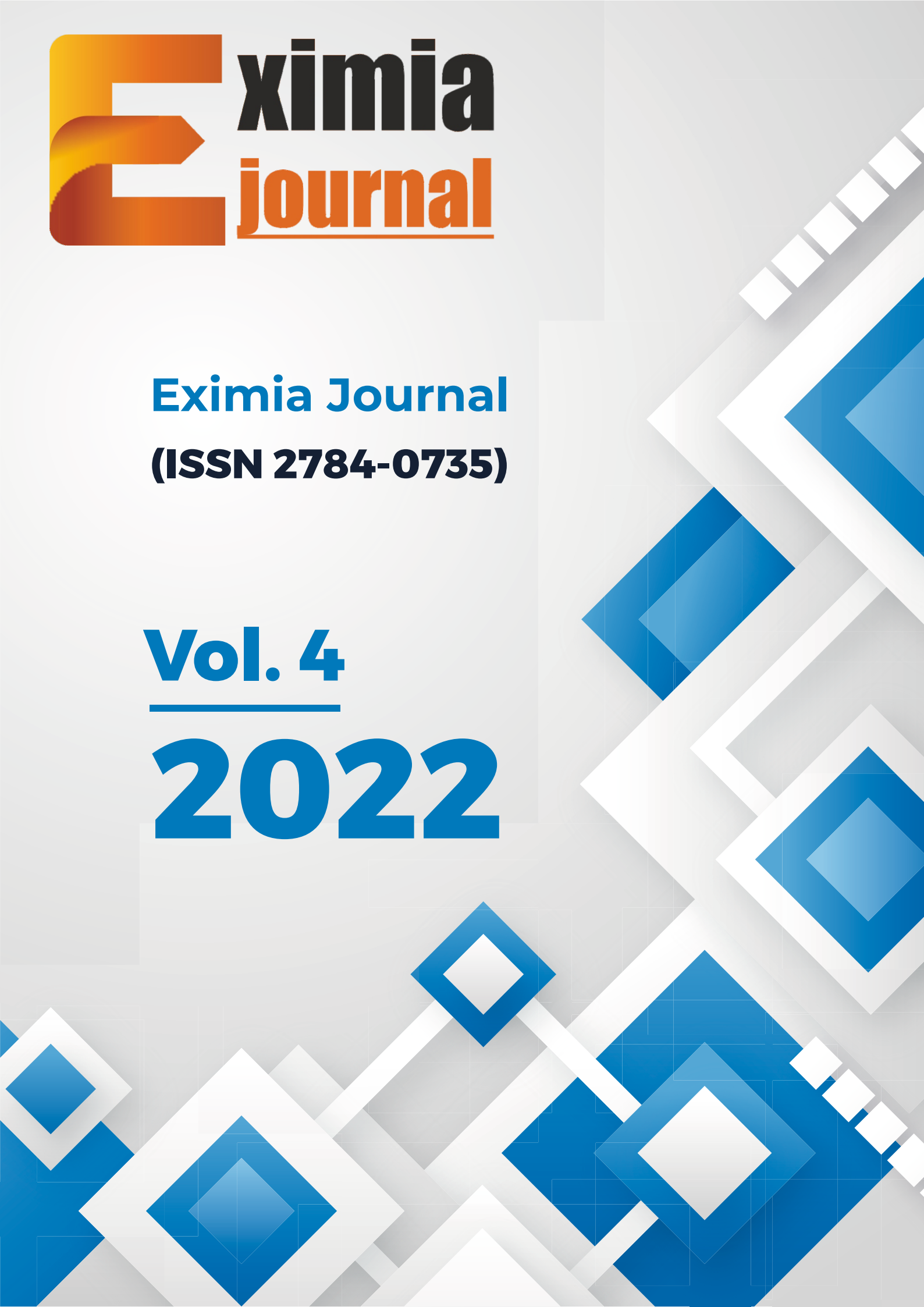




Eximia Journal
(ISSN 2784-0735)

Vol. 4

2022



Using the Technology Acceptance Model (TAM) in Understanding the Preschool Teachers in Palestine Technology' Acceptance during the COVID-19 pandemic

Nafiz A.Ali Ahmad, Abdelrahim M. Zabadi

nahmad@qou.edu, amaz_2019@hotmail.com

Abstract. One of the long-term lessons from the school closures is that remote education has become a necessary reaction as a precautionary measure to prohibit the diffusion of the global epidemic "COVID-19 ". This requires preschool teachers to adapt rapidly to remote education as well as accept educational technologies. Research on the preschool teachers' technology acceptance supplies evidence to improve their intention to utilize educational technology in emergency remote teaching. In the previous literature, the TAM is utilized broadly to test the process of technology acceptance by individuals. *When the findings were evaluated, it can be stated that the participants' behavioral intention is medium to a high level. Perceived usefulness is influenced by job relevance and perceived ease of use. Also, computer self-efficacy and perceptions of external control are the positive factors toward perceived ease of use. Finally, perceived usefulness and perceived ease of use are direct significant predictors of preschool teachers' behavioral intention.* It is believed that the findings of the current study present a strong guide for the applicability of the TAM to a sample of Palestinian preschool teachers under contingency situations. These findings highlighted some probable paths for interventions purposed at improving preschool teachers' acceptance of educational technology.

Keywords. TAM, Preschool Teachers, COVID - 19 pandemic, Palestine

1. Introduction

The transformation from face-to-face education to crisis online teaching has made teachers feel matchless pressure to harness technology during the Corona pandemic (Knig et al.2020; Bozkurt & Sharma, 2020). As a consequence, preschool teachers are no an exception, they interact with young children and their parents, share text and video resources, engage in meetings and remote training, and transact with workaday matters thru computer-based educational technology, which they have seldom tried previously (Hong et al.2021; Verska et al.2021). From this point of view, this research proposes that, with the quick transference of distance teaching, preschool teachers encounter matchless obstacles in the acceptance of technology. The enforcement of educational technology (ET) which is considered a necessity for online education success during the COVID-19, aims to lessen face-to-face courses and enforce social distancing (Hong et al.2021; Laura et al.2020).

Such practices, however, (Granic & Maranguni, 2019; Abramson et al.2015) do not conduct to any efficient results if preschool teachers lack the behavioral intention (BI) to utilize technology, because the success of any technology or system relies on how it is exercised by its

target users. In general, research examining technology acceptance has concentrated on students and pre-service teachers, however, to the author's knowledge, there have been no empirical studies to determine the preschool teachers' technology acceptance intention and the influential factors, particularly in the context of a global public health crisis. Thru an in-depth review of the extant literature (e.g., Abramson et al.2015; Aburagaga et al., 2020; Al-Azawei et al.,2015; Al-Azawei et al.,2017; Granic& Maranguni ' c, 2019; Okcu et al.2019) it was found that the TAM model is widely viable and supplies an evident theoretical foundation and empirical reference for the current research.

However, extant studies still have the following restrictions; (a) most of them were conducted in the context of developed countries, but few empirical studies were conducted in the context of developing countries; (b) most studies examined the TAM under natural conditions rather than the period of the epidemic;(c) the prior research centralize on pre-service teachers and students, instead of preschool teachers. Under such circumstances (namely, COVID-19), the rapid adoption of online teaching implicate an understanding of prerequisites that impact preschool teachers' tendency to accept ET. In this vein, TAM has been broadly applied to technology acceptance in order to ascertain the key determinants (Joo et al., 2018b; Rafique et al., 2018). Motivated by the increasing calls for harnessing technology in early childhood education, and based on the TAM, this research's major objectives are: (1) to explore the Palestinian preschool teachers' acceptance intention of ET during the COVID-19 pandemic? , and (2) to examine the linkages between Palestinian preschool teachers' technology acceptance intention and its determinant factors during the COVID-19 Pandemic?

To be more specific, the present research would be guided by the following two main questions: first, what is the preschool teachers in Palestine acceptance intention to accept educational technology during the COVID-19 Pandemic?, second, What are the relationships between preschool teachers in Palestine intention to accept educational technology and its determinant factors (namely, Perceived Usefulness (PU), Perceived Ease of Use (PEU), Job Relevance (JR), Computer Self-Efficacy (CSE), and the Perceptions of External Control (PoEC)) during the COVID-19 Pandemic?. This study will have both theoretical and practical implications and could help technology acceptance research. Theoretically, this study enriches the extant empirical research by examining the TAM's applicability for preschool teachers under a public health emergency period, and practically, the results could provide suggestions for the developers of the ET system, policy-makers, as well as preschool managers. The remainder of this study is structured as follows: section 2 presents the literature review & hypothesis development; Section 3 then presents the material and methods; section 4, introduces the findings; discussion of results and implications is presented in sections 5 and 6 respectively; section 7 closes with limitations and conclusion.

2. Literature Review & Hypothesis Development

In this section, first, we present the consequences of the COVID -19 pandemic on school education in Palestine; we second present preschool teachers' ET usage during the COVID-19 pandemic; third, we introduce a theoretical model in detail, namely TAM, to explore the preschool teachers' technology acceptance and its influential factors.

2.1. Consequences of the COVID -19 pandemic on school education in Palestine

The government of Palestine announced the emergency state on 5 March 2020 and call for the closure of all public and private schools and kindergartens in the West Bank and Gaza as a protective measure to evade the prevalence of the COVID-19. In spite of the fact that

distance education was not broadly accepted prior to the pandemic by many policymakers (Shraim, 2012), however, the MoE announced on March 10 that schools would transition to the distance education as the key approach to keeping students involved with the learning process during school closures as a result of the epidemic diffusion (MoE, 2020 March 9). Policymakers afforded education directorates in all districts and schools further flexibility with their expertise and resources to deliver online education in both government and private schools.

Since then, the MoE is working closely with its partners to control the status and take proper steps. On 2 April, the MoE decided to cancel all examinations for the 2019-2020 school year, except the Tawijhi exam, and that all teachers will cover the core subjects thru traditional face-to-face teaching at the beginning of next year (MoE, 2020, April 2). Also, the MoE has collaborated with Al-Quds Open University and the Palestinian Broadcasting Corporation to launch an online secondary initiative, broadcasting live lessons via YouTube, radio, and TV to deliver a stricter schedule of daily online classes to provide support to students in all stages including kindergartens. Different applications (e.g., Zoom and Google Hangouts) are also being diffused to link teachers and students (MoE, 2020, April 2). On April 1st, 2020, the MoE and UNESCO established the Taskforce for Distance Learning, with the aim of partnerships building, mobilizing funds, coordinating different interventions of partners, and compiling online resources (UNESCO, 2020, April 12). Moreover, the MoE launched an interactive online platform called Ta'mmol (Reflection), concentrating on enrichment and extracurricular activities to keep students learning, rather than on teaching. This initiative will assist students to stay linked with their teachers, seize their time properly in evolving their skills in utilizing educational technologies for problem-solving, and develop cognitive learning. Also, it will prompt students to self-study and develop their adaptability to face any future emergency (MoE, 2020, April 2).

The MoE launching a Facebook page "Ta2ammal" to bridge the distance gap with the students and receive feedback on their progress as well as their challenges during this epidemic. Also, it launched an e-learning portal to reach all grade students in Palestine. Other initiatives were implemented at the directorates' level; including producing YouTube channel videos and using other social media platforms. Moreover, the ministry has started a media campaign to encourage students to take online courses broadcasted thru its media outlets, the "Rawafid" website, and Voice of education radio, the radio station promptly began including lessons for all grades in its broadcasts, building on the success of the previous streaming of videos for education courses (MoE, 2020, March 9).

The MoE specified that schools use different technologies for: first; the well-being of teachers and students, who should all be encouraged and ready to utilize any proper technology for psychological support, raise the safety awareness of the dangers of technology to health and the environment, encourage teachers, students, and their families to help reduce the spread of COVID-19 in Palestine; second, lower schools (preschool to 4th grade) have to concentrate on making learning enjoyable thru PowerPoint, animated video presentations, songs, worksheets, drawing, games, and YouTube videos; third, middle and upper schools (5th to 11th grades) have to create Facebook groups and teachers should develop lesson plans according to grade and subject, uploading assignments, worksheets, materials, pictures, and videos. Fourth, for higher secondary (Twajih; 12th grade) students, each district of education has to create a YouTube channel to upload videos recorded by teachers in various subjects (Shraim & Crompton, 2020; MOE, 2020, March 30).

In addition to all of the above, to ensure the smooth running of school education, the government in Palestine signed many agreements with UNESCO and UNICEF and the

education cluster and other partners with the support of the MoE to join forces by providing content for the e-learning platform, mobile phones, TV, and radio; awareness-raising thru social media; training teachers on educational technologies; and supporting the development of ICT in education strategy (UNESCO, 2020b) . During COVID - 19, schools, teachers, and students are utilizing their own Facebook pages and YouTube channels in addition to the national e-School portal (MoE, 2020, March 30). Teachers and students in the Gaza Strip are further utilizing the Rawafid online educational portal, UNRWA's Interactive Learning Program, and Voice of Education Radio (UNESCO, 2020, April 12). Communication between all stakeholders, including decision-makers at all levels, teachers, students, and parents, is via Facebook and WhatsApp, as these are the most common social media in Palestine (Hamleh, 2019) that are utilized to share information, post opinions, and discuss issues surrounding the current outbreak of COVID-19, in addition to ZOOM is being used for virtual meetings.

2.2. Preschool Teachers' ET use During the COVID -19 pandemic

Teachers of young children consider their main aim is preparing academically the children for the first grade and emphasize their fundamental skills, increase their capabilities, and develop their cognitive, affective, psychomotor, and social skills, also, Preschool teachers take the major responsibilities in early educational settings (Nuri & Kursat, 2017). Since preschool teachers make several decisions in early educational settings, it is essential to underline teachers' opinions. ICTs utilization in early educational environments may as well be influenced by the teachers' views and intentions. Blackwell et al. (2014) found preschool teachers' attitudes toward the role of technology are of great significance in terms of technology use. Kalas (2010) affirms that early childhood education teachers support the educational value of ICT. Similarly, teachers of young children generally have positive attitudes or views towards the use and integration of new technologies (Nikolopoulou & Gialamas, 2009). Teachers' positive approaches toward new technologies in early educational environments can accelerate the integration of ICT. Teachers who believe the educational value of ICT can lead children to technology-related activities and integrate these activities into the preschool curriculum.

Undoubtedly, during the COVID-19 pandemic, technology has become a vital instrument, even a necessity in the education sector (Iivari et al., 2020). Several countries all over the world have taken the measures of switching to online education to confront the danger of the Coronavirus and prevent its spread and minimize its harm (Jandric', 2020; OECD, 2020; Zhang et al., 2020). As a response to epidemic safeguard, such as in many countries, all educational institutions including preschools in Palestine were compelled to transform to online education on the fifth of March 2020(second semester). As a consequence, all preschool teachers were required to quickly and skillfully accept and usage of educational technologies they were not renowned with before (Rapanta et al., 2020; Laura et al., 2020).

This case, as per Von Davier et al.(2017) requires preschool teachers to meaningfully accept and usage of technology in the online teaching environment, this includes, "but is not limited to", connecting people (i.e., children, parents, colleagues, and principals), resource integrating, and collaborating thru ET(Garbe et al.2020). Besides, preschool teachers, need to closely choose the proper resources for young children's learning and parent-child interaction, produce audio and video clips and answer parents' parenting questions since all these practices rely on ET (Hong et al.2021). As per Yuen & Ma (2008), teachers' readiness and acceptance of technology play a critical role in the successful application of ET.

As per Nafiz & Zabadi (2020), for a long time, preschool teachers in Palestine lack the ability to use ET, besides, the Palestinian ministry of education has not made definite requirements on preschool teachers' ability in information technology (IT), and also, online

education was not broadly conducted in preschool education in Palestine before the COVID-19. Moreover, only some preschool teachers communicate with families thru landline, the mobile phone, or regular meetings but this is not for children's learning thru technology. However, preschool teachers rely on computer-mediated ET compulsorily to deliver online education during the COVID-19. As such, Palestinian preschool teachers may encounter obstacles when receiving and using ET.

Based on the aforementioned arguments, it is necessary to explore preschool teachers in Palestine's willingness to accept ET, as well as its influencing factors to ensure the smooth evolution of online preschool education during the COVID - 19 epidemic, however, researchers especially in the Arab region have not paid more attention to this issue. At the moment, although preschools in Palestine reopening after three semesters of closing and in other parts of the world, any prediction as to when the epidemic will be over and closures of preschools will end finally seems to be hardly complete. Thus, it is necessary to explore and examine preschool teachers' BI toward ET, and why the technology is accepted or not. The research results would provide insights into preschool teachers' technology acceptance and utilization during the COVID - 19 epidemic, which would assist support preschool educational continuity.

2.3. Development and use of TAM

TAM was introduced by Fred Davis in 1986 (Lu et al.2003). An adaptation of the Theory of Reasonable Action (TRA), TAM is specifically tailored for modeling users' acceptance of information systems or technologies (PC Li, 2017). In 1989, Davis used TAM to explain technology usage behavior. The purpose of Davis' (1989) TAM is to explain the general determinants of technology acceptance that lead to explaining users' behavior across a broad range of end-user computing technologies and user populations (Zha et al., 2015; Yoon, 2016; Rafique et al., 2018; Teo et al., 2018; Abdullah & Ward, 2016).

The TAM contains core components (Hong et al.2021; Davis, 1989), i.e., use motivation, including PEU, PU, and outcomes including BI. Guided by the TAM's point of view, individuals' BI to accept technology is influenced by the following key factors: PEU and PU, which are considered the most significant determinants predicting BI in a direct or indirect manner (Liu et al., 2019; Henderson & Divett, 2003; Davis 1989; Venkatesh & Bala, 2008). PEU refers to the degree to which the potential user expects the target system to be effortless and PU is defined as the potential user's subjective likelihood that the use of a certain system will improve his/her action (Davis, 1989). BI means the degree of the individuals' inclination and state of readiness before adopting technology behaviors (Ajzen, 1985). That is to say, if preschool teachers perceive advantages and serviceability when utilizing ET (namely, PU), their intention toward these technology resources and systems will be stronger, also how preschool teachers perceive that applying the target technology is free from any effort to enhance the achievement of their tasks (namely, PEU).

At the same time, when ET is easy to understand and use (i.e., PEU), preschool teachers will have positive tendencies toward the use of technology. In this vein, empirical research on the TAM explored the significant effect of PU and PEU on users' intention toward using technology (Valdehita et al., 2019; Rafique et al., 2020). Particularly, in educational environments, teachers' PU and PEU are positively related to their acceptance intention of ET in teaching practices (Pynoo et al., 2012; Scherer et al., 2019). The last version of TAM was created by Venkatesh & Davis (1996), in this version, their main finding of both PU and PEU was found to have a direct effect on BI. Therefore, this research proposes the following hypotheses:

Hypothesis One (H1): PU will have a positive significant impact on the BI to use ET.

Hypothesis Two (H2): PEU will have a positive significant impact on the BI to use ET.

Moreover, the relationship between PEU and PU has been described in preceding studies, for example, a study conducted by Rafique et al. (2018) and Hong et al. (2021) indicated that PEU affects PU, leading to increased BI. When individuals perceive that utilizing a specific technology would get rid of difficulties or does not require a big effort, the perception of this technology will be more helpful and useful. Thus, the following hypothesis was proposed.

Hypothesis Three (H3): PEU will have a positive impact on the PU of ET.

Several studies replicated and validated the TAM in many fields, including the education sector, for example (Granic & Maranguni, 2019; Al-Azawei & Lundqvist, 2015; Al-Azawei et al.2017; Ibrahim et al .2017). The TAM was mainly employed to examine individuals' usage intention of developed tools and technologies, for example, by exploring individual's acceptance of mobile libraries and electronic learning (Jeong, 2011; Chang et al., 2017) or to examine students' acceptance of virtual laboratories, machine translation in education, YouTube, etc. (Lee & Lento, 2013; Valdehita et al., 2019; Yang & Wang, 2019; Indahyanti & Sukarjadi, 2015).

Besides, the TAM was employed to understand teachers' ET acceptance behavior in teaching practices (e.g., Scherer et al.2019). Studies conducted in the sample of pre-service teachers and secondary school teachers revealed that the TAM's validity in an educational context was applicable (e.g., Pynoo et al., 2011; Teo & Noyes, 2014). However, the background of the above research is mainly concentrated on higher education areas (Chang et al., 2017; Yang & Wang, 2019), and there are few studies on preschool education. In spite of the fact that considerable evidence for the TAM can be found in studies with western teacher participants (Holden & Rada, 2011; Kusano et al., 2013; Perkmen et al., 2016), research with non-western teachers is still fragmented to date. In addition, there were limited applications and replication of TAM in the education field, particularly in developing countries (Scherer et al.2019; Liu et al.2019, Awwad & Al-Majali, 2015; Alharbi & Drew, 2014). In Palestine, as a developing country in the Middle East, studies on the application and extension of the TAM are limited and do not concentrate on the preschool teacher.

Even though many studies (e.g., Awwad & Al-Majali, 2015; Aburagaga et al., 2020; PC Li, 2017; Al-Azawei et al.2015; Granic& Maranguni 'c, 2019) confirmed TAM robustness, it is needful to complement many determining TAM factors to explain how individuals accept a specific technology comprehensively (Nistor, 2014; Hong et al.2021). Venkatesh & Bala (2008) proposed and explored the respective determinants of PU and PEU. The TAM introduced by Davis holds that external variables (i.e., system design features) are associated with TAM constructs (Davis, 1989). Taking into account this demand, prior studies have developed and adapted TAM by adding various determinants, such as Subjective Norm(SN), Job Relevance (JR) , Image(I) , Output Quality(OQ) , Result Demonstrability(RD), Computer Self – Efficacy (CSE), Perceptions of External Control (PoEC) , Computer Anxiety(CA),Computer Playfulness(CP), Perceived Enjoyment(PE),and Objective Usability(OU) (Venkatesh and Bala, 2008; Cheung & Vogel, 2013; Joo et al., 2018a; Yang & Wang, 2019; Davis ,1989; PC Li, 2017;Hong et al.2021).

According to the TAM, PU and PEU have different impacts on individual acceptance tendency, which indicates that the unique role of these two antecedents in the process of individual technology acceptance should be investigated separately (Venkatesh, 2000; Davis,

1989). Later, many studies on the TAM (e.g., Schepers & Wetzels, 2007; Venkatesh & Bala, 2008; Son et al., 2012; Ros et al., 2015; Hong et al.2021) took the external factors such as JR, CSE, and PoEC as determinants of TAM constructs that are expected to influence PEU and PU. JR is an external variable of PU, and PoEC and CSE are significant external factors of PEU. JR refers to how persons believe technology is viable to work (Son et al., 2012). JR is positively associated with PU, which is verified by relevant studies (Sun et al., 2019). PoEC is recognized as how one perceives the current organization and technology to uphold the application of technology (Ros et al., 2015). Researchers (e.g., Ozturk et al., 2016; Alwabel et al., 2020) found that an individual's perception of external resources and support are the main features influencing PEU. Besides, CSE is defined as individuals' speculation and judgment on whether he or she is capable of applying educational technologies (Celik & Yesilyurt, 2013). Past studies (e.g., Scherer et al., 2015) suggested that PEU is significantly associated with beliefs (namely, CSE). A study conducted by Hong et al. (2021) revealed that PoEC has a positive significant impact on PEU toward ET. In line with the literature, the following three hypotheses were proposed:

Hypothesis Four (H4): JR will have a positive significant impact on the PU.

Hypothesis Five (H5): PoEC will be a significant predictor that positively influenced the PEU toward ET.

Hypothesis Six (H6): CSE will be a significant predictor that positively influenced the PEU toward ET.

Although some previous studies(e.g., Liu et al. 2019; Abramson et al., 2015; Granic and Maranguni, 2019) have widened and identified the determinants of BI to technology usage, to the researcher's knowledge, and after reviewing the literary work in this domain, it was noticed that little is known about the antecedent variables regarding preschool teachers' acceptance of education technology in the local and Arabic published works, that is why the researcher, will shed a light on the preschool teachers in Palestine accept the technology during the COVID-19 by adopting TAM . Constructing and testing a model with multiple impacting factors contributes to a more thorough grasp of the preschool teacher's TBM. The current research used the original and adapted TAM versions to construct the theoretical model for understanding preschool teachers' acceptance of ET during the COVID-19 motivated by prior literature.

According to Szajna (1996) and Liu et al (2010), in technology acceptance studies, BI has a strong impact on the actual behavior of users. Therefore, the current research selects BI as the outcome variable. PEU and PU are primary variables of individuals' technology acceptance (Hao et al., 2017; Teo et al., 2017). JR as one of the external factors is strongly associated with PU (Pituch & Lee, 2006). Likewise, CSE and PoEC play a positive impact on PEU (Abdullah & Ward, 2016; Hong et al.2021). According to the TAM's existing literature, this research suggested the theoretical model as illustrated in **Fig. 1**.

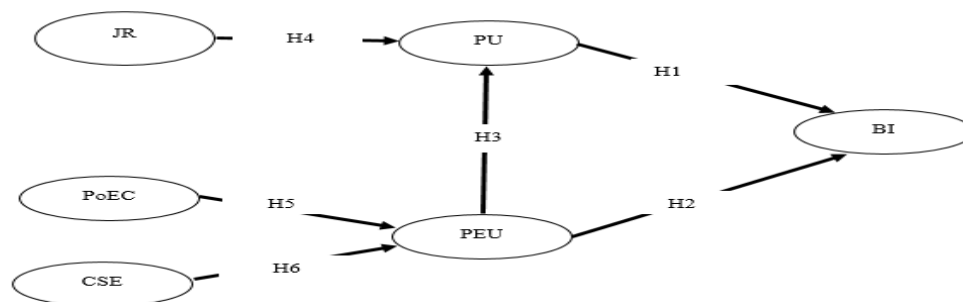


Fig. 1: Theoretical Model

3. Material and Methods

3.1. Data Collection:

Before data gathering, the researchers' obtained ethical approval for this study. The researchers developed an electronic questionnaire and modified original items according to the situation of preschool teachers' ET use during the COVID-19 pandemic. The electronic questionnaire was conducted because it could be easily administered and accessible with different devices. Most of the participants were contacted thru What Sapp, Messenger, and email. Further, the online questionnaire was administered in Google Form by sending a link to participants and keeping the questionnaire active for 3 weeks.

3.2. Measures

Based on past studies (e.g., Mailizar et al.2021; Alharbi, 2014; Hussein, 2017; Hong et al.2021; Lau et al.2017; Queirós et al. 2017) validated items were used to test the TAM. According to Venkatesh and Bala (2008), the TAM constructs (namely: JR, CSE, PoEC, PU, PEU, and BI) were measured. The measurement of TAM consists of 6 dimensions and 23 items. A pilot test was conducted among 30 preschool teachers to gather feedback, the electronic questionnaire was revised and improved based on this feedback. Table 1 presents the Cronbach's α of the 6 constructs subscales.

Table 1: The Cronbach's α values

Construct	Items No.	Cronbach's α
JR	3	0.81
PoEC	4	0.84
CSE	4	0.87
PU	4	0.83
PEU	4	0.85
BI	4	0.82

3.3. Participants

All preschool teachers from both public and private sector who have participated in online education during the COVID-19 and have utilized ET can get involved in this study. Accordingly, the participants of this study were (1488) preschool teachers during the school closure period which lasted for more than one year. Random sampling was used for the selection of respondents. The respondents' demographic information was as follows: teachers' age were selected from 20 - to less than 30 years (28.7%), from 30 - to less than 40 years (41.1 %), and

40 years or above (30.2 %). Teachers' years of experience were selected into shorter than 5 years (12.3%), 5- 10 years (33.9%), and 10 years or above (53.8%). Teachers' educational level was as follows: 77.6% with a bachelor's degree or higher, 22.4% with a diploma degree. Most teachers are from private preschools (75.1%), and (24.9 %) are from public preschools.

3.4. Data Analysis

Descriptive and correlation statistics were analyzed in SPSS Statistics V.22, as well the structural equation model (SEM) was conducted. In the structural model, four variables were considered as control variables (age, educational level, years of experience, and preschool type). The research model's fit was evaluated by the following indicators: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root-Mean-Square Error of Approximation (RMSEA), and Standardized Root-Mean-Square Residual (SRMR), and the (χ^2) - Chi-Square statistic (Bentler, 1990; Bentler & Bonett, 1980; Steiger, 1990; DiStefano et al.2018). Earlier research (e.g., Bentler & Bonett, 1980; Byrne, 2001; Kline, 2005) recommended that CFI and TLI > 0.90 indicate an acceptable fit. As per Browne & Cudeck (1993) and DiStefano et al. (2018) and Hu and Bentler (1999), RMSEA and SRMR value of < 0.05 indicates a "close fit" and that ≤ 0.08 suggests a reasonable model-data fit. A (χ^2) statistic of ≤ 5 is typically considered acceptable (Bollen, 1989).

4. Results

4.1. Initial Analysis

For all examined variables, the correlations and descriptive statistics were depicted in Table 1. A Five-point Likert Scale was used to measure all variables, with 3 being the theoretical midpoint. Table 1 shows that the variables' scores are (3.874, 3.632, 3.810, 3.764, 3.770, and 3.891) respectively, exhibiting that the Palestinian preschool teachers have mid-to-high levels on all constructs. Also, compared with the scores of the 6 investigated variables, it was shown that they have the lowest score on PEU with (Mean (M) = 3.632) toward ET. The variables' standard deviation (SD) values range between (0.644) and (0.792) which exhibits a small range of variation. Kurtosis values range from (0.080) to (0.449), while Skewness values range from (0.120) to (0.249). Skewness and Kurtosis' values in the current study exhibit that all constructs are within the agreeable range of normality data as recommended in the previous literature (e.g., Ori et al., 2009). Correlation values are positively at a significant level of (0.05), ranging from (0.509) to (0.779). Also, as shown in Table 2, it was found that the highest correlation coefficient was among CSE and PoEC ($r = 0.779$, $p < 0.001$).

Table 2: Correlations and descriptive statistics for study constructs

Constructs	JR	CSE	PoEC	PU	PEU	PI
JR						
CSE	0.639***					
PoEC	0.599***	0.779***				
PU	0.509***	0.709***	0.559***			
PEU	0.601***	0.689***	0.719***	0.689***		
.BI	0.619***	0.759***	0.64***	0.610***	0.559***	
M	3.810	3.770	3.764	3.874	3.632	3.891
SD	0.788	0.644	0.749	0.725	0.791	0.671
Kurtosis	0.179	0.449	0.339	0.139	0.410	0.080
Skewness	- 0.030	0.249	-0.020	0.040	-0.120	-0.120

*** $p < 0.001$ (2 – tailed)

4.2. Structural Model

When the measurement models' validity and reliability were verified, the SEM was employed utilizing the maximum probability estimation to assess the relations between the latent variables. In the structural model of the current study, all the obtained fit indices meet the recommended values in the literature (i.e., Hair et al., 2010; Hong et al.2021):

CFI = 0.92, TLI = 0.91; SRMR = 0.06, RMSEA = 0.07 with 95% Confidence Interval (CI) [0.07, 0.08]; $\chi^2 = 3573.64$, DF = 332. **Fig. 2** illustrates the path coefficients and their significance. There is a positive association among JR and PU ($\beta = 0.296$, $p < 0.001$), also, a positive association was found among CSE and PEU intention ($\beta = 0.321$, $p < 0.001$), as well as PoEC is positively associated with PEU intention ($\beta = 0.646$, $p < 0.001$). PU is influenced by PEU ($\beta = 0.459$, $p < 0.001$). In addition, PU is positively affect BI ($\beta = 0.091$, $p < 0.05$), and PEU are positively affect BI ($\beta = 0.746$, $p < 0.001$).

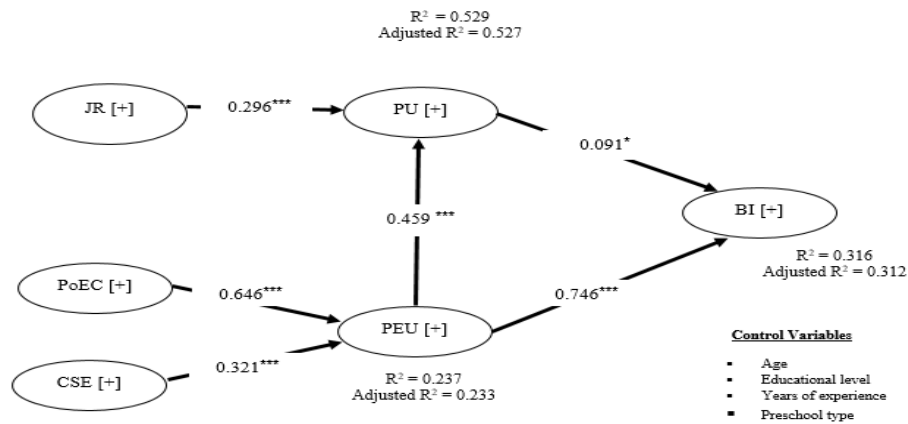


Fig. 2. Verified model for BI to use.

Table 3 shows the significance of the path coefficients. Results revealed that the (95%) CI for the direct impact did not contain zero, which indicates that all of the hypotheses are confirmed.

Table 3. Structural model results.

Paths	Coefficients	95 % CI	Decision
H1 : PU -> BI	0.091*	[0.033 , 0.171]	Confirming
H2 : PEU -> BI	0.746***	[0.843, 0. 929]	Confirming
H3 : PEU -> PU	0.459***	[0. 174, 0.360]	Confirming
H4 : JR -> PU	0.296***	[0. 399 , 0. 624]	Confirming
H5 : PoEC -> PEU	0.646***	[0.207 , 0.275]	Confirming
H6: CSE -> PEU	0.321***	[0.582, 0. 641]	Confirming

* $\rho < 0.05$.*** $\rho < 0.001$ (2 – tailed)

5. Discussion of Results

Preschools were closed in Palestine on the 5th of March, 2020 as a response to the coronavirus consequences, this led to the great and inevitable transition from offline to online education. In the midst of this transformation, preschool teachers are required to have ICT proficiency. It is still, however, unbeknown whether preschool teachers in Palestine are prepared to accept ET. Thus, this study applied the TAM to detect preschool teachers'

acceptance of ET during the COVID-19 pandemic. Findings introduced strong evidence for the TAM's applicability in the situation of emergency circumstances. Results exhibited that Palestinian preschool teachers' BI level was moderate to high influenced by PU, PEU, JR, CSE, and PoEC. To be more specific, PU and PEU are direct significant predictors of preschool teachers' BI. JR is positively associated with PU, as well as CSE and PoEC are positively associated with PEU. The results in this arena created a thorough understanding of preschool teachers' acceptance tendency toward ET during the COVID-19 pandemic, as well as provided insights into teacher training worldwide on such technology, including in Palestine.

The study concluded that the majority of preschool teachers in Palestine accepted and use ET during the COVID -19 epidemic as the mean BI score was over 3, exhibiting a moderate or above agreement. The relatively high behavioral intentions may be attributed to what the government and the MoE in Palestine did during the COVID - 19 pandemic. The MoE has launched home-based online education and provided online resources and professional training for teachers having access to ET during the COVID - 19 pandemic through cooperation with local partners and international organizations such as UNESCO and UNICEF. The MoE's hard work during the COVID-19 epidemic might increase the willingness of preschool teachers to use ET.

Among these variables, the score of preschool teachers' PEU is the lowest, which indicates that preschool teachers have difficulties in the actual usage of technology. This can be explained by the fact that, although the availability of technologies, preschool teachers seemingly do not have extensive experience in using technology in education practices, accordingly, faced with the sudden impulse of online education during the COVID-19 Pandemic, they experienced difficulties in using ET. These difficulties can be overcome through continuous training and workshops. In this vein, Rafique et al. (2020), pointed out that the unexpected shift of teachers to online education requires training and preparation for using platforms, tools, and organizing workflows, while the fact is that most teachers do not have mature experience in online education. This may be one of the reasons for the low score of teachers' PEU. Despite the fact that preschool teachers in Palestine encountered technological obstacles in their professional practices especially in PEU during the COVID - 19 pandemic, however, the results provide a breakthrough window to enhance preschool teachers' intention to use ET.

Results revealed that the BI of Palestinian preschool teachers on ET is positively influenced by both PU and PEU. This suggests that the results are in tune with the literature examining the TAM (e.g., Okumus et al., 2016; Scherer et al., 2019; Hong et al. 2021; Mailizar et al. 2021). This result may not be unexpected. According to Marangunić & Granić (2015) and Liu et al. (2019), PU and PEU are the two key constructs that are playing a central role in the process of a system's adoption. Commenting on these results, the researchers believe from their experience in this field, that the more teachers feel relaxing in using educational technologies, the more motivated to practice it in their educational processes, otherwise, they may reject ET if it is difficult to utilize, also, awareness of the technology's usefulness would promote their willingness to use ET, that is to say, the more useful ET is for their work, the more interested preschool teachers are to employ it.

Compared with the extant research, this study introduces notable contributions. Despite the TAM's dominance in the research scene, however, it has not been concentrated on preschool teachers during the COVID-19 Pandemic. Thence, this research contributes in part to the literature by testing the significance of PEU and PU for individuals' BI utilizing a sample of preschool teachers, a style similar to that prior to the COVID-19 outbreak. Notably, it was

found that preschool teachers' BI is more strongly affected by their PEU rather than PU. This result is conflicting with prior literature (e.g., Scherer et al., 2019) which includes a sample of non-preschool teachers. For instance but not limited to, in a study by Baydas & Goktas (2016), PU had the strongest impact on teachers' intention to ICTs use.

Results of our current work indicate that preschool teachers in Palestine have a tendency to concentrate on the use, ease of understanding, and acceptance when they utilize ET. The ET's ease of use and simplicity would promote preschool teachers' willingness to use it. A conceivable explanation could be that preschool teachers in Palestine lack the capability to use ET (Nafiz & Zabadi, 2020). On the other hand, although Palestinian preschool teachers in Palestine had practiced ET on a narrow scale prior to the outbreak of the COVID-19 pandemic, however, face-to-face communication and teaching dominated their teaching practice. In general, Preschool teachers have few opportunities to utilize ET, this may be attributed to the pre-service education and post-service training of preschool teachers do not concentrate on the application of ETs'. As per Venkatesh et al. (2003), despite the fact that PEU may not be a critical predictor during the formation of behavioral intentions in the final phase of technology use, however, it is a key factor for beginners.

As the epidemic has influenced education at the global level, the sudden transformation of online education constitutes. If the application of ET is free of effort, then preschool teachers would show a stronger BI, otherwise, they would not be willing to apply ET. Consistent with previous studies, in this study, the positive impact of PEU on PU was emphasized. In this respect, it can be said that this result is supported by empirical studies (e.g., Cigdem and Ozturk, 2016; Rafique et al., 2018; Hong et al. 2021; Mailizar et al. 2021; Abramson et al. 2015; Chen & Aklikokou, 2019).

Davis (1989) argues that users would confirm PEU in shaping PU. This means that if preschool teachers feel that ETs are challenging to apply, then they will conclude that ETs will have little impact on their work, that is, during the COVID-19 pandemic, they will believe the technology is beneficial and helpful when they perceive that ET is easy to apply. Over and above, the current study supported the hypothesis that JR is an impacting factor on PU. That is, when technology eases an individual work and improves work efficiently in an accurate, easy-to-understand, and effective manner, preschool teachers are more likely to experience greater JR of the technology, which ultimately promotes their PU.

Moreover, results in the current study reveal that preschool teachers' PEU is predicted positively by both PoEC and CSE. This suggests that these results are in tune with the prior literature (e.g. Son et al., 2012; Ros et al., 2015; Hong et al. 2021). A study conducted by Okcu et al. (2019) concludes that CSE has a direct effect on the PEU. Preschool teachers' PoEC influences PEU significantly in a greater manner compared with CSE. This result is consistent with prior studies (e.g., Venkatesh & Bala, 2008). That is, when preschool teachers are provided with support and more organizational resources during the COVID-19 pandemic such as equipment and information on utilizing ET, they would perceive more highly that technologies are easier to apply (Ngai et al., 2007). Therefore, with an increasing PoEC in employing technology, preschool teachers' use intentions correspondingly would be improved.

The TAM has wide applications as demonstrated by many studies (e.g., Abramson et al., 2015; Aburagaga et al., 2020; Awwad & Al-Majali, 2015; Chen & Aklikokou, 2019; Holden & Rada, 2011; Lee & Lento, 2013) about a different set of technologies and users. However, the distinctive contribution of this work is embodied in identifying the likely determinants of behavioral intentions based on preschool teachers who have not been well prepared in technology knowledge and skills during the COVID-19 pandemic. Results referred that the

TAM completely fits. This work supplies more evidence that the TAM is convenient for measuring educational technology's acceptance intention during both normal and contingency circumstances. In the final analysis, remarkably, preschool teachers' PU only demonstrates a weak direct effect on utilizing intention to ETs, while PEU demonstrates a directly strong effect on the intent to use. Further, the effect of preschool teachers' PoEC on their PEU is stronger than that of CSE.

6. Implications

Research on examining the acceptance of technology remains rare in the preschool education area, particularly during the COVID-19 crisis in spite of the growing attention to integrating technology into educational environments. In both theoretical and practical, this study could assist technology acceptance research. Theoretically, this study enriches the current empirical research by examining the different TAM versions' applicability for preschool teachers during a globally public health emergency. In both general and special situations alike, the current literature and this work have found that the TAM model has applicability and competence. This study also expanded the research of technology acceptance from developed countries' preschool teachers to developing countries' teachers, so that the research findings from developed and developing countries together can be better discussed and benefit from their experiences in this field. The TAM's original and adapted versions with PU, PEU, JR, PoEC, and CSE reveal the factors that may impact preschool teachers' technology adoption during the COVID-19 pandemic.

Practically, the results could introduce suggestions for the developers of the educational technology system, preschool managers, and policy-makers. According to Yang & Wang (2019), improving the suitability of the ET can be considered when technology developers design the system, also, they could make easiest the operation of ETs based on the feedback and comments of preschool teachers and supply understandable instructions. For preschool managers, initial ET training, learning communities, and obtainable technology professionals could effectively support methods to make the teachers control ET, and thus the preschool teachers' BI gets better. As for policy-makers, efforts to incorporate ET into teacher education and pre-service teacher education programs are needful (Perkmen et al., 2016). In pre-service education, ET competence and knowledge can be integrated into the curriculum for student teachers majoring in preschool education. For in-service teachers, education departments can consider developing educational technology training programs to improve the capability of preschool teachers' educational technology competence. Moreover, the government, especially the Ministry of Education, could update the national professional standards for preschool teachers requiring them to master the requisite ET knowledge and skills.

7. Limitations and Conclusion

Like any research work, there are some restrictions in the current research:(1), the results were obtained from cross-sectional data with preschool teachers' self-reports, which means that their perception and intention toward using ET might differ with the duration of use, so, future research could employ a longitudinal design to test the change in their BI and its impacting determinants; (2) the data were gathered thru electronic questionnaires during the period of school closures and social isolation as precautionary measures to inhibit the diffusion of the COVID-19 pandemic, thus, the results may be overstated by social impacts. In future research, observations and face-to-face interviews can be applied to obtain more objectively and comprehensively data and results; (3) when replicating and verifying the results, it should be taken a large sample. By considering that preschool teachers have different backgrounds,

future research could target teachers from different districts or even different countries; (4), the results in this study are limited to a sample of preschool teachers, hence, these results might not be the same for the other teachers from primary and secondary schools, high schools, universities, and vocational schools. Moreover, given the variations in age, educational level, years of experience, and preschool type, future research could target teachers from other educational stages. Finally, the current research tested only JR as a predictor for PU, CSE, and PoCE as factors for PEU, however, there are more alternative determinants, such as SN, CA, OQ, RD, CP, PE, and OU that could be considered in future research also. In the main, in spite of the aforementioned limitations, this study is the first to analyze, utilizing the TAM, preschool teachers' technology acceptance intention and its impacting factors during the COVID pandemic in the Arab region according to the researcher's current knowledge. Also, despite the TAM being dominant in literature, past studies have not enough concentrated on preschool teachers influenced by the global epidemic. In the context of the COVID-19 pandemic, this study tested the theoretical model using TAM based on data from preschool teachers.

The findings concluded that Palestinian's preschool teachers' BI of ET came at an "average" level, and their BI was directly or indirectly affected by JR, PU, CSE, PoEC, and PEU. This research contributes to the literature by spotlighting the BI for preschool teachers in Palestine who have experienced distance teaching at home for about 3-semester during the COVID-19 pandemic. Besides, this research contributes to exploring prospective determinants impacting preschool teachers' intention to apply ETs. In conclusion, the results are beneficial to developing targeted practical measures to improve preschool teachers' technology acceptance intention and therefore improve the quality of distance education.

References

- [1] Abdullah, F., and Ward, R. (2016). Developing a general extended technology acceptance model for E-learning (GETAMEL) by analyzing commonly used external factors. *Comput. Hum. Behav.* 56, 238–256. <https://doi.org/10.1016/j.chb.2015.11.036>.
- [2] Abramson, J., Dawson, M., & Stevens, J. (2015). An Examination of the Prior Use of ELearning within an Extended Technology Acceptance Model and the Factors That Influence the Behavioral Intention of Users to Use M-Learning. *SAGE Open*, 5(4). <https://doi.org/10.1177/2158244015621114>
- [3] Nafiz A. Ali Ahmad, Abdelrahim.M.Zabadi. (2020). Transition to online education in Palestinian kindergartens during the Coronavirus (COVID-19) pandemic: Al-Ameen Kindergarten as a case study. *American Journal of Educational Research*, 8(8), 600-608. Retrieved <http://article.scieducationalresearch.com/pdf/EDUCATION-8-8-13.pdf>
- [4] Aburagaga, I., Agoyi, M., and Elgedawy, A. I. (2020). Assessing faculty's use of social network tools in Libyan higher education via a technology acceptance model. *IEEE Access*. 8, 116415-116430. <https://doi.org/10.1109/ACCESS.2020.3004200>
- [5] Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In: Kuhl, J., Beckmann, J. (eds.) *Action Control: From Cognition to Behavior*. Springer, New York. https://doi.org/10.1007/978-3-642-69746-3_2.
- [6] Al-Azawei, A., & Lundqvist, K. (2015). Learner Differences in Perceived Satisfaction of an Online Learning: An Extension to the Technology Acceptance Model in an Arabic Sample. *Electronic Journal of e-Learning*, 13(5), 408-426.
- [7] Al-Azawei, A., Parslow, P., & Lundqvist, K. (2017). Investigating the effect of learning styles in a blended e-learning system: An extension of the technology acceptance

- model (TAM). *Australasian Journal of Educational Technology*, 33(2), 1-23. <https://doi.org/10.14742/ajet.2741>
- [8] Alharbi, S., & Drew, S. (2014). Using the technology acceptance model in understanding academics' behavioral intention to use learning management systems. *International Journal of Advanced Computer Science and Applications*, 5(1), 143-155. <https://doi.org/10.14569/ijacsa.2014.050120>
- [9] Alwabel, A. S. A., Al-Gahtani, S. S., and Talab, A. (2020). Factors influencing the use of smartphones for programing: a structural equation modeling approach. *Int. J. Innov. Technol. Manage.* 17:2050032. <https://doi.org/10.1142/S0219877020500327>
- [10] Awwad, M. S., and Al-Majali, S. M. (2015). Electronic library services acceptance and use: an empirical validation of unified theory of acceptance and use of technology. *Electron. Libr.* 33, 1100-1120. <https://doi.org/10.1108/EL-03-2014-0057>
- [11] Baydas, O., and Goktas, Y. (2016). A model for preservice teachers' intentions to use ICT in future lessons. *Interact. Learn. Environ.* 25, 930-945. <https://doi.org/10.1080/10494820.2016.1232277>
- [12] Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588-606. <https://doi.org/10.1037/0033-2909.88.3.588>.
- [13] Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246. <https://doi.org/10.1037/0033-2909.107.2.238>
- [14] Blackwell, C. K., Lauricella, A. R., & Wartella, E. (2014). Factors influencing digital technology use in early childhood education. *Computers & Education*, 77, 82-90. <https://doi.org/10.1016/j.compedu.2014.04.013>
- [15] Bollen, K. A. (1989). A new incremental fit index for general structural models. *Social Methods Res.* 17, 303-316. <https://doi.org/10.1177/0049124189017003004>
- [16] Byrne, B. M. (2001). *Structural equation modelling with Amos. Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Ass. <https://doi.org/10.1177/0049124189017003004>
- [17] Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- [18] Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Coronavirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi. <https://doi.org/10.5281/zenodo.3778083>.
- [19] Celik, V., and Yesilyurt, E. (2013). Attitudes to technology, perceived computer self-efficacy and computer anxiety as predictors of computer supported education. *Comput. Educ.* 60, 148-158 <https://doi.org/10.1016/j.compedu.2012.06.008>
- [20] Chang, C. T., Hajiyevev, J., and Su, C. R. (2017). Examining the students' behavioral intention to use e-learning in Azerbaijan? The General Extended Technology Acceptance Model for E-learning approach. *Comput. Educ.* 111, 128-143. <https://doi.org/10.1016/j.compedu.2017.04.010>
- [21] Chen, L., and Aklikokou, A. K. (2019). Determinants of E-government adoption: testing the mediating effects of perceived usefulness and perceived ease of use. *Int. J. Public. Adm.* 43, 850-865
- [22] <https://doi.org/10.1080/01900692.2019.1660989>

- [23] Cheung, R., and Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Comput. Educ.* 63, 160-175. <https://doi.org/10.1016/j.compedu.2012.12.003>
- [24] Cigdem, H., and Ozturk, M. (2016). Factors affecting students' behavioral intention to use LMS at a Turkish post-secondary vocational school. *Int. Rev. Res. Open Distrib. Learn.* 17, 276-295.
- [25] <https://doi.org/10.19173/irrodl.v17i3.2253>
- [26] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. <https://doi.org/10.2307/249008>
- [27] DiStefano, C., Liu, J., Jiang, N., & Shi, D. (2018). Examination of the weighted root mean square residual: Evidence for trustworthiness? *Structural Equation Modeling*, 25(3), 453-466. <https://doi.org/10.1080/10705511.2017.1390394>
- [28] Ertmer, P. A., and Ottenbreit-Leftwich, A. T. (2010). Teacher technology change. *J. Res. Technol. Educ.* 42, 255-284.
- [29] Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). COVID-19 and remote learning: Experiences of parents with children during the pandemic. *American Journal of Qualitative Research* 4(3), 45- 65. <https://doi.org/10.1080/15391523.2010.10782551>
- [30] Granic, A., and Maranguni ' c, N. (2019). Technology acceptance model in ' educational context: a systematic literature review. *Br. J. Educ. Technol.* 50, 2572-2593. <https://doi.org/10.1111/bjet.12864>
- [31] Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). *Advanced Diagnostics For Multiple Regression: A Supplement To Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice Hall.
- [32] Hamleh (2019). Silenced Networks: The Chilling Effect among Palestinian Youth in Social Media. The Arab Center for the Advancement of Social Media. https://7amleh.org/wpcontent/uploads/2019/10/7amleh_Net_0919_ENGLISH1.pdf
- [33] Hao, S., Dennen, V. P., and Mei, L. (2017). Influential factors for mobile learning acceptance among Chinese users. *Educ. Tech Res. Dev.* 65, 101-123. <https://doi.org/10.1007/s11423-016-9465-2>
- [34] Henderson, R. & Divett., M. J. (2003). Perceived usefulness, ease of use and electronic supermarket use. *International Journal of Human-Computer Studies*, 59, 383-395. [https://doi.org/10.1016/S1071-5819\(03\)00079-X](https://doi.org/10.1016/S1071-5819(03)00079-X)
- [35] Holden, H., and Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *J. Res. Technol. Educ.* 43, 343-367. <https://doi.org/10.1080/15391523.2011.10782576>
- [36] Hong X, Zhang M and Liu Q (2021) .Preschool Teachers' Technology Acceptance during the COVID-19: An Adapted Technology Acceptance Model. *Front. Psychol.* 12:691492. <https://doi.org/10.3389/fpsyg.2021.691492>
- [37] Hu, L. T., and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus. *Struct. Equ. Modeling* 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- [38] Hussein, Z. (2017). Leading to intention: The role of attitude in relation to technology acceptance model in eLearning. *Procedia Computer Science*, 105, 159-164. <https://doi.org/10.1016/j.procs.2017.01.196>
- [39] Ibrahim, R., Leng, N.S., Yusoff, R.C.M., Samy, G.N., Masrom, S., & Rizman, Z.I. (2017). E- Learning Acceptance Based on Technology Acceptance Model (TAM). *Journal of Fundamental & Applied Sciences*, Vol. 9, 871-889. <https://doi.org/10.4314/jfas.v9i4S.50>

- [40] Indahyanti, U., & Sukarjadi (2015). <https://doi.org/10.4314/jfas.v9i4S.50>. Applying the technology acceptance model to measure the learning management system acceptance by students of Politeknik Sakti Surabaya. *Journal Technology*, 72(4), 127-131.
- [41] Jandric, P. (2020). https://doi.org/10.1007/978-981-13-1179-6_115-1 "Deschooling," in ' Encyclopedia of Teacher Education, ed. M. Peters (Singapore: Springer.).
- [42] Jeong, H. (2011). An investigation of user perceptions and behavioral intentions towards the e-library. *Libr. Collect Acquis. Tech. Serv.* 35, 45-60. <https://doi.org/10.1080/14649055.2011.10766298>
- [43] Joo, Y. J., So, H., and Kim, N. H. (2018b). Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K-MOOCs. *Comput. Educ.* 122, 260-272. <https://doi.org/10.1016/j.compedu.2018.01.003>
- [44] Kalas, I. (2010). Recognizing the potential of ICT in early child education. Analytical Survey. Moscow: UNESCO Institute for Information Technologies in Education. <https://unesdoc.unesco.org/ark:/48223/pf0000190433>
- [45] Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling*, 2nd Ed. New York: Guilford Press.
- [46] Knig, J., Jger-Biela, D. J., and Glutsch, N. (2020). <https://doi.org/10.1080/02619768.2020.1809650>. Adapting to online teaching during covid-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *Eur. J. Teach. Educ.* 43, 608-622. <https://doi.org/10.1080/02619768.2020.1809650>.
- [47] Kusano, K., Frederiksen, S., Jones, L., Kobayashi, M., Mukoyama, Y., Yamagishi, T., et al. (2013). The effects of ICT environment on teachers' attitudes and technology integration in Japan and the U.S. *J. Inf. Technol. Educ: Innov. Prac.* 12, 29-43. <https://doi.org/10.28945/1768>
- [48] Lau Y, Htun TP, Wong SN, Tam WSW, Klainin-Yobas P. (2017). Therapist supported internet-based cognitive behavior therapy for stress, anxiety, and depressive symptoms among postpartum women: a systematic review and meta-analysis. *J Med Internet Res.*, 19:1-18. <https://doi.org/10.2196/jmir.6712>
- [49] Lau, S.-H., & Woods, P. C. (2008). An empirical study of learning object acceptance in multimedia learning environment. *Communications of the IBIMA*, 5(1), 1-6.
- [50] Laura Sokal, Lesley Eblie Trudel, Jeff Babb. (2020). Canadian teachers' attitudes toward change, efficacy, and burnout during the COVID-19 pandemic. *International Journal of Educational Research Open*1, 100016, 1 - 8. <https://doi.org/10.1016/j.ijedro.2020.100016>
- [51] Lee, D. Y., and Lento, M. R. (2013). User acceptance of YouTube for procedural learning: an extension of the technology acceptance model. *Comput. Educ.* 61, 193-208. <https://doi.org/10.1016/j.compedu.2012.10.001>
- [52] Liu, Wang & Koehler. (2019). Exploring the intention-behavior gap in the technology acceptance model: a mixed-methods study in the context of foreign-language teaching in China. *Br. J. Educ. Technol.* 50(5), 2437-2556.
- [53] <https://doi.org/10.1111/bjet.12824>.
- [54] Livari Netta, Sumita Sharma, Leena Ventä-Olkkonen. (2020). Digital transformation of everyday life - How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care?, *International Journal of Information Management*, 55, 1 -6. <https://doi.org/10.1016/j.ijinfomgt.2020.102183>

- [55] Lu, J., Yu, C. S., Liu, C., & Yao, J. (2003). Technology acceptance model for wireless internet. *Journal of Internet Research*, 13(2), 206-222. <https://doi.org/10.1108/10662240310478222>
- [56] Mailizar Mailizar, Abdul Salam Almanthari, Suci Maulina. (2021) .Examining Teachers' Behavioral Intention to Use E-learning in Teaching of Mathematics: An Extended TAM Model. *Contemporary Educational technology* 13(3), ep298. <https://doi.org/10.30935/cedtech/>
- [57] Marangunić, N., and Granić, A. (2015). Technology acceptance model: a literature review from 1986 to 2013. *Univers. Access Inf. Soc.* 14, 81-95. <https://doi.org/10.1007/s10209-014-0348-1>
- [58] MoE (2020, March 9). Ministry of Education News- Palestine. <http://www.moehe.gov.ps/>
- [59] MoE (2020, March 30). PS eLearning Portal. <https://www.it-mohe.com>
- [60] MoE (2020, March 30). PS elearning Portal. <https://www.it-mohe.com>
- [61] MoE (2020, April 2). #Secondary online. [Facebook update]. <https://www.facebook.com/Palestinian.MOE/>
- [62] Ngai, E., Poon, J., and Chan, Y. (2007). An empirical examination of the adoption of WebCT using TAM. *Comput. Educ.* 48, 250-267. <https://doi.org/10.1016/j.compedu.2004.11.007>
- [63] Nikolopoulou, K. & Gialamas, V. (2009). Investigating pre-service early childhood teachers' views and intentions about integrating and using computers in early childhood settings: Compilation of an instrument. *Technology, Pedagogy and Education*, 18(2), 201-219. <https://doi.org/10.1080/14759390903003837>
- [64] Nistor, N. (2014). When technology acceptance models won't work: non-significant intention-behavior effects. *Comput. Hum. Behav.* 34, 299-300. <https://doi.org/10.1016/j.chb.2014.02.052>
- [65] Nuri Kara, Kursat Cagiltay. (2017). In-service Preschool Teachers' Thoughts about Technology and Technology Use in Early Educational Settings. *Contemporary Educational Technology*, 8(2), 119-141 <https://doi.org/10.30935/cedtech/6191>
- [66] OECD. (2020). *Education Responses to Covid-19: Implementing A Way Forward*. Paris: OECD Publishing.
- [67] Okcu, S., Hancerliogullari, K. G., Basak, E., and Calisir, F. (2019). "Factors Affecting Intention to Use Big Data Tools: An Extended Technology Acceptance Model," in *Industrial Engineering in the Big Data Era. Lecture Notes in Management and Industrial Engineering*, Eds F. Calisir, E. Cevikcan, and A. H. Camgoz (Cham: Springer). https://doi.org/10.1007/978-3-030-03317-0_33
- [68] Okumus, S., Lewis, L., Wiebe, E., and Hollebrands, K. (2016). Utility and usability as factors influencing teacher decisions about software integration. *Educ. Tech. Res. Dev.* 64, 1227-1249. <https://doi.org/10.1007/s11423-016-9455-4>
- [69] Ori, D., Nikoli-Ori, E., Jevremovi, V., and Malii, J. (2009). On measuring skewness and kurtosis. *Qual. Quant.* 43, 481-493 <https://doi.org/10.1007/s11135-007-9128-9>.
- [70] Ozturk, A. B., Bilgihan, A., Nusair, K., and Okumus, F. (2016). What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. *Int. J. Inf. Manage.* 36, 1350-1359. <https://doi.org/10.1016/j.ijinfomgt.2016.04.005>

- [71] PC Li (2017). The Literature review of Technology Adoption Models for the Novel Technology. *JISTEM - Journal of Information Systems and Technology Management*, 14(1): 21 - 38. <https://doi.org/10.1007/s11135-007-9128-9>.
- [72] Perkmen, S., Antonenko, P., and Caracuel, A. (2016). *Validating a measure of teacher intentions to integrate technology in education in Turkey, Spain and the USA*. Waynesville, NC USA: Society for Information Technology and Teacher Education. Available Online at: <https://www.learntechlib.org/primary/p/152244/> (accessed December 17, 2020)
- [73] Pituch, K., and Lee, Y. (2006) .The influence of system characteristics on e-learning use. *Comput. Educ.* 47, 222-244 <https://doi.org/10.1016/j.compedu.2004.10.007>.
- [74] Pynoo, B., Devolder, P., Tondeur, J., Braak, J. V., Duyck, W., and Duyck, P. (2011). Predicting secondary school teachers' acceptance and use of a digital learning environment: a cross-sectional study. *Comput. Hum. Behav.* 27, 568-575. <https://doi.org/10.1016/j.chb.2010.10.005>.
- [75] Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies*, 3(9), 451-457.
- [76] Rafique, H., Almagrabi, A. O., Shamim, A., Anwar, F., and Bashir, A. K. (2020). Investigating the acceptance of mobile library applications with an extended technology acceptance model (TAM). *Comput. Educ.* 145:103732.
- [77] <https://doi.org/10.1016/j.compedu.2019.103732>.
- [78] Rafique, H., Anwar, F., Shamim, A., and Minaei-bidgoli, B. (2018). Factors affecting acceptance of mobile library Applications: structural equation model. *LIBRI* 68, 99-112. <https://doi.org/10.1515/libri-2017-0041>
- [79] Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., and Koole, M. (2020) .Online University teaching during and after the covid-19 crisis: refocusing teacher presence and learning activity. *Post. Sci. Educ.* 2, 923-945.
- [80] <https://doi.org/10.1007/s42438-020-00155-y>
- Ros, S., Hernández, R., Caminero, A., Robles, A., Barbero, I., Maciá, A., et al. (2015). On the use of extended tam to assess students' acceptance and intent to use third-generation learning management systems. *Br. J. Educ. Technol.* 46, 1250-1271. <https://doi.org/10.1111/bjjet.12199>
- [81] Schepers, J., and Wetzels, M. (2007). A meta-analysis of the technology acceptance model: investigating subjective norm and moderation effects. *Inf. Manage.* 44, 90-103. <https://doi.org/10.1016/j.im.2006.10.007>
- [82] Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, Vol. 128, 13-35. <https://doi.org/10.1016/j.compedu.2018.09.009>
- [83] Scherer, R., Siddiq, F., and Teo, T. (2015). <https://doi.org/10.1016/j.compedu.2015.05.005>. Becoming more specific: measuring and modeling teachers' perceived usefulness of ICT in the context of teaching and learning. *Comput. Educ.* 88, 202-214.
- [84] Shraim, K. & Khlaif, Z. (2010) An E-Learning Approach to Secondary Education in Palestine: Opportunities and Challenges. *Information Technology for Development*, 16(3), 159-173. <https://doi.org/10.1080/02681102.2010.501782>
- [85] Shraim, K., & Crompton, H. (2020). The Use of Technology to Continue Learning in Palestine Disrupted with COVID-19. *Asian Journal of Distance Education*, 15(2), 1-20. <https://doi.org/10.5281/zenodo.4292589>

- [86] Son, H., Park, Y., Kim, C. W., and Chou, J. S. (2012). Toward an understanding of construction professionals' acceptance of mobile computing devices in South Korea: an extension of the technology acceptance model. *Autom. Constr.* 28, 82-90. <https://doi.org/10.1016/j.autcon.2012.07.002>
- [87] Speier, C., Valacich, J. S., and Vessey, I. (2003). The effects of interruptions, task complexity and information presentation on computer-supported decision making performance. *Decis. Sci.* 34, 771-797.
- [88] <https://doi.org/10.1111/j.1540-5414.2003.02292.x>
- [89] Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, 25, 173-180. https://doi.org/10.1207/s15327906mbr2502_4
- [90] Sun, S. L., Hwang, H. G., Dutta, B., and Peng, M. H. (2019). Exploring critical factors influencing nurses' intention to use tablet PC in patients' care using an integrated theoretical model. *Lib. J. Med.* 14:1648963. <https://doi.org/10.1080/19932820.2019.1648963>
- [91] Szajna, B. (1996). <https://doi.org/10.1287/mnsc.42.1.85> Empirical evaluation of the revised technology acceptance model. *Manage. Sci.* 42, 85-92.
- [92] Teo, T., Huang, F., and Hoi, C. K. W. (2018). Explicating the influences that explain intention to use technology among English teachers in China. *Interact. Learn. Env.* 26, 460-475. <https://doi.org/10.1080/10494820.2017.1341940>
- [93] Teo, T., Milutinović, V., Zhou, M., and Banković, D. (2017). Traditional vs. innovative uses of computers among mathematics pre-service teachers in Serbia. *Interact. Learn. Environ.* 25, 811-827. <https://doi.org/10.1080/10494820.2016.1189943>
- [94] UNESCO. (2020, April 12). COVID-19 in Palestine: how distance learning will help student continue education. <https://en.unesco.org/news/covid-19-palestine-how-distance-learning-will-helpstudent-continue-education>
- [95] UNESCO. (2020, April 12). <https://en.unesco.org/news/covid-19-palestine-how-distance-learning-will-help> COVID-19 in Palestine: how distance learning will help student continue education.
- [96] UNESCO. (2020b). COVID-19 in Palestine: how distance learning will help student continue education. <https://en.unesco.org/news/covid-19-palestine-how-distance-learning-will-helpstudent-continue-education>
- [97] Valdehita, R. E., Medina-merodio, J. A., and Plata, R. B. (2019). Student acceptance of virtual laboratory and practical work: an extension of the technology acceptance model. *Comput. Educ.* 135, 1-14. <https://doi.org/10.1016/j.compedu.2019.02.010>
- [98] Venkatesh, V. (2000). Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342-365. <https://doi.org/10.1287/isre.11.4.342.11872>
- [99] Venkatesh, V. and Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Science*, 39(2), 273-312. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- [100] Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences*, 27(3), 451-481. <https://doi.org/10.1111/j.1540-5915.1996.tb01822.x>
- [101] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Q.* 27, 425-478. <https://doi.org/10.2307/30036540>

- [102] Veraksa, A.; Chursina, A.; Gavrilova, M. The Effect of Distance Teaching Experiences on Educators' Attitudes toward Distance Education for Preschoolers. *Educ. Sci.* 2021, 11, 650. <https://doi.org/10.3390/educsci11100650>
- [103] Von Davier, A. A., Hao, J., Liu, L., and Kyllonen, P. (2017). Interdisciplinary research agenda in support of assessment of collaborative problem solving: lessons learned from developing a collaborative science assessment prototype. *Comput. Hum. Behav.* 76, 631-640. <https://doi.org/10.1016/j.chb.2017.04.059>
- [104] Yang, Y., and Wang, X. (2019). Modeling the intention to use machine translation for student translators: an extension of technology acceptance model. *Comput. Educ.* 133, 116-126. <https://doi.org/10.1016/j.compedu.2019.01.015>
- [105] <https://doi.org/10.1016/j.compedu.2019.01.015>
- [106] Yuen, A. H. K., and Ma, W. W. K. (2008). Exploring teacher acceptance of e-learning technology. *Asia Pac. J. Teach. Educ.* 36, 229-243. <https://doi.org/10.1080/13598660802232779>
- [107] Yoon, H. (2016). User acceptance of mobile library applications in academic Libraries: an application of the technology acceptance model. *J. Acad. Librariansh.* 42, 687-693. <https://doi.org/10.1016/j.acalib.2016.08.003>
- [108] Zha, X., Zhang, J., and Yan, Y. (2015). Comparing digital libraries in the web and mobile contexts from the perspective of the digital divide. *J. Libr. Inf. Sci.* 47, 330-340. <https://doi.org/10.1177/0961000614532677>
- [109] Zhang, W., Wang, Y., Yang, L., and Wang, C. (2020). Suspending classes without stopping learning: china's education emergency management policy in the COVID-19 outbreak. *J. Risk. Financ. Manage.* 13:55. <https://doi.org/10.3390/jrfm13030055>