Review article

Understanding online assessment continuance intention and individual performance by integrating task technology fit and expectancy confirmation theory

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A B S T R A C T

This study delves into online assessments, focusing on their numerous advantages, including reducing paper usage and alleviating concerns surrounding the security of traditional examinations. The purpose of this study was to develop and test a model delineating the interplay between factors influencing the continuance intention to use online assessments and the influence on individual performance. A quantitative approach using an online survey was used to collect data from 222 graduate students from three major Palestinian universities. The research instrument was developed based on the finding of previous studies. Confirmatory factor analysis was employed to construct and validate the proposed model. The findings of this study revealed that perceived usefulness has a significant influence on the intention to continue using online assessment. The proposed model indicated that there is no direct or indirect relationship between perceived ease of use and the continuance intention to use online assessment. The main limitation of this study was its reliance on a purely quantitative approach. Therefore, a sequential mixed methods approach van be a suggestion for future research and include all the higher education institutions in the Palestinian context.

1. Introduction

After introducing of the World Wide Web, e-assessment were dramatically developed [1] and have been used widely in education [2]. Moreover, the use of ICT in various fields in society has introduced a digital divide between countries and individuals. The digital divide concept refers to variations in opportunities on different levels, including the individual and the country levels, to access and implement new ICT. The digital divide has two dimensions, including social inequalities related to unequal access to ICT and individual characteristics that distinguish citizens [3]. One study's findings have revealed that various factors, including individual characteristics such as age, experience, and education, influence the digital divide [4].

ICT is the cornerstone of sustainable and equitable development in developing and developed countries. However, there is a gap

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regarding using and accessing ICTs and information on individual characteristics; these could negatively influence online class attendance [5,6]. Lack of access and use of inappropriate technologies could slow the achievement of sustainable development [7]. Furthermore, digital inequality is an essential concern for different countries due to its impact on sustainable development. ICT enables citizens to access more information and make appropriate decisions in less time, providing a competitive advantage [8]. ICTs also play an essential role in achieving gender equality and empowering women by improving access to information and including them in societal development [3]. The emergence of the COVID-19 pandemic compels all Universities to continue delivering teaching through distance learning and using online assessment for formative and summative purposes [9]. The continuation of using online education and online assessment is a function of students' willingness and satisfaction with using it according to the Expectation Confirmation Theory (ECT) [10]. Expectation Confirmation Theory was initially formulated by Oliver [11]; Oliver's original model focuses on the level of satisfaction a customer has and its impact on repurchase intention. The theory states that customer satisfaction is the key factor influencing customer behavior toward products and services.

The continuation intention of learners in various aspects was widely investigated using (ECT) as a platform to describe students' intentions [12] and investigated the adoption of electronic textbooks by studying electronic textbook users' continuance intentions [13]. In addition, Dai et al. [14] investigated Chinese students' willingness to continue using open online courses (MOOCs). They expanded the constructs of ECT by adding additional variables such as attitudes and culture. Moreover, Tam et al. [15] used (ECT) to address students' satisfaction with Emergency Remote Teaching (ERT). In their study, Rabaa'i et al. [16] aimed to investigate the factors that influence students' continuous intention to use Moodle. Other scholars expanded ECT by replacing perceived usefulness with learning outcomes [17].

Moreover, Cheng [18], investigated nurses' continuance intentions of online learning and extended ECT and the information system. Although these studies proved that ECT has a sound research foundation on the continuous use of online learning, the higher education system is promoting online learning platforms during the pandemic, which presents an emergency management environment. There is a lack of studies integrating task technology fit with ECT to investigate continuance intention to use online assessment during the crisis. Previous studies investigated using emerging technology in normal situations utterly different from the current study through combining two theories with a lack of investigating individual performance. In the context of this study, all Palestinian universities adopted distance learning during the COVID-19 pandemic. Most of them used Moodle as a Learning management system benefiting from all forms of assessment it provides for teachers to assess students learning. The assessment was conducted in various moods and forms without the preparation of faculty to use it. Therefore, this study aimed to develop a model to describe the factors influencing the continuance intentions to use online assessment and how online assessment influences individual performance based on the technology-task fit model. Based on the literature, there is a lack of studies about using online assessment and how online assessment influenced individual performance in higher education institutions. Therefore, this study came to fill the gap and can help decision makers in higher education institutions to design curriculum based on the new assessment methods.

1.1. Research questions

Two research questions guided this study, including.

- Does the perceived usefulness of online assessment influence individual performance in higher education in online assessment?
- How does the perceived ease of using online assessment impact individual performance in higher education?

1.2. Research hypothesis

1.2.1. Online assessment

Online evaluation procedures have been recognized as an advantageous mode of assessment. This approach offers many benefits, from reducing paper consumption to eliminating the security risks associated with the physical transport of test papers. The flexibility of online assessment is another significant advantage, allowing students to complete their tests irrespective of their location or timing.

Furthermore, introducing immediate feedback is another merit of online assessments, proving highly beneficial for students. A unique and influential aspect of online evaluation methods is their ability to facilitate online quizzes, which teachers can populate using randomly chosen questions from a comprehensive question bank. This feature allows teachers to administer the same test repeatedly, further underscoring the merits of online assessments.

The study conducted by Spivey and Mcmillan [19] explored the performance of 174 students evaluated mainly via online platforms versus traditional pen-and-paper tests. Intriguingly, their research found no significant difference in performance or effort between students assessed through conventional means and those evaluated through online platforms. Thus, this study bolstered the validity of online assessments, asserting they do not negatively impact student grades.

1.2.2. Task-Technology Fit (TTF) model

In parallel, the Task-Technology Fit (TTF) model, conceptualized by Goodhue and Thompson in 1995, sheds light on the suitability of a technology and its specific features for a given task. This theoretical framework examines the congruity between the characteristics of technology and the task, delving into how technological features influence user attitudes, beliefs, and performance.

The TTF model has been widely employed by researchers aiming to understand the adoption and acceptance of novel technologies [14,20–22]. Despite numerous studies on TTF in various contexts, research remains scarce exploring the sustained intent to use online assessments via mobile technology in higher education. Consequently, it remains ambiguous whether TTF impacts the continuous

intention to use online assessments and how this intention influences individual performance.

In sum, online assessments and the TTF model provide exciting avenues for exploration in education and technology. As research continues to evolve, observing how these tools are integrated and utilized within the educational landscape to enhance student performance and assessment processes will be interesting.

H9a.   TTF positively affects the perceived usefulness of online assessment.

H9b.   TTF will positively affect the confirmation of online assessment.

H9c.   TTF positively affects the perceived ease of use of online assessment.

H9d.   TTF will positively affect satisfaction with online assessment.

H9e.   TTF will positively affect the continuance intention of the online assessment.

1.2.3. Expectation Confirmation Theory

Expectation Confirmation Theory (ECT), initially introduced by Oliver in 1980 and later developed by Bhattacharjee in 2001a, is a theoretical model to investigate the persistent intent to use information systems. The theory has been utilized across numerous studies and contexts to examine post-acceptance and expectations concerning new technology use (eg. Refs. [12,18]; Pal et al., 2020; [16]).

ECT sets itself apart from other technology acceptance models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM). Its unique focus is identifying factors influencing the sustained intention to use technology.

ECT has found applicability in diverse technological contexts, including Massive Open Online Courses (MOOCs) [17], Cloud ERP systems [23], intelligent wearables ([24,25]; Ogbanufe & Gerhart, 2018), mobile learning applications [26], industrial augmented reality (Allam et al., 2021), and e-learning [16].

Bhattacharjee's ECT model comprises several elements: confirmation, perceived usefulness, expectations, and continuous intention. Huang [27], found that when technology uses align with user expectations, it is assumed to streamline their workflow, enhancing productivity and performance. Consequently, the ECT model offers a practical framework for understanding and promoting the persistent use of technological tools.

1.2.4. Perceived usefulness

In this study, perceived usefulness refers to how a faculty member perceives that online assessment would enhance their teaching practice. The usefulness of using new technology has been identified as one of the significant predictors of information systems use based on previous studies' findings (Cheng, 2018; [28,29]). Therefore, in this study, we hypothesize a positive relationship between perceived usefulness, continuance intentions, and individual performance. Therefore, this study hypothesizes that.

H2.   Perceived usefulness will positively affect satisfaction with online assessment

H4.   Perceived usefulness will positively affect the continuance intention of online assessment

H11.   Perceived usefulness will positively affect individual performance with online assessment

H12.   Perceived ease of use will positively affect individual performance with online assessment

H14.   Perceived ease has a significant direct influence on continuance intentions of online assessment

1.2.5. Confirmation

Hsu and Lin [30] defined confirmation as the degree to which users' actual performance matches their expectations while using information systems and services. In this study, confirmation pertains to the end user's assessment of the expected advantages of online assessment against its actual performance. Confirmation plays a critical role in determining users' perceived satisfaction with information systems, where satisfaction is linked to their intent to use the system. Thus, within the Expectation Confirmation Model (ECM) framework, this study investigates how confirmation impacts perceived usefulness, ease of use, continued intentions to utilize online assessments, and the performance of faculty members. We proposed the following hypothesis.

H1.   Confirmation will positively affect the perceived usefulness of online assessment

H6.   Confirmation will positively affect the perceived ease of use of online assessment

H3.   Confirmation will positively affect satisfaction with online assessment.

H5.   Confirmation will positively affect continuance intentions to use online assessment.

1.2.6. Satisfaction

User satisfaction can be created from previous experience, influencing the continuance intentions to use technology [31]. Moreover, Franque and colleagues [32] described the strong influence of satisfaction on the continuance intentions to use information systems. This study hypothesizes that.

H7.   Satisfaction will positively affect the perceived ease of use of online assessment

H8.   Satisfaction will positively affect the continuance intention of online assessment

1.2.7. Continuance intentions and individual performance

Many previous studies explored the relationship between continuance intention and individual performance while using new technology For example [33] Cheng (2020) found a positive relationship between continuance intention and the individual performance of using ERP cloud. Moreover, Marsh (2021) [34] found also a strong relationship between continuance intention and individual performance in his study about digital literacy.

H10.   Continuance intention of online assessment will positively affect individual performance

Osabutey et al. (2022) [35] found that online assessment has a positive impact on students' academic assessment. Another study by Yang et al. (2022) [36] found that taking online self-assessment frequently correlated positively with learning performance. Therefore, the researchers hypothesized the following hypothesis.

H13.   TTF in online assessments will positively affect individual performance.

1.2.8. Research proposed model

Based on the theoretical frameworks of this study which were TTF, ECM, and TAM, the researchers proposed the following research model (Fig. 1)

1.2.9. Methodology

The goal of this study is to propose a hybrid model based on ECM and TAM to investigate whether university students' conceptions of the TTF in online assessments as well as their beliefs about these assessments can have a direct or indirect impact on their intention to continue using online assessments and individual performance. The following describes the research design procedure.

1.2.10. Measures

Responses to the questions items in the TTF, confirmation, P.U., PEOU, satisfaction, continuance intention, and individual performance were evaluated in this study using a five-point Likert scale, with one denoting "strongly disagree" and five denoting "strongly agree," and three denoting "neutral." In essence, content validity ensures that construct items are chosen after reviewing pertinent literature [33]. Items presented in Table 1 used for the constructs in this study were modified and adapted from earlier studies in which they had demonstrated strong content validity. Additionally, the questionnaire was voluntary and anonymously pre-tested on 39 online assessment end students from Palestinian institutions who had completed the implementation of the online assessment for more than two semesters at the time of the study. The questionnaire was altered due to the participants' feedback after they were asked to point out any meaning ambiguities. Comments Face validity relates to whether respondents believe the concept items are relevant and reliable [34]. Since they had high face validity, the items were chosen for the constructs in this study. When the instrument's reliability was tested, Cronbach's values (which ranged from 0.85 to 0.95) were above the norms for exploratory research [35], showing a satisfactory level of reliability. Table 1 includes a list of the last few items and their sources.
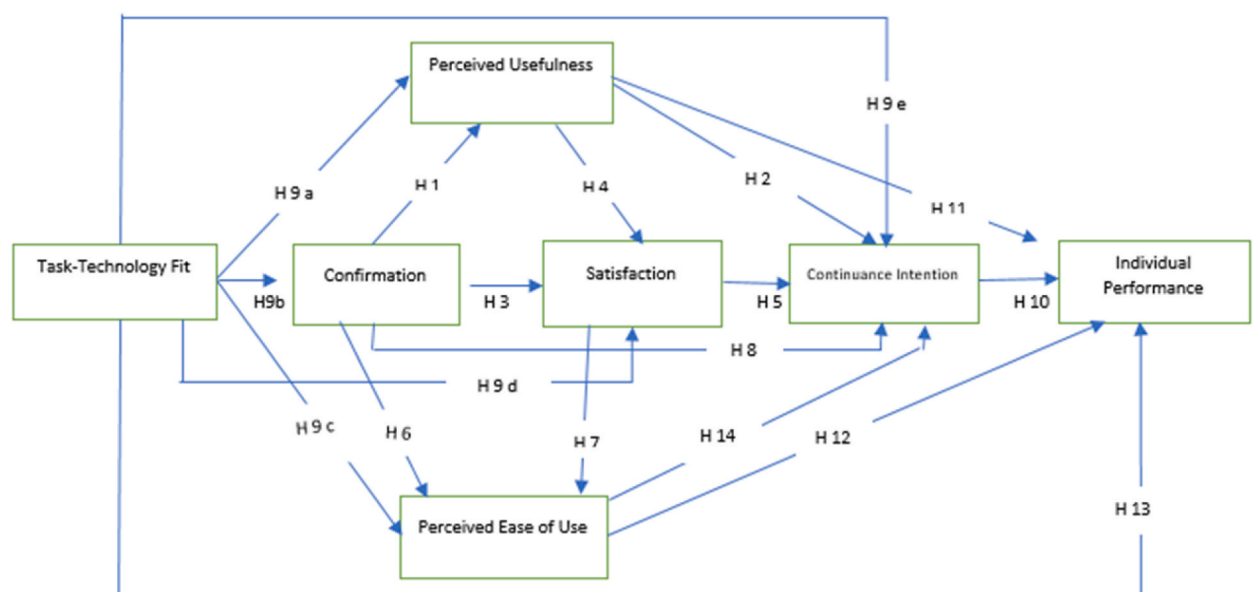

Fig. 1. The proposed model.

Table 1
Contracts and their items adapted from previous studies.

Construct	Item Measure	Source
Task-technology fit(TTF)	Using online assessment fits well with my learning goals and needs.	[36]
	Using online assessment effectively with how I prefer to improve my learning efficiency is a challenge.	[37]
	Using online assessment fits well with how I like to strengthen my professional skills in learning within my existing operational practice.	[38]
	Using online assessment fits well with all aspects of my learning.	[39]
Confirmation (Conf)	My experience with using online assessments was better than I expected.	[40]
	The online assessment's service level was better than I expected.	[25]
	My expectations from using the online assessment were confirmed.	[41]
Perceived usefulness (P.U.)	Using cloud online assessment enhances my learning effectiveness.	[42]
	Using online assessment can improve my learning performance.	[43]
	Using online assessments gives me greater control over my learning.	[44]
	I find online assessments useful in my learning.	[45]
Perceived ease of use (PEOU)	Interacting with the online assessment does not require a lot of mental effort.	[42]
	I find online assessments easy to use.	[43]
	My interaction with the online assessment is clear and understandable.	[44]
	I find online assessment does what I want it to do.	[45]
Satisfaction (Satisf)	I am content with the performance of the online assessment.	[40]
	I am pleased with the experience of using online assessment.	[25]
	I am happy with the functions provided by online assessment.	[46]
	I am satisfied with the overall experience of using online assessment.	[47]
Continuance intention	I intend to continue using online assessments in the future if possible.	[40]
	I will use online assessments regularly in the future if possible.	[41]
	I will frequently use online assessments in the future if possible.	[39]
	I intend to continue using online assessment rather than using any alternative means if possible.	[45]
Individual performance (I.P.)	Online assessment significantly positively impacts my effectiveness and productivity in my work.	[36]
	Online assessment is an essential and valuable aid to me in the performance of my learning.	[39]
	Online assessments help me to improve the quality of my learning.	[48]
	Using online assessment fits well with my learning goals and needs.	[45]

1.2.11. Context of the study

This study was conducted in three large universities in Palestine. At the beginning of the COVID-19 pandemic, which considers in the context of this study a crisis, faculty members, students, and parents were suddenly shocked by the transition to online learning and teaching [6]. The change was unplanned, and students did not have experience with online learning, and the faculty members used online assessment and authentic evaluation. By the end of the first online semester, students were happy with their academic performance by getting high scores in the course. Still, later universities changed the process of students' evaluation in online courses, which frustrated the students and satisfied them with online assessment, which was one of the motivations of this study. However, the online check failed in subjective questions because faculty members were unprepared to use it.

Table 2
Demographic information about the participants.

Demographic		N	%
Gender	Male	48	21.6
	Female	174	78.4
Level	unacceptable	6	2.7
	acceptable	7	3.2
	Good	90	40.5
	very good	91	41.0
	Excellent	28	12.6
College	humanities	134	60.4
	Science	21	9.5
	Engineer	14	6.3
	Medicine	53	23.9
Year	First	9	4.1
	Second	36	16.2
	3ed	102	45.9
	4th	65	29.3
	more than 4	10	4.5
university	An-Najah	174	78.4
	Birzeit	30	13.5
	PTU	18	8.1

1.2.12. Participants

Among 300 university students, 222 of them correctly fulfilled the questionnaire, 174 were females (21.6 %), 91 outstanding levels (41 %),134 were from humanity colleges (60.4 %), 102 were 3ed year (45.5 %), 174 were at University 1 (78.4) Table 2 lists the descriptive statistics. The criteria to recruit the universities were that the university was using Moodle and LMS for online assessments, the staff was teaching online, and students had at least studied two courses online.

1.2.13. Data collection

On line survey was employed to test this study's research hypotheses, A cross-sectional design was used for this study as data was collected at one point in time. In the academic year 2020–2021, with ethical approval number ANNU-A0087-2022. Moreover, the participants in this study signed a consent form that was part of the research tool. A short paragraph at the beginning of the survey was added, informing participants about the purpose of the study, that participation in the study was voluntary, and that their responses would remain anonymous. The following sentence was added at the end of the paragraph: "If you agree, we consider that you have signed the form. If not, you can stop participating in the study". This study's sampling frame was taken from three Palestinian universities (An-Najah National University, Birzeit University, and Palestinian Technical University) that use Moodle to perform their students' assessments. This was a stratified random sample. The unit of analysis was students who used online assessment using mobile technology for at least two semesters and agreed to participate in the study.

1.2.14. Data analysis

The structural equation modeling (SEM) strategy provided by Anderson and Gerbing was used for the data analysis in this study (1988). Confirmatory factor analysis (CFA) was first employed to create the measurement model. Second, the structural model for the research model was tested utilizing SEM to investigate the causal linkages among all constructs. These analyses were carried out using the statistical analysis software packages AMOS 24 and SPSS 26.

Table 3
reliability coefficients.

Item				
Construct	SRW	CR	AVE	Cronbach's α
TTF1	0.896			
TTF2	0.932			
TTF3	0.918			
TTF4	0.881			
TTF		0.948815	0.822581	0.948
CONF1	0.811			
CONF2	0.814			
CONF3	0.698			
CONF		0.872711	0.805169	0.853
SAT1	0.883			
SAT2	0.934			
SAT3	0.884			
SAT4	0.938			
SAT		0.950703	0.828336	0.95
CONT1	0.909			
CONT2	0.735			
CONT3	0.905			
CONT4	0.868			
CONT		0.916695	0.734739	0.919
IP1	0.949			
IP2	0.94			
IP3	0.86			
IP		0.940721	0.841267	0.94
PEOU1	0.697			
PEOU2	0.792			
PEOU3	0.862			
PEOU4	0.794			
PEOU		0.848601	0.587802	0.85
PU1	0.914			
PU2	0.925			
PU3	0.884			
PU4	0.915			
PU		0.950429	0.827426	0.95

2. Results

2.1. Descriptive characteristics of the useable responses

2.1.1. Test on normality

Since the sample size of 222 is larger than the minimum size of 200 necessary for SEM analysis [49], the normality of the data distribution was evaluated using the statistical approach of skewness and kurtosis. All elements should have skewness and kurtosis absolute values of less than 3 and 10, respectively ([49,50]). The skewness and kurtosis of each item in this study range in absolute value from 0.16 to 0.40 and 0.22 to 0.902, respectively, indicating that the data is normally distributed.

2.1.2. Results of structural modeling analysis

The study aimed to ascertain the reliability of all constructs by applying a model of measurement that utilized standardized regression weight (SRW) for each item, composite reliability (C.R.), and average variance extracted (AVE) for each construct. This approach aligns with the methodologies of earlier studies (e.g., Refs. [26,35,51,52]).

The Confirmatory Factor Analysis (CFA) results showcased that the SRW, C.R., and AVE values were all above the minimally acceptable values, which are 0.7, 0.5, and 0.5, respectively ([26,35,52,53]). These high values indicate a significant level of reliability, implying the production of highly consistent results. Therefore, the CFA results substantiated that all constructs possess an acceptable level of convergent reliability. This conclusion was reached since SRW, C.R., and AVE exceeded their respective thresholds, and each construct's C.R. was greater than its AVE ([35,52,53]), as shown in Table 3.

Furthermore, Cronbach's coefficient determined that all constructs' reliability coefficients exceeded the cut-off point of 0.7, as Nunnally [35] and Hair [53] proposed. These findings from the reliability test can also be observed in Table 3.

The approach suggested by Fornell and Larcker [54] was then employed in this study to test for discriminant validity. According to the CFA results, each construct was unique since its square root of AVE was greater than its correlation for each pair of constructs and heterotrait–monotrait ratio of correlations, with values below the (conservative) threshold of 0.85 [55]. Hence, discriminant validity is established. Table 4 displays the discriminant validity test's findings, indicating discriminant validity was accomplished.

The most common rules used in testing the CFA for the measurement model and the structural model are: the goodness-of-fit index (GFI) should be greater than 0.9, the adjusted GFI (AGFI) should be greater than 0.8, the incremental fix index (IFI) should be greater than 0.9, the Tucker–Lewis index (TLI) should be greater than 0.9, the comparative fit index (CFI) should be greater than 0.9, the root mean square error of approximation (RMSEA) should be less than 0.08, and $\chi 2$ was not significant at 0.05 level or $\chi 2/df$ should be less than three.([53,56]). Table 5 shows all goodness of fit indices for the proposed model are fulfilled because $\chi 2$ was not significant and GFI, AGFI, IFI, and CFI are all greater than 0.9, also RMSEA below 0.08.

Hypothesis testing. Properties of the causal paths, including standardized path coefficients.
(β), t-values and explained variances (R^2), are shown in Fig. 2. As to the synthesis of ECM
and TAM, confirmation had significant effects on P.U. (β = 0.142, p < 0.05), satisfaction.
(β = 0.45, p < 0.001), PEOU (β = 0.5, p < 0.001), and continuance intention hence (β = 0.15, p < 0.05), H1, H3, H6 and H8 are supported; P.U. had significant effects on satisfaction (β = 0.42, p < 0.001), continuance intention.
(β = 0.15, p < 0.05) and individual performance (β = 0.38, p < 0.001), and PEOU had significant effects on I.P. (β = 0.08, p < 0.05), satisfaction had significant effects on continuance intention (β = 0.34, p < 0.001), and PEOU (β = 0.314, p < 0.001), hence, H4, H2, H11, H12, H5 and H7 are supported; continuance intention significantly affected I.P. (β = 0.15, p < 0.001), hence, H10 is supported. As for the combination of TTF and the hybrid
model integrating ECM and TAM, TTF had significant effects on P.U. (β = 0.47, p < 0.001), confirmation (β = 0.28, p < 0.001), satisfaction (β = 0.68, p < 0.001), continuance intention (β = 0.28, p < 0.001) and I.P. (β = 0.14, p < 0.01); hence, H9a, H9b, H10d, H13, and H10e are supported; but TTF hadn't significant on P.U. with (β = 0.07, p = 0.06) The R^2 and path coefficients are essential for evaluating the structural model [53]. Chin (1998) explained the R2 values greater than the cut-offs 0.67, 0.33, and 0.19 to be substantial, moderate, and weak, respectively.

results above show the direct and indirect effects between the constructs in Table 6.
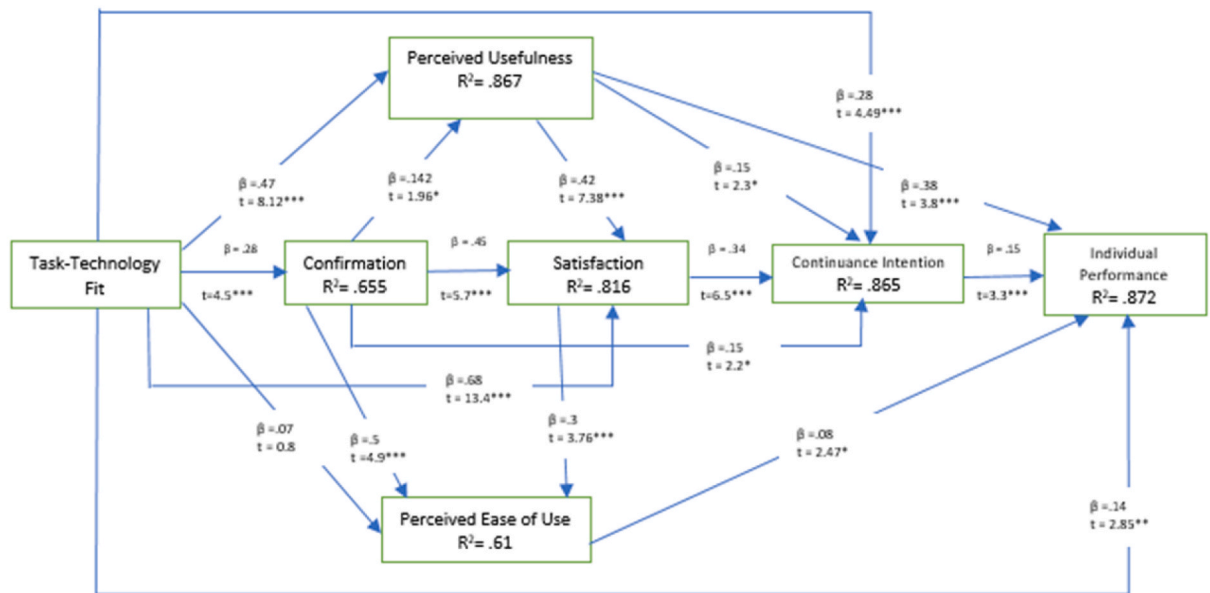
Table 4
discriminant validity.

	TTF	CONF	PU	PEOU	SAT	CONT	IP
TTF	*0.907*	0.79	0.58	0.64	0.71	0.66	0.82
CONF	0.810	*0.934*	0.48	0.77	0.84	0.63	0.69
PU	0.905	0.804	*0.910*	0.57	0.81	0.64	0.76
PEOU	0.711	0.741	0.712	*0.767*	0.76	0.76	0.62
SAT	0.888	0.816	0.902	0.745	*0.910*	0.56	0.70
CONT	0.842	0.809	0.835	0.710	0.807	*0.857*	0.66
IP	0.888	0.797	0.900	0.724	0.896	0.848	*0.917*

Diagonal the $\sqrt{AVE}$. Below the diagonal elements are the correlations between the construct's values. Above the diagonal elements are the heterotrait–monotrait ratio of correlations values.

Table 5
Goodness-of-fit indices for the proposed model.

Parameters	Score
Chi square ($\chi 2$)	$\chi 2 (4) = 9.46$, P = 0.051
$\chi 2$/df	2.35
Adjusted goodness of fit index	0.977
Increment fit index	0.998
Goodness-of-fit index	0.985
Comparative fit index	0.997
Root mean square error of approximation	0.079

(* p<.05 , ** p<.01 , *** p< .001)

Fig. 2. shows that the model has an acceptable R^2 value of 0.61 for PEOU, 0.87 for PU, 0.66 for confirmation, 0.82 for satisfaction, 0.87 for continuance intention and 0.87 for IP, Further, using the empirical.

Table 6
direct and indirect effects.

Effects	construct	TTF	CONF	SAT	PU	PEOU	CONT
Direct Effects	CONF	0.514	0	0	0	0	0
	SAT	0.677	0.452	0	0	0	0
	PU	0.47	0.142	0.423	0	0	0
	PEOU	0.065	0.5	0.303	0	0	0
	CONT	0.281	0.153	0.399	0.151	0	0
	IP	0.139	0	0	0.382	0.079	0.153
Indirect Effects	CONF	0	0	0	0	0	0
	SAT	0.232	0	0	0	0	0
	PU	0.458	0.191	0	0	0	0
	PEOU	0.532	0.137	0	0	0	0
	CONT	0.581	0.231	0.064	0	0	0
	IP	0.533	0.236	0.256	0.023	0	0
Total Effects	CONF	0.514	0	0	0	0	0
	SAT	0.909	0.452	0	0	0	0
	PU	0.927	0.333	0.423	0	0	0
	PEOU	0.597	0.636	0.303	0	0	0
	CONT	0.862	0.383	0.463	0.151	0	0
	IP	0.672	0.236	0.256	0.405	0.079	0.153

All effects are significant at 0.05 level.

3. Discussion

The central aim of this study was to construct and evaluate a model delineating the relationship between factors impacting the continuance intention to use online assessment. It further sought to understand how individual performance is influenced by these factors, predicated on the Task-Technology Fit (TTF) and Expectation Confirmation Model (ECM) frameworks.

The results of this study provided compelling evidence that the TTF had a significant positive influence on the confirmation and perceived usefulness of online assessments. Whether direct or indirect, this influence catalyzes student satisfaction, fostering continuance intentions and enhancing individual performance. According to the model developed in this study, perceived usefulness significantly impacts individual performance, continuance intentions, and satisfaction levels. This, in turn, strongly affects perceived ease of use, which resonates with earlier research findings. Existing literature corroborates the idea that the perceived utility of new technology reflects end-users attitudes, culminating in heightened satisfaction levels, promoting greater adoption and usage of technology ([29,57]).

Perceived ease of use was found to exert a significant direct influence on individual performance in this study. Interestingly, the model did not demonstrate any direct or indirect relationship with the continuance intention to use online assessments. This finding contradicts the observations from earlier research, such as Chen [45], and only partially aligns with Mishra [12], who documented an indirect relationship with the continuance intention to adopt new technology.

Moreover, the findings revealed that confirmation significantly predicted perceived ease of use, satisfaction, perceived usefulness, continuance intentions, and individual performance. These results are congruent with previous studies' findings (e.g., Refs. [58,59]), further substantiating the impact of confirmation on various aspects of online assessments.

An important finding of the study was the confirmed positive association between satisfaction and the continuance intention to utilize online assessments. This association agrees with the results of Cheng [47] and reinforces the idea that satisfaction directly influences users' choice to continue using a particular technology. Earlier studies substantiate this claim, stating that when users find happiness in a new technology, they continue its usage ([12,60]).

In conclusion, this research deepened the understanding of how TTF and ECM frameworks and the perceived usefulness and ease of use of technology shape users' continuance intentions and satisfaction levels with online assessments. The study demonstrated that these factors significantly affect individual performance and shape users' attitudes toward technology, influencing their satisfaction and continuance intentions. The results open avenues for further research, providing valuable insights for educational institutions seeking to implement online assessments effectively.

3.1. Theoretical implications

Our research model describes the relationship among many factors that could influence individual performance through using online assessments based on the positive and significant associations between teachers' satisfaction and usage of new technology in the context of this study online assessments. Therefore, the proposed model suggests that perceived usefulness and ease of use are crucial factors for enhancing users' satisfaction to continue using online reviews. Hence, our research model extends the previous models through combined TTF and ECT with individual performance as the outcomes of continuance intentions to use online assessment, which is essential for e-learning [61]. Furthermore, the model in this study extends and compliments prior research on using new technology based on TTF and ECT, such as online assessments ([62,63,64]).

3.2. Practical implications

Our findings reveal that perceived usefulness and ease of use are important factors for the intention to continue using new technology. Therefore, it is essential to train users to use new technology and inform them about the usefulness of using a new will to continue using it. Many industrial reports mentioned that there is a high rate of discontinuance of using technology after using it such as mobile applications and new emerging technology, after using it for a short time ([65,66–68]), which needs more studies to find out the rationale of discontinuance of using new technology.

4. Conclusion

This study pioneered a research model that integrated the Task-Technology Fit (TTF) and Expectation Confirmation Theory (ECT) to forecast the individual performance associated with online assessments, primarily based on user satisfaction levels. It highlighted the positive and significant prediction of continuance intentions to use online assessments, influenced by perceived usefulness, perceived ease of use, confirmation, and TTF. These factors directly affect the intention to continue using online assessments and indirectly impact it by bolstering individual performance.

The study's key strength lies in its focus on a pertinent and contemporary topic in education: online assessment. Moreover, the research gained further significance by exploring this topic under unique conditions, where a crisis necessitated the compulsory utilization of technology. This context has global relevance as numerous countries face similar scenarios and can learn from the research findings. Consequently, the study's outcomes can offer valuable insights and guide strategies for educators, administrators, and policymakers in implementing and promoting online assessments across the globe.

However, the study also underscores the need for further research to comprehensively understand the factors influencing individual performance in higher education. Future research could benefit from a mixed-methods approach, combining qualitative and

quantitative methodologies, providing a more nuanced understanding of these phenomena. A larger sample size would also bolster the generalizability and reliability of the research findings.

Exploring additional factors that impact individual performance beyond those investigated in this study would also be beneficial. Factors such as user engagement, technological self-efficacy, or the effect of external support structures like institutional assistance or peer influence could be worthy of exploration.

In conclusion, this study represents a significant step forward in understanding the dynamics of online assessment usage in higher education. It establishes a clear relationship between perceived usefulness, perceived ease of use, confirmation, TTF, and continuance intentions, influencing individual performance. Further research, as suggested, could illuminate more aspects of this complex inter-play, leading to more efficient and effective use of online assessments in education.

The processed data required to reproduce the above findings are available to download from [https://drive.google.com/file/d/1_2ylu7dvtonKeenvLpHzWeHBIVu8z57r/view?usp=drive_link].

CRediT authorship contribution statement

Abed Alkarim M Ayyoub: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Belal Ahmad Abu Eidah:** Writing – review & editing, Writing – original draft. **Zuheir N. Khlaif:** Writing – review & editing, Writing – original draft, Validation, Investigation, Concep-tualization. **Mahmoud Ahmad EL-Shamali:** Writing – review & editing, Writing – original draft, Data curation. **Mohammed Rajeh Sulaiman:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

The researchers received approval to conduct this study from the Deanship of Scientific Research at An- Najah National University under number ANNU-A0087-2022**.**

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2023.e22068.

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