



Cultural Levels and Pre-Service Teachers' Behaviour Towards the Use of Open Educational Resources

SPECIAL COLLECTION:
GO-GN

ARTICLE

MUHAMMAD ZAHEER ASGHAR

YASEMIN KAHYAOĞLU ERDOĞMUŞ

PIRITA SEITAMAA-HAKKARAINEN

*Author affiliations can be found in the back matter of this article

]u[ubiquity press

ABSTRACT

The behaviour to use innovation and technology for teaching, learning, and research is influenced by different levels of culture, ranging from the supranational, professional, and organizational to the individual level. The current study focused on the organizational, professional, and individual levels of cultural influence on pre-service teachers' intentions towards the use of open educational resources (OERs). This study is based on the theory of planned behaviour (TPB) and different levels of culture for innovation and technology usage. A survey was conducted on pre-service teachers (n = 376) enrolled in the universities of Punjab (Pakistan). Structural equation modeling (SEM) was applied through smart-PLS. The results revealed that pre-service teachers were aware of the importance of OERs. It was found that pre-service teachers' intentions played an important role towards their actual behaviour to use OERs. Personal level culture and perceived behavioural control influences the pre-service teacher's intentions to use open educational resources. The study has policy and practice implications for developing a social, cultural, and psychological environment to enhance pre-service teachers' intentions to use OERs. Future studies may be conducted on the effect of supranational and national culture on institutional policies designed to adopt OERs.

CORRESPONDING AUTHOR:
Muhammad Zaheer Asghar

Department of Education,
University of Helsinki, 00014
Helsinki, Finland

School of Doctorate, Education
& ICT (e-Learning), Universitat
Oberta de Catalunya, 08018
Barcelona, Spain

zaheer.asghar@helsinki.fi

KEYWORDS:

culture; open educational
resources (OERs); pre-service
teachers; theory of planned
behaviour (TPB)

TO CITE THIS ARTICLE:

Asghar, MZ, Kahyaoğlu
Erdogmus, Y and Seitamaa-
Hakkarainen, P. 2021. Cultural
Levels and Pre-Service Teachers'
Behaviour Towards the Use of
Open Educational Resources.
*Journal of Interactive Media in
Education*, 2021(1): 21, pp. 1-16.
DOI: [https://doi.org/10.5334/
jime.674](https://doi.org/10.5334/jime.674)

Advances in information and communication technology (ICT) have facilitated the process of generating and sharing information. Thus, it is possible for individuals to access information resources easily and free of charge. The Open Education Resources (OERs) movement emerged in the early 2000s when it was realised that ICT resources are easily available, accessible, and affordable for learners. OERs are defined as the open provision of educational resources with the support of ICT for non-commercial purposes (Altunolu 2020; Sclater 2011). Several well-known institutions and organizations such as UNESCO and OECD have supported the movement for the provision of educational resources in a standard structure and the protection of contents through licenses (Kursun 2013; Thomas 2017). Higher education and research institutions have also contributed to create, share, and use OERs in teaching and learning to extend their reach and effectiveness (Bliss & Smith 2017). Researchers and practitioners have worked on the 5R principles of “retain, reuse, revise, remix, and redistribute” the collections of OER (Tang 2020; Wiley 2016). OER is seen as a powerful tool to solve problems related to education and to reduce inequality in education (Bliss & Smith 2017). It also plays an important role in basic information sharing in developing countries and is useful for time and cost-saving (Olcott 2013). In a traditional campus environment, where the course contents and materials are accessible to very few people, OER can ensure that the content and academic culture produced around the world can be seen. It provides development benefits for self-taught students, faculty, and institutions (Kursun, Cagiltay, & Can 2014). OERs comprise learning resources, resources to support teachers, as well as the resources needed to ensure the quality of educational practices (UNESCO 2004). This is the reason that the awareness of the importance of OERs is imperative. OERs are used among teachers and students in higher education as a result of a collective move from the supranational level, to national, institutional, professional, and individual levels. Teachers are significant stakeholders in the educational system bent towards adopting a culture of open access by utilizing OERs (Baas, Admiraal & van den Berg 2019). Teachers can develop their pedagogical strategies using OERs and make their lessons more accessible (UNESCO 2011). It is important that teachers learn to use these versatile resources while they are still in their pre-service years so that they can utilize OERs properly in their professional life. Pre-service teachers or students of teacher education programs are an important segment of higher education. Pre-service teachers are students at higher education levels on the one hand and the other hand, they are future teachers. They learn pedagogical skills and subject content during their pre-service years before entering their professional life. It is important to research their beliefs, attitude, and higher education culture for OER usage. It would help to predict their mindset to implement and develop a culture of OER usage in their professional life.

Culture is defined as “the mind’s collective programming that distinguishes the category of people or members of a group from another” (Hofstede 1980). Global open access culture for using OERs is based on the philosophy that knowledge is a shared product of society and there exists a desire among scholars to make it a societal property (Thomas 2017; UNESCO 2020). The culture of ‘open access’ demands to include OERs in higher education as an emerging trend in which ‘open processes’ are used in an ‘open infrastructure’ to produce ‘open content’ for setting an ‘open culture’, gradually (Harold & Rolfe 2019). The open access culture is not only influenced by the national culture to promote OERs that affects faculty behaviour to use OERs; rather, it is also influenced by different layers of culture. Open access culture can be categorized at different cultural levels of analysis ranging from the national level to organisational level to group level (Hofstede 1991; and Kristjánsdóttir et al. 2017). According to Rohman et al. (2020), the open access culture of a higher education institution influences the behaviour and attitude of the faculty and learners. Straub et al. (2002) suggested that different cultural levels interact with each other. It has been proposed that these different layers of open access culture influence an individual’s behaviour to use OERs depending on the circumstances of the set of norms and values of that person. Vukovi (2020) says that a nation may have different subcultures such as ethnic groups, professional associations, and political parties. Their norms and values in higher education may influence a person’s work attitude and behaviour towards using OERs. This study has endeavoured to find out the impact of the different cultural levels in Higher Education Institutions (HEIs) that can influence pre-service teachers’ intentions towards the use of OERs in a developing country like Pakistan.

According to Shams, Haq and Waqar (2020) open educational resources (OERs) are gaining popularity in developed countries. The basic purpose of OERs was to reduce inequality in access to knowledge resources. Therefore, it would be significant to conduct research in this field,

particularly in a developing country like Pakistan which is facing major challenges in open access to knowledge resources (Asghar, Iqbal, Seitamaa-Hakkarainen & Barbera 2021). In an attempt to provide accessible world-class higher education, the Government of Pakistan established the Virtual University Pakistan (VUP) in 2002. The university provides distance education via online learning programs in various fields. All the courses of VUP carry a Creative Commons license. Apart from traditional universities, VUP is the only online university in Pakistan. According to Asghar, Barbera and Younas (2021) low-quality educational resources, inadequate books, scarcity of high-quality teaching are the major challenges faced by universities in Pakistan. Bansal et al. (2013) claim that India faces similar issues which need to be addressed through the utilization of OERs. According to Shams, Haq and Waqar, (2020) there is a scarcity of research on different topics related to OER awareness, creation, and usage in Pakistan. A study was conducted by Hussain and Malek, (2013) to find out the attitude and use of OER among higher education faculty in Pakistan. Another research was conducted by Muslim, Touseef and Raza (2018) that compared the OER usage between the faculty of the online university and traditional university. Similarly, there is a dearth of research on awareness and use of OERs among higher education students as well as teachers and students at the school level in Pakistan. Pre-service teachers are representative of students at the higher education level and they are also future teachers. Morales and Baker (2018) reviewed literature about research on OERs and found that the demographic section of pre-service teachers was not reported in previous studies. The current study has focused on pre-service teachers because they play the role of bridge between higher education and school teaching. Previous research (e.g., Baas, Admiraal & van den Berg 2019; Otto 2021) has either focused on a micro level, such as a person's social and psychological components, to study their attitude and intentions to use OERs or researchers (e.g., Sabadie et al. 2014) have analysed at a broader level international and national policies, institutional barriers, and challenges for OER adoption at the institutional level. Only a few studies are available to investigate the aspects of culture that influence a person's intentions to use OERs. Therefore, it was felt imperative to research pre-school teachers regarding the use of OERs at a broader level to explore the cultural aspects and at a micro level to investigate attitude as well as intentions towards the use of OER.

This survey study was aimed to measure the effect of different cultural layers and social as well as psychological factors affecting the behaviour of pre-service teachers about the use of OERs in universities of Pakistan. This would be the originality of the research to add different cultural aspects in the formation of a person's intentions for innovation, technology and OER usage at the higher education level. This study would also help policymakers and higher education institutions in promoting an open access culture by understanding the influence of different cultural levels, social and psychological aspects of the individuals. The major research question under study is:

RQ: What are different social, psychological, and cultural levels that influence pre-service teachers' intentions to use OER?

This paper proceeds with the development of a conceptual framework based on previously researched theories. Hypotheses were developed based on previous studies and conceptual frameworks. Research methodology explains research design, population sample, and instrument. Data analysis was performed for the assessment of reliability and validity of the questionnaire as well as hypothesis testing. The discussion was piloted based on findings of the current study as well as previous studies. The final section of this paper deals with the conclusion and practical implications.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This study has two major components. The first component is about the intention of preservice teachers to use OERs. To determine this, the Theory of Planned Behaviour (TPB) by Ajzen (1985) which was based on Fishbein and Ajzen's (1977) Theory of Reasoned Action (TRA) was applied. TPB explains that behavioural intentions determine human voluntary behaviour. Ajzen (1991) says that TPB predicts the likelihood of an individual's behaviour to perform a certain act. According to Fishbein & Ajzen (1977) an individual's attitude towards certain behaviour and subjective norms influences the decision to choose a certain action. The addition of construct of perceived behavioural control along with other factors shifted the TRA to TPB for an individual's choice to choose a behaviour.

The second component is the influence of different cultural levels on pre-service teachers' intentions to use OERs. The levels of cultures for innovation and technology by Karahanna, Evaristo and Srite (2005) from information sciences are added in the theory of planned behaviour to measure the effect of culture on preservice teachers' intentions. This is the uniqueness of the study that the subjective norms component of the TPB was further divided into different cultural levels. It helped to combine the effect of cultural levels on preservice teachers' behavioural intentions towards the use of OERs.

THEORY OF PLANNED BEHAVIOUR (TPB)

The theory of Planned Behaviour explains and predicts human behaviours (Ajzen 1985). According to Ajzen (2020), this theory has been used successfully for many years to explain various behaviours related to different physical activities, choices, and the adoption of technology. Intentions show the motivation factors that affect behaviour and the effort individuals make to perform the behaviour (Ajzen 2020; Nazir et al. 2021). The theory of planned behaviour was used in this study to assess the intentions of the pre-service teachers to use open educational resources in higher education. The theory of planned behaviour has been used in previous studies to find out teachers' and students' intentions towards different phenomena. It has also been used to find out the intentions of higher education faculty for online teaching (Knabe 2012). Smith-Turchyn and Richardson (2015) applied the theory of planned behaviour to measure the nurse educator's intentions for instructional strategies to develop critical thinking in the students of nursing education. Kim, Park, and O'Rourke (2017) also used TPB in the context of nursing education for simulation methods. Lee, Cerreto, and Lee (2010) applied TPB regarding teachers' decision in higher education to use computers for the delivery of lesson plans. Mijares et al. (2017) applied TPB in understating the changing pedagogy and OERs at the higher education level.

There are three main dimensions to explain behavioural intention; attitudes, subjective norms, and perceived behavioural control (Ajzen 2006).

ATTITUDE

One of the important factors of the TPB is the attitude towards certain behaviour. Attitude is the positive or negative evaluation of the behaviour towards the realization of the behaviour (Ajzen 2020). Expectancy and value are important to explain attitude. Behavioural belief is the subjective probability of the consequences and experiences that will occur if individuals perform a behaviour. These beliefs produce a positive or negative attitude towards behaviour. Positive or negative values of expectations contribute to the general attitude (Ajzen 2020). According to Otto (2021), attitudes are very important to develop a person's intentions to use OERs. In the scope of the study, the attitude of the pre-service teachers towards OER is one of the variables examined. The hypothesis is as follows:

H1: Pre-service teachers' attitude influences their intentions to use OER

PERCEIVED BEHAVIOURAL CONTROL

The second factor of the TPB is perceived behavioural control which is the perceived ease or difficulty of performing behaviour, obstacles, and past experiences (Ajzen 1991). There is a direct proportion between the individual's control over behaviour and the probability of realization of the intention. The greater the control, the higher the probability (Fishbein & Ajzen 2010).

It includes factors (skill, money, time, etc.) that can facilitate or hinder the performance of control beliefs that contribute to perceived behavioural control. According to Ajzen (2020), It may also moderate the effect of attitude and subjective norm on intention. The hypothesis derived here is:

H2: Perceived behavioural control influences pre-service teachers' intentions to use OER

SUBJECTIVE NORM

The third factor of the TPB is the subjective norm which is the perceived social pressure to perform certain types of behaviour or not (Ajzen 1991). At this point, normative beliefs are important as 'injunctive' and 'normative'. Injunctive norms represent whether the behaviour

is approved by people close to the individual whereas the ‘normative’ norms deal with the importance of performing a behaviour. These beliefs contribute to subjective norms (Fishbein & Ajzen 2010). In the study, subjective norm formations are divided into different cultural layers. Culture influences and guides the behaviour of individuals (Parsons & Shils 2013; Sathe 1983). There are different layers of culture that affect an individual’s behaviour (Straub et al. 2002).

LEVELS OF CULTURE

According to Karahanna, Evaristo and Srite (2005), there are different levels of culture such as supranational, national, organizational, professional, and individual that influence behaviour for innovation and technology. However, a person’s competence values, behaviour, and practices are influenced by three levels of culture that are organizational, professional, and personal. Karahanna, Evaristo and Srite (2005) stated that “*behaviours involving competence values are primarily influenced by professional, organizational, and group cultures*” (Karahanna, Evaristo & Srite 2005: 12). Culture plays an important role in the explanation of information technology usage behaviour (Straub et al. 2002). It is possible to refer to a culture of openness in open-source technologies (Wiley 2006). In the Kurelovi (2018) study, open access culture has a personal, professional, and organizational level. The personal level may involve personal attitude and awareness towards OERs and knowledge sharing. The professional level is the perception of norms in research and teaching that promote open access in science and education and bring about changes in teaching practices. The organization level is the perception of organizational values towards open sharing of knowledge. Within the framework of this model, it is hypothesized that open access culture has a significant effect on the intention to use OERs (Kurelović 2018). As it influences the intention of OER usage, the study also examined the open access culture levels (personal, professional, and organizational) of the pre-service teachers. The subjective norms of the pre-service teachers are substituted with three levels in hypothesis as follows:

H3a: Professional level culture influences pre-service teachers’ intentions to use OERs

H3b: Organizational level culture influences pre-service teachers’ intentions to use OER

H3c: Personal level culture influences pre-service teachers’ intentions to use OER

INTENTIONS

The fourth important factor of the TPB is behavioural intentions which consist of voluntary activities (Fishbein & Ajzen 1977). The theory of planned behaviour determines behavioural intention with its dimensions both separate and together. Therefore, it is important to investigate the effects of the theory of planned behaviour dimensions on intention as intentions ultimately influence the actual behaviour of a person to perform a certain action (Ajzen 1991). The hypothesis that arises here is:

H4: Pre-service teachers’ intentions influence their actual behaviour to use OER.

CONCEPTUAL FRAMEWORK

Partial least square structural equation modeling (PLS-SEM) was applied to measure the contributing factors of the conceptual framework. According to Hair et al., (2019) PLS-SEM is useful when a prediction perspective is needed for testing a theoretical framework. It may also be used when there is a complex structural model, and it includes many constructs. It is most useful when research aims to explore theoretical perspectives, or there is a need to develop a theory based on exploratory research. This study has found a cause-effect relation between the constructs. It was also the aim of the study to explore the addition of different cultural levels with the theory of planned behaviour. Therefore, the complexity of the multivariate analysis, exploratory research, and theory development lead to applying PLS-SEM. In this study, attitude, cultural levels, and perceived behavioural control are considered exogenous variables for the endogenous variable of intentions. The actual use behaviour was considered as an endogenous construct for behavioural intentions. While intentions are considered as exogenous variables for the endogenous variable of OER use behaviour. The derived hypothetical relations are shown in **Figure 1** of the conceptual framework.

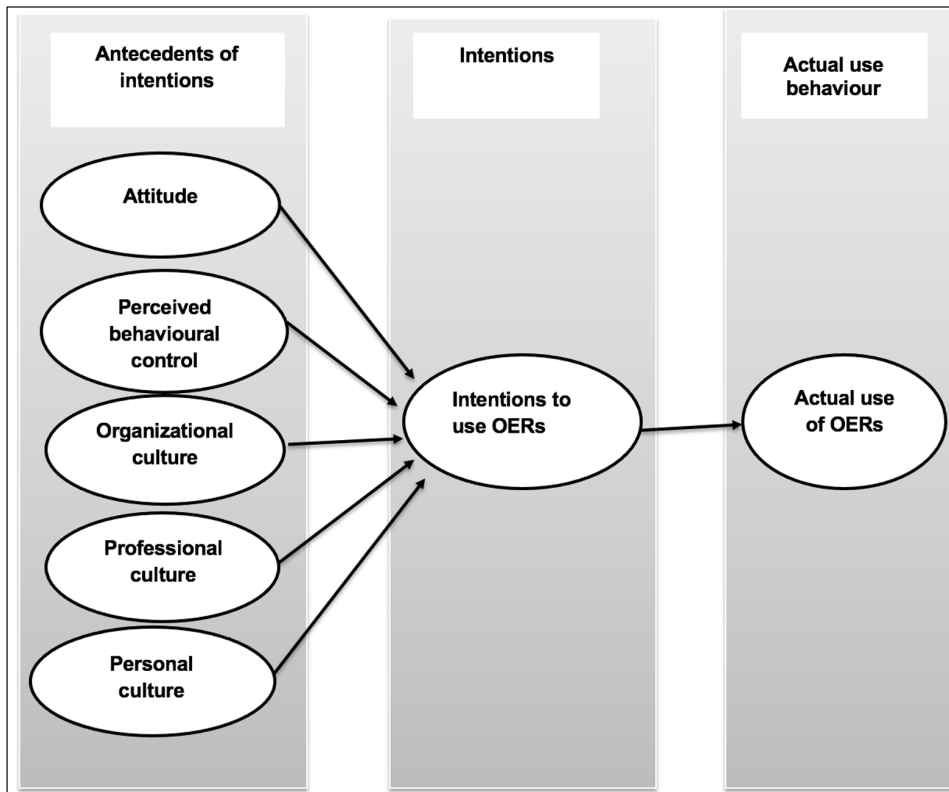


Figure 1 Conceptual framework.

METHODOLOGY

RESEARCH APPROACH

This research is based on a cross-sectional survey. There were three reasons to select survey design; first of all, the phenomenon of the effect of different cultural levels on the pre-service teachers' intentions needs self-reported insight; and secondly, pre-service teachers were accessible for data collection at mass level; thirdly the results of mass data collection were generalisable on population. The proposal of this study was approved by the ethical committee of the university. Proper consent was taken from the research participants for their voluntary participation in the study. Respondents were assured that their privacy and anonymity would be protected and the research results shared in generalised form.

POPULATION AND SAMPLE

The target population for the study was the pre-service teachers enrolled in different universities in the Punjab province of Pakistan. Four universities were selected through stratified random techniques to collect data with a distribution of two public and two private universities. An instrument was developed to collect data from a sample of 376 pre-service teachers. The collected sample through convenient sampling techniques was distributed to 127 male and 249 female pre-service teachers. Of 376 participants, 242 participants were enrolled in the master's program and 134 participants were enrolled in the Ph.D. program. 127 participants were in the age bracket of 21–25, while 153 participants were in the age bracket of 26–30, and 95 participants were above 30-years-old.

QUESTIONNAIRE DEVELOPMENT

The survey questionnaires in the research were adapted from the research studies of Rolfe (2012), McKerlich, Ives and McGreal (2013), Kelly (2014), and Kurelovi (2018). A pilot study was conducted on 20 Ph.D. students enrolled in teacher education programs and 10 researchers in educational sciences. The reliability of the questionnaire was found satisfactory $\alpha > 0.70$. The experts also gave their opinions regarding the content validity of the questionnaire. The questionnaire was revised according to the suggestions of the experts.

CONSTRUCTS MEASUREMENT

The questionnaire consisted of two major parts. The first part consisted of demographics of the sample population such as university type (public/private), gender (male/female), education (masters/Ph.D.), and age. The second part was constructed on the Likert Type scale (1 = strong

disagreement, 2 = disagreement, 3 = neutral, 4 = agreement, 5 = strong agreement). The constructs of the second part were as follows:

1) Attitude (ATT)

The construct of attitude was adapted from Rolfe (2012), McKerlich, Ives and McGreal (2013). It has the following sample items such as “I like to use open education resources for academic work”, “OERs play an important role for learning in higher education”, and “OERs facilitate the research process.” According to Hulin, Netemeyer, and Cudeck (2001) and Zhou et al. (2021) a reliability level of Cronbach alpha 0.6 to 0.7 is an acceptable level, while reliability greater than 0.80 is considered good. The Cronbach alpha of the construct was found $\alpha = 0.70$ which shows a satisfactory level of consistency of scale items.

2) Perceived behavioural control (SEF)

The construct of perceived behavioural control was adapted from Rolfe (2012), McKerlich, Ives and McGreal (2013). It has the following sample items such as “I am capable enough to use OER for academic purposes”, “I am confident that I can use OER for preparing my class assignment”, and “I have potential to benefit from OER.” The Cronbach alpha of the construct was found $\alpha = 0.72$ which shows a satisfactory level of consistency of scale items.

3) Culture at personal level (CPE)

The construct of culture at personal level was adapted from Kelly (2014) and Kurelovi (2018). It has the following sample items such as “I believe that integrating open educational resources into the higher education system is a good idea”, “I am aware of the initiatives of Open Access and Open Educational Resources” and “I believe that Creative Commons licenses are an important part of open educational resources.” The Cronbach alpha of the construct was found $\alpha = 0.64$ which shows a satisfactory level of consistency of scale items.

4) Culture at professional level (CPR)

The construct of culture at professional level was adapted from Kelly (2014) and Kurelovi (2018). It has the following sample items such as “Finding quality open educational resources should be responsibility of each teacher”, “Teachers should actively participate in the open sharing of knowledge and educational resources”, and “It is desirable for teachers to use creative common licenses for teaching materials they publish on the internet.” The Cronbach alpha of the construct was found $\alpha = 0.72$ which shows a satisfactory level of consistency of scale items.

5) Culture at organizational level (COR)

The construct of culture at the culture level was adapted from Kelly (2014) and Kurelovi (2018). It has the following sample items such as “The institute where I am employed is flexible and open to new ideas”, “Institute trains its faculty for OER development and usage”, and “My institute devises strategies to introduce innovative learning resources for teaching and learning.” The Cronbach alpha of the construct was found $\alpha = 0.8$ which shows a satisfactory level of consistency.

6) Intentions to use OER (INT)

The construct of intentions to use OER was adapted from Rolfe (2012), McKerlich, Ives and McGreal (2013). It has the following sample items such as “By the beginning of the next academic year I intend to find several quality open educational resource in my field of interest”, “In the next year I intend to adjust the selected open educational resources to the needs of teaching that I perform” and “In the next year I intend to include open educational resources in the teaching that I perform.” The Cronbach alpha of the construct was found $\alpha = 0.61$ which shows a satisfactory level of consistency of scale items.

7) Actual use behaviour of OER (USE)

The construct of actual use behaviour of OER was adapted from Rolfe (2012), McKerlich et al. (2013). It has the following sample items such as “I use open educational resources for my own training”, “When teaching I use open educational resources in their original form”, and “I tailor selected open educational content to suit students and teaching needs.” The Cronbach alpha of the construct was found $\alpha = 0.61$ which shows a satisfactory level of consistency of scale items.

DATA ANALYSIS

This study used the smart-PLS 3.2.7 version (Ringle, Wende, & Becker 2015) for data analysis purposes. PLS-SEM was used for theory construction and explorations (Bamgbade et al. 2018) as the variables of different cultural layers were added in the theory of planned behaviour in this study. Structural equation modeling consisted of confirmatory analysis and cause-effect analysis (Lin & Jeng 2017; Mehmood et al. 2021 and Wang et al. 2021). A two-step procedure was used for the measurement of the outer model and inner model as suggested by Henseler, Ringle, and Sinkovics (2009). The multivariate analysis technique was used through PLS-SEM which is considered the best method for theory exploration in social sciences (Peng & Lai 2012; Rasool et al. 2021). It is a non-parametric approach that does not need assumptions of the data distribution. PLS-SEM is the most commonly used multivariate approach in social sciences. PLS-SEM helps to resolve multifaceted issues of cause-effect and variable associations (Hair et al. 2019). It helps in the data analysis especially for the measurement of path coefficient. Path coefficient is measured by bootstrapping techniques. Path coefficient is confirmed with significance level and t-statistics.

EVALUATION FOR OUTER MODEL

The outer model was assessed for single observed item reliability, construct reliability, and observed variables validity in relevance with unobserved variables.

According to Hoque and Awang (2019), an item loading greater than 0.6 is acceptable for an item loading with the relevant factor. **Table 1.** shows that all items were greater than 0.6. The item loading ranged from 0.68 to 0.81.

FACTORS	ITEM	LOADING	CRONBACH_A	CR	AVE
Attitude	ATT1	0.73	0.70	0.81	0.52
	ATT2	0.75			
	ATT3	0.69			
	ATT4	0.70			
Organizational culture	COR1	0.69	0.80	0.87	0.62
	COR2	0.84			
	COR3	0.82			
	COR4	0.80			
Personal culture	CPE1	0.72	0.64	0.80	0.58
	CPE2	0.77			
	CPE3	0.79			
Professional culture	CPR1	0.70	0.72	0.83	0.55
	CPR2	0.76			
	CPR3	0.83			
	CPR4	0.66			
Intentions	INT1	0.62	0.61	0.78	0.55
	INT2	0.85			
	INT3	0.74			
Perceived behavioural control	SEF1	0.74	0.72	0.83	0.54
	SEF2	0.72			
	SEF3	0.81			
	SEF4	0.68			
Actual use	USE1	0.74	0.61	0.79	0.56
	USE2	0.83			
	USE3	0.68			

Table 1 Reliability and composite reliability.

Reliability analysis such as rho alpha and Cronbach alpha indicated an adequate level of consistency. The reliability values were between 0.6 to 0.8. According to Hulin, Netemeyer, and Cudeck (2001), a generally accepted rule is that a reliability level of Cronbach alpha 0.6 – 0.7 is an acceptable level, while a reliability greater than 0.80 is considered good. Convergent validity was measured through Average Variance Extracted (AVE). All constructs have shown AVE values greater than 0.5. The composite reliability of the factors is above threshold 0.7 as recommended by researchers (Churchill 1979) as shown in **Table 1**.

DISCRIMINANT VALIDITY

The discriminant validity of the factors was measured through HTMT ratios. The HTMT values for all factors were below threshold 0.95 (AbHamid, Sami, & Sidek 2017) as given in **Table 2**.

	ATT	COR	CPE	CPR	INT	SEF	USE
ATT							
COR	0.115						
CPE	0.333	0.212					
CPR	0.253	0.351	0.438				
INT	0.304	0.186	0.501	0.313			
SEF	0.628	0.148	0.557	0.403	0.417		
USE	0.144	0.373	0.471	0.261	0.611	0.345	

Table 2 HTMT ratio.

Att = Attitude, USE = Actual use, COR = Organizational culture, CPE = Personal culture, CPR = Professional culture, INT = Intentions, SEF = Perceived behavioural control.

SECOND ORDER FACTOR ANALYSIS

A second order factor analysis was performed to develop a formative construct of the subjective norms to represent the three variables which are organizational culture, professional culture, and personal culture. It was observed that only the personal culture was significant ($p < .05$) with outer weight ($>.5$) while the other two variables were not significant ($p > .05$) with less outer weight values ($<.50$).

EVALUATION OF INNER MODEL

The conceptual model was confirmed with reliability, convergent validity, and discriminant validity. The next step was taken to evaluate the inner model. It contains inner VIF, path coefficient of the constructs. The structural model was measured for the coefficient of determination for direct relations and their goodness of fit index.

COEFFICIENT OF DETERMINATION

R^2 or coefficient of determination measures the variance explained in SEM that represents the accuracy of predictivity of the model. The Intentions to use OERs (INT) and actual behaviour to use OERs (USE) in this research were considered as endogenous variables. Researchers suggest that R-square must be greater than 0.1. It was observed that all values of adjusted $R^2 > .1$ whereas the observed values of R^2 of endogenous constructs INT and USE were 0.138.

VIF STATS AND GOODNESS OF FIT

SEM did not show multicollinearity issues as the VIF values were below 0.5. The VIF values for constructs were Attitude = 1.24, Organization culture = 1.07, Personal culture = 1.22, Professional culture = 1.20 and Intentions = 1.00.

The goodness of fit (GOF) is applied to verify the effectiveness of the model that explains the empirical data. The value of GOF ranges from 0 to 1 where 0.10 is considered small, 0.25 is considered average and a value above 0.36 is considered substantial. The goodness of fit index reflects the parsimony and plausibility of the model (Henseler, Hubona, and Ray 2016). The formula to measure a good model fit index is $GoF = \sqrt{((\text{average AVE}) \times (\text{average } R^2))}$. The GOF value was 0.27 which shows that the model has the power to explain empirical data with predictivity (Tenenhaus et al. 2005).

STRUCTURAL MODEL PATH COEFFICIENTS

Path coefficient and β are considered the same in PLS. The β values were observed to test the hypotheses. The significance level and t-stats were used to confirm the path coefficient (Chin 1998). A unit change in exogenous variables' effect on endogenous variables is reflected by β . The higher the β value, the higher per unit change in the endogenous variable due to change in the exogenous variable. Bootstrapping was used to measure the 5000 subsamples to observe the significance level, t value, and β value to reject or not reject the hypothesis under study as shown in **Table 3**. Attitude has not significantly influenced the intentions. Hence hypothesis 1 was rejected. Perceived behavioural control has shown a positive and significant effect on preservice teachers' intentions to use OER ($\beta = 0.147, t = 2.52, p < .05$). Hence hypothesis 2 was accepted. This study found that professional culture level has no significant ($p > .05$) effect on preservice teachers' intentions to use OER. Hence hypothesis 3 (a) was rejected. Organisational culture has shown no significant ($p > .05$) effect on preservice teachers' intentions to use OER. Hence hypothesis 3 (b) was rejected. Personal culture level has a significant positive effect on preservice teachers' intentions to use OER ($\beta = 0.221, t = 3.814, p < .0001$). Hence hypothesis 3 (c) was not rejected. Pre-service teachers' intentions have shown a positive and significant effect on actual behaviour to use OER ($\beta = 0.381, t = 7.47, p < .0001$). Hence hypothesis 4 was accepted as shown in **Table 3**.

HYPOTHESIS		β	T-STAT	P	STATUS
H1	Attitude Intentions	0.081	1.552	0.121	Rejected
H2	Perceived behavioural control Intentions	0.147	2.528	0.012	Not rejected
H3a	Professional culture Intentions	0.069	1.078	0.281	Rejected
H3b	Organisational culture Intentions	0.071	1.368	0.171	Rejected
H3c	Personal culture Intentions	0.221	3.814	0.000	Not Rejected
H4	Intentions Use behaviour	0.381	7.47	0.000	Not rejected

Table 3 Direct paths.

The overall descriptive statistics of the constructs shows that attitude (M = 3.97, SD = 0.54), personal culture (M = 3.76, SD = 0.61), organizational culture (M = 3.32, SD = 0.84), professional culture (M = 3.53, SD = 0.61), perceived behavioural control (M = 4.32, SD = 0.73), behavioural intentions (M = 3.72, SD = 0.51) and actual use behaviour (M = 3.82, SD = 0.53) have shown a tendency towards agreement of pre-service teachers for OER adoption.

The overall direct path's significance level with β value is shown in **Figure 2**:

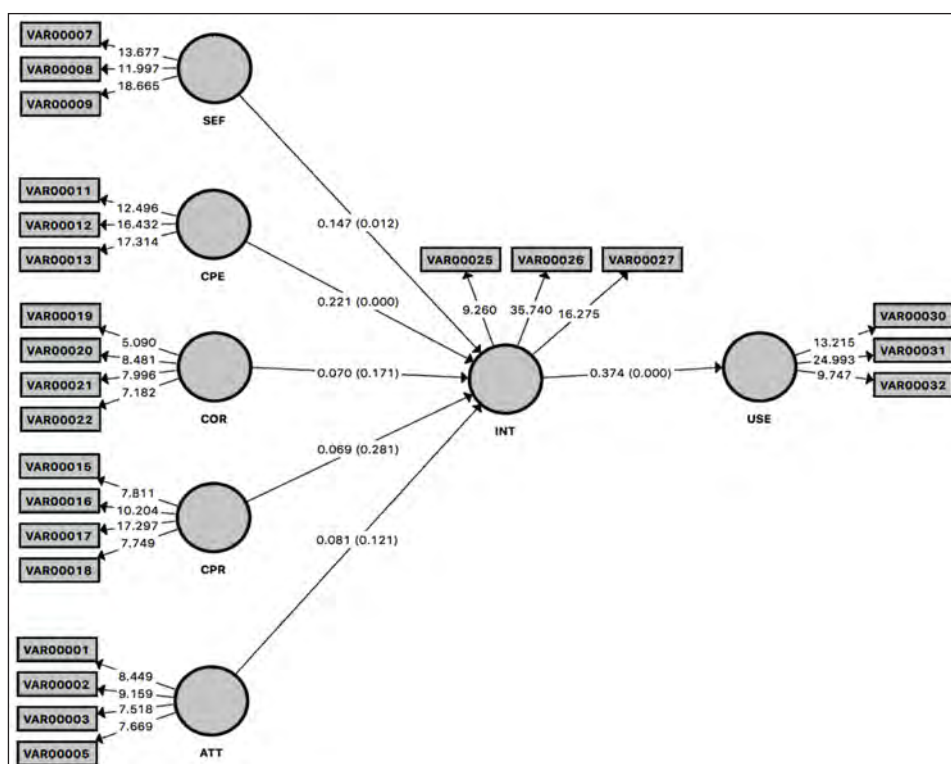


Figure 2 Structural equation modeling of different cultural levels and OER usage intentions.

The present study aimed to find out the effect of different cultural levels on preservice teachers' intentions towards the use of OER. Four hypotheses were developed based on the theory of planned behaviour. The findings of the hypotheses testing are discussed as follows.

The current study found that attitude has not shown any significant effect on preservice teachers' intentions to use OER. Hence hypothesis 1 was rejected. Some previous studies have also found that attitude has shown no effect on behavioural intentions. Lu and Xia (2013) found that there is no effect of attitude on intentions. Another study by Lam and Hsu (2006) also found that there was no impact of attitude towards intentions. Researchers claimed that sometimes pre-service teachers' intentions are large enough to ignore their attitude towards certain behaviour (Lam & Hsu 2006). The same reason applies in this study that the other antecedents such as personal culture and perceived behavioural control were large enough that the attitude of the pre-service teachers was ignored to measure their intentions towards OER usage.

The present study further explored the influence of perceived behavioural control on pre-service teachers' intentions to use OER. The results indicated that perceived behavioural control has shown a positive and significant effect on preservice teachers' intentions to use OER. Hence hypothesis 2 was accepted. This result of the study is endorsed by previous research on pre-service teachers (Jones & Nyland 2020; Nusbaum, Cuttler, & Swindell 2020; Ward & Lindshield 2020). Ajzen and Madden (1986) say that PBC directly affects a person's intentions for technology adoption. In other words, a person's abilities, or capabilities to use OER were taken as a key factor for technology adoption. Previous studies for technology adoption were conducted on e-learning in which researchers found a positive effect of PBC on e-learning intentions (Ndubisi 2004). Allen and Seaman (2014) surveyed 2,144 faculty members in US universities and found that most of the teachers remained unaware of open educational resources. But the same survey has proven that professors who have positive intentions for the usage of OER perceive that they have proven efficacy to use OERs.

The current study further explored the influence of pre-service teachers' professional culture, organizational culture, and personal culture on their intentions to use OERs. Different levels of culture such as organizational, professional, and personal were taken as exogenous variables for the endogenous variable of intentions. It was found that only the personal culture level influences behavioural intentions. There was also an endeavour to combine the different levels of culture as a formative construct of subjective norms, but it was found that only the construct of personal level culture was influential to represent subjective norms. The results indicated that pre-service teachers' personal culture influenced their intentions to use OERs, while their professional and organizational culture has shown no influence on their intentions, hence hypotheses H3a and H3b were rejected while H3c is accepted. According to researchers (e.g., Sánchez-Franco, Ramos & Velicia 2009; Tarhini et al. 2016) most of the studies have found the effect of culture in individual or collective form. Parsons and Shils (2013) say that these two different types of culture have shown different behaviour patterns. In personal or individual culture, several cultural mechanisms, both informal and formal, are used to develop a person's choices and preferences. According to Gelfand and Christakopoulou (1999) while in the collective culture of an organisation the formal and informal culture highlights the importance of a person's dependence on others. This study has found that subjective norms in the form of personal culture play an important role in enhancing the intentions of higher education students to use OER. Ajzen (1985) mentioned the role of subjective norms for the improvement of a person's intentions. It can be concluded that personal culture and subjective norms synonymously influence the behavioural intentions to use OER. The pre-service teacher's personal choices influenced by colleagues and mentors develop their personal culture to choose OER for teaching, learning, and research at higher education.

Lastly, the study measured the influence of pre-service teachers' intentions on their actual behaviour to use OER. The results found that the pre-service teachers' intentions have shown a positive and significant effect on actual behaviour to use OER. Hence hypothesis 4 was accepted. The results of the present study were aligned with previous studies (Asghar et al. 2019; Mtebe & Raisamo 2014). The finding of the study was endorsed by a previous study by Ajzen (1991). This is the uniqueness of the study to use the theory of planned behaviour in

the context of open educational resources usage among pre-service teachers in universities. It has found the validity of the theory of planned behaviour to measure intentions for OER usage among pre-service teachers.

CONCLUSION

This study aimed to find the influence of different cultural levels along with the different psychological aspects of preservice teachers to use OER for education and research. This study has concluded that pre-service teachers enrolled in the universities of Pakistan are aware of the importance of open educational resources usage. They like to use OER. However, their liking does not influence their decision to use OER. It also found that pre-service teachers are confident enough to use OER for teaching, learning, and research purposes. Hence, internet and technology infrastructure is easily accessible in Pakistan. Pre-service teachers perceive that their organizational culture and professional culture appreciate using OER, but that does not influence their decision to opt for OER. However, culture at the personal level does help pre-service teachers to adopt OER for teaching and learning. Pre-service teachers' attitude, personal culture, and perceived behavioural control to use open educational resources help them to promote their intentions for OER usage. It is visible from the study that pre-service teachers have positive intentions towards usage of OER due to which there exists a behavioural propensity among them to use open educational resources.

IMPLICATIONS

This study has wider implications for teacher education institutions to develop institutional strategies for the adoption of OER in their teaching-learning process. Hence, culture at the personal level is an important factor to promote OER usage, therefore, it is important to promote awareness of OER usage. Conferences, seminars, and workshops must be organised to highlight the importance of OER. Faculty must be trained to create, share and use OER. Students must be involved in OER creation, sharing, and usage practices. It would also develop a personal culture of pre-service teachers to use OER in the future and help to develop confidence in students to use OER for learning and research. Future studies may be conducted on the impact of supranational culture and national culture on organizational policies to promote OER practices.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR AFFILIATIONS

Muhammad Zaheer Asghar  orcid.org/0000-0003-2634-0583

Department of Education, University of Helsinki, 00014 Helsinki, Finland

School of Doctorate, Education & ICT (e-Learning), Universitat Oberta de Catalunya, 08018 Barcelona, Spain

Yasemin Kahyaoğlu Erdoğmuş  orcid.org/0000-0002-5302-5901

Dokuz Eylül University, TR

Pirita Seitamaa-Hakkarainen  orcid.org/0000-0001-7493-7435

University of Helsinki, FI

REFERENCES

- Ab-Hamid, MR, Sami, W and Sidek, MH.** 2017. Discriminant validity assessment: Use of Fornell & Larcker criterion versus HTMT criterion. *Journal of Physics: Conference Series*, 890: 012163. DOI: <https://doi.org/10.1088/1742-6596/890/1/012163>
- Ajzen, I.** 1985. From intentions to actions: A theory of planned behavior. In: Kuhl, J and Beckmann, J (eds.), *Action control*. Berlin, 11–39. Heidelberg: Springer. DOI: https://doi.org/10.1007/978-3-642-69746-3_2
- Ajzen, I.** 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2): 179–211. DOI: [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I.** 2006. Constructing a theory of planned behavior questionnaire. Available at <https://people.umass.edu/~ajzen/pdf/tpb.measurement.pdf>.
- Ajzen, I.** 2020. The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4): 314–324. DOI: <https://doi.org/10.1002/hbe2.195>

- Ajzen, I** and **Madden, TJ**. 1986. Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22(5): 453–474. DOI: [https://doi.org/10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4)
- Allen, IE** and **Seaman, J**. 2014. *Grade change: Tracking online education in the United States*. Babson Park, MA: Babson Survey Research Group. <https://eric.ed.gov/?id=ED572730> (Last accessed 7 April 2021).
- Altunoğlu, A**. 2020. Yükseköretimde kapsayıcılığın uygulanabilirliği üzerine bir tartışma. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 16(27): 1–1. DOI: <https://doi.org/10.26466/opus.755015>
- Asghar, MZ, Barberà, E** and **Younas, I**. 2021. Mobile learning technology readiness and acceptance among pre-service teachers in Pakistan during the COVID-19 pandemic. *Knowledge Management & E-Learning: An International Journal*, 13(1): 83–101. DOI: <https://doi.org/10.34105/j.kmel.2021.13.005>
- Asghar, MZ, Gul, F, Hakkarainen, PS** and **Tasdemir, MZ**. 2019. Giriimcilik Etiminin Etkisini Değerlendirmek için Giriimcilik Niyetleri Anketinin Dorulanması. *Eitim ve Bilim*, 44(197).
- Asghar, MZ, Iqbal, A, Seitamaa-Hakkarainen, P** and **Barbera, E**. 2021. Breaching Learners' Social Distancing through Social Media during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 18(21): 11012. DOI: <https://doi.org/10.3390/ijerph182111012>
- Baas, M, Admiraal, W** and **van den Berg, E**. 2019. Teachers' adoption of open educational resources in higher education. *Journal of Interactive Media in Education*, 2019(1). DOI: <https://doi.org/10.5334/jime.510>
- Bamgbade, JA, Kamaruddeen, AM, Nawi, MNM, Yusoff, RZ** and **Bin, RA**. 2018. Does government support matter? Influence of organizational culture on sustainable construction among Malaysian contractors. *International Journal of Construction Management*, 18(2): 93–107. DOI: <https://doi.org/10.1080/15623599.2016.1277057>
- Bansal, D, Malla, S, Gudala, K** and **Tiwari, P**. 2013. Anti-counterfeit technologies: A pharmaceutical industry perspective. *Scientia Pharmaceutica*, 81(1): 1–14. DOI: <https://doi.org/10.3797/scipharm.1202-03>
- Bliss, TJ** and **Smith, M**. 2017. A brief history of open educational resources. In: Jhangiani, RS and Biswas-Diener, R (eds.), *Open: The philosophy and practices that are revolutionizing education and science*, 9–27. London: Ubiquity Press. DOI: <https://doi.org/10.5334/bbc.b>
- Chin, WW**. 1998. The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, 295(2): 295–336.
- Churchill, GA**. 1979. A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1): 64. DOI: <https://doi.org/10.2307/3150876>
- Fishbein, M** and **Ajzen, I**. 1977. Belief, attitude, intention, and behavior: An introduction to theory and research. *Philosophy and Rhetoric*, 10(2).
- Fishbein, M** and **Ajzen, I**. 2010. *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press. DOI: <https://doi.org/10.4324/9780203838020>
- Gelfand, MJ** and **Christakopoulou, S**. 1999. Culture and negotiator cognition: Judgment accuracy and negotiation processes in individualistic and collectivistic cultures. *Organizational Behavior and Human Decision Processes*, 79(3): 248–269. DOI: <https://doi.org/10.1006/obhd.1999.2845>
- Hair, JF, Risher, JJ, Sarstedt, M** and **Ringle, CM**. 2019. When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1): 2–24. DOI: <https://doi.org/10.1108/EBR-11-2018-0203>
- Harold, S** and **Rolfe, V**. 2019. I find the whole enterprise daunting: Staff understanding of Open Education initiatives within a UK university. *Open Praxis*, 11(1): 71–83. DOI: <https://doi.org/10.5944/openpraxis.11.1.918>
- Henseler, J, Hubona, G** and **Ray, PA**. 2016. Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, 116(1): 2–20. DOI: <https://doi.org/10.1108/IMDS-09-2015-0382>
- Henseler, J, Ringle, CM** and **Sinkovics, RR**. 2009. The use of partial least squares path modeling in international marketing. In: Sinkovics, RR and Ghauri, PN (eds.), *New challenges to international marketing (advances in international marketing)*, 277–319. Bingley: Emerald Group Publishing Limited. DOI: [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Hofstede, G**. 1980. Culture and organizations. *International Studies of Management & Organization*, 10(4): 15–41. DOI: <https://doi.org/10.1080/00208825.1980.11656300>
- Hofstede, G**. 1991. Empirical models of cultural differences. In: Bleichrodt, N and Drenth, PJD (eds.), *Contemporary issues in cross-cultural psychology*, 4–20. Lisse: Swets & Zeitlinger Publishers.
- Hoque, ASMM** and **Awang, ZB**. 2019. Does gender difference play moderating role in the relationship between entrepreneurial marketing and Bangladeshi SME performance? *Accounting*, 5(2019): 35–52. DOI: <https://doi.org/10.5267/j.ac.2018.6.001>
- Hulin, C, Netemeyer, R** and **Cudeck, R**. 2001. Can a reliability coefficient be too high? *Journal of Consumer Psychology*, 10(1): 55–58. DOI: https://doi.org/10.1207/S15327663JCP1001&2_05
- Hussain, MY** and **Malek, JA**. 2013. Knowledge transfer and the role of local absorptive capability at science and technology parks. *The Learning Organization*, 20(4/5): 291. DOI: <https://doi.org/10.1108/TLO-12-2011-0059>

- Jones, M and Nyland, R.** 2020. A case study in outcomes on open-source textbook adoption in an introduction to art class. *Frontier in Education*, 5: 92. DOI: <https://doi.org/10.3389/feduc.2020.00092>
- Karahanna, E, Evaristo, JR and Srite, M.** 2005. Levels of culture and individual behavior. *Journal of Global Information Management*, 13(2): 1–20. DOI: <https://doi.org/10.4018/jgim.2005040101>
- Kelly, H.** 2014. A path analysis of educator perceptions of open educational resources using the technology acceptance model. *The International Review of Research in Open and Distributed Learning*, 15(2). DOI: <https://doi.org/10.19173/irrodl.v15i2.1715>
- Kim, S, Park, C and O'Rourke, J.** 2017. Effectiveness of online simulation training: Measuring faculty knowledge, perceptions, and intention to adopt. *Nurse Education Today*, 51: 102–107. DOI: <https://doi.org/10.1016/j.nedt.2016.12.022>
- Knabe, AP.** 2012. Applying Ajzen's Theory of Planned Behavior to a study of online course adoption in public relations education. Unpublished thesis (PhD), Marquette University.
- Kristjánisdóttir, H, Guðlaugsson, ÞÖ, Guðmundsdóttir, S and Aðalsteinsson, GD.** 2017. Hofstede national culture and international trade. *Applied Economics*, 49(57): 5792–5801. DOI: <https://doi.org/10.1080/00036846.2017.1343446>
- Kurelović, EK.** 2018. Open access culture and acceptance of open educational resources in Croatian public universities. *Zbornik Veleučilišta u Rijeci*, 6(1): 39–50. DOI: <https://doi.org/10.31784/zvr.6.1.3>
- Kursun, E.** 2013. Açık eğitim kaynakları. In: Çaltay, K and Gökta, Y (eds.), *Öretim teknolojilerinin temelleri: Teoriler, araştırmalar, ilimler*. IST: Pegem Akademi. pp. 681–696.
- Kursun, E, Cagiltay, K and Can, G.** 2014. An investigation of faculty perspectives on barriers, incentives, and benefits of the OER movement in Turkey. *The International Review of Research in Open and Distributed Learning*, 15(6). DOI: <https://doi.org/10.19173/irrodl.v15i6.1914>
- Lam, T and Hsu, CHC.** 2006. Predicting behavioral intention of choosing a travel destination. *Tourism Management*, 27(4): 589–599. DOI: <https://doi.org/10.1016/j.tourman.2005.02.003>
- Lee, J, Cerreto, FA and Lee, J.** 2010. Theory of planned behavior and teachers' decisions regarding use of educational technology. *Journal of Educational Technology & Society*, 13(1): 152–164.
- Lin, CL and Jeng, CH.** 2017. Exploring interface problems in Taiwan's construction projects using structural equation modeling. *Sustainability*, 9(5): 822. DOI: <https://doi.org/10.3390/su9050822>
- Lu, K and Xia, Y.** 2013. Adaptive attitude tracking control for rigid spacecraft with finite-time convergence. *Automatica*, 49(12): 3591–3599. DOI: <https://doi.org/10.1016/j.automatica.2013.09.001>
- McKerlich, RC, Ives, C and McGreal, R.** 2013. Measuring use and creation of open educational resources in higher education. *The International Review of Research in Open and Distributed Learning*, 14(4). DOI: <https://doi.org/10.19173/irrodl.v14i4.1573>
- Mehmood, SA, Malik, MAR, Saood Akhtar, M, Faraz, NA and Memon, MA.** 2021. Organizational justice, psychological ownership and organizational embeddedness: A conservation of resources perspective. *International Journal of Manpower*, 42(8): 1420–1439. DOI: <https://doi.org/10.1108/IJM-06-2020-0296>
- Mijares, TS, Bustamante, RA, Ayo, EB, Anacio, ML and Jotic, RN.** 2017. The role of open educational resources (OERs) and web 2.0 in transforming pedagogy in higher education—implications to practice. *Asian Journal of Educational Research*, 5(1): 14.
- Morales, R and Baker, A.** 2018 secondary students' perceptions of open science textbooks. *Journal of Interactive Media in Education*, 2018(1): 4. DOI: <https://doi.org/10.5334/jime.455>
- Mtebe, JS and Raisamo, R.** 2014. Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *International Review of Research in Open and Distributed Learning*, 15(1): 249–271. DOI: <https://doi.org/10.19173/irrodl.v15i1.1687>
- Muslim, D, Touseef, SA and Raza, MM.** 2018. A comparative study of the usage of open educational resources in the e-learning universities and conventional universities of Pakistan. *International Journal of Distance Education and E-Learning*, 4(1). DOI: <https://doi.org/10.36261/ijdeel.v4i1.476>
- Nazir, MU, Yasin, I, Tat, HH., Khaliq, M and Mehmood, SA.** 2021. The influence of international tourists' destination image of Pakistan on behavioral intention: The roles of travel experience and media exposure. *International Journal of Hospitality & Tourism Administration*, 1–25. DOI: <https://doi.org/10.1080/15256480.2021.1938782>
- Ndubisi, NO.** 2004. Factors influencing e-learning adoption intention: Examining the determinant structure of the decomposed theory of planned behaviour constructs. In: *Research and Development in Higher Education: Transforming Knowledge into Wisdom Holistic Approaches to Teaching and Learning, Vol 27, Proceedings of the 27th Annual Conference of HERDSA*, 4–7 July 2004 Miri, Sarawak. Milperra, NSW: Higher Education Research and Development Society of Australasia Inc, 252–262.
- Nusbaum, AT, Cuttler, C and Swindell, S.** 2020. Open educational resources as a tool for educational equity: Evidence from an introductory psychology class. *Frontiers in Education*, 4. DOI: <https://doi.org/10.3389/feduc.2019.00152>
- Olcott, Jr., D.** 2013. New pathways to learning: Leveraging the use of OERs to support non-formal education. *Revista de Universidad y Sociedad Del Conocimiento*, 10(1): 327–344. DOI: <https://doi.org/10.7238/rusc.v10i1.1562>

- Otto, D.** 2021. Driven by emotions! The effect of attitudes on intention and behaviour regarding Open Educational Resources (OER). *Journal of Interactive Media in Education*, 2021(1). DOI: <https://doi.org/10.5334/jime.606>
- Parsons, T and Shils, EA.** (eds.) 2013. *Toward a general theory of action*. Cambridge, MA: Harvard University Press. DOI: <https://doi.org/10.4159/harvard.9780674863507>
- Peng, DX and Lai, F.** 2012. Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management*, 30(6): 467–480. DOI: <https://doi.org/10.1016/j.jom.2012.06.002>
- Rasool, SF, Wang, M, Tang, M, Saeed, A and Iqbal, J.** 2021. How toxic workplace environment effects the employee engagement: The mediating role of organizational support and employee wellbeing. *International Journal of Environmental Research and Public Health*, 18(5): 2294. DOI: <https://doi.org/10.3390/ijerph18052294>
- Ringle, C, Wende, S and Becker, J.** 2015. *SmartPLS 3*. Available at <http://www.smartpls.de> (Last accessed 3 February 2021).
- Rohman, A, Eliyana, A, Purwana, D and Hamidah, H.** 2020. Individual and organizational factors' effect on knowledge sharing behavior. *Entrepreneurship and Sustainability Issues*, 8(1): 38–48. DOI: [https://doi.org/10.9770/jesi.2020.8.1\(3\)](https://doi.org/10.9770/jesi.2020.8.1(3))
- Rolfe, V.** 2012. Open educational resources: Staff attitudes and awareness. *Research in Learning Technology*, 20. DOI: <https://doi.org/10.3402/rlt.v20i0.14395>
- Sabadie, JMA, Muñoz, JC, Punie, Y, Redecker, C and Vuorikari, R.** 2014. OER: A European policy perspective. *Journal of Interactive Media in Education*, 2014(1). DOI: <https://doi.org/10.5334/2014-05>
- Sánchez-Franco, MJ, Ramos, AFV and Velicia, FAM.** 2009. The moderating effect of gender on relationship quality and loyalty toward Internet service providers. *Information & Management*, 46(3): 196–202. DOI: <https://doi.org/10.1016/j.im.2009.02.001>
- Sathe, V.** 1983. Some action implications of corporate culture: A manager's guide to action. *Organisational Dynamics*, 12: 4–23. DOI: [https://doi.org/10.1016/0090-2616\(83\)90030-X](https://doi.org/10.1016/0090-2616(83)90030-X)
- Sclater, N.** 2011. Open educational resources: Motivations, logistics and sustainability. In: Ferrer, N and Alfonso, J (eds.) *Content management for e-learning*, 179–193. New York, NY: Springer. DOI: https://doi.org/10.1007/978-1-4419-6959-0_10
- Shams, S, Haq, MAU and Waqar, Y.** 2020. Open educational resources (OER) usage trends among university students of Pakistan. *Education and Information Technologies*, 25: 5637–5654. DOI: <https://doi.org/10.1007/s10639-020-10195-3>
- Smith-Turchyn, J and Richardson, J.** 2015. Critical review of the theory of planned behavior to predict and explain exercise behavior in women with breast cancer. *Critical Reviews in Physical and Rehabilitation Medicine*, 27(1): 51–64. DOI: <https://doi.org/10.1615/CritRevPhysRehabilMed.2015011760>
- Straub, D, Loch, K, Evaristo, R, Karahanna, E and Srite, M.** 2002. Toward a theory-based measurement of culture. *Journal of Global Information Management (JGIM)*, 10(1): 13–23. DOI: <https://doi.org/10.4018/978-1-931777-10-0.ch006>
- Tang, H.** 2020. A qualitative inquiry of K–12 teachers' experience with open educational practices: Perceived benefits and barriers of implementing open educational resources. *International Review of Research in Open and Distributed Learning*, 21(3): 211–229. DOI: <https://doi.org/10.19173/irrodl.v21i3.4750>
- Tarhini, A, El-Masri, M, Ali, M and Serrano, A.** 2016. Extending the UTAUT model to understand the customers' acceptance and use of internet banking in Lebanon. *Information Technology & People*, 29(4): 830–849. DOI: <https://doi.org/10.1108/IITP-02-2014-0034>
- Tenenhaus, M, Vinzi, VE, Chatelin, YM and Lauro, C.** 2005. PLS path modeling. *Computational Statistics & Data Analysis*, 48(1): 159–205. DOI: <https://doi.org/10.1016/j.csda.2004.03.005>
- Thomas, R.** 2017. Use of open educational resources: Indian scenario. *International Journal of Library & Information Science (IJLIS)*, 6(5): 17–26.
- UNESCO.** 2004. *Second global forum on international quality assurance, accreditation and the recognition of qualifications in higher education: "Widening access to quality higher education": background document*. Paris: UNESCO.
- UNESCO.** 2011. *UNESCO Commonwealth of Learning OER policy guidelines to be launched at the UNESCO general conference, 1 October, 2011*. Available at http://www.unesco.org/new/en/media-services/single-view/news/unescocommonwealth_of_learning_oer_policy_guidelines_to_be/ (Last accessed 7 April 2021).
- UNESCO.** 2020. *UNESCO recommendation on open science*. <https://en.unesco.org/science-sustainable-future/open-science/recommendation> (Last accessed 7 April 2021).
- Vuković, A.** 2020. Knowledge management concept and subculture: Police profession example. *Nauka i društvo: asopis za društvene nauke*, 12: 16–35.
- Wang, B, Rasool, SF, Zhao, Y, Samma, M and Iqbal, J.** 2021. Investigating the nexus between critical success factors, despotic leadership, and success of renewable energy projects. *Environmental Science and Pollution Research*, 1–11. DOI: <https://doi.org/10.1007/s11356-021-16441-6>

- Ward, EJ and Lindshield, BL.** 2020. Performance, behaviour and perceptions of an open educational resource-derived interactive educational resource by online and campus university students. *Research in Learning Technology*, 28. DOI: <https://doi.org/10.25304/rlt.v28.2386>
- Wiley, D.** 2006. Open source, openness, and higher education. *Innovate: Journal of Online Education*, 3(1).
- Wiley, D.** 2016. *The consensus around "openness"*. Available at <http://opencontent.org/blog/archives/4397> (Last accessed 7 April 2021).
- Zhou, X, Rasool, SF, Yang, J and Asghar, MZ.** 2021. Exploring the relationship between despotic leadership and job satisfaction: The role of self efficacy and leader-member exchange. *International Journal of Environmental Research and Public Health*, 18(10): 5307. DOI: <https://doi.org/10.3390/ijerph18105307>

TO CITE THIS ARTICLE:

Asghar, MZ, Kahyaoğlu
 Erdoğan, Y and Seitamaa-
 Hakkarainen, P. 2021. Cultural
 Levels and Pre-Service
 Teachers' Behaviour Towards
 the Use of Open Educational
 Resources. *Journal of
 Interactive Media in Education*,
 2021(1): 21, pp. 1–16. DOI:
[https://doi.org/10.5334/
 jime.674](https://doi.org/10.5334/jime.674)

Submitted: 12 April 2021

Accepted: 26 October 2021

Published: 13 December 2021

COPYRIGHT:

© 2021 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>.

Journal of Interactive Media in Education is a peer-reviewed open access journal published by Ubiquity Press.