Adoption of Could Based E-Learning in Public Universities of Saudi Arabia

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Abstract

Cloud based E-learning (CBE-L) is a new technology that is used in learning and teaching. The use of the technology is developing countries such as Saudi Arabia is limited. The purpose of this study is to examine the factors that affect the adoption of CBE-L among students in Saudi Arabia. Based on the literature, this study proposed that adoption of CBE-L by students will be affected by performance expectancy (PE), effort expectancy (EE), social influence (SI), security (SE), privacy (PV) and facilitating condition (FC). Trust (TR) is expected to mediate the effect of PE, EE, SI, SE and PV on the behavioural intention (BI) to use CBE-L. The data of this study was collected from 263 students in Saudi Arabia in particular in Riyadh, the capital of Saudi Arabia. An online questionnaire was created for the purpose of collecting the data. The data was analysed using Smart Partial Least Square (Smart PLS).The measurement and structural model were assessed. The result of testing the hypotheses using the structural model showed that EE, SI, security, and PV have significant effect on BI. The FC and BI affected the use behaviour (UB). TR mediated the effect of PV on BI and has a direct effect on the BI. The findings were discussed and mores studies are needed to examine the predictors of using CBE-L by students and academic staff in developing countries.

Keywords: Cloud Based E-learning, UTAUT, Performance Expectancy, Security

1. Introduction

Cloud computing (CC) is a new technology and it is defined as "a dynamic innovation platform that addresses a wide variety of requirements by giving a digital framework to broaden information storage abilities". CC is beneficial for programmers, users and service providers. The technology reduce the operational cost as it provide access on demand for programming and equipment(Alkhater, Walters & Wills 2014). This ability enables the CC to handle large amount of data and to provide services such as software, hardware, and platforms on demand basis (Dempsey & Kelliher, 2018).

Perception and attitude of the users are important for the usage of the CC (Alotaibi 2014; Marston et al. 2011). But previous studies focus on domain such as business organization while the educational organization such as universities has received less attention (e.g. Gupta, Seetharaman, & Raj 2013; Johansson & Ruivo 2013; Marston et al. 2011; Nedev 2014; Ponsignon et al. 2015; Stieninger & Nedbal 2014; Tehrani 2013). The usage of CC by educational institutions such as universities has not been well investigated by researchers (Gohary, Hussin, Zadehgan 2013; Lim, Grönlund, & Andersson 2015). In addition, few of the prior literature focus on the adoption and usage of CC in higher education (Gohary et al., 2013; Lim et al., 2015; Huang, 2016). In addition, studies focused on developed countries and the usage of cloud in these countries(Guner & Sneiders, 2014).

A study found that most of previous studies were conducted in Western and developed Countries because the technology is widely used in these countries while in developing countries, there is a lack of usage and preparation for using high and advanced technology (Tarhini, Hone, & Liu 2013; Phaphoom et al. 2015). It is found that few studies have investigated the CC issues in developing countries. Nevertheless, there is a gap in term of using the technology between developed and still developing countries. Due to this gap, developing countries are facing more challenges in term of infrastructure, readiness, and perception of individuals toward the technology (Mujinga & Chipangura, 2011; Safie & Aljunid, 2013). Thus, it is important to investigate the issues surrounding the adoption of CC to ensure its success (Morgan & Conboy, 2013).

In Saudi Arabia, the use of CC among universities is weak and this could be due to several factors that are related to the benefit of the usage and the effort needed to use the technology. CBE-L in Saudi Arabia is still in its emergence stage. Universities do not recognize the opportunities in moving to cloud based learning technology (Thorpe & Alsuwayed, 2019). In addition, the adoption of CBE-L among students is low and further studies are needed (Almaiah & Al-Khasawneh, 2020; Almazroi et al., 2019). Existing findings in the literature indicate that the usage of technology by students in developing countries is less than 21% (Tarhini, Hone, et al., 2015; Tarhini, Scott, et al., 2015). A comparison between universities of developing countries and United Kingdom (UK) universities indicates that the usage of technology in UK is highly advanced compared with the usage in developing countries (Tarhini, Scott, et al., 2015). In addition, the studies pertaining to CBE-L worldwide are few (Nguyen et al. 2014; Nguyen, Nguyen, & Cao 2014).

Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh, Morris, Davis and Davis (2003) to examine the individual acceptance of new technology. Nevertheless, UTAUT was criticized for not including security, trust, and privacy. Thus, this study will handle the criticism of UTAUT and includes variables such as trust, security, and privacy. In Could based e-learning (CBE-L), the use of the technology is based on the perception of the users toward its safety and the concern over privacy. Trust is an important and critical factor in using a technology. Thus, this study will examine its role as a mediating variable in the context of CBE-L. The following sections discuss the literature review, methodology, findings, discussion, and conclusion.

2. Literature Review
This section discusses the literature and the development of the conceptual framework and hypotheses.

2.1 Theoretical Framework
This study deployed the framework of UTAUT. The model was developed by Venkatesh et al. (2003). Venkatesh et al. (2003) proposed that there are four main predictors of BI toward accepting and using new technology. These predictors are PE, EE, and SI while BI and FC are expected to impact the UB. Several previous studies have used the UTAUT in investigating the factors that affect the adoption of technology in E-government context, or business organization context. However, previous studies noted that the use of UTAUT in the context of CC is still limited to few studies (Cao et al., 2013). In the present study the UTAUT is used as the theoretical foundation for developing the proposed research model. Along with UTAUT, the social exchange theory (SET) which suggested that any exchange that an individual makes will be based on the cost-benefit analysis. Trust is an important variable of social exchange theory, and it is an enablers of online exchange. The variable is proposed in this study as a mediator (Shiau & Luo, 2012; Wang et al., 2016).

2.2 Conceptual Framework
Based on UTAUT, social exchange theory, and the review of existing frameworks and models, this study proposes that PE, EE, SI (from UTAUT), security, and privacy will have a positive effect on the BI to use CBE-L among students in Saudi Arabia. Following the conceptualization of UTAUT, this study proposes that BI and FC will have a direct effect on the UB of CBE-L. Trust is proposed to mediate the effect of PE, EE, SI, security, and privacy on the BI to use CBE-L.
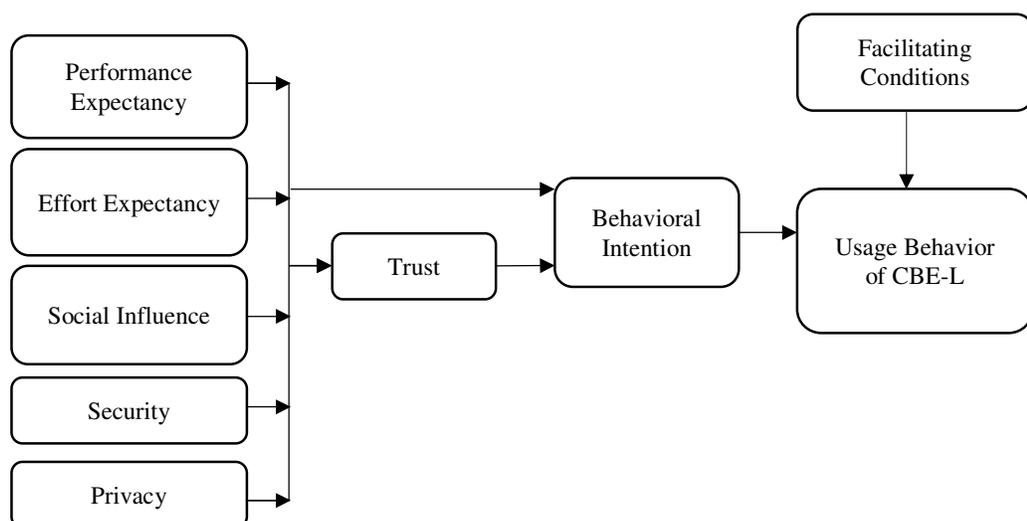
Figure 1: Proposed Model

2.2.1 Performance expectancy and Behavioural Intention

PE is the belief of individual or users about the benefits that can be obtained in term of performance from using the technology (Venkatesh et al., 2003). Nguyen et al. (2014)also investigated the impact of PE on the use of CBE-L. The result showed that PE is an important predictors of CBE-L. Several other studies (Abdekhoda et al., 2016; Samsudeen & Mohamed, 2019; A. Tarhini et al., 2017; Yakubu & Dasuki, 2019). Hence, this study will attempt to find the impact of PE on BI to use CBE-L among students in Saudi Arabia. The below hypothesis is made.

H1: PE is a positive predictors of BI to use CBE-L.

2.2.2 Effort Expectancy and Behavioural Intention

EE indicates the degree of efforts are needed to use a technology such as CBE-L(Venkatesh et al., 2003). Bellaaj et al. (2015) tested the impact of EE on the BI of users of the E-learning. The finding confirmed that EE has a positive impact on BI. Nguyen, et al. (2014) found that EE affects the BI to use CBE-L. Other studies such as Yakubu and Dasuki (2019) found that the effect of EE on the BI to use CBE-L by students is positive and significant. Similar findings were derived by other studies that investigate the effect of EE on BI to use e-learning in UK (Tarhini et al., 2017), and BI to use technology by students in Sri Lanka (Samsudeen & Mohamed, 2019), as well as in Iran (Abdekhoda et al., 2016). Therefore, the hypothesis is stated as follows:

H2: EE is a positive predictor of the BI to use CBE-L.

2.2.3 Social Influence and Behavioural Intention

SI is defined as the effect of others such as friends, relative, classmate, and lecturers on the decision of users to use a specific technology or new innovation (Venkatesh et al., 2003). Sabah (2016) investigated the adoption of M-learning by students. The author stated that those with high knowledge of using the technology are less affected by the opinion of others. Park and Ryoo (2013)examined the degree to which the SI affect the decision of switching to other technology such as CC storage and found that SI impacts positively the CC storage. Similarly, in the study of Cao et al. (2013), the findings showed that SI is an important predictors of the CC adoption. In a study of CBE-L, Nguyen et al. (2014) derived findings that has confirmed the positive link between SI and the use of CBE-L. Suki and Suki (2017) also found that SI did not affect the students' BI for storytelling and animation using social media in Malaysia. In addition, in the study of Yakubu and Dasuki (2019), SI did not affect the BI to use technology by students. Accordingly, in this study, it is hypothesized:

H3: SI is a positive predictor of BI to use the CBE-L.

2.2.4 Security and Behavioural Intention

Security in the context of CBE-L is the extent to which the users of CBE-L thinks that the CBE-L is a secure service for making transaction such as to store, share, and download applications (Arpaci, 2016). Prior studies attempted to find the link between security of the CBE-L and the BI to use this technology. For instance, Arpaci et al. (2015) found that security is vital for the use of CC. Senyo et al. (2016) also found that security concern of the IT professional is a critical reason when it comes to deploy a technology such as CC. Alkharusi and Al-badi (2016) found that the security has a significant effect on the adoption of CC by individuals. Therefore, in this study, it is expected that the high level of security will encourage students to use the CBE-L.

H4: Security is an important predictor of BI to use CBE-L.

2.2.5 Privacy and Behavioural Intention

Privacy is defined as "the degree to which students believe that CBE-L services are safe and protects their sensitive data" (Arpaci, 2016). Alkhater et al. (2015) found that privacy of the CC affects strongly the intention to adopt CC by IT staff. Lim et al. (2015) indicated that privacy is one of the most urgent concerns for school principals when adopting new technology. Phaphoom et al. (2015) compared between adopter and non-adopter of CC and found that data privacy is critical for the

adoption of CC. Accordingly, in this study, it is expected that high privacy will enhance the BI to use CC by students at universities.

H5: Privacy is a positive predictor of BI to use CBE-L.

2.2.6   Facilitating Condition and Use Behaviour
FC is one of the variables of UTAUT and it refers to "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh, et.al. 2012). Researchers who deployed UTAUT linked the FC to direct use of new technology (Venkatesh et al., 2003; Tarhini, Hone, et al., 2015; Cao et al., 2013). Nguyen et al. (2014) found that FC has a positive and significant effect on the adoption of CBE-L (UB). However, in the study of Tarhini, Deh, Al-Busaidi, Mohammed and Maqableh (2017) FC did not affect the BI of students to use E-learning. Nevertheless, in this study, it is expected that FC has a strong effect on the UB of students at Saudi universities.

H6: FC is a positive determinant of UB of CBE-L

2.2.7 Behavioural Intention and Use Behaviour
BI is a positive or negative feeling toward acting or performing an action. It is whether users intended to use the CBE-L or not in the near future. On the other hand, the UB is the actual use. It is whether they are actually using the CBE-L or not (Venkatesh et al., 2003). Most of previous theories in the context of using a technology and that have deployed TAM or UTAUT has proposed that BI will have a positive impact on UB (Davis et al., 1989; Venkatesh et al., 2003). Researchers such as Taylor and Hunsinger (2011) indicates that the positive BI is the most vital reasons to use a technology such as Google.Doc. Cao et al. (2013) also showed empirically that BI is a predictor of UB. Several studies have derived similar results (Ali et al., 2016; Behrend et al., 2011; Sabi et al., 2016). Therefore, in this study, it is hypothesized:

H7: BI is a predictor of UB ofCBE-L

2.2.8 Mediating Role of Trust

Trust can be defined as the confidence of the users in the system or the technology to be reliable as well as trustworthy (Arpaci, 2016). The perception about the service providers as trustworthy, honest, and work in the interest of the user enhanced trust and increased the adoption of CC (Adjei, 2015). Based on a typology on trust role in CC adoption, Lansing and Sunyaev (2016) concluded that trust received less attention in the context of CC and the variable trust has been proven to be a mediator in the link between success factor of adoption and usage intentions of CC. The mediating role of trust was examined in few studies. For instance, in the study of Burda and Teuteberg (2014), trust as a mediator was examined between the PEOU and PU and the BI. The findings of mediation analysis showed that trust did mediate the effect of PEOU and PU on BI. In the study of Masrek, Uzir, and Khairuddin (2012), the authors examined the role of trust in mobile banking and constructed a proposed framework to identify and understand how trust can play a role in the usage of a technology such as M-banking in the Malaysian context. In the after mentioned framework, trust predicted to be a mediating variable. Ghazizadeh, Lee, and Boyle (2012)tested the role of trust as a mediator. Their empirical results showed that trust has a mediating effect between TAM's variable i.e., PEOU, PU and BI. The result of the analysis showed that trust did mediate the effect of the PEOU and PU on the BI. Similarly, in the study of Hew et al. (2016), trust was proposed to mediate the impact of perceived competency and BI. The result showed that trust is a mediating variable between perceived competency and BI.

Lian (2017) tested the mediating role of trust in CC adoption. The author found that trust mediated the effect of perceived quality on satisfaction about CC adoption by users in Taiwan. LI, Zhao and Yu (2015) found that trust mediated the effect of technological aspects and environmental aspects on the CC transformation intention. Thus, in the present study, the role of trust as a mediator is proposed. Trust assumed to madidate the effect of the variables on the BI to use the technology.

H8a: Trust is a positive mediator between PE and BI to use CBE-L.
H8b: Trust is a positive mediator between EE and BI to use CBE-L.
H8c: Trust is a positive mediator between SI and BI to use CBE-L.

H8d: Trust is a positive mediator between privacy and BI to use CBE-L.
H8e: Trust is a positive mediator between security and BI to use CBE-L.

3. Methodology

The population of this study is the public universities in Saudi Arabia and in particular in the Riyadh, the capital of Saudi Arabia. In Riyadh, there are five public universities. However, some of the these universities are gender based and limited to either male or female. This study includes the two genders and thus, only three universities meet this condition. Accordingly, the three universities are the university of Imam Mohammad Ibn Saud Islamic University (79,004 students), King Saud University (35,123 students), and Saudi Electronic University (17,023 students). This makes the population of this study accounts to 131,150 students. This study deploys random sampling technique. The sample size is calculated based on the formula that is given by Krejcie and Morgan (1970), which showed that the exact sample size of population of 131,150 is 383 at margin error of 0.05 and confidence level of 0.95. This study collected the responses from students using a survey. Measurement of PE, EE, SI, FC, and UB was adopted from Venkatesh et al. (2003) and Lian (2015). Security and privacy was adopted from Wu (2011) Park and Kim (2014), trust was adopted from Alotaibi (2014).Data collection of this study wasconducted using an online questionnaire. English and Arabic languageswereused. A total of 383 questionnaires wasdistributed to the three universities. As a result, a total of 274 responses was collected. Nine responses were found to have large number of missing values and deleted accordingly. In addition, the outlier analysis showed that two responses are outliers and removed. Data is normally distributed and there is no multicollinearity.

4. Findings

4.1 Profile of the Respondents

A total of 263 respondents have participated in this study. The majority of the respondents are males in the age between 21-25 years studying IT, management, and engineering. They access the CBEL using smartphone.

4.2 Measurement model

The measurement model is evaluated by examining the factor loading of the items as well as the reliabilities and the validities (Hair et al., 2017). The factor loading of some items were less than 0.70 and they were deleted. The Cronbach's Alpha (CA) should be greater than 0.70 and the composite reliability (CR) should be 0.70. In Table 2, the CA and CR are greater than 0.70 and this indicates that the measurement is reliable. For the convergent validity, it is achieved because AVE for all the variables is greater than 0.50 indicating that the items measure the variables with a percentage higher than 50%.

Table 1: Reliabilities and Validities of the Variables

Variable	CA>0.70	CR>0.70	AVE<0.50
Behavioural Intention	0.884	0.920	0.741
Effort Expectancy	0.789	0.877	0.704
Facilitating Conditions	0.818	0.880	0.648
Performance Expectancy	0.894	0.922	0.703
Privacy	0.849	0.898	0.688
Security	0.879	0.917	0.734
Social Influence	0.858	0.904	0.701
Trust	0.870	0.911	0.720
Use Behaviour	0.920	0.940	0.759

Hair et al. (2017) pointed out that the discriminant validity is achieved if the indicators (in bold) should be greater than the cross loading (the row and column). The discriminant validity is achieved.

4.3 Structural Model

The structural model can be assessed using criteria such as the R-square, effect size (f-square), and predictive relevance (Q-square). The value of R-square of this study for behavioral intention is 0.803 which is substantial. Similarly, the R-square of trust and use behavior is above than 0.50 which indicates that the explanatory power is substantial. The predictive relevance (Q-square) should be

greater than zero to conclude that the independent variable can predict the dependent variable. The value of Q-square for behavioral intention, trust, and use behavior are greater than zero. The values of the f-square are acceptable except for the effect of SI on TR which accounts to 0.019. The fourth criteria to evaluate the structural model is the path coefficient. In Table 4, the results of testing the hypotheses are given. It shows the hypothesis (H), path, path coefficient (ß), standard deviation (Std.), T-value (T), P-value (P), conclusion. The hypothesis is considered as accepted if the p-value is less than 0.05.

Table 2: Results of Direct Effect Hypotheses

H	Path	ß	Std.	T	P	Conclusion
H1	PE -> BI	0.131	0.087	1.506	0.132	Rejected
H2	EE -> BI	0.181	0.083	2.191	0.028	Accepted
H3	SI -> BI	0.171	0.054	3.182	0.001	Accepted
H4	SE -> BI	0.185	0.065	2.861	0.004	Accepted
H5	PV -> BI	0.322	0.079	4.059	0.000	Accepted
H6	FC -> UB	0.538	0.067	8.054	0.000	Accepted
H7	BI -> UB	0.367	0.067	5.448	0.000	Accepted
H8a	PE -> BI	0.092	0.087	1.053	0.292	No mediation effect
	PE -> TR -> BI	0.039	0.023	1.678	0.093	
H8b	EE -> BI	0.144	0.076	1.895	0.058	No mediation effect
	EE -> TR -> BI	0.035	0.025	1.392	0.164	
H8c	SI -> BI	0.149	0.049	3.046	0.002	No mediation effect
	SI -> TR -> BI	0.022	0.014	1.589	0.112	
H8d	SE -> BI	0.140	0.065	2.159	0.031	No mediation effect
	SE -> TR -> BI	0.046	0.024	1.885	0.059	
H8e	PV -> BI	0.234	0.073	3.193	0.001	There is partial mediation
	PV -> TR -> BI	0.088	0.040	2.212	0.027	
	TR -> BI	0.236	0.081	2.911	0.004	Supported

The first hypotheses of this study predicted that the effect of PE on BI is significant. The results in Table 4 shows that the ß is 0.131 and it is positive. However, the p-value is greater than 0.05. This indicates that the hypothesis (H1) is rejected. For the second hypothesis, the effect of EE on BI is positive and significant. This is because the ß is equal to 0.181 and the p-value is less than 0.05. Therefore, the EE is a critical factor that affect the BI of using CBE-L among students in Saudi Arabia. For H3, the effect of SI on BI is significant because the ß is 0.171 and the p-value is less than 0.05. Thus, H3 is accepted. For H4, the effect of security on BI is significant at significance level of less than 0.05. Thus, H4 is significant. For the H5, the privacy has a significant effect on BI because the ß is 0.322 and the p-value is less than 0.05. Thus, H5 is supported. For H6, the FC has a direct and significant effect on the UB. This is because the ß is large at 0.538 and the p-value is less than 0.05. Thus, H6 is supported. The last direct hypothesis predicted that the BI has a significant effect on UB. The findings in Table 2 shows that the ß is 0.367 and the p-value is less than 0.05. Thus, the positive BI is critical for the UB of the CBE-L. The mediating effect of trust is examined by testing the direct and the indirect effect of independent variable via trust. Figure 1 shows the structural model of the mediation effect of trust.
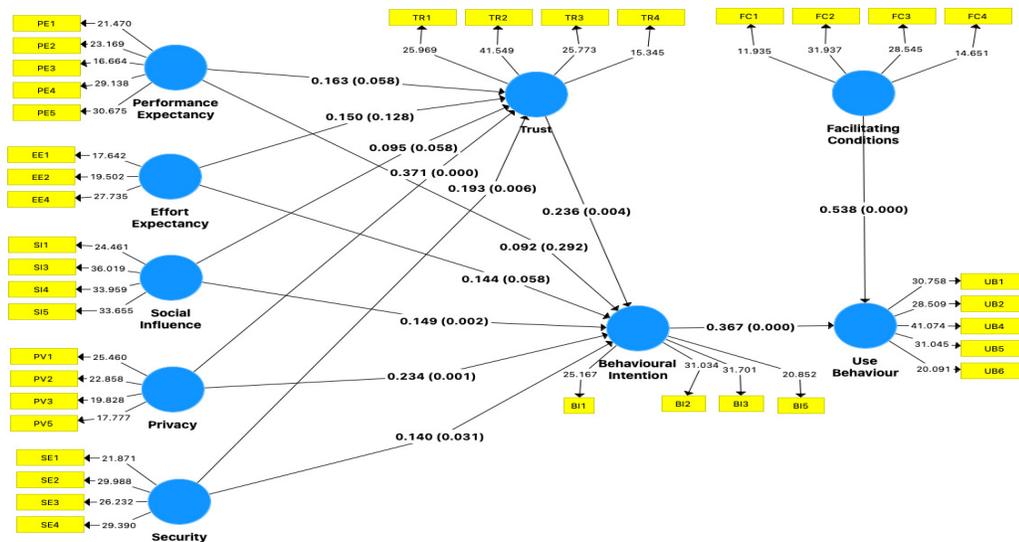
Figure 1: Structural Model

To test the mediating the effect of trust, the direct effect of the variables on BI is compared with the direct effect after including trust as a mediator. The indirect effect via trust is also tested. Table 4.11 shows the mediating effect of trust.

For H8a, the effect of PE on BI reduced but the indirect effect of PE on BI via trust is not significant. Thus, H8a is not supported. For H8b, the effect of EE on BI reduced but the direct and indirect effect are not significant. Therefore, the H8b is not supported. H8c predicted that the effect of SI on BI is mediated by trust. The findings in Table 5 showed that the effect of SI on BI is significant. But the effect of SI on BI via trust is not significant. Thus, H8c is not supported. For H8d, the effect of security on BI is significant. However, after including trust as a mediator, the effect of security via trust on BI is not significant. Thus, H8d is not supported. For the last hypothesis, the effect of privacy on BI is significant. In addition, the indirect effect via trust is significant. This leads to a conclusion that the effect of privacy on BI is mediated partially by trust. This is because the direct and the indirect effect are significant. Additional findings showed that the effect of trust on BI is significant. Thus, trust is also considered as an important factor that affect the usage of CBE-L.

5. Discussion

This study was conducted to examine the factors that affect the adoption of CBE-L. The findings showed that PE is not an important factor for the BI to use CBE-L. This finding is in disagreement with the findings of the literature i.e., Bellaaj et al. (2015), Cao et al. (2013) and Nguyen et al. (2014).However, in agreement with the findings of this study of Yakubu and Dasuki (2019) indicates that some variables of UTAUT are not important for the BI toward using the e-learning. The findings indicated that EE and SI affect significantly the BI of students in Saudi Arabia to adopt the CBE-L. Previous studies showed that EE is an important factor of UTAUT when decision made to adopt new technology. Bellaaj et al. (2015) found that EE enhances the BI to use e-learning technology. BI to use cloud storage by Chinese students was affected significantly by EE and SI (Cao et al., 2013). Nguyen et al. (2014) found that EE and SI affected the BI to use CBE-L.

In this study, it was proposed that security and privacy have significant effect on BI toward CBE-L. The findings of hypotheses testing confirmed that the effect is significant. Secure and privacy of CC will increase the BI of student to use the CBE-L. The increase in security and privacy will cause an increase in the BI of students in Saudi Arabian universities toward the CBE-L. Findings of previous studies are in agreement with the findings of this study. Several researchers investigated the effect of security and privacy on cloud adoption. Lian et al. (2014) found that security and privacy have significant effect on the adoption of CC. Findings of Park and Kim (2014) also indicated that the effect is significant. Similar findings were derived in the study of Arpaci et al. (2015), Senyo et al. (2016) and Alkharusi and Al-badi (2016). Thus, it is concluded that security and privacy are important technological factor for increasing the adoption of CBE-L by students in Saudi Arabia.

FC and BI affected positively and significantly the UB of CBE-L. This indicates that the increase in the level of FC and BI will lead to an increase in the UB of CBE-L by students in Saudi universities. In agreement with the findings of this study, the study of Tarhini, Hone, et al. (2015) found that FC has a direct significant effect on the actual use of educational technology. The study of Cao et al. (2013) indicated that FC affect significantly the UB of CC. Nguyen et al. (2014) found that FC has a positive and significant effect on the adoption of CBEL. Accordingly, this study concluded that the FC is important organizational predictor for the acceptance and increase the use of CBE-L by students in Saudi Arabia.

The eighth hypotheses were related to the mediating effect of trust between PE, EE, SI, SE, and PV and the BI toward CBEL. Findings of the mediating analysis showed that trust partially mediated only the effect of privacy on BI toward CBE-L. The findings also showed that trust has a direct effect on BI toward CBE-L. This indicates that trust in the service providers can explain part of the relationship between privacy and BI. However, trust does not explain the effect of PE, EE, SI, and SE on BI. Previous studies investigated the mediating role of trust among various variables in the context of technology acceptance. For example, Lian et al. (2017) found that trust mediated the effect of perceived quality on satisfaction of CC. Similarly, LI et al. (2015) found that trust mediated the effect of technological and environmental aspects on CC adoption.

6. Implications

This study contributed to the literature by examining the applicability of UTAUT in the context of CBE-L. The study also contributed to the literature by combining the UTAUT along with security, privacy and trust by using Social Exchange Theory to increase the explanatory power of the model. Therefore, the study contributed to the body of knowledge and extending the existing literature in CBE-L. The study tested the mediating role of trust, which is a new variable in the context of CC (Lansing & Sunyaev 2016). In this sense, the study responded to the calls of researchers to examine the effect of trust in the context of CBE-L adoption and usage. This study contributed to the literature of CC and e-learning adoption in the context of developing countries.

This study has contributed to the practice of adopting CBE-L. Decision makers are recommended to enhance the understanding of PE and its benefits for students. Decision makers are recommended to conduct workshops and public lectures to enhance the understanding of students regarding the benefits and the usage as well as the awareness of CBE-L services. Decision makers are recommended to ensure that the usage of CBE-L is confidential and data of the students will not be used by third party. In addition, the decision makers have to assure the student that the cloud is safe for the transaction that they are conducting using the CBE-L of the university.

Decision makers are recommended to focus on improving the level of the variables to create positive BI toward CBEL so that the intention to adopt and use the CBEL will increase. In addition, the FCis highly important. Thus, decision makers are recommended to equip students with the required resources, hardware, and software to increase their willingness to use the CBEL.

Trust mediated partially the effect of privacy on BI toward CBE-L. To improve the role of this mediator, decision makers are recommended to ensure that the service providers is trustworthy and will do their best to protect the information of the students. Decision makers are advised to establish a community CC where the security, privacy, and trust will be high due to the fact that the servers are kept away from third party and they can share the costs with other universities.

7. Conclusion

This study was conducted to examine the factors that affect the adoption of CBE-L among students in Saudi universities. The findings of hypotheses testing showed that the effect EE, SI, privacy, and security were significant on BI to use CBE-L. The finding also indicated that FC and BI affected significantly the UB. The findings of this study also showed that trust mediated partially the effect of privacy on the BI to use CBE-L. Trust also has a direct effect on BI. This study was conducted on universities and educational institutions. Findings of this study are limited to such institutions. The study collected data from students. Thus, the findings of this study are limited to the students. Further studies in Saudi Arabia are advised to collect data from students, academic and non-academic staff. A stratified sampling technique can be deployed. Future researchers are recommended to replicate the study using public or private universities in different countries. Trust as a mediator in this study could explain part of the relationship between variables, future studies are recommended also to examine the

potential role of this variables such as to operationalize trust into trust in organization, trust in service provider, and trust in internet and examine to what degree these variables as mediator or direct independent variables can affect the CBE-L adoption.

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