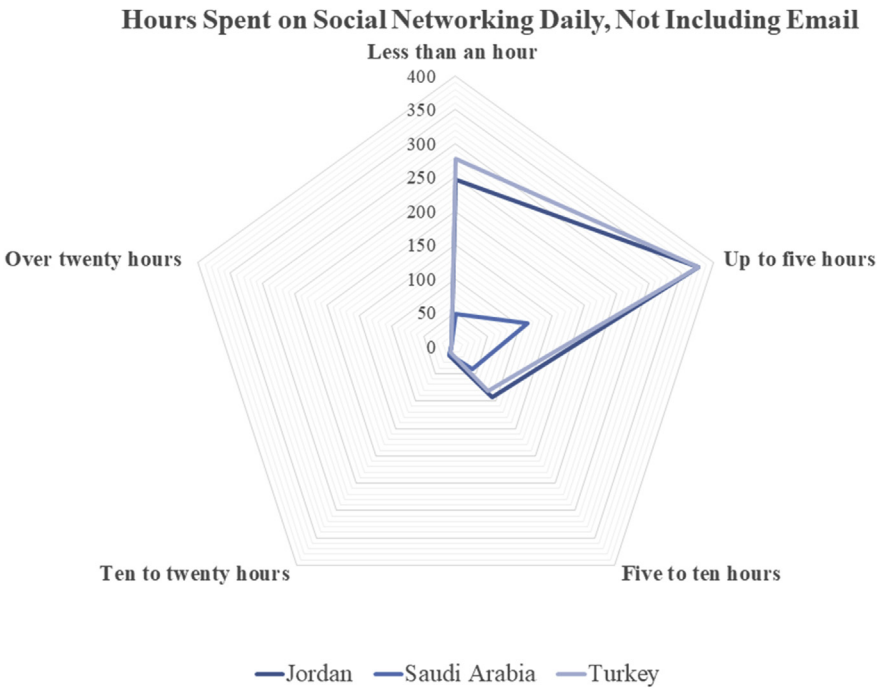


Figure 4. Online Survey –Hours spend on social networking daily by ME Participants (Prepared by the Authors).

test the data and to support the research questions and if a tested population come from a multivariate normal distribution (Yıkmış and Çöl, 2019; Zhang and Liu, 2019).

For this study, a Kaiser-Meyer-Olkin measure of sampling adequacy of .939, .912, .920 and .934 obtained for Jordan, Saudi Arabia, Turkey and all countries, indicated a good sample size was obtained for the analysis, and since the KMO was .9 and above, this was considered a 'marvellous' result (Hill, 2012; Williams et al., 2010).

Finally, Bartlett's test of sphericity was highly significant for Jordan, Saudi Arabia and Turkey, as well as for all countries (see Figure 6), indicating that the items in the scale were sufficiently correlated for factors to be found (Das et al., 2017; Tobias and Carlson, 1969).

To evaluate the regression coefficients (i.e., slopes), the authors determined the factor loadings. The factor loadings for the benefits and risks were high enough and the one with the "cleanest" factor structure are considered as a steady and strong factor (Costello and Osborne, 2005). Several items were eliminated where the factor loading was lower than 0.5 based on Stevens (1992) law of thumb for a sample size above 100.

The authors generated two social networking benefits for each country as well as for all countries, except for Turkey which had three social networking benefits (see Figures 7, 8, and 9). Figures 7, 8, and 9 present the benefits for the three countries based on the loading factors (0.8 are in bold and underlined, 0.7 are in bold, and 0.6 are in italics).

The results confirmed that students believe social networking will assist them to complete their study tasks more quickly, communicate and collaborate with their peers, and improve their reading and writing skills. Moreover, all the participants agreed that social networking was more sustainable and 'greener'. Furthermore, the results from Jordan, Saudi Arabia and Turkey confirmed the research questions, and suggested that the use of social networking as a learning and teaching tool in the Middle East HE sector allows students to communicate and collaborate with their peers, enables them to concentrate more on their reading and writing skills and, most importantly, it will encourage sustainable practices.

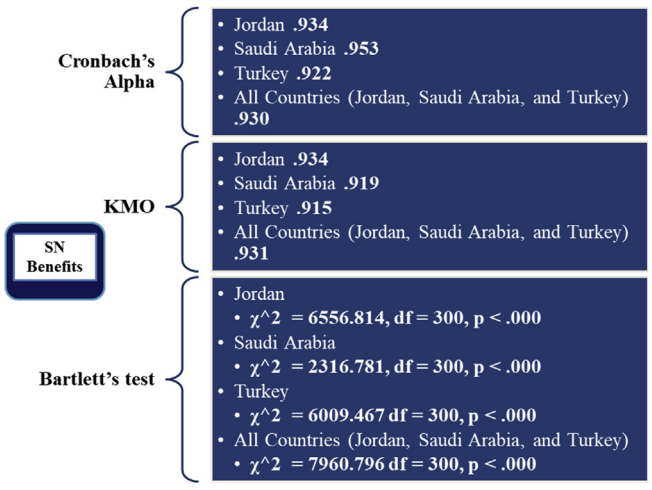


Figure 5. SN Benefits – Cronbach's Alpha, KMO and Bartlett's test (Prepared by the Authors).

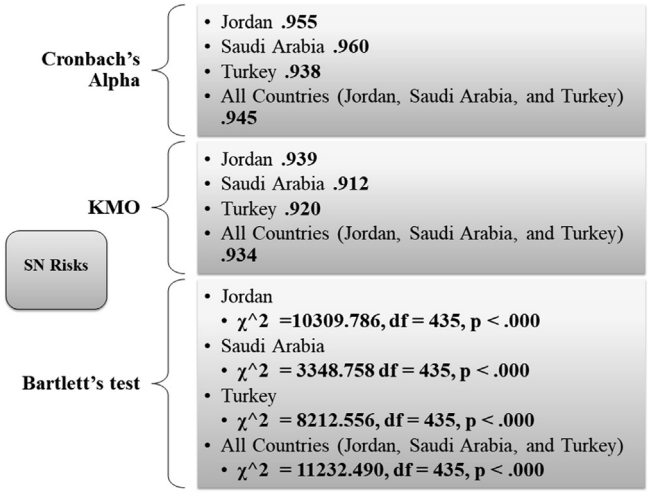


Figure 6. SN Risks – Cronbach's Alpha, KMO and Bartlett's test (Prepared by the Authors).

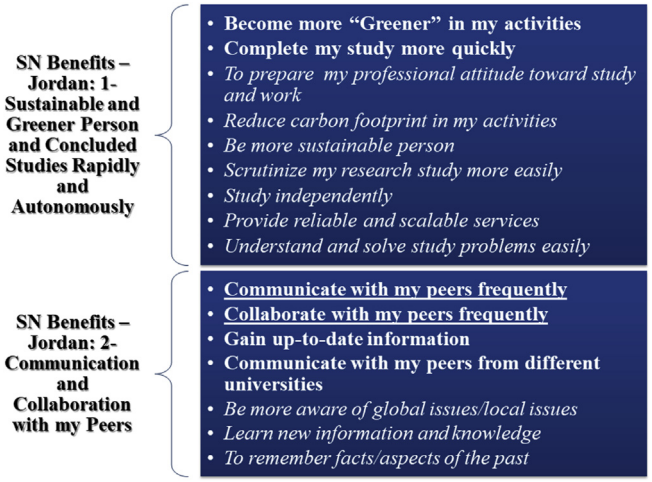


Figure 7. SN benefits – Jordan (Prepared by the authors).

Furthermore, Turkish students confirmed that SN will help them to make new acquaintances (i.e., friendships and romance), while Saudi Arabian students believe that SN will help them to make new work-related acquaintances. Several studies (Alqahtani, 2016; Köse, 2016) have confirmed that the implementation of technology in higher education, especially regarding assessments and learning activities, will improve students' professional and personal skills by giving them the opportunity to enhance their collaboration skills, and their communications and connections with their peers and their unit coordinator.

The results addressed the first research question and confirmed that, according to higher education students, social networking in the Middle East can provide several benefits: it facilitated better communication and collaboration with their peers, enabled them to focus more on reading and writing skills, and assisted them to complete their study tasks more quickly and independently.

The study results revealed that there is a relationship between social networking and sustainability awareness amongst Middle Eastern students which answered both research questions. The online survey results indicated that students' attitudes to sustainability were changing. They were becoming good guardians of sustainable development in their country as SN technology is sustainable, simple, and reduces the consumption of materials such as paper, thereby promoting sustainability and offering both environmental and economic benefits.

To change the mind-sets of students, universities and academics should integrate and implement sustainability and green information technology (IT) into curriculum activities and assessments. This could raise awareness of, and transform students' critical thinking about, technology usage and its impacts. Furthermore, Varela-Candamio et al. (2018) indicate that human behavior has become a significant and vital factor in environmental protection.

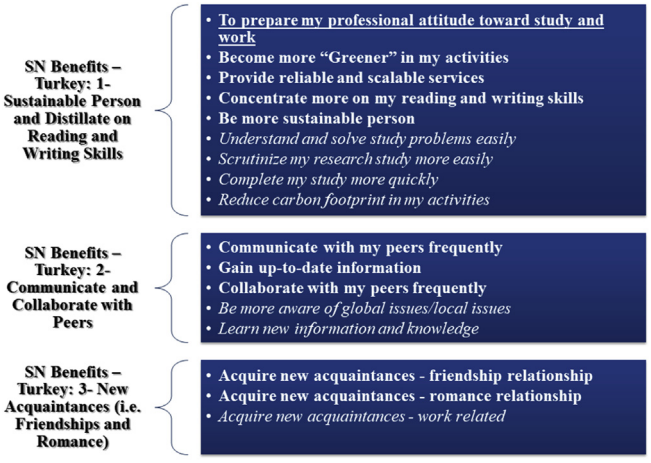


Figure 9. SN benefits – Turkey (Prepared by the authors).

Academics have the responsibility for taking a leading role in transforming students' critical thinking about technology products and their impact, since the incorrect disposal of such products can create additional problems and jeopardize people's health and well-being, especially in developing countries. Students should be made aware of the relationship between technology, Green Information Technology, and sustainability. In the long term, it will benefit our community, society and the Earth, as there is no plan B for our planet (Gomis et al., 2011; Newton, 2003).

However, although the usage of social networking by students in the Middle East may offer benefits, it also poses several risks. Several risk factors that emerged from this study, and of great concern to students, are: depression, stress, loneliness, less engagement in traditional activities, breaches of security and privacy, theft of intellectual property, and theft of personal information (see Figures 10, 11, and 12).

Figures 10, 11, and 12 show the risks perceived by students in the three countries, based on the loading factors (0.8 are in bold and underlined, 0.7 are in bold, and 0.6 are in italics).

These potential risks should be taken into consideration by academics, researchers, and the administrative bodies in higher education institutions to minimize or eliminate these risks since, without

Figure 8. SN benefits – Saudi Arabia (Prepared by the authors).

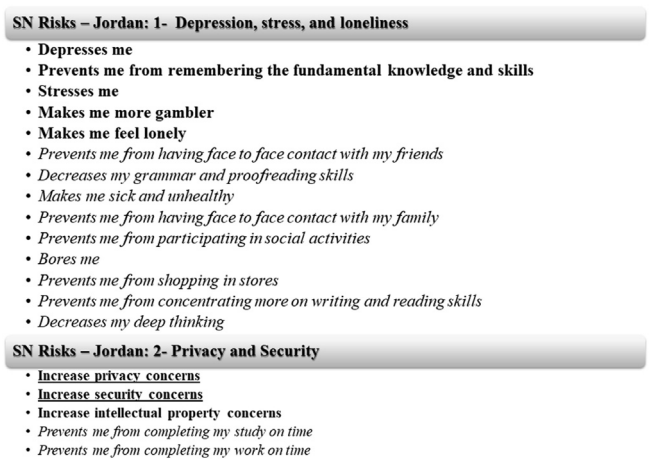


Figure 10. SN risks – Jordan (Prepared by the authors).

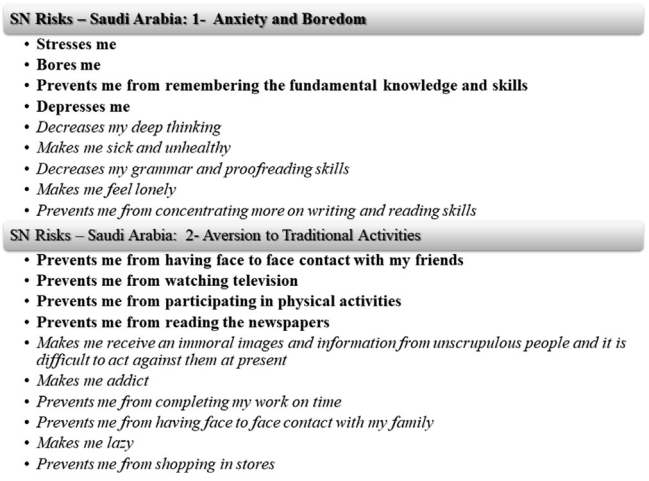


Figure 11. SN risks – Saudi Arabia (Prepared by the authors).

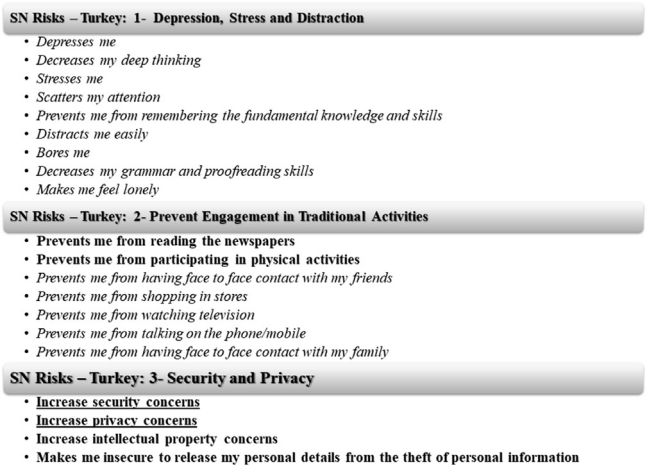


Figure 12. SN risks – Turkey (Prepared by the authors).

monitoring, observing, and implementing social networking models, future risks could emerge.

The online survey results for the risks answered the first research question and confirmed the findings in the literature (Al-Oqily and Alkhatib, 2016; Goktalay and Ozdilek, 2016); moreover, the research outcomes saw the emergence of other risks suggested by students in the Middle East. Finally, based on the above study outcomes, an action plan

Figure 13. SN Benefits – All Three Countries (Prepared by the authors).

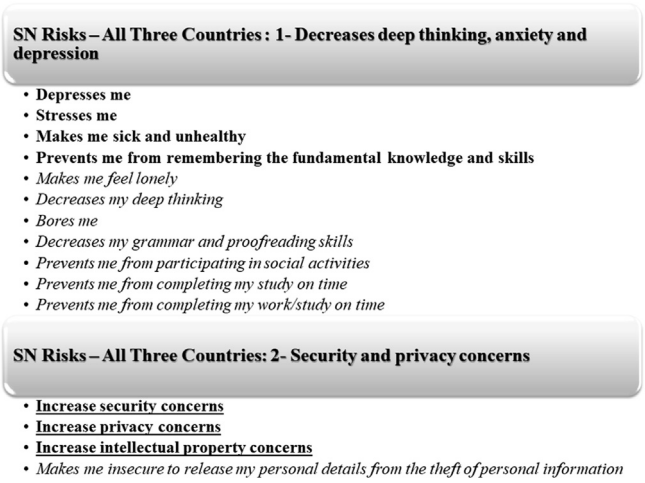


Figure 14. SN Risks – All Three Countries (Prepared by the authors).

should be implemented for students in the Middle East to minimize these risks, the most important action being the raising of awareness via training and workshops conducted by academics and researchers in the region. The authors combined the online survey results for all countries (Jordan, Saudi Arabia, and Turkey), and found new benefits of SN use: greater concentration on reading and writing skills, increased collaboration, and communication among peers and, finally, SN's contribution to sustainability. Several risks also emerged: a decrease in the capacity for deep thinking, an increase in anxiety and depression, security and privacy issues, threats to intellectual property, and theft of personal information. Figures 13 and 14 present the benefits and risks for all three countries based on the loading factors (0.8 are in bold and underlined, 0.7 are in bold, and 0.6 are in italics).

6. Contribution of new theoretical and practical findings

This study focused on Middle Eastern students and found new benefits and risks associated with the use of SN. Therefore, researchers should collaborate with HE administrators to minimize the risks associated with the usage of SN by Middle Eastern students, and to increase the benefits that SN can offer to higher education. This type of collaboration will benefit not only the academics, but also the students as the use of SN for assessments and academic activities will increase students' professional and personal skills which are needed in the workforce. Similarly, universities in developed and developing countries should work together to develop students' skills for employability to match the needs of employers (Carpenter and Harvey, 2020; Novakovich et al., 2017, Ruge and Mccormack, 2017). Social networking can provide outstanding benefits for students in the Middle East as it will increase communication and collaboration and make them more independent learners. Importantly, social networking can help to make them more sustainable and 'green'. However, without careful observation and monitoring, students can be exposed to several risks which may affect their physical, mental, and emotional well-being (Brunborg and Andreas, 2019; Feinstein et al., 2015; Özmen and Atıcı, 2014; Wenninger et al., 2019).

These problems should be tackled promptly by adopting a specific methodology for SN implementation. In this study, the authors introduce a new social networking model: the Social Networking and Education Model (SNEM) (Issa et al., 2016b). The aim of SNEM is to assist academics and researchers to implement SN successfully in the education sector by reducing the risks and increasing the benefits associated with SN. The SNEM contains five elements, namely: Teaching Methods, Learning, Technology Design and Psychological Aspects. Moreover, the authors will assist the academics and researchers in the Middle East to integrate SN in their assessments and activities in Middle Eastern

Table 2. Relationship between Hofstede's cultural framework and SN usage in the Middle East (Prepared by the authors).

Hofstede's cultural framework	Middle East Countries Comparison (Figure 1)	SN Advantages	Middle East Country Based on this study	SN Disadvantages	Middle East Country Based on this study
Power Distance	Jordan, Saudi Arabia, and Turkey	N/A	N/A	N/A	N/A
Individualism	N/A	N/A	N/A	N/A	N/A
Collectivism/	Jordan, Saudi Arabia, and Turkey	**Communication and collaboration with my peers**	*Saudi Arabia*	N/A	N/A
Masculine	Saudi Arabia	N/A	N/A	N/A	N/A
Femininity	Jordan and Turkey	**Sustainability and new acquaintances (i.e., Friendships and Romance, Work)**	*Saudi Arabia*	N/A	N/A
Uncertainty avoidance	Jordan, Saudi Arabia, and Turkey	N/A	N/A	**Security and privacy**	*Jordan, and Turkey*
Long Term Orientation	Jordan, Saudi Arabia, and Turkey	**Concluded studies rapidly and autonomously Distillate on reading and writing skills**	*Jordan and Turkey*	**Loneliness, and depression**	*Jordan and Turkey*
Indulgence	N/A	N/A	N/A	N/A	N/A
Restraint	Jordan	**Concluded studies rapidly and autonomously**	Jordan	**Prevent engagement in traditional activities**	*Saudi Arabia and Turkey*

universities to maximize the benefits and minimize the risks. Moreover, this study discovered that even though students are living in different countries in the Middle East, they can derive the same benefits and face the same risks associated with SN. In Figure 1, the Middle East Cultural Orientation based on Hofstede's cultural framework was shown. Table 2 shows the relationship between Hofstede's cultural framework and the use of SN from the perspective of the Middle East sample obtained for this study.

Table 2 outlines the benefits and risks perceived by Middle Eastern students who are using SN in the education sector based on Hofstede's cultural framework. It came to our attention that some Middle Eastern countries share the same view and judgement regarding the benefits and risks in terms of Hofstede's cultural framework. Nevertheless, some benefits and risks are missing from Hofstede's cultural framework since this issue is beyond the study scope and aims.

This study confirmed the cultural contexts based on Hofstede's cultural framework. However, some countries have shifted from one dimension to another (based on Hofstede's cultural framework) (the new countries are in italics) due to the influence of technology tools such as Website, Facebook, Twitter, Instagram, Twitter, Blogs, and Snapchat. These tools enable the sharing of knowledge, awareness, interaction, information, news, political, media and facts related to Middle Eastern culture; this occurs globally as well as among the students in these countries. Therefore, this reinforcement has changed the mindset of Middle Eastern students in regard to technology, sustainability, and culture (Alshoaibi, 2019; Nasrallah and Sarkis, 2020; Salminen et al., 2017).

This study has confirmed that culture influences the use of SN in the Middle Eastern countries, as students from the focal countries have the same opinion about the benefits and risks of SN. Moreover, the new findings from this study in regard to Middle Eastern countries match Hofstede's cultural framework, while some countries are added to different dimensions in the Hofstede's cultural framework based on students' attitudes toward SN.

This study answered the research study questions and fulfilled the stated aims. It made several theoretical contributions to the current literature, especially regarding the benefits and risks associated with social networking awareness and use, specifically in the Middle East. This study will assist researchers in the Middle East and in other developing countries to understand students' attitudes toward the use of SN for study or work purposes. However, although this technology offers several benefits, it also poses several risks.

In terms of the practical contributions of this study, it is suggested that the authors should work very closely with other researchers from the Middle East to increase the benefits and to minimize the risks, particularly since Middle Eastern students see SN as a Green IT. Hence, SN should be implemented and used appropriately to assist students in both developing and developed countries. The use of this technology in the higher education sector will improve students' personal skills and encourage greater collaboration between students and their teachers.

Finally, as countries worldwide have been affected by the coronavirus (COVID-19) pandemic, universities have shifted their learning and teaching mode to e-learning facilitated by various tools such as Blackboard Collaborate via Learning Management Systems (LMS), and social networking tools such as Wiki, Blog, and discussion forum via LMS to communicate with, and motivate and encourage students to complete their studies successfully. The Australian researchers have the necessary skills, knowledge and experience to implement social networking tools for learning and teaching, and are willing to assist other researchers in the Middle East, especially during the COVID-19 pandemic (Issa, 2019, 2020), to improve their teaching and students' learning so as to reap the benefits and diminish the challenges associated with the integration of SN in the HE sector.

7. Study limitations and future research

This study focused only on three countries in the Middle East (with 1180 valid responses) and was intended to determine students' attitudes to the awareness of SN tools and their use for the development of personal and academic skills. In the future, the authors will compare the Middle Eastern study with findings from other countries in the Middle East to determine any similarities and/or differences between them.

Research will be conducted in the future to examine the benefits and risks of SN integration in the Middle East universities especially in terms of curriculum content and assessments, since the relationship between learning styles and the usage of social networking in specific discipline(s) was not a focus of this study. Furthermore, quantitative research methods will be applied to strength the study aims and objectives in the future.

8. Conclusion

The results obtained by the online survey indicated that social networking among students generated more communication and collaboration between peers and helped to make them sustainable and 'green'. SN can assist students to reduce printing costs and travel costs, and it creates more independent learners who are encouraged to investigate more thoroughly the unit topics presented by their unit coordinator. Furthermore, this study successfully addressed the research questions while also raising the issue of risks associated with SN, which can be taken as a warning. In terms of its negative effects on students, SN can cause anxiety, reduce students' capacity for critical thinking, prevent them from engaging in everyday, physical activities, and can create security and privacy concerns. Such risks can be averted using the SNEM model to increase the benefits and minimize the risks associated with SN. Finally, this study indicated that the use of SN can influence the culture of Middle Eastern countries since some countries are added to different dimensions in Hofstede's cultural framework based on students' attitudes toward SN use. Further research will be carried out by the authors to examine more countries in the Middle East using a greater sample size and variety of students in order to reinforce the research outcomes.

Declarations

Author contribution statement

Tomayess Issa: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Ibrahim Al-Oqily, Sehnaz Baltaci Goktalay, Sulaiman Alqahtani, Waleed Khalid Almufaraj, Utku Köse: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Theodora Issa, Bilal Abu Salih: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

The data that has been used is confidential.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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