Students' Use of Internet Technologies for Interactions in Learning Practices: A Study from Saudi Arabia's Higher Education

Full Paper

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Abstract

Internet technologies provide support for students' learning practices. Some Internet technologies are supported on an organisational level such as learning management systems (LMS) while others are adopted voluntarily by academics and students such as social networking sites (SNSs). Given the unique culture of Saudi Arabia where communication and interaction norms are strictly defined by strong traditions, little is known about the use patterns of these diverse technologies to support student interactions with peers and academics within tertiary learning practices. This qualitative study was conducted in two Saudi universities where seventeen students and twelve academics from both genders were interviewed. The study showed how students tend to communicate with academics in a formal way, create their own online community and interact with external tutors through online paid websites. These interaction patterns are discussed considering the national culture, learning styles and organisational regulations.

Keywords: Internet Technologies, Social Networking Sites, Learning Management Systems, Interactions, Higher Education.

1 INTRODUCTION

Integrating Internet technologies into teaching and learning practices in higher education has been widely claimed to be effective in enhancing students' learning experiences for self-directed learning, communication with academics and peers and many other learning practices (Lee and Tsai 2011). Most universities in developing countries, however, are still in their early stages in attaining the optimal outcomes in the use of Internet technologies (Limaj and Bilali 2018). In particular, universities in Middle Eastern countries such as Saudi Arabia are relatively late in their adoption of the Internet and learning systems such as learning management systems (LMSs) compared to Western countries (Mirza and Al-Abdulkareem 2011). Moreover, most Saudi universities reported failure in implementing and adopting LMS despite the heavy investments they put through to make these systems available to academics and students (Alshammari 2015).

Despite the increased interest of research on the adoption and use of Internet technologies in higher education in Saudi Arabia, most of prior studies have focused on acceptance, intention to use, and early adoption stages of technologies (e.g. Alshammari 2015; Alzahrani 2016; Zabadi and Al-Alawi 2016). Studies in these stages show that users have not interacted long enough to gain the full potential of these technologies (Islam 2012). Furthermore, the effective use of IT and the positive outcomes that are expected at an organisational level can be attributed to individuals' continuous interaction with technology (Nan 2011). Therefore, it is critical to understand the interactions between students and academics through technology and issues that can occur in teaching and learning practices and explore what enables and disrupts these interactions.

From an educational perspective, there is insufficient explanation of the interconnections and relationships between the protagonists involved in IT use (i.e. students, academics and their associated environment) (White 2017). Furthermore, most of the Internet technologies that are used in the education domain are considered as culturally-infused tools that reflect the culture of the context in which they are designed and developed (Masoumi and Lindström 2012). Thus, due to diverse cultural values, studies that consider the cultural aspects in using IT in the Western contexts, for example, are not necessarily applicable in Eastern contexts. Moreover, most prior studies on Saudi higher education adoption of Internet technologies have little focus on the cultural aspects of Saudi Arabia that reflects on users' behaviours (e.g. Zabadi and Al-Alawi 2016). This is particularly important for Saudi Arabia as representative of Arabic and Islamic countries known for the significant influence of religious and cultural norms on several practices (Binsahl et al. 2015). Lacking awareness of the social and cultural variables of the context in which the technology is actually being used, can lead to conflicts that limit the pedagogical achievements that are expected from these technologies (Ismail 2016).

This study is part of a larger project that aims to provides insights into the effective use of Internet technologies within Saudi culture, teaching and learning styles and educational policies. This, in turn, can promote positive engagement in learning practices such as collaborative learning and communication with academics and peers. To this effect, this paper focuses on students' use of Internet technologies for interactions within the learning practices by answering the following question: *Within the context of Saudi Arabian higher education, how do students use internet technologies to interact with academics and peers in their learning practices?*

The rest of this paper covers the background describing the types of Internet technologies used in teaching and learning practices in higher education. Next, the data collection and analysis process are introduced. Finally, the results of the analysis are presented followed by discussion and conclusion.

2 BACKGROUND

There is an increasing demand in educational research to move toward a more student-centric education in which the learner's role takes place in constructing and contributing to the knowledge (Yang 2014). According to many of the social constructivist theories in learning, students should be enabled to interact with peers and academics in a social learning process that supports cooperation, collaboration and knowledge building (e.g. Vygotsky, 1978). Various internet technologies nowadays provide the basic medium for interaction among students and between students and academics. On the one hand, there are formal learning technologies that are adopted by organisation and academics such as LMSs and email. An LMS integrates many features offering different "possibilities" of use by academics and students that vary from synchronous and asynchronous communication tools such as discussion boards and messages to class management tools such as scheduling and grades (Piña 2013).

On the other hand, there are informal learning technologies that are mostly adopted by students on a voluntary basis such as social networking sites (SNSs). SNSs are defined as internet-based services

that provide users with the ability to create online communities in which they create personal profiles and share content with others (Ryan et al. 2011). Although student behaviours vary according to different technologies (i.e. formal and informal), prior research calls for the need to blend both approaches in the learning process for better learning experiences for students (Lai 2011). Therefore, it is important to understand the various internet technology use by academics and students to promote better interaction and improve learning outcomes.

Information System (IS) research has moved from IT intention of use, acceptance and adoption toward exploring and understanding actual IT use in the post-adoption stage (Burton-Jones and Straub 2006; Nan 2011). In the post-adoption stage, the organisation integrates IT within the work system and users develop different variations of behaviours towards it to create an adaptive behaviour (Lauterbach and Mueller 2014). Many researchers call to conceptualise IT use as an iterative complex process focusing on the dynamic interaction between technologies, users and the social context (e.g. Lauterbach and Mueller 2014; Nan 2011; Orlikowski and Scott 2008). Thus, IT use is considered as a core and dynamic part of a complex process that resulted in an emergence of adaptive behaviour that influences the intended outcomes of the organisation (Lauterbach and Mueller 2014). Therefore, it is recommended that managers and decision-makers focus on understanding the micro-level of interaction behaviour among agents and overcome any limitation on this level to encourage a productive outcome on an organisational level (Nan 2011).

Nan (2011) conceptualised the process of IT use based on complex adaptive system (CAS) theory that focused around three main components: agents (human actors and IT features), the interaction of agents and the relationship of agents and the environment structure (Nan, 2011). The model of CAS of IT use further suggests that the properties of social and organisation context (i.e. environment structure) affect the way users interact and use IT. Examples of these properties include cultural and organisational factors (Nan 2011). However, in CAS of IT use, the way that these factors influence users' behaviour towards IT is undefined. According to Nan (2011), it is up to the researchers to "specify how environmental structures alter the actions and interactions of agents and vice versa" (Nan 2011, p. 514).

The design and development of most Internet technologies in the education domain is derived from the culture of the context in which they are introduced (Masoumi and Lindström 2012). Furthermore, culture is embedded in human activities; thus it plays a vital role in individuals' interactions within the system (Leidner and Kayworth 2006). According to Hofstede (1980), culture is described as "the collective programming of the mind which distinguishes the members of one human group from another" (p. 260). However, culture is often a hidden variable that comes to the surface only if triggered by a form of conflict (Leidner and Kayworth 2006). Giving the fact that the education context is greatly influenced by culture, policies, economics, regulations and rules (Dhukaram et al. 2018), the use of Internet technologies is expected to be varied in different contexts. Thus, students' interactions using both formal and informal Internet technologies need to be explored in relevant to the social and educational context in which these technologies are used.

2.1 Study Context

While Saudi Arabia is considered a late adopter of the Internet (Mirza and Al-Abdulkareem 2011), it has the highest number of active users of many SNSs such as Twitter compared to the other Arab countries (Arab Social Media Report 2017). However, research shows that Saudi universities are in the early phase of gaining the potential benefits of Internet technologies such as LMS (Alshammari 2015) or SNSs in supporting learning and teaching practices (Alsolamy 2017). Therefore, there is a need to understand the overlapping relationship between students in the Saudi higher education context and the formal (e.g. LMS) and informal (e.g. SNS) learning technologies that support their learning practices.

Saudi Arabia is highly affiliated with religious and cultural norms that impact on practices in several aspects of education (Binsahl et al. 2015). For example, being a highly collectivistic culture, there are teaching and learning styles that make it different than most of the other countries. As described by Hofstede, "collectivist cultures assume that any person through birth and possible later events belongs to one or more tight "in-groups," from which he/she cannot detach him/herself" (Hofstede 1986, p. 307). Therefore, it is common in collectivist societies that students are interdependent on each other and seek help and support from each other (Eid and Nuhu 2011; Pinpathomrat et al. 2013).

A unique feature of the Saudi higher education is that it is gender-segregated in which, as in many other environments in Saudi Arabia, universities provide separate campuses for each gender (Smith and Abouammoh 2013). However, due to the limited number of female academics in some disciplines,

male academics often teach female students through online communication tools (Smith and Abouammoh 2013). Furthermore, in the Saudi culture, it is widely known that female and male communication outside family members should be kept to a minimum (Binsahl et al. 2015). This, in turn, can affect research in higher education in Saudi Arabia by limiting researchers ability to reach out to participants from the opposite gender especially in qualitative studies (Al Lily and Foland 2014). Although recent studies attempt to overcome this sensitive cultural barrier and reach out to both genders (e.g. Alghamdi and Plunkett 2018), female and male student and academic online behaviours during learning practices lack in-depth investigation.

3 RESEARCH METHOD

This paper presents an exploratory qualitative study as part of larger qualitative research aims to provide in-depth investigations on how students use diverse Internet technologies, taking into consideration the critical role of the cultural norms, learning and teaching styles in the Saudi higher education context. Although qualitative studies in most cases are not aiming to support generalisation to population, a vital implication of this type of research is its ability to discover new and wide range of evidence related to the phenomena under investigation (Neuman 2014).

The data collection technique in this study was semi-structured interviews, and the unit of analysis was undergraduate students. Academics were also interviewed to obtain insight into their perspectives of students' use of Internet technologies in learning practices. Ethics approval was obtained before the data collection. Data has been collected from two colleges of Computer Sciences and Information Systems (CIS) in two of the largest universities in Saudi Arabia. Sampling was made sequentially until a data saturation point was reached in terms of themes and patterns (Marshall et al. 2013; Neuman 2014). Interviews with female students and academics were conducted face-to-face on campuses while interviews with male students and academics were conducted via phone calls due to cultural barriers and gender-segregated campuses. Participants comprised seventeen female students (coded and referred in this paper as: SF01, … SF17), ten male students (referred to as: SM01, …SM10), ten female academics (referred to as: AF01, … AF10) and two male academics (referred to as: AM01, AM02).

All interviews were conducted in Arabic language according to the preferences of participants. The recorded interviews were transcribed and translated into English. A thematic analysis approach was followed to provide general and specific themes and codes based on the research question and presented in the data descriptive form supported by frequency scores (Boyatzis 1998).

4 FINDINGS

The aim of this study was to explain how students use internet technologies in their learning practices. Although the intended aim was to focus on students' interaction with peers and academics, during the interviews, it was noted that students heavily relied on a third role to support their learning practices, the external tutor. Students often accessed websites that provided paid lessons taught by external tutors. Thus, the findings are categorised into three main themes: (1) interaction with academics; (2) interaction with external tutors, and (3) interaction with peers. Although these themes are oriented around student behaviour, relevant perspectives of academics are included to provide a narrative of the context.

4.1 Interactions with Academics

The data revealed that besides face-to-face interaction with academics, students mostly use email to communicate with academics. SNSs - mainly Twitter - are mentioned by 10 out of 27 students as another type of communication media with academics. The following sub-themes provide details on the nature of students' interactions with academics through internet technologies.

4.1.1 Preference of formal approach for online communication

The majority of students (20 out of 27) indicated that they use the university email to communicate with academics. According to nine students, they seek what they called a formal way of communication with academics by using the university email for communication as evidenced by the following quote: *"the university email is more formal to communicate with academics" (SF03)*. However, seven students mentioned that they only use the university email to communicate with academics while they use their personal emails to communicate with their colleagues. This is captured by one student: *"I use my personal email address to communicate with my friends. I use the university email for communication with my teachers because I think it is more formal" (SF04).*

The data analysed from academics' interviews is supportive of this perspective. Most female academics (8 out of 10) identified their preferences for a formal approach in online communication with students. The following participant's comment typifies this: *"I always make it clear to my students on the first lecture how they can contact me. I provide them my email account, office numbers and office hours … I think social media is not a formal medium to be used professionally" (AF02).*

Academics stated that they set rules for students to show them how to send emails properly such as sending email using the university email (supported by ten academics) and setting a timeframe in which students can expect responses to their emails from academics (supported by three academics). However, academics mentioned that most students lack formal behaviour in communication with academics online. The following quote provides evidence: *"I am expecting them to behave in a formal way when they send emails… Unfortunately, I found students don't have the etiquette of writing emails. They sent emails without proper subjects or emails with attachments without content! … This generation don't know these basics…" (AF10).*

Blackboard is another type of formal Internet technology that provides a way of communication with students. Some academics (4 out of 12) stated that they create discussion forums to allow students to participate and ask questions: *"I used the discussion forum once for programming subject so students were able to ask their questions and other students benefit from it instead of sending emails to instructors individually and to avoid the repetition of answering the same question to many students" (AF07).* Only one male academic commented positively on this feature and how it makes the communication with female students easier: "*Using Blackboard, communicating with the female students in groups became easier" (AM02).* The other three academics (one male and two females) indicated that students were not participating in these forums. The following quote illustrates this: *"students were not active in this discussion forum and questions are sent by them via email. I think students were shy in asking questions in front of others…. students may prefer to be by their own without interfering by academics. They already have WhatsApp group as a replacement" (AF07).*

4.1.2 Social networking sites as an alternative way for communication

Although most students stated that they prefer using emails for online communication with academics, some students (12 out of 27) indicated that they use SNSs to communicate with academics in some cases. For example, five of them explained that they communicate via Twitter usually with the younger teaching assistants (TA): *"lecturers and professors prefer emails for communicating with students, as they say it is more professional, but the younger teacher assistants prefer Twitter" (SF05).* Some students (6 out of 12) stated that some academics joined WhatsApp and created a group for the course and enabled students to communicate with them within the group. The following student's quote is evidence of this type of communication: "*I have a group that involves one of the teachers who is young, and he is participating with us and answer the questions all the times" (SM07).*

It is worth mentioning that 3 out of 12 students indicated that using SNSs as a medium of communication with academics is more common with academics from disciplines other than CIS. The following quote provides evidence*: "Usually our teachers from other colleges use twitter and prefer it in communicating, they respond to our questions on direct messages immediately" (SF01).* To make it clear, in the selected CIS colleges, students are required to complete courses in science, mathematics and Arabic and Islamic culture colleges.

From an academics' perspective, the two male academics stated that that they find the use of SNSs beneficial to open the communication channels with female students. The following quote explained: "*I use WhatsApp. Some students prefer to ask me through WhatsApp, and I answer… I like to maximize the level of collaboration from me with students" (AM04).* However, this is opposite to the female academic perspective mentioned earlier as most of them prefer not to use SNSs to communicate with students. There was one exception from the female participants, provided by the interviewed TA who indicated that she used Twitter to communicate with students when she did not have the full authority to access Blackboard: *"my account [in Blackboard] wasn't activated from the beginning of the semester… I was using email lists of students or Twitter to communicate with students… we use it for content delivery and answering students' questions" (AF03).*

4.1.3 Hierarchical online communication

The data revealed that one feature of students' online communication with academics is the indirect communication that some academics prefer as mentioned by 5 out of 27 students. This type of communication is common between students and academics who teach courses belonging to colleges other than CIS. Students explain that in their groups, there is a student representative who is responsible for contacting the academic either via email or SNSs such as WhatsApp and who

subsequently share the instruction and the materials he/she gets in response with other students. This is illustrated by the following evidence: *"One teacher was contacting with the section leader via email, she sends the pdfs of the lectures to her and the leader sent it to us via WhatsApp group" (SF02).* Another male student commented on the difficulty of this form of communication: *"In other colleges, communication is very difficult. Some of [academic] assign a student representative to share his [phone] number with him… If I need anything, I contact this student then he contacts the teacher" (SM07).* One Student explained that in this way, academics don't have to worry about sharing their number with all students: *"the teacher gave me her number, so she communicates with me via WhatsApp and I send her instructions to the other students in the group. She doesn't like to share her number with all students" (SF03).* Another participant commented positively on being the student representative: *"although it is an extra load for me, I feel more comfortable that I get the information directly form the teachers… I try to be the leader in all courses" (SF06).*

4.2 Interaction with external tutors

An interesting finding revealed through the interviews was female students use of online tutoring websites according to 9 out of 17. Two websites were mentioned heavily by participants in which they were provided with private paid lessons: Vision Academy and Shoroh - an Arabic term meaning *explanations*. In such websites, students can subscribe to courses that are provided by tutors who could be already known to the students (i.e. academics from their own university) or others: "*The tutors are teachers in known universities here, for example, our Math teacher joined the website and gave private lessons through it" (SF03).* The courses materials are provided as videos and can be accessed anytime: *"The tutor explains the subject lectures in videos and provides files of all related exercises" (SF04).* The provided online courses followed the same curriculum given in the university: *"these websites provide the exact curriculum that we have in better explanation way that we can understand" (SF06).*

It is worth noting that male students have been asked about their use of these type of websites and they all responded negatively. However, 4 out of 10 male students, indicated that they have heard about these websites from some students and indicated that it could be more popular among the first-year students. For example, this student explains: *"By that time when I have started the basic subjects [these websites] weren't available. I used to go to a tutor face to face with a group of students because I needed to get a higher grade… I know that a lot of students are subscribed in such websites especially for programming courses. Tutors on these websites teach the same curriculum and the exam questions and prepare students to pass the exams…. It is cheaper" (SM07).*

The interactions with external tutors as mentioned by 5 out of 9 students was done using SNSs: *"I joined the science and math courses on the website. From the website I can access the lectures records and the tutors created Telegram groups for discussion" (SF13).* This interaction maximises the benefits of the provided online courses according to students: *"The Telegram group is an important resource for helpful materials… they provide a lot of helpful examples and tutorials in both languages" (SF01).* Students also admired the immediate responses from tutors in these groups: *"our tutor is always available to answer our questions specially before the final exam" (SF02).*

Academics participating in this study agreed on the students' need for such resources to support their learning. However, 2 out of 12 academics stated that students should use these resources carefully: *"referring to these online materials should be with caution that it reflects the same method that is in the curriculum to avoid distraction" (AF10).*

4.3 Interaction with peers

The data revealed that students' online interaction with one another is one of the fundamental learning activities they do on a daily basis. Students indicated that they mostly communicate with each other using WhatsApp. The following sub-themes describe how students interact with peers using Internet technologies.

4.3.1 Students online community

All students without exception stressed the importance of the WhatsApp groups for their learning practices. The following comments are examples: *"I start my day checking the WhatsApp groups" (SF04)* and *"WhatsApp is my first source to check any updates related to the subjects" (SM03).* According to students, every semester, they create a WhatsApp group for each course they have besides the groups that join all students from the same level of study together: *"We have a group of students on the same year and a group for each course" (SF06).* One student positively commented

on these groups as they are mimicking physical communities: *"I can say that in these groups we are like gathered in one room and having a conversation" (SM07).*

As mentioned earlier, some students (6 out of 27) indicated that academics joined some of these groups. However, four students mentioned that when they had a group with academic involvement, they created another group for the same course that only involved students. This is seen by the following quote: *"Once, we had a teacher in one subject's group… but we created another group for the same subject without her so we can discuss freely…" (SF14).*

In these groups, students indicated that they shared different types and sources of information. The following are the most mentioned types of information as supported by quotes from participants:

- Announcements and updates from academics (21 out of 27): *"We share recent updates related to the subject or any announcement that the teachers post in the blogs or twitter" (SF01)*
- Lectures materials such as slides and tutorials (15 out of 27): *"students are sending slides, materials, assignments and even the feedback they got from their teachers" (SF02)*
- Previous assessments tools (9 out of 27): *"Students usually sent us previous models of the exams and quizzes via WhatsApp group" (SF16).*
- Helpful online resources (9 out of 27): *"Students also sent helpful links from websites and YouTube" (SM07).*
- Students experiences and opinions about courses and academics (9 out of 27)*: "For each level, we have a group in WhatsApp, we share everything related to the subjects and information about the professors" (SM03).*
- Students discussion and explanation of learning content (13 out of 27): *"We also use these groups to explain things to each other, on video and audio messages" (SM03).*

As the WhatsApp group became a community of students in which they could share everything according to their needs, some of them (4 out of 27) stated that they find the WhatsApp groups an improvement over other formal learning technologies, for example: *"I do not like to check the Blackboard frequently… if there is an announcement or any update, the students send it via WhatsApp group as a screenshot" (SF06).* Another evidence is: *"Although the slides are officially provided by the academics in blogs or emails, students share them in the groups" (SM10).*

Despite the benefits that students perceived from these online communities, a number of students (14 out of 27) pointed out that the increasing number of groups and messages often made them annoyed. The following quotes explain: *"It is annoying in fact, but I am not reading everything in it unless it is important" (SF11)* and "*It bothers me that in half an hour I find more than 150 messages in one group and when I checked it I found it all out of topic conversations" (SM07).*

From an academics' perspective, most academics (8 out of 12) agreed on the advantages of these students' online groups. However, four academics raised their concerns of some negative sides such as dependence on WhatsApp groups over Blackboard (AF03), students getting overwhelmed by the vast number of materials shared, especially during the exams' periods (AF06, AF10) and sharing negative individual experiences about a specific course or teacher (AF07).

4.3.2 Showing support through online communication

The data revealed that beside joining and sharing information in WhatsApp groups, students support each other using other online tools. For example, 5 out of 27 students showed their willingness to help their peers by sharing their experiences in previous courses and the learning acquired. The following evidence illustrates this: *"I try to help students to get access to the helpful resources I have, I use snapchat, Twitter and WhatsApp to share with them my experiences in all courses" (SF05).* Another participant indicated that she created a blog in which she adds learning materials related to each course: *"I created a blog on WordPress that I put every useful resource and materials of each subject that I studied. I did that for other students to benefit from it" (SF01).*

4.3.3 Wider scale of communication enabled by SNSs

The data showed that SNSs offer wider scale support among students according to 13 out of 27 students. SNSs support the communication between female and male students according to eight students. Students revealed that there were some WhatsApp and Telegram groups that include both male and female students in the same discipline and that they were able to benefit from the others' experiences through these groups. This is illustrated by the following female comment: "*The group that related to the course that I took includes male and female students from the university, and it*

was helpful... they were sending their slides and exams ... they told us about one of their professors who has a YouTube channel and that was very useful" (SF16). Another male participant indicated that they benefit from getting the previous exam models from female students: *"there are some subjects that are in common [taught to both male and female students] and we got the exams samples from them [female students]. It was shared in the group" (SM02).*

Another scale of communication enabled by the SNSs is communication with students from other universities. This was mentioned by five students who indicated that they joined Telegram groups related to paid online courses they subscribed to as explained by the following quote: *"I like the collaboration in these groups because there were students from different universities and they were sharing their exams and materials, so I benefited from their experiences a lot" (SF04).*

5 DISCUSSION AND CONCLUSION

This study aimed to explain students' use of Internet technologies in interactions for learning purposes within the cultural context of higher education systems in Saudi Arabia. We explored how the understanding of individual-level interactions can lead to better estimation and understanding of the collective IT use patterns and outcomes (Nan 2011). We also identified common social and cultural practices on a national level focused on different teaching and learning styles in different countries (Hofstede 1986) and different use behaviours of technologies (Leidner and Kayworth 2006). This section describes students' interactions with academics, external tutors and peers using Internet technologies in light of the macro-level influence of the cultural values, learning and teaching styles and the educational environment.

5.1 Interaction with academics

With respect to the interaction between students and academics using Internet technologies, the findings show that a formal online communication style is favourable as illustrated by both students and academics. There are different use behaviours that can be attributed to this style of communication. First, students use university email in communication with academics although they prefer to use personal emails for communicating with others. Second, academics are keen to set rules for students to follow when they send emails and avoid SNSs when communicating with students. Academics also select a student representative to be the messenger between academic and student groups.

It is expected in such a collectivist society that students and academics maintain a formal relationship at all times (Hofstede 1986). A recent study conducted in Saudi Arabia affirms that academics use of SNSs to communicate with students is attributed to their perception of their relationship with students and concludes that academics were concerned with protecting their image in online communication and maintaining a formal relationship with students (Alsolamy 2017). Our finding is consistent with Alsolamy's (2017) conclusion from the academics' perspective as well as from the students' perspective. However, similar studies conducted with Malaysian students who have a similar degree of collectivism as Saudi students, find that in contrast to our findings, the interaction with academics via SNS is prominent (Hamid et al. 2014). These contrasting findings suggest that the meanings and values users give to technology can be different according to the context and social norms (Vyas et al. 2006). Furthermore, we found that using or not using SNSs among academics could be attributed to departments' autonomy as shown in the findings from non-CIS academics being more likely to use SNSs to communicate with students. Another reason could be the lack of authority given to academics to use other platforms such as LMS. Our findings suggest that when academics are not able to access central formal platforms adopted by the university to communicate with students (i.e. LMS), they use alternative platforms that might be less favourable for them (i.e. SNSs such as Twitter).

In contrast to female academics' perspective in using SNSs, the study found that male academics appreciated the use of SNSs to communicate with female students. This suggests the potential of SNSs to enhance the communication between male academics and female students in Saudi universities. Therefore, it could be suggested that male academics, in particular who teach female students, need to consider the use of SNSs in effective way to broaden the communication and support to students.

5.2 Interaction with external tutors

A significant finding of this study is the popularity of websites that provide paid lessons. Our findings revealed the emergence of domestically designed websites providing paid lessons by external tutors online. The popularity of these websites and tutors could be attributed to two reasons. First, students mentioned that their preference for these lessons is due to the curriculum-based materials that are

provided which matches their subjects. Second, the tutors who provide these lessons are always available to support students.

This finding aligns with the high uncertainty avoidance behaviour of Saudi society. With strong uncertainty avoidance societies, students like to follow structure-based learning styles and expect that the teachers provide answers to their questions (Aldubaibi 2018; Hofstede 1986). Furthermore, our findings show that while academics schedule office-hours and response times to students' emails, students found immediate answers from external tutors for their questions. Therefore, such websites are attractive, especially for "digital natives" who have increased their need for instant responses (Andone et al. 2006). It is worth mentioning that the emergence of online interaction with external tutors is more popular among female students. One reason could be due to culture constraints in Saudi Arabia related to gender segregation. Male students, for example, can easily be taught by a private tutor in any place. However, this is not the case for Saudi female students, especially if the tutor is male. Such websites -unlike other learning technologies- are domestically created to match the existing socio-cultural norms and needs of Saudi students.

5.3 Interaction with peers

Our findings show that one of the most used SNS among students is the WhatsApp group. Students showed their dependence and engagement in these groups. One can clearly attribute this behaviour to the collectivistic nature of Saudi society (Hofstede 2011). WhatsApp groups reflect the interdependence of students on each other as well as the support they provide to their peers. The normative nature of Saudi Arabia is another cultural dimension reflecting this interaction pattern. In normative societies, an important goal for members is to provide services to others (Hofstede 2011). However, it is worth noting that extensive communication with peers in such a technology-mediated environment is not necessarily a sign of collaborative learning. By looking at the type of information that students share in these groups, we can conclude that these groups -to some extent- reflect the traditional transmissive, exam-based learning styles that Saudi education is accused of (Aldubaibi 2018). For example, students mostly share learning materials that are provided by academics and the previous assessment models of previous students. Furthermore, our study revealed that despite the extensive dependence on online communities (i.e. WhatsApp groups), student engagement is reduced in the presence of academics. This had been shown by (1) students experiences when academics join WhatsApp groups and (2) academic-initiated discussion forums on Blackboard and the lack of student engagement in these groups. This interpretation differs from that of Alzahrani (2016) who argue that Saudi students are more motivated to participate in online discussion forums when academics present and provide feedback to them. However, in his study, Alzahrani (2016) surveyed 67 Saudi male students who were required to join the online discussion forums as supplementary tools in their courses. Unlike our findings, students were keen to participate and get feedback from their teachers in order to score high grades in these courses (Alzahrani 2016).

Another finding is related to the conservativeness of Saudi society. As mentioned earlier, within Saudi culture, it is not widely accepted that women contact men unless needed. However, recent research showed that most of these cultural norms have started to be relaxed in Saudi Arabia (Alsolamy 2017). Our results confirmed this and show that the use of WhatsApp has the potential to enable a broader type of connection than face-to-face communication in a gender-segregated context. This is reflected in female students communicating with male students from the same college. Previous research on higher education in Saudi Arabia have suggested that universities should provide a medium of connection between students from both genders (Smith and Abouammoh 2013). This study shows that students are already establishing connections among genders using WhatsApp groups. Although this is based on a small group, our findings show that this type of communication media offers ways to broaden knowledge and experiences sharing through students' interactions.

To conclude, students exhibit a diverse set of interactions using a variety of formal and informal Internet technologies. The implications of this study are firstly that it explains how students use Internet technologies in learning practices in Saudi Arabia. We observe that cultural considerations influence the interactions in the choice and use of Internet technologies. Moreover, students apply their current learning styles in their online interactions emphasising the role of educators, managers and decision-makers and the need to consider the culture and learning styles that maximise the benefits of using Internet technologies in supporting students' learning practices. Secondly, in the absence of supporting a formal learning platform, students tend to depend on Internet technologies that they are familiar with, i.e. SNSs. Saudi universities need to make clear policies to academics and students to clarify the expected protocols when using either formal or informal learning technologies.

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