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Impact of Knowledge Sharing, Self Efficacy and Social Media Collaborative Learning on Student Engagement: A Study of Saudi University Students

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Abstract

Saudi Vision 2030 is a transformative roadmap which encompasses all aspects of the social life. The roadmap has strong emphasis on improving the higher education system, turning society in a knowledge and digital economy. The prime objective of the present study is to examine the relationship between Knowledge sharing self-efficacy, Social media collaborative learning, Perceived ease of use of Technology and students engagement through the mediation of Online Knowledge sharing behaviour. This study is cross-sectional and quantitative in nature. The data was collected from the students studying at the universities of the Kingdom of Saudi Arabia. For this purpose, convenience sampling was used to reach 318 students. The feedback was taken from the respondents in the form of questionnaires developed from past studies. The questionnaire was developed by using the Likert 5 scale. The collected data was analyzed using AMOS 25. The results pointed out that students' engagement is positively and significantly linked to the online knowledge-sharing behaviour. On the other hand, knowledge-sharing self-efficacy, perceived ease of use of Technology and social media are important predictors of online knowledge-sharing. The mediating role of online knowledge-sharing behaviour is also supported by the results of the study. These findings are helpful for the decision-makers of the education sector in engaging students through online means.

Keywords

Online Knowledge Sharing, Self-Efficacy, Social Media, Student Engagement, Saudi Arabia, Saudi Vision 2030, Higher Education

1. Introduction

Saudi Vision 2030 envisions a shift towards a knowledge-based economy by investing in education, research, and innovation. The plan aims to increase the quality of higher education, promote research, and foster a culture of innovation to drive economic growth and diversification. This aligns with the aspiration to reduce the kingdom's reliance on oil and build a sustainable future.

Organizations have learned and employed e-learning in their operations because of rapid growth in innovation and internet-based technology. The traditional methods are replaced or supplemented by these methods enabling clients to get engaged in the learning process by using different web-based technologies instead of face-to-face methods. The same is the condition with students. There are two basic reasons why students get engaged in online-based courses. The initial reason is that online courses will grow as well as stay there for a longer period which is needed all. On the other hand, the growth of online courses has increased rapidly. Whereas engagement of students in online learning is the second reason, thus, students must use online courses and the educational institutes should focus on creating an online learning environment so they can engage the students (Soffer & Cohen, 2019).

The communication of people is greatly influenced by the advent of the Internet. Because of Internet technology sharing of information and knowledge is also influenced. In past, knowledge sharing among individuals was very limited such as in training sessions or at conferences. After exposure to the Internet, it is possible to spread knowledge among academics and teachers throughout the world. From the perspective of social sciences, a lot of research is conducted on the aspects of self-efficacy, attitude and motivation in terms of the dead relationship with knowledge sharing. The purpose of this perspective is to get knowledge regarding human behaviour. It is assumed in social sciences that the behaviour of humans is composed of different factors that interact with each other. These factors include behaviour and social context (Brooke, Rasdi, & Samah, 2017).

The context of collaborating learning is also known as cooperative learning, involves working with different students on different activities in the form of groups. The composition of groups should be small enough that every person can interact with others. It is possible that students who are working in group can work on different tasks that are separate from each other but the goal is to achieve a common objective (Kemény, Beregi, Nacsa, Glawar, & Sihn, 2018). The good type of learning is dependent on different characteristics of social media including communal, collaborative and conversational having the purpose to encourage and share active participation of the customers. There are a lot of advantages of collaborative learning including the development of leadership skills, self-management, oral communication and high-level thinking. It also helps in increasing interaction among students and faculty. The advantages of these characteristics include an increase in responsibility, self-esteem and retention of

the student. Therefore, there is a lot of demand for collaborative learning, which is best for students because of its smoothness among the children students. It is important to mention that attention is drawn because of social media that collaborative effort is required to develop creativity among individuals (Bozanta & Mardikyan, 2017).

To accept the technology and its usage, motivation is required. This motivation is dependent upon the factor of perceived ease of use. The intention of students is highly dependent upon the factor of ease of use. The factor of perceived ease of use plays an important role to forecast the intention of students to accept the technology (Al-Okaily, Alqudah, Matar, Lutfi, & Taamneh, 2020). When students explore the system, it becomes easy for them to accept it and use it. This system later contributes to knowledge creation and to develop of confidence among the students, whereas students can feel difficulty when they are interacting with the system. Therefore, there is a need for training, awareness programmes and seminars to overcome this problem. Perceived ease of use, however the cat is done total effect of different factors which represents system characteristics, organization influences and individual differences. So to many different digital platforms, implementers, and designers PEOU play an important role (Moslehpour, Pham, Wong, & Bilgiçli, 2018).

Presently social media plays an important role the shape the knowledge behaviour among students. the learning, knowledge sharing and interaction among the students is Bing transformed because of different social media such as Wikis, blogs, networking sites, online communities and logging tools (Mustafa, Hernandez, Mahon, & Chee, 2016). Different people have used these platforms for the purpose of the interaction, sharing of information, and creation of information based on their interests. A large number of students used social media for their academic purpose, sharing documents, getting connected, discussing different topics and completion of homework (Ul Ain Baig & Waheed, 2016).

Therefore, there is a need to groom the student's skills and empower them so that they can use technology to get the high level of knowledge. This is their off high tech in which highly qualified graduates can effectively use technologies with the purpose to gain knowledge and education, develop different policies, making different decisions, for the betterment of economy and development of society. Therefore it is very interesting to explore different factors that can help the enhancement of knowledge among the students (Ismail, Tajuddin, & Yunus, 2019).

In the context of contemporary education, this study tries to shed light on the complex interactions between numerous elements that affect student involvement. This study is unique in that it examines the complex interactions between knowledge self-efficacy, social media collaborative learning, perceived technology ease of use, and information sharing behavior as mediators in raising student engagement. The research is noteworthy because it takes a thorough approach to understanding how these elements work together to create an engaging learning environment. While earlier studies focused on individual factors like

self-efficacy, attitudes, motivation, and technology adoption, this study combines these factors to provide a more comprehensive understanding of the dynamics that motivate student participation.

Furthermore, the research acknowledges the evolving role of social media in shaping students' knowledge behavior. Unlike earlier studies that primarily focused on knowledge sharing within limited contexts, this research recognizes the transformative impact of social media platforms such as networking sites/apps in reshaping learning, interaction, and information dissemination among students.

The study's singular emphasis on universities in Saudi Arabia adds a contextual dimension to the investigation in a larger context. The recognition of over 43 universities in Saudi Arabia and the need to effectively engage students in a dynamic educational environment show the relevance of this research in real-world settings. In essence, this study not only adds to the body of knowledge about the variables affecting student engagement, but also sets itself apart by adopting an all-encompassing strategy that views the interaction of knowledge self-efficacy, collaborative learning through social media, perceived ease of technology use, and knowledge sharing behavior as pivotal determinants. The goal of the research is to give students the knowledge and assurance they need to successfully traverse technologically advanced learning settings, thereby influencing their educational paths and benefiting society as a whole.

2. Conceptual Background and Hypotheses

2.1. Saudi Vision 2030 & Higher Education

Saudi Vision 2030 is a transformative roadmap launched in 2016 by the Kingdom of Saudi Arabia to diversify its economy and reduce its dependency on oil. The vision outlines a comprehensive framework of strategic objectives across various sectors, aiming to create a vibrant society, a thriving economy, and an ambitious nation. (About Saudi Vision 2030, n.d.)

One of the main goals of Saudi Vision 2030 is to enhance the non-oil sectors, such as tourism, entertainment, and technology, to drive economic growth. This initiative seeks to bolster employment opportunities for Saudi nationals and attract foreign investment. It also emphasizes the development of a robust healthcare and education system, thus ensuring the well-being and productivity of the population. (About Saudi Vision 2030, n.d.)

Saudi Vision 2030 places a strong emphasis on the transformation and enhancement of higher education in the Kingdom of Saudi Arabia. This strategic blueprint recognizes the pivotal role that education plays in achieving sustainable economic diversification and societal progress. A key objective of the vision is to foster a knowledge-based economy through the development of world-class universities, research institutions, and innovative centers. (Ministry of Education, n.d.)

The vision seeks to improve the quality and relevance of higher education

programs, aligning them with the needs of the labor market. It aims to increase the participation of Saudi nationals in higher education and enhance their skills to meet the demands of a rapidly changing global landscape. This is in line with the goal of equipping the Saudi workforce with the necessary expertise to thrive in a post-oil economy. (Ministry of Education, n.d.)

Furthermore, the vision aims to promote research and innovation by establishing partnerships between universities, research centers, and industries. By fostering a culture of research and entrepreneurship, Saudi Arabia aims to become a hub for innovation and scientific advancements.

2.2. Knowledge Sharing Behaviour and Student Engagement

Researchers have defined knowledge sharing as the activity in which a person precision cell knowledge to others in the context of education. Scholars have interpreted knowledge sharing as the process of acquiring and exchanging knowledge from different channels such as formal and informal channels or through technical facilities. Scholars have also stated that the main incentive is represented through volunteers and active sharing of knowledge. It plays a key role in successful collaborative learning among the different students and also among those who guide students in enhancement of their understandings, new concepts learning, solving all the problems and answering different questions by the teachers (Nishanthi & Munasinghe, 2020).

On the other hand, sharing of knowledge all information through different online communities represents online knowledge sharing. There are a lot of different kinds of online knowledge-sharing platforms including YouTube channels, Facebook groups, Internet chat rules, and blogging. By using these platforms students can demonstrate tutorials, discuss different issues, post permission, provide feedback add ask questions with the purpose please sharing and contributing knowledge throughout the world (Charband & Jafari Navimipour, 2016).

Researchers have conceptualised engagement as the emotional quality and behavioural intensity of the involvement of a person during different tasks. The behavioural factor of engagement of students consists of persistence, attention and regular effort during activities of learning. On the other hand, the emotional factor of engagement includes the emotional involvement of students during activities of learning such as enjoyment, interest and enthusiasm. In contrast disaffection, disengagement or engagement, among the students is evident among students who gave up easily, are discouraged and are passive (Skinner, Saxton, Currie, & Shusterman, 2017). Among different sectors of education is very important because there are several positive outcomes among the students such as academic resilience, skill development achievement, and academic learning in different educational fields (Struyf, De Loof, Boeve-de Pauw, & Van Petegem, 2019).

There is a very close linkage between social media and social networking sites. Bought these provides a platform for students to share emotional intelligence,

and develop communication and interaction with other people having the same attitude. Different kinds of outcomes, knowledge and skills are also increased because of YouTube channels and Facebook (Adzovie, Nyieku, & Keku, 2017). Scholars have highlighted that more than 90% of teachers around the globe have used social media to interact with their students and also for teaching purposes. As per the study, Facebook was the most visited social media. Additionally, more than 40% of the faculty members ask the students if they will read the different content available on social media. Therefore, social media is the primary source who acquired knowledge. On the other hand, another study concluded that more than half of the faculty members teaching in higher education have social media accounts in Türkiye (Akçayır, 2017).

Some of the searchers also reported that the primary motive among the students to study is the adoption of social media. This motivation is very quick and effective (Akçayır, 2017). Social learning is designed to develop the linkage among the Indian community who are sharing information and working together. Distribution of information, a factual conversation and active learning are encouraged through social media (Cunha Jr, van Kruistum, & van Oers, 2016). It can also help the students in getting engaged with their teachers. It is key to note that the students who are engaged in knowledge-sharing activities are likely to get social support. As a result, team effectiveness is increased. Knowledge sharing among students is facilitated through creativity and students engagement (Rasheed et al., 2020).

Thus, the hypotheses formulated are:

*H*1: *Online knowledge sharing behaviour is positively associated with the students' engagement.*

2.3. Knowledge Sharing Self-Efficacy; Association with Online Knowledge Sharing Behaviour and Student's Engagement

Self-efficacy refers perception of a person regarding the skills he or she owns for the completion of a task that is very complex. It is the belief of the individual in the skills that are possessed by him or her. It is one type of self-evaluation regarding the decisions, the level of effort and determination to face the obstacles. Researchers pointed out that, knowledge-sharing self-efficacy tends to affect the Learning environment of the organisation. Knowledge self-efficacy of the student is referred to as the belief of a person in his abilities to face the environment to share knowledge (Tantrarungroj & Suwannatthachote, 2012). Additionally, knowledge sharing self-efficacy is also considered an important control variable that helps the students to solve the problems that are encountered in the individual environment. Whereas interpersonal collaboration can also be improved with the influence of high-level knowledge sharing and a high level of knowledge self-efficacy (Ergün & Avcı, 2018).

Self-efficacy of knowledge sharing is referred as a share of knowledge and confidence in which valuable knowledge can be provided to another person. Useful information can be provided in terms of knowledge through self-efficacy.

It is also pointed out by the researchers that people are inspired to share knowledge when they perceive that they know enough to share with others. Additionally, scholars also demonstrated that the knowledge sharing behaviour of a person is strongly influenced by knowledge-sharing self-efficacy. Therefore, researchers have provided arguments that knowledge-sharing self-efficacy Is influenced by the reward system (Liou, Chih, Yuan, & Lin, 2016).

As the outcomes of students are affected by knowledge sharing therefore it is very important to shape the behaviour of the students. Whereas facilitating the learning process is a very important step. Scholars have reported a positive relationship between learning outcomes and knowledge sharing (Sriratanaviriyakul & El-Den, 2017).

H2: *Knowledge sharing self-efficacy is positively associated with online knowledge sharing behaviour.*

2.4. Social Media Collaborative Learning; Association with Online Knowledge Sharing Behaviour and Student's Engagement

Collaborative learning can be found in different forms such as learner and interaction with the learner. In past, collaborative learning was considered an important instructional method in the distance and traditional learning settings. in the presenter of education which is considered a modern era of education, students and other stakeholders are showing a lot of interest in collaborative learning. Studies pointed out that there is a need that students must work in groups. Groups that are very actively involved in collaborative learning perform very well to achieve their goals. To achieve active groups social media plays a very important role (Amastini, Kaunang, Nefiratika, Sensuse, & Lusa, 2020). By using different social media tools, Students can talk to their group members to solve a number of different problems. This is an important collaborative style. Learners have cognitive ability their collaborative learning becomes very important. Social media sites can play an important role to motivate the students, increasing the level of learning, creating a linkage between teachers and students and developing collaborative learning among students as well. it also helps in the development of resilient classrooms (Amadu, Muhammad, Mohammed, Owusu, & Lukman, 2018).

The engagement of students through different social media sites represents the involvement of students on mental and physical levels. It also shows the time spent buying Just Dance on social media sites to interact with teachers and peers during the learning process. Engagement of the students then they are interacting with teachers and peers and sharing ideas. Interaction plays an important role to affect the engagement of students. Add information technology is becoming more advanced therefore IT is the House of information. Scholars in the study reported that more than 30% of the students prefer to collaborate with their friends, tutors and colleagues further interaction whereas more than 55% of the students preferred social media for chatting, blogging and sharing videos during last times. Therefore E-learning has become a very important and sharp

tool to affect performance positively. it will be better for the students if the knowledge is shared. Researchers reported that social media sites are one the important tool and predictors for sharing knowledge. As a result, the knowledge sharing behaviour of the students is also affected. With the help of social media, students can get an interactive learning environment, and improve their performance (Al-Mukhaini, Al-Qayoudhi, & Al-Badi, 2014).

Scholars also claim that social media is supported by collaborative learning. As a result, students can improve their creative learning as well. Therefore, further decision makers need to integrate different methods by which collaborative learning can be improved in classes by using social media. The decision-makers can also use social media to increase the creativity of the students in there all kinds of activities. A number of different alternatives are provided by social media such as YouTube, blogs and even different kinds of podcasts tend to enable knowledge creation (Zhang, Meng, de Pablos, & Sun, 2019). Therefore, it was hypothesised that:

H3: *Use of social media for collaborative learning is positively associated with online knowledge sharing behaviour.*

2.5. Perceived Ease of Use of Technology; Association with Online Knowledge Sharing Behaviour and Student Engagement

As mentioned above perceived ease of use is defined as the belief of a person regarding the knowledge he or she has about technology. Perceived ease of use also refers to the web interface, Internet functions, accessor website, and use of particular technology very easily. It also shows the importance of important technology elements. Specifically, if online shoppers approve of any technology, then it is more appropriate to use. In other words, the technology used will be complicated and easy to use it will be accepted by the people. Therefore, perceived ease of use and perceived usage are important factors of acceptance of technology. The cost of perceived ease of use is used in a number of electronic factors such as in Internet applications, mobile commerce, eCommerce, and electronic mail. Increase in the pursuit of ease of use affects behavioural intention positively (Chen & Aklikokou, 2020).

Perceived ease of use also affects knowledge sharing among students. It is because perceived ease of use is linked with the valuation of users to use the technology. If the student considered that usage of technology is important and favourable for their studies he or she will be willing to use the technology in future (Bilgihan, Barreda, Okumus, & Nusair, 2016). Perceived ease of use can play an important role in students sharing information on different networks. So, this shows that knowledge sharing is affected significantly by perceived ease of use. It is more likely that a student who is working online and using different social media networks will share information with other peers. It is more likely that I usually write a review online of any service or product if it is liked by that person. a number of different studies have proposed that in a virtual environment knowledge sharing will also be affected positively by perceived ease of use. The

expected benefits of using the online social media website or any new technology his perception of ease-of-use end time savage (Amidi, Jabar, Jusoh, & Abdullah, 2017). Therefore, the attitude of the students will be affected by the perceived ease of use creating behaviour intention among them (Camilleri & Camilleri, 2019).

H4: Perceived ease of use Of Technology is positively associated with online knowledge sharing behaviour.

2.6. Mediating Hypotheses

H5: Online Knowledge sharing behaviour mediates the association between Knowledge sharing self-efficacy and Student Engagement.

H6: Online Knowledge sharing behaviour mediates the association between social media collaborative learning and Student Engagement.

H7: Online Knowledge sharing behaviour mediates the association between Perceived ease of use Of Technology and Student Engagement. (Figure 1)

3. Methodology

This study uses a quantitative research design to examine the effects of social media collaborative learning and knowledge sharing self-efficacy on student engagement in Saudi Arabian universities. Structured questionnaires are used in this research to collect responses from participants. The cross-sectional design of the study allows it to provide a picture of the participants' experiences and perspectives by concentrating on a single point in time.

4. Measurement Tool and Sampling

A questionnaire was used in this study were used to gather data from the respondents. This questionnaire was developed from the literature of past studies. The knowledge sharing self efficacy was measured by adapting the concepts of Sherer et al. (1982) and Pierce, Gardner, Cummings and Dunham (1989). To measure the social media collaboration learning, the items were developed by adapting the concept of Popescu (2014). The third dimension perceived ease of use was adapted from Davis (1989). Online knowledge sharing behaiour was conceptualized by adapting Yu, Lu and Liu (2010). Students engagement was measured by following the guideline of Fredricks, Filsecker, & Lawson (2016).

This questionnaire was developed on 5 point Likert scale. The range of the scale was from 1 to 5. On this scale, 1 reflects strongly disagree whereas 5 represents strongly agreed. The respondents of the study were employees working in the universities of KSA. The questionnaire was distributed among 318 respondents personally by using convenient sampling. The total number of questionnaires received back was 241. Among these 18 questionnaires were not usable as they were not filled by the respondents. Therefore, 223 questionnaires were usable. Respondents were asked about their consent before giving them a questionnaire to be filled.
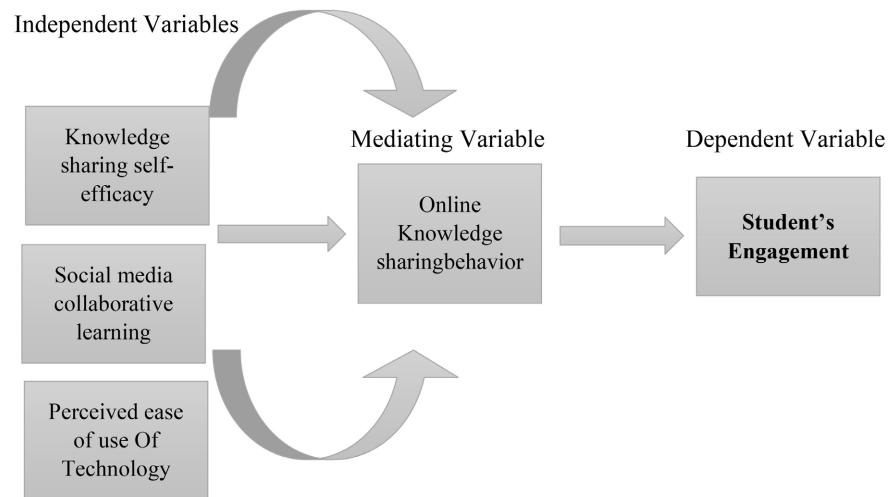
Figure 1. Research framework.

The first part of the questionnaire was related to the demographic information of the respondents. Among the respondents, 69 per cent of the respondents were male whereas the remaining were female. Moreover, 74 per cent of the employees were having experience from the range of 0 to 5 years. The remaining employees had experienced more than 5 years. Later, the gathered data was analyzed using SPSS 25 and AMOS 25. As the sample size of the present study is relatively high, therefore this study used AMOS 25 for the analysis of the data. For the analysis of data from AMOS, the data used for the analysis must be normal. The analysis of data through AMOS will be based on the structural model and measurement model. To gather an accurate estimation of standard errors, the bootstrapping procedure was used with bootstrapping samples of 2000 (Arifin & Yusoff, 2016). For the confirmation of the theory CBSEM was used (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). Thus, AMOS 25 is used in the present study for analysis purposes.

5. Data Analysis and Results

5.1. Descriptive Analysis

Table 1 offers a concise and organized depiction of the quantitative demographic profile of respondents to offers a clear picture of the distribution of respondents across different demographic categories.

The distribution of responders across various academic disciplines, academic levels, technology familiarity levels, and preferred technologies for educational purposes is clearly broken out by demographic profile. It provides a numerical illustration of the traits of the study's participants, enabling a quantitative comprehension of how these traits affect their participation in Saudi Arabian colleges.

Different data analysis tools were used for the analysis of data in the present study. For the analysis of initial response and cleaning of the data we used SPSS. This software was also used for cleaning the data as well as descriptive analysis. An extensive data cleaning process was used to remove any errors, discrepancies,

or missing values from the participant's initial response data. This phase was essential in getting the dataset ready for further analysis since it made sure that analyses were built on a firm foundation of correct and trustworthy data. Outliers, missing values, and probable errors in the dataset were easier to find using SPSS. Any outliers were carefully examined to assess their veracity and whether they needed to be eliminated or changed. For this purpose, trimming at 10th Percentile and 90th Percentile were followed. Depending on the degree of missing values and the underlying assumptions of the data, missing values were treated using the relevant procedures, such as mean imputation or deletion. Additionally, the process of cleaning the data involved assuring consistency and standardization in the formats of the variables.

Table 1. Demographics.

Demographics	Percentage
Gender	
Male	73%
Female	27%
Age	
20 - 30	55%
30 - 40	26%
Above 40	19%
Course of Study	
Computer Science	25%
Business	20%
Engineering	15%
Social Science	10%
Natural Science	12%
Others	18%
Academic Level	
Undergraduate	65%
Postgraduate	35%
Prior Knowledge of Technologies	
Experience with Technologies	65%
Limited Experience with Technologies	35%
Most Used Technology for Education Purpose	
Facebook	20%
Youtube	26%
Telegram	20%
Whatsapp	10%
Instagram	10%
Others	14%

In present research, most of the respondents are male representing around 73% of the respondents. On the other hand, only 27% of the respondents are female. Majority of the respondents fall in the age group of 20 to 30 years (55%), 26% of the respondents fall between the age group of 30 to 40 years. Whereas, remaining respondents falls between the age group of more than 40 years. Similarly, the respondents were asked about the course they are teaching and it is found that most of the respondents were involved in teaching computer science and business subjects with 25% and 20% ratio respectively. Whereas, 15% were involved in engineering, 10% from social science, 12% were in natural science and 18% with other subjects. Most of the respondents were involved in teaching at undergraduate level consisting 65% and only 35% were involved in teaching at postgraduate level. The respondents were also asked to disclose prior knowledge of technologies and it is evidenced that 65% of respondents were having experience with technologies while 35% were having limited experience with technologies.

5.2. Measurement Model

For the further analysis of the research, this study has used SEM. For this purpose PLS was used as the tool. The analysis through PLS falls under measurement model and structural model. The beginning stage of analysis through PLS is the measurement model which is used to assess reliability and validity of the constructs. The factor loading of the present research is given in Table 1. It is evident from the values of Table 2 that outer loading of the items retained in the study is more than 0.50 (Hair Jr et al., 2014).

Figure 2 provides a graphical representation of measurement model and score of factor loading for each idem and variable.
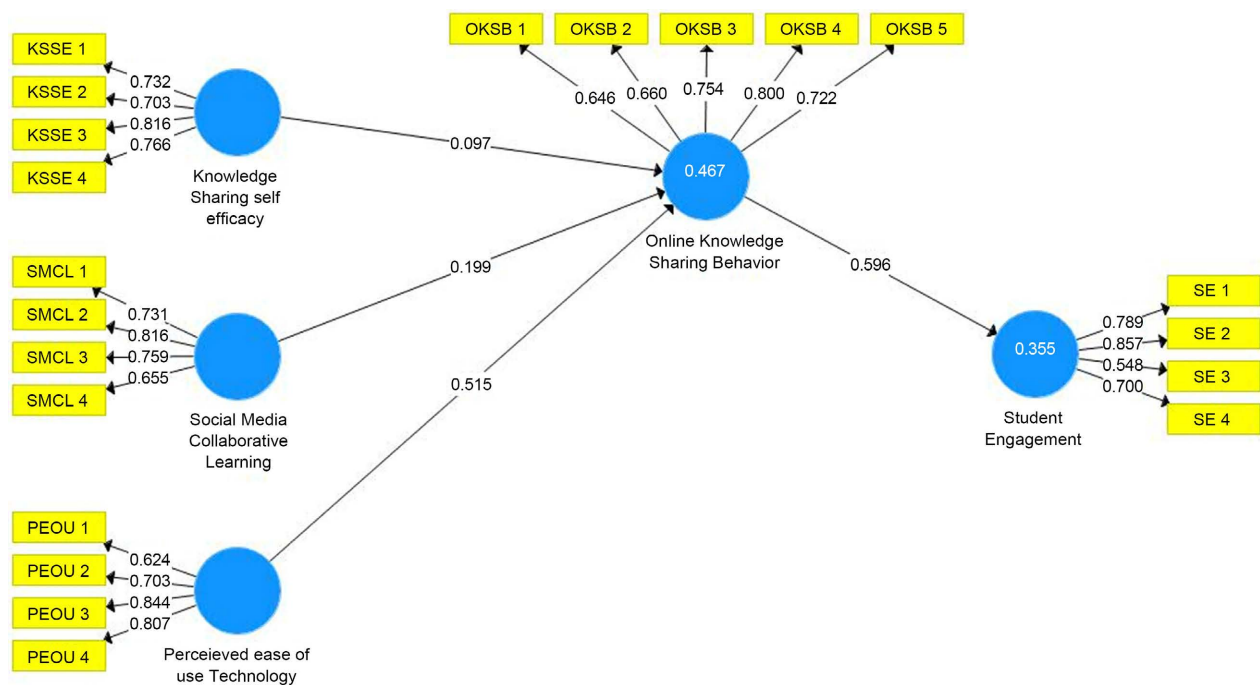
Figure 2. Measurement model.

Table 2. Factor loading.

	KS-SE	OKSB	PEOU	SE	SMCL
KSSE 1	0.732				
KSSE 2	0.703				
KSSE 3	0.816				
KSSE 4	0.766				
OKSB 1		0.646			
OKSB 2		0.660			
OKSB 3		0.754			
OKSB 4		0.800			
OKSB 5		0.722			
PEOU 1			0.624		
PEOU 2			0.703		
PEOU 3			0.844		
PEOU 4			0.807		
SE1				0.789	
SE2				0.857	
SE3				0.548	
SE4				0.700	
SMCL 1					0.731
SMCL 2					0.816
SMCL 3					0.759
SMCL 4					0.655

Moreover, the reliability of measurement scale has also been tested using Cronbach's alpha and composite reliability measurements. It is a widely used method to measure internal consistency of responses. The values of Cronbach alpha and composite reliability is more than 0.70 (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017). The values of AVE in this research is more than threshold level of 0.50 (Sarstedt, Ringle, & Hair, 2017) as evident in Table 3. Later the value of R square is also determined and mentioned in Table 3. It is revealed from the values of R square in Table 3 that that combined effect of all Iv's on mediator is more than 40% and on dependent variable is more than 35%.

Later we analyzed discriminant validity in this research. For this purpose we adopted HTMT technique which is used to overcome the shortcomings of Fornell and Larker technique. It is revealed from the HTMT matrix that the values are less than 0.90 meeting the criteria and establishing discriminant validity. (Table 4)

Table 3. Reliability analysis.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
KS-SE	0.751	0.764	0.841	0.571
OKSB	0.764	0.769	0.842	0.517
PEOU	0.737	0.765	0.835	0.562
SE	0.712	0.776	0.819	0.537
SMCL	0.727	0.737	0.830	0.552

Table 4. Discriminant validity.

	KS-SE	OKSB	PEOU	SE
KS-SE				
OKSB	0.691			
PEOU	0.871	0.847		
SE	0.701	0.772	0.739	
SMCL	0.735	0.562	0.462	0.576

5.3. Structural Model

After establishment of measurement model, we analysed structural model in the present study. This step is important to examine the proposed hypothesis. According to the values mentioned in table below that KSSE do not have significant effect on OKSB as Beta = 0.097, t = 0.247. Numerous factors that may have influenced the results may be to blame for the lack of a substantial impact of knowledge sharing self-efficacy on online knowledge sharing behavior in our research study. It's possible that the study's participants' traits contributed to the results. The variance in knowledge sharing self-efficacy scores may have been constrained, preventing a meaningful effect, if the participants already exhibited a propensity for online information sharing or had relatively high levels of self-efficacy (Shaari, Rahman, & Rajab, 2014). On the other hand OKSB and SE have statistically significant relationship (Beta = 0.596, t = 13.518). This explains that knowledge sharing self efficacy has a direct relationship with student engagement but the interaction of mediating term does not fit in the path analysis.

Also PEOU have positive significant effect on OKSB (Beta = 0.515, t = 6.885). The results are inline and consistent with the previous findings (Siagian, Tarigan & Ubud, 2022). People encounter fewer difficulties in using a system when they believe it to be simple to use. They are more willing to investigate the system because of the lower hassle in technology use. In the context of online knowledge sharing platforms, a user is more likely to actively participate in sharing information and insights if they regard the interface to be intuitive and user-friendly. Similarly when we look at Table 5 to find the indirect relationship of PEOU to SE in the presence of OKSB as mediator the *P*-value is significant. Online knowledge sharing behavior plays a key role as a mediator in the relationship

between student engagement and perceived ease of use of technology. Perceived simplicity of use starts a process that leads to student engagement through social connections, reciprocity, and the accumulation of pleasant experiences by making it simple for people to share knowledge within the online platform. Understanding this mediation process can help designers create electronic interfaces that are simple to use and encourage long-term involvement.

Furthermore SMCL also have positive significant effect on OKSB (Beta = 0.199, t = 3.210). Social media platforms give students a way to create knowledge together. Deeper comprehension and critical thinking are promoted through participating in discussions, exchanging materials, and working together on projects. The sense of ownership over the learning process is fostered by this active participation, which raises engagement. Social contact and peer support are also promoted via collaborative learning through social media (Stewart & Abidi, 2012). Students can ask questions, get advice, and help out their fellow students. This sense of solidarity and support for one another helps to create a positive learning environment, which further influences student engagement. Online knowledge sharing behavior mediates the relationship between student involvement and social media collaborative learning (Tarantino, McDonough, & Hua, 2013). In the end, the values of Table 6 reveals that mediating role of OKSB is confirmed among the proposed relationships other that the relationship among KSSE and OKSB.

In PLS-SEM, R^2 values range from 0 to 1, where a value of 0 indicates that the independent variables have no explanatory power and a value of 1 indicates that they fully explain the variance in the dependent variable. The R^2 value of 0.4678, for OKSB, indicates that the independent variables (KS, PEOU and SMCL) in the model account for 46.78% of the variance in the dependent variable i.e. online knowledge sharing behaviour (OKSB). Similarly, R^2 value of 0.355 for SE explains the variation in student engagement due to online knowledge sharing behaviour (OKSB). R^2 evaluate the model's goodness-of-fit. Fit is less important in PLS-SEM than predictive relevance of the model. Therefore, poor model fit isn't always indicated by a lower R2 value in PLS-SEM. In PLS-SEM, the R2 value indicates how well the independent variables in the model account for the variance in the dependent variable. However, taking into account the objectives of the research, the complexity of the model, and the predictive usefulness of the relationships being investigated, the results interprets sound nuanced. (Table 7)

Figure 3 illustrate the graphical explanation of the structural model.

Table 5. Direct relationships.

	Beta	SD	T value	*P* Values	Decision
KS-SE -> OKSB	0.097	0.084	1.159	0.247	Not Supported
OKSB -> SE	0.596	0.045	13.158	0.000	Supported
PEOU -> OKSB	0.515	0.075	6.885	0.000	Supported
SMCL -> OKSB	0.199	0.062	3.210	0.001	Supported
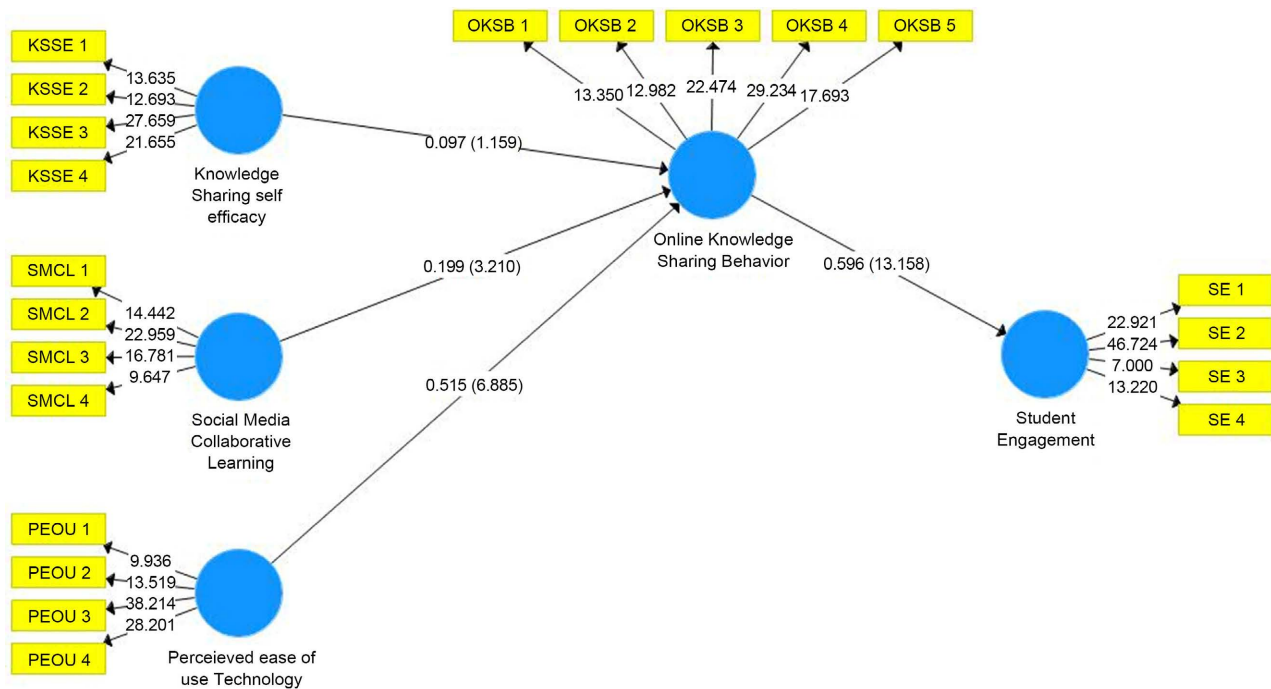
Figure 3. Structural model.

Table 6. Indirect relationships.

	Beta	SD	T value	*P* Values
KS-SE -> OKSB -> SE	0.058	0.052	1.119	0.264
PEOU -> OKSB -> SE	0.307	0.051	6.014	0.000
SMCL -> OKSB -> SE	0.118	0.038	3.122	0.002

Table 7. Explained variation in SE and OKSB.

	R Square
OKSB	0.467
SE	0.355

6. Discussion and Conclusion

Students are the asset of higher education institutes. Therefore, the universities need to find out the factors that can help in the engagement of students. Therefore, this research was designed to determine the relationship between Knowledge sharing self-efficacy, Social media collaborative learning, Perceived ease of use of Technology and students' engagement. This research also tried to determine the mediating role of online knowledge sharing. The data of the study were collected from the students of KSA University and analyzed using SEM through AMOS.

The findings of the study revealed that students' engagement is positively linked to online knowledge sharing. This result is supported by (Rasheed et al., 2020). Additionally, the statistical results support the hypothesis that knowledge

sharing self-efficacy is positively associated with online knowledge sharing behaviour. In past, the same results were revealed by (Ergün & Avcı, 2018). The results also support the claim that there is a positive linkage between social media collaborative learning and knowledge sharing behaviour as supported by (Amadu et al., 2018). These findings highlight the importance of social media to alter the behaviour of students. Furthermore, the findings also support the linkage between perceived ease of use of technology and knowledge sharing behaviour (Chen & Aklikokou, 2020). It shows the importance of ease of usage of technology among students for technology adoption. This study bridges the gap of limited studies highlighting the importance of online tools and social media for student engagement and knowledge sharing behaviour. These results can be used by the strategists of the education sector to develop a strategy for student engagement through online tools and social media.

While the research article sheds light on the intricacies of online teaching and learning via social media, it is essential to acknowledge its limitations for a balanced interpretation of the findings. The research was primarily focused on a certain age group, with a large proportion of respondents aged between 20 to 30 years. Typically, people in this age group have a stronger affection for technology and digital tools. In light of the fact that older people may have a different relationship with technology and online learning platforms, the findings may not truly reflect the experiences and difficulties faced by this group of people. Additionally, the method of data collection and analysis was predominantly quantitative. Although this method provides statistical insights, it may ignore the individuals' complex experiences, perceptions, and emotions. Incorporating qualitative research techniques would have allowed for a greater comprehension of the psychological and emotional aspects of social media-based online teaching and learning. Moreover, the study was limited to one country and the generalizability is constrained by the absence of cross-country study. The sociocultural backdrop, technological environment, and educational regulations of any nation can have a big impact on how online teaching and learning works. The study's usefulness and robustness would be improved by investigating these factors in cross country setting.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Annesture

Knowledge Sharing Self Efficacy

1) How confident are you in your ability to share knowledge when asked or required, regardless of the complexity of the information?

2) To what extent do you believe you can willingly share your knowledge with anyone, irrespective of their background or familiarity with the subject?

3) How sure are you that you can openly share both common and impressive knowledge voluntarily, without hesitation?

4) How willing are you to share your knowledge, even if it's unconventional or not widely known, without concern for ownership or recognition?

Social Media Collaboration

5) I frequently use social media platforms to collaborate with my students and/or peers for educational purposes.

6) I find social media platforms effective in facilitating discussions, knowledge sharing, and collaborative projects with other educators.

7) I am confident in utilizing various social media tools to connect with fellow educators, share teaching strategies, and co-create educational content.

8) I am willing to actively participate in online communities and groups on social media to engage in discussions, exchange ideas, and learn from other educators in your field.

Perceived Ease of Use of Technology

9) How easy do you find it to quickly learn and become proficient in using new technologies?

10) To what extent do you believe that using technology for various tasks is uncomplicated and straightforward?

11) How confident are you in your ability to navigate and interact with different digital tools without encountering significant difficulties?

12) How comfortable do you feel when using technology, even if you have limited prior experience with a particular tool or application?

Online Knowledge Sharing Behaviour

13) I have contributed knowledge to others using online platforms

14) I usually actively share my knowledge with others using online platform

15) I have contributed knowledge to other members that resulted in the development of new insights.

16) I have tried to share my educational and training expertise with other members in more effective ways

Students Engagement

17) At university, I am bursting with energy.

18) Time flies when I am studying.

19) I find my school full of meaning and purpose.

20) Overall, I feel engaged in my studies and institute experience.