Influence of Culture on Knowledge Sharing Attitude among Academic Staff in eLearning Virtual Communities in Saudi Arabia

Daniel Chandran1 · Abdullah M. Alammari2

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Abstract
Knowledge sharing is a significant component of success in knowledge management. In Saudi Arabia, knowledge management is often lacking when it comes to knowledge sharing adoption, especially between academic staff. This research aims to investigate various factors of knowledge sharing adoption for eLearning communities in Saudi Arabia and to examine the effect of culture as a moderating role on the relationships between these factors and academics’ attitude. Therefore, a framework is aimed at sharing knowledge within the eLearning communities is developed. Data has been collected from public universities in Saudi Arabia. Partial Least Square approach has been applied to analyse the data. The results show individual factors (such as openness in communication, interpersonal trust) and technology acceptance factors (perceived usefulness and perceived ease of use) significantly influence knowledge sharing attitude, while the relationship between people self-motivation and knowledge sharing attitude is insignificant. Subjective norm and attitude significantly impact behavioral intention toward knowledge sharing adoption in Saudi universities’ eLearning communities.

Keywords Knowledge sharing · eLearning · Virtual communities · Saudi Arabia

1 Introduction

Knowledge Management (KM) is relatively a new research area within Arab countries generally and Saudi Arabia in particular. Saudi Arabia has given a high priority to transform the Saudi society to knowledge based society and consequently to knowledge based economy (Al-Othman and Sohaib 2016). Recently, Saudi Arabia has started planning and investing to build knowledge centres in order to diversify its economic resources from natural resource production reliance to a knowledge-based economy (Shin et al. 2012). Further, Saudi Ministry of Education (MOE) has launched a national Learning Objects Repository (LOR) project called ‘Maknaz’ which aims to serve the strategic plans towards the enrichment in learning resources and knowledge growth. However, there is a need to populate the Saudi national Learning Objects Repository ‘Maknaz’ with reusable digitalized content and electronic materials (Alammari and Chandran 2013; Almegren and Yassin 2013 cited in Alammari and Chandran 2014). eLearning communities lack an integrated knowledge management framework that leads to learning contents creation, knowledge management practices and processes in an online learning approach. However, knowledge management techniques in eLearning can offer Saudi communities with knowledge content by creating, filtering, sharing and reusing. Thus, ‘Maknaz’ will be effectively populated by knowledge adoption in eLearning environment.

eLearning communities refer to educational environments that address the learning needs of its members through computer-mediated communication. Also, it refers to “computer-supported knowledge-building communities”. The concept of learning communities is based on the reflection that knowledge and learning are part of communities that share beliefs, values and ways of doing things (Cooper et al. 2004). In this respect, knowledge is difficult to separate from practice and practice is inseparable from the communities in which it occurs (Davenport et al. 1998).
Saudi universities have now started to think the role of eLearning in their institutional learning futures. Fullwood et al. (2013) suggests, with new information technologies available, the future role of universities is in producing knowledge processes and developing knowledge possibilities. Cooper et al. (2004) states there has been a rhetoric in using eLearning to support knowledge-based economy by proposing broader and different types of access to learning. Knowledge sharing is the main component of success to many organizations (Griffith & Sawyer 2010; Charband and Navimipour 2019), particularly in academic institutions. Knowledge sharing process has positive effects on technology business incubator. They may not be able to perform well due to their knowledge sharing disabilities (Binsawad et al. 2019). Researchers have shown the key factors that influence knowledge sharing adoption in various organizational settings (Alattas et al. 2016; Alhary et al. 2018; Cooper et al. 2004; Fullwood et al. 2013; Gupta and Govindarajan 2000).

Further, success of an organisation depends on its organisational culture (Schein 1996). However, organizations need to overcome cultural issues to enable knowledge sharing (Jones et al. 2006). According to Zhang et al. (2014), national culture directly influences organization’s performance. Similar to other organizations, universities as knowledge-based entities tend to rely more on culture and knowledge sharing. Although the existing research has investigated the relationship between organizational culture and knowledge sharing (Alattas et al. 2016; Jones et al. 2006), not much research has investigated the influence of national culture on knowledge sharing adoption of academic staff in Saudi Universities, especially in the context of eLearning communities. The purpose of this study is to investigate the cultural effects on various factors that influence the adoption of knowledge sharing activities in Saudi eLearning communities. The research attempts to address the following research question:

What is the impact of national culture on the influencing factors on knowledge sharing attitude among academic staff in eLearning communities in Saudi Arabia?

## 2 Theoretical Background and Related Studies

This research attempts to identify factors in knowledge sharing adoption in e-learning communities in Saudi Arabia and examine the effect of moderating the role of culture between the identified factors and academic staff attitude. The research proposes a model that will affect the process of knowledge sharing within the e-learning community through knowledge management practices. Relevant literature on most frequently cited theoretical models on knowledge management factors, attitude and behavioural intention are reviewed. Different models have been taken into account relating to attitude and behavioural intentions, such as Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1980), Theory of Planned Behaviour (TPB) (Ajzen 1991; Fishbein and Ajzen 1975) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh and Davis 2000). While predicting human behaviour, Theory of Planned Behaviour (TPB) and Theory of Reasoned Action (TRA) models are widely used. Theories suggest that a person’s behaviour is predicted by the behavioural intentions of individuals, which is influenced by the attitude towards the behaviour.

Theory of Reasoned Action focuses on predicting behavioural intention and actual behaviour. It is based on beliefs and subjective norms (Alammari and Chandran 2014). In the context of the current study, TRA is used to predict the actual use of knowledge sharing adoption in Saudi eLearning communities as being influenced by users’ behavioural usage intention, which in turn depends on the users’ attitudes and subjective norms (Barnes and Huff 2003). The proposed model is shown in Fig. 1.

### 2.1 Culture

Hofstede (1980, 2001) define national culture as “the collective programming of the mind which distinguishes members of one group or category of people from another”. The study defines national culture as the values embraced by a society. According to Hofstede et al. (2010) Arab nations score high in power distance, uncertainty avoidance and masculinity, but low in individualism.

Further researchers (Straub et al. 1997) have explored Hofstede’s cultural differences on the adoption and use of IT–based innovation. Studies show within (for example Saudi Arabia) culture high scores are for power distance. Communication using computerised medium is not favoured. Straub et al. (2001) also explored the cultural impacts on the adoption of new technology in the Arab world. The findings show that successful transfer of IT into organizations require an understanding of the micro-level beliefs within the framework of national and international macro-structures (Straub et al. 2001). McCoy et al. (2007) found that the relationship between technology, perceived ease of use and the behavioural intentions is not significant for societies who scored high on power distance. However, businesses need to overcome cultural issues to enable knowledge-sharing (Jones 2005; Jones et al. 2006). Earlier studies have investigated cultural orientation as a moderating variable in an online context (Srite and Karahanna 2006; Reay et al. 2013; Yoon 2009; Sohaib and Kang 2014, 2015).
2.2 Openness in Communication

Openness in communication is the individual’s ability and willingness to disclose one’s knowledge (Schiller and Cui 2010). Research shows openness in communication within the organisation can lead to tacit knowledge creation and information flow that is hardly transferred when it comes to knowledge sharing to make the workplace a learning organisation (Schiller and Cui 2010). It is argued that willingness to communicate is a predecessor in the process of creating knowledge sharing culture in the organisation (Davenport et al. 1998). Individual’s attitude is increasingly influenced towards knowledge sharing when the culture of openness in communication is available within the organisation (Alammari and Chandran 2014). Further, when the environment is open for communication and the required communication channels and tools are available and easy to use, individuals will be keen to have knowledge sharing attitude and accept related initiatives for such practices. In this regard, openness is a factor that offers free communication attitude without hesitation or fair criticism from colleagues if new ideas are shared and disclosed for discussion and feedback (Alammari and Chandran 2014). This culture will benefit the organisation towards the adoption of knowledge-sharing practices. Based on this, the research assumes the eLearning community in Saudi universities will be the environment where academic staff can be aided to share their learning and teaching knowledge contents.

H1 Culture moderates the relationship between openness in communication and staff attitude in e-learning communities in Saudi Arabia.

2.3 Interpersonal Trust

Interpersonal trust is the individual’s willingness to be vulnerable when behaving positively based on expectations and other actions (Sohaib and Kang 2015). It has been found that high level of interpersonal trust among staff in an organisation will lead to high level of willingness to share knowledge (Bijlsma and Koopman 2003). The level of interpersonal trust in an organisation is determined by the organisational common practice and how it is internally structured. This means that formal and centralized organisational working style will have negative impact on the level of interpersonal trust between staff which will affect their attitude towards knowledge-sharing. Whereas, social and informal relationships and interactions within the organisation can boost the degree of trust among the staff. Research indicates that interpersonal trust can be affected by people’s benevolence and competence. Benevolence is defined as the desire and wish to do good things to others. Whereas competence is defined as the ability and qualification that a person can have to do something. Therefore, individuals can be more open to seek knowledge when they perceive benevolence in the person who can pass on the required knowledge. At the same time, a person needs to perceive self-competence in order to trust his/her own knowledge to be passed on to others who may seek it. Based on these two constructs of interpersonal trust, academics can form high level of trust with their colleagues to share their knowledge (Alawi et al. 2007). Earlier studies have investigated national culture orientation as a moderating variable in an online context (Srite and Karahanna 2006; Yoon 2009). Culture affects how people develop trust (Doney et al. 1998; Choi and Geistfeld 2004).

H2 Culture moderates the relationship between Interpersonal Trust and staff attitude in e-learning communities in Saudi Arabia.

2.4 Self-motivation

Self-motivation is the initiative of participants to complete a task that they believe to be done without others influence (Zboralski 2009). A concept that rapidly appeared in the literature of knowledge management in relation to self-motivation
is ‘self-efficacy’. Self-efficacy is defined as a person’s belief or trust in his/her capabilities and skills to perform a certain task. Research highlights that self-motivation in relation to knowledge-sharing is associated with the self-determination theory (Sureena and Mahmood 2013). This theory illustrates that people are more likely to involve in a task if they perceive favourable consequences. In fact, self-motivation is generally related to perception of an individual about the value gained when completing a certain task. In order to perform a task or to achieve a goal, an individual need to have self-motivation and confidence in his/her competences; and to believe that it is possible to attain that task. However, in relation to knowledge-sharing, the academic needs to perceive that his/her knowledge can be beneficial to others and will be successfully applied if shared. The greater self-efficacy a person has, the greater confidence he/she may have about his/her expertise and knowledge (Al-Alawai et al. 2007). For example, academic staff who have extensive experience will be much confident and self-motivated to share their knowledge; indeed, they may enjoy sharing their experiences as they may feel other people interest in what they share. Further, research also shows when individuals believe and feel that they are strongly connected with the community members of the same organisation, then they will be self-motivated to share their knowledge with that community. This will make a sense of closeness among the community members who can encourage each other and receive appreciations from their connected colleagues for present knowledge-sharing participation. This appreciation will lead to future self-motivated attitude and practice to engage in the community knowledge-sharing activities (Sureena and Mahmood 2013). Therefore, intrinsic motivation and motivation beliefs which the academic staff should have can lead to increased knowledge sharing attitude and practice within the eLearning community in their universities which will result in more productivity and success.

**H3** Culture moderates the relationship between and People Self-Motivation and staff attitude in e-learning communities in Saudi Arabia.

### 2.5 Perceived Usefulness and Perceived Ease of Use

Perceived usefulness is defined as ‘the degree to which a person believes that using a particular system would enhance his or her job performance’ and Perceived ease of use is ‘the degree to which a person believes that using a particular system would be free of effort’ (Davis 1989, p. 1). According to Davis (1989), if the users perceive a technology to be useful, it will positively impact their attitude towards technology acceptance. Furthermore, if the users perceive that the technology is easy to use, it will positively impact their attitude towards technology acceptance. Attitude leads to positive impact on the users’ intention to use the technology (Cheung and Vogel 2013). Perceived usefulness and perceived ease of use have significant effects on user’s attitude towards use of an eLearning system (Lee 2013). Previous studies reveal that perceived usefulness and perceived ease of use have a strong correlation on attitude across various information systems (Sivo et al. 2007; Lau and Woods 2008).

**H4** Culture moderates the relationship between and PU and staff attitude in e-learning communities in Saudi Arabia.

**H5** Culture moderates the relationship between PEOU and staff attitude in e-learning community in Saudi Arabia.

### 2.6 Attitude, Subjective Norm and Behavioral Intention

Empirical researchers have shown that attitude is the strongest predictor of behavioral intention (Kolekofski and Heminger 2003; Ajzen and Fishbein 1980; Sivo et al. 2007). Davis (1989) argues that individual attitudes are the co-determinants of any behavioral intention to adopt a technology. It is important to note that attitude towards knowledge-sharing is largely formed from behavioral beliefs (Lin 2007). Results show people’s attitude toward knowledge-sharing reflect their willingness to be involved in the knowledge-sharing adoption. Seba et al. (2012) contend that attitude towards knowledge-sharing influence the behavioral intentions of individuals. It leads to the conclusion that positive attitudes lead to positive behavioral intentions (Kanchanatanee et al. 2014), ensuring the participants of any community share knowledge with the aim of mutual benefit (Kharabsheh 2007; Alotaibi et al. 2014).

**H6** Staff attitude has a significant positive influence on staff behavioural intention in e-learning communities in Saudi Arabia.

Previous research identifies that subjective norm has impact on an individual’s behaviour (Ajzen 1991; Venkatesh and Davis 2000). Greater the subjective norm to share knowledge, more intense would be the intention to carry out the actual behavior. Subjective norm impacts the intention to share knowledge while proving itself significant influencing factor in the spread of knowledge (Chow and Chan 2008).

**H7** Subjective Norm has a significant positive influence on staff behavioural intention in e-learning communities in Saudi Arabia.

According to Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB), stronger the intention of the individual to engage in a behaviour, more likely the individual will be to perform it (Chow and Chan 2008).
H8 Behavioural intention has a significant positive influence on staff knowledge-sharing adoption in e-learning communities in Saudi Arabia.

3 Methodology

The authors have applied quantitative method to collect numerical data from respondents in Saudi Universities. Survey instrument is used to collect data from major public universities in Saudi Arabia. The research adopted previously validated instruments in order to ensure the survey items are adequate. An English version of the survey was developed and a translated Arabic version was also included in the survey. The five-point Likert scale (1 = strongly disagree to 5 = strongly agree) is used as it is a commonly used technique for scaling responses in a survey design. Survey was sent to 500 academics and 200 participated in the survey. After removing the incomplete responses, a total of 160 responses were used for data analysis. Partial Least Squares - Structural Equation Modelling (PLS-SEM) statistical technique using SmartPLS version 3 was used to test the research model. Partial Least Squares approach is used to tests theoretical models to understand the simultaneous modelling of relationships among various independent and dependent factors.

4 Data Analysis

Descriptive analysis shows that the majority of the respondents are male totalling to 73% and female 27%. This distribution of male and female is fairly representative of the population of staff in the selected Saudi Universities. 14% of the respondents are between 18 and 25 years, 43% respondents belong to the age group of 26–35, followed by 26% respondents between the age of 36–45 years. 14% of the respondents are 46–60 years and 3% respondents above 60 years. The majority of respondents hold doctorate degree (52%), followed by Master’s degree with 34% and 14% of the respondents had bachelor’s degree. 47% of respondents had 3–5 years work experience, followed by 33% with more than 5 years. 17% of respondents had work experience between 1 and 3 years. 3% had less than a year experience. This high percentage shows that all respondents have experience in the academia. 47% are lecturers and 30% are other academic staff, such as teaching assistants, tutors etc. 23% are professors (assistant, associate and full professors).

Partial Least Squares (PLS) approach allows to simultaneously evaluate structural path coefficients and measurement model parameters (Sohaib et al. 2019). It allows formative and reflective factors to be tested together (Chin et al. 2003). In our research model all factors except subjective norms are modelled as reflective indicators because they are viewed as effects of latent variables. The subjective norm is formative in nature (Eckhardt et al. 2009), which is not interchangeable because it is a multidimensional variable, which is consistent with prior research studies.

4.1 Reliability and Validity Assessment

Reliability and validity assessments are measured by internal consistencies, convergent and discriminant validity (Sohaib et al. 2019a, b). Cronbach’s reliability and composite reliability of each factor has the recommended value of 0.7. Similarly, all correlations and the average variance extracted (AVE) indicate sufficient discriminant validity. Table 1 shows the reliability, correlation, and discriminant validity of constructs.

4.2 Structural Model Testing

The path coefficients significance using T-test which has been calculated using the bootstrapping technique (Sohaib et al. 2019a, b). The significance level of 5% is taken into account. Table 2 shows the results of the testing for the eight hypotheses (Fig. 2).

5 Findings and Discussion

This study has used the concepts of TRA, TPB and UTAUT theories to predict the knowledge-sharing attitude in Saudi eLearning communities. The findings confirm that the effect of moderating role of culture has relationship between academic staff attitude and identified factors including, Openness in Communication, Interpersonal Trust, People Self-Motivation, Perceived usefulness and Perceived Eased Use. Results show the order of significance among knowledge-sharing factors. The highest impact is Openness in Communication followed by Interpersonal Trust. People’s Self-motivation follows Openness in Communication and Interpersonal Trust. This indicates Openness in Communication and Interpersonal Trust are more likely to be associated with staff attitude towards knowledge-sharing adoption. It is concluded that knowledge-sharing is more in e-learning communities where there is a culture of openness amongst staff members. The results are consistent with the earlier findings (Yu et al. 2010; Liu and DeFrank 2013). Also, when the staff trust each other, they are likely to contact more and share knowledge, which leads to the generation of new knowledge. Again, the results are consistent with earlier findings (Lin 2006; Al-Alawai et al. 2007).

Technology acceptance factors such as perceived usefulness and perceived ease of use have the potential to determine staff attitude towards knowledge-sharing adoption in Saudi e-
learning communities. Perceived usefulness and perceived ease of use are strongly related to attitude towards the acceptance of information technology (Davis 1989). TAM was based on TRA and it highlights the key factors that determine how users accept or reject technology. A number of factors including how users perceive the usefulness of the technology affects users’ behaviour. This study also confirms the users’ perceptions about the usefulness of technology and their behaviour in using it. Most of these studies show there is a positive relation between the perceived usefulness of technology and ease of use and the behaviour of users.

Furthermore, the findings show that attitude and subjective norm have significant effect on behavioral intention towards knowledge-sharing adoption in e-learning communities. This is because Saudi Arabia has a high collectivistic culture (Hofstede et al. 2010) and hence in collectivistic country, the staff behavior is influenced by social norms of people, such as friends and family who are important to them. Again, this is consistent with previous studies (Yeo and Gold 2014; Lee 2013; Davis 1989; Cheung and Vogel 2013; Sivo et al. 2007; Lau and Woods 2008), which shows that ‘perceived usefulness’ and ‘perceived ease of use’ positively impact individual attitude towards technology acceptance.

Results confirm that staff attitude and subjective norm are the key factors of behavioral intention in knowledge-sharing adoption in Saudi e-learning communities. The results are aligned with the earlier works (Sivo et al. 2007; Lin 2007; Seba et al. 2012). Earlier literature discusses the widespread models related to attitude, subjective norm and behavioural intentions such as Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB). These theories suggest that a person’s behaviour is predicted by his/her behavioural intention, which is influenced by his/her attitude and subjective norm towards the behaviour, among other factors (Venkatesh and Davis 2000). In the context of the current study, the actual use of knowledge-sharing adoption in

| Table 1 Reliability, Correlation, and Discriminant Validity of Constructs |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | AVE  | Calpha | CR  | OIC  | IPT  | PSM  | PU  | PEOU | SN  | ATT  | BI  | KSA  | PD  |
| OIC             | 0.79 | 0.86   | 0.71 | **0.89** |   |       |     |      |     |      |     |      |     |
| IPT             | 0.81 | 0.87   | 0.65 | 0.43 | **0.90** |   |       |     |      |     |     |     |     |
| PSM             | 0.80 | 0.77   | 0.61 | 0.31 | 0.31 | **0.89** |   |       |     |      |     |     |     |
| PU              | 0.77 | 0.75   | 0.70 | 0.50 | 0.01 | 0.23 | **0.87** |   |       |     |     |     |     |
| PEOU            | 0.80 | 0.86   | 0.76 | 0.42 | 0.08 | 0.13 | 0.12 | **0.89** |   |     |     |     |     |
| SN              | NA   | NA     | NA  | 0.33 | 0.50 | 0.26 | 0.21 | 0.13 | **0.87** |   |     |     |     |
| ATT             | 0.79 | 0.83   | 0.72 | 0.12 | 0.16 | 0.12 | 0.46 | 0.15 | 0.23 | **0.89** |   |     |     |
| BI              | 0.81 | 0.80   | 0.56 | 0.53 | 0.07 | 0.18 | 0.02 | 0.41 | 0.15 | 0.43 | **0.90** |   |     |     |
| KSA             | 0.80 | 0.86   | 0.28 | 0.41 | 0.13 | 0.11 | 0.37 | 0.22 | 0.30 | 0.28 | 0.67 | **0.89** |   |
| CUL             | 0.79 | 0.80   | 0.56 | 0.43 | 0.11 | 0.17 | 0.04 | 0.42 | 0.11 | 0.45 | 0.34 | 0.18 | **0.89** |

Notes: 1. AVE: Average Variance Extracted, CR: Composite Reliability, C Alpha: Cronbachs Alpha 2. OIC: Openness in Communication, IPT: Interpersonal Trust, PSM: People Self Motivation, SN: Subjective Norm PU: Perceived Usefulness, PEOU: Perceived Ease of Use, ATT: Attitude, BI: Behavioural Intention, KSA: Knowledge-sharing Adoption, CUL: Culture 3. Diagonal elements are the square root of AVE.

| Table 2 Hypotheses Testing |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Path            | Path coefficient mean | StDev | T statistics | P value | Supported? |
| H1 OIC*CUL -> ATT | 0.39 | 0.05 | 4.19 | 0.000*** | Yes |
| H2 IPT*CUL -> ATT | 0.29 | 0.04 | 4.29 | 0.000*** | Yes |
| H3 PSM*CUL -> ATT | 0.15 | 0.01 | 1.45 | 0.342 | No |
| H4 PU*CUL -> ATT | 0.29 | 0.01 | 2.75 | 0.003* | Yes |
| H5 PEOU*CUL -> ATT | 0.35 | 0.03 | 3.38 | 0.000*** | Yes |
| H6 ATT -BI      | 0.20 | 0.05 | 2.91 | 0.000*** | Yes |
| H7 SN -> BI     | 0.28 | 0.02 | 4.51 | 0.000*** | Yes |
| H8 BI -> KSA    | 0.35 | 0.03 | 2.11 | 0.000*** | Yes |

Notes: *Significant at 0.05 level **, Significant at 0.01 level, *** Significant at 0.001 level
Saudi e-learning communities is influenced by the staff behavioural usage intention, which in turn depends on the users’ attitude and the subjective norms.

6 Conclusion

The study has fulfilled its main aim that was to examine the moderating effect of culture on the key factors that influence the adoption of knowledge-sharing activities in Saudi universities’ e-learning communities. A conceptual model has been developed based on existing theories and extensive literature review. The proposed model integrates the key concepts adopted from TRA, TPB and TAM. The results show knowledge-sharing individual factors (such as openness in communication, interpersonal trust), technology acceptance factors (perceived usefulness and perceived ease of use) significantly influence knowledge-sharing attitude while the relationship between people self-motivation and knowledge-sharing attitude is insignificant. Among other factors, subjective norm and attitude significantly impact behavioural intention toward knowledge-sharing adoption in Saudi universities’ e-learning communities.

This study provides both theoretical and practical implications of knowledge-sharing adoption in e-learning communities in Saudi universities. The research has valuable theoretical implications for academic researchers. Firstly, this study contributes and offers evidence to the body of knowledge in that it is the first to explore the knowledge-sharing adoption success factors in Saudi context. Second contribution of this research is the development of a conceptual model that can be used in future studies. Therefore, this research contributes to the existing knowledge by proposing knowledge-sharing adoption model based on TAM, TPB and TRA. In particular, this study addresses the shortcomings in the existing literature; by applying knowledge-sharing success factors within the Saudi universities’ e-learning communities.

Concerning implications from a practical perspective, Saudi universities can use the findings of this study to implement supportive knowledge management practices to make academic staff to adopt knowledge-sharing practices. For example, the findings show that staff are willing to use e-learning if their social norms are high towards knowledge-sharing. Therefore, a range of tools need to be included on the e-learning platform to allow academic staff to network via connecting profiles, such as using social networking site, blogs and online chat etc. These features could create a compelling platform to adopt knowledge-sharing. In addition, a significant set of motivational success factors for knowledge-sharing adoption identified in this research can be a list of factors for top management to concentrate while planning, applying and developing knowledge-sharing practices within the universities for e-learning communities.

6.1 Limitations and Future Research

This study has a few limitations like any other research. First, the data collection was restricted to public universities in Saudi Arabia, which may affect the generalization of the study. In addition, having a larger base of survey respondents and interviewees size would have been more useful to examine the dependability of the findings. Second, this study did not cover all aspects of knowledge-sharing adoption. Future studies can include other factors, such as culture that is likely to influence knowledge-sharing adoption in Saudi e-learning communities. Third, this study did not consider the type of knowledge-sharing. Future studies could investigate what specific type of knowledge-sharing is more effective, such as tacit or explicit knowledge-sharing within e-learning communities.
### Appendix

**Table 3** Survey Items

#### Knowledge Sharing Factors

**Openness in Communication (OIC)**
1. There is a high level of interaction among academic colleagues in the e-learning community.
2. Online discussions and collaboration in the e-learning community enhance communication between academic colleagues.

**Interpersonal Trust (IPT)**
1. I don’t hesitate to share my feelings and point of views with my academic colleagues in the e-learning community.
2. I believe that academic staff should not share personal information in the e-learning community.
3. Our university maintains certain rules and procedures to protect the academic staff from sharing their knowledge in the e-learning community with harmful intentions towards others.
4. In our university a considerable level of trust exists between co-academic members within the e-learning community.
5. Most of my academic colleagues in the e-learning community are people whom I know and thus consider trustworthy.

**People Self-Motivation**
1. I am motivated to share what I know with my co-academic in the e-learning community.
2. I have satisfactions from making a contribution to others in the e-learning community.

#### Technology Acceptance Factors

**Perceived Usefulness (PU)**
1. I think using e-learning tools enables me to effectively and quickly share knowledge with my academic colleagues.
2. I think using e-learning tools makes it easier for me to share knowledge with my academic colleagues.
3. I think using e-learning tools enhances my effectiveness in sharing knowledge with my academic colleagues.
4. I think using e-learning tools is a convenient way to share knowledge with my academic colleagues.
5. I think e-learning tools are useful in sharing knowledge with my academic colleagues.
6. I think using e-learning gives me greater control over sharing knowledge with my academic colleagues.

**Perceived Ease of Use (PEOU)**
1. I think it is easy to learn how to use e-learning tools for knowledge sharing in the e-learning community.
2. I think interacting with e-learning tools to share knowledge is a clear and understandable process.
3. I think e-learning tools are flexible to interact with for the purpose of knowledge sharing.
4. I think it is easy for me to become skillful at using e-learning tools for the purpose of knowledge sharing.
5. I think e-learning knowledge sharing tools are easy to use.

**Subjective Norms**
1. People who influence my behaviour think that I should use e-learning tools for knowledge sharing in the e-learning community.
2. People important to me think that I should use e-learning tools for knowledge sharing in the e-learning community.
3. People whose opinions I value would prefer that I use e-learning tools for knowledge sharing in the e-learning community.
4. People who influence my decisions think that I should use e-learning tools for knowledge sharing in the e-learning community.

**Attitude (AT)**
1. Using e-learning tools for knowledge sharing is a good idea.
2. I like the idea of using e-learning tools for knowledge sharing.
3. Using e-learning tools for knowledge sharing is an appealing idea.

**Behavioral Intention (BI)**
1. I intend to use e-learning tools for knowledge sharing.
2. I would use e-learning tools for knowledge sharing.
3. Using e-learning tools for knowledge sharing is something that I would do.
4. I would not hesitate to use e-learning tools for knowledge sharing.
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