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The influence of selected factors on perceived enjoyment of the online learning experience: lessons for post-COVID-19 classrooms

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Introduction: Since digital transformation has become a priority in the higher education landscape, it is unlikely that higher education institutions will return to traditional face-to-face teaching and learning. Many higher education institutions have adopted a hybrid approach to teaching and learning in a post-Covid-19 setting. This unplanned forced change has raised concerns about the quality of online teaching and learning, as well as issues related to the student experience thereof. Therefore, it is necessary to consider possible factors that may influence students' perceived enjoyment of the online teaching and learning experience. To date, very few studies have considered the antecedents of perceived enjoyment of online teaching and learning. The purpose of this paper was to determine the influence of selected factors of online teaching and learning on the perceived enjoyment of students.

Methods: Quantitative data was collected, and the final sample consisted of 501 students enrolled at higher education institutions.

Results: The findings showed that cognitive benefits, perceived usefulness and perceived ease of use are statistically significantly correlated with students' perceived enjoyment of the online learning experience.

Discussion: The current study contributes to existing knowledge regarding the intention of continued use of online teaching and learning. The findings of this study are also practically relevant for enhancing students' online learning experiences in a post-Covid-19 setting.

KEYWORDS

perceived enjoyment, online teaching and learning, perceived cognitive benefits, perceived usefulness, perceived ease of use

1 Introduction

The COVID-19 outbreak resulted in unexpected conditions that impacted, among other things, the higher education sector worldwide. The unexpected COVID-19 pandemic forced higher education institutions to move their teaching and learning methods from traditional face-to-face settings to an online approach. Traditional educational settings have been found to create more student-tutor, and student-student interaction, thus promoting better engagement (Kumar et al., 2021). Although, according to Paul and Jefferson (2019), the online approach has an advantage over traditional settings, in that lessons could be offered to students globally through internet connectivity, there was insufficient information to guide higher

education institutions to successfully move to online teaching and learning. Kumar et al. (2021) indicated that the teaching and learning method change to the online approach during the COVID-19 pandemic impacted both students and academics. Receiving lessons and being assessed solely online was a new experience for students, and academics switched to online teaching without having had proper training in teaching through online technology, all the while being required to maintain quality standards (Almendingen et al., 2019). Apart from the difficulties that lecturers experienced, students faced numerous challenges with online teaching and learning, such as internet access and access to household computers (UNESCO, 2020).

During the post-COVID-19 pandemic period, many higher education institutions have adopted a hybrid education delivery method, with in-person and online learning methods (Zamarro et al., 2021). This change in education delivery method can only be effective if online learning is systematically reviewed, considering that the long-term consequences of online learning are yet to be established (Kumar et al., 2021). Van der Walt and Nkoyi (2022) found that students enrolled at higher education institutions during COVID-19 perceived online teaching and learning negatively, and, as such, it is necessary to consider factors that could potentially influence students' perceived enjoyment of online teaching and learning, to optimize the learning experience. This seems necessary, as the emphasis is often placed on teaching and learning outcomes, rather than on the experience of students, which could advance student engagement and connectedness (Kolb and Kolb, 2013). Saadé et al. (2008) assert that a student's subjective feelings of joy, relaxation and pleasure, and a positive holistic experience of learning, affect user acceptance and usage behavior of e-learning. Although there is some empirical evidence that students prefer online teaching and learning to traditional face-to-face instruction, various studies report quality concerns regarding online teaching, a lack of student engagement, and high dropout rates (Baturay, 2011). The scholar suggests that to improve persistence and, as such, reduce dropout rates, student satisfaction should be considered. Okada and Sheehy (2020) share these sentiments, and they found in their study that students should experience enjoyable learning, which will help them shape a desirable future.

Over time, several theories and models have been developed regarding the adoption of technology. Although cognizance is taken of these theories and models, lockdown regulations during the COVID-19 pandemic forced higher education institutions to use online teaching and learning, and, as such, students could not decide to use online teaching and learning, but were forced to do so. Due to the fact that students were forced to adopt technology-based education, it is necessary to reflect on their enjoyment thereof, to establish which factors, either intrinsic or extrinsic, influence their enjoyment of online learning. The shift in focus toward enjoyment of e-learning seems necessary, as previous research has found that perceived enjoyment significantly influences the intention to use technology (Hussein, 2018). Moving beyond the focus of forced adoption necessitated by the COVID-19 pandemic, this study focuses on perceived enjoyment of online learning to promote students' continued use of this approach and enrich the learning experience. The reason is that most previous studies investigating post-adoption behavior of technology have attempted to analyze satisfaction (Naranjo-Zolotov et al., 2019) rather than enjoyment.

The technology acceptance model (TAM) (Davis, 1989) is a well-known theory used to explain technology adoption and usage. Despite

the fact that perceived enjoyment is not central to the TAM, several theories and scholars note the importance of the construct of enjoyment. According to Deci and Ryan's self-determination theory (Deci and Ryan, 1995), intrinsic motivation derives from interest and enjoyment. In fact, they established that students' intrinsic motivation and enjoyment decreased when they were rewarded (Gagné, 2014). It is, therefore, important to consider factors other than those that reward students with performance-related outcomes.

Research investigating online learning using the control-value theory has yielded mixed results regarding enjoyment of online learning (Heckel and Ringeisen, 2017). In their study, Heckel and Ringeisen (2017) found that personal relevance predicts greater enjoyment, and that enjoyment mediates the relationship between cognitive predictors and content-related outcomes. This shows the relevance of cognitive and content-related variables when considering enjoyment. Okada and Sheehy (2020) suggest that understanding the influencing factors of students' enjoyment of e-learning, which is regarded as fundamental for student success and retention (Higher Education Academy, 2015), should continue post-COVID-19. The scholars mention that it is important to understand the what, how and why of fun, or enjoyment, as a valuable consideration in online education, which is often overlooked, due to the competitiveness between higher education institutions.

After a careful analysis of the literature, we theorize five factors, namely perceived system quality, perceived usefulness, perceived ease of use, perceived cognitive benefits and perceived reflective learning, to be influential in explaining perceived enjoyment. The first variable included in the study is perceived system quality. Alkhawaja et al. (2021) assert that because of technology problems that cause e-learning systems to fail, education institutions often find it challenging to introduce and promote the use of e-learning systems. According to the information systems success model, developed by DeLone and McLean (2003), user satisfaction is influenced by service quality, system quality and information quality. Armenteros et al. (2013) found that user satisfaction and enjoyment are closely related. Due to the relevance of system quality to user satisfaction and perceived enjoyment, it was decided to investigate whether perceived system quality influences perceived enjoyment of online learning.

Secondly, perceived usefulness and perceived ease of use were considered. The reason being that these two variables are at the core of the TAM, proposed by Davis (1989). Jere (2020) asserts that the adoption of e-learning by full-contact universities may be regarded as a disruptive innovation, and TAM theory successfully explains user acceptance of disruptive technologies. Sun et al. (2009) suggest that perceived usefulness is the most critical factor when considering continued use of e-learning systems. The final two factors included in the study are perceived cognitive benefits and perceived reflective learning. Okada and Sheehy (2020) suggest that there is a great need for research that focuses on the epistemological beliefs of students. They mention that according to constructivist beliefs, teaching facilitates the generation of knowledge through reasoning. Heckel and Ringeisen (2017) emphasize the relevance of cognitive and content-related variables when considering enjoyment. As such, it is expected that if the content is cognitively beneficial and students engage in perceived reflective learning, enjoyment of online learning will increase.

The following subsections discuss perceived enjoyment and selected factors related to the online learning experience, namely

perceived system quality, perceived usefulness, perceived ease of use, perceived cognitive benefits and perceived reflective learning.

1.1 Perceived enjoyment

Perceived enjoyment is defined as the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from the use of the system (Venkatesh, 2000). Lee (2010) argues that e-learning often has many entertainment interactive functions, and that users can derive great enjoyment when using such systems. Given the findings in the literature cited above, it is clear that perceived enjoyment is a construct that needs further attention. In particular, we believe that insights about specific factors influencing students' perceived enjoyment of online learning are necessary to enhance current approaches to teaching in the post-COVID-19 setting. Darby and Lang (2019) assert that students' enjoyment of online learning is important, as online courses are proving to have higher attrition rates, and therefore when students enjoy their courses, they are more likely to continue engaging, and they will thus be retained in the online class. Recent literature stresses that understanding factors that influence students' enjoyment of online learning is fundamental to promote student retention and success during and after the COVID-19 pandemic (Okada and Sheehy, 2020). Against this background, we investigate students' perceived enjoyment and operationalize it as a dependent variable.

1.2 Perceived system quality

Worldwide, higher education institutions are realizing the importance of quality e-learning systems (Mulhem, 2020). Unfortunately, quality in the e-learning context seems complex, and, as such, the construct of perceived system quality has been operationalized in different ways by different authors (Alla, 2013). According to Dreheeb et al. (2015, p. 13), system quality refers to "the extent to which an industry defines a set of desirable features that should be incorporated into the product to enhance its lifetime performance." DeLone and McLean (2003) postulate the following dimensions of system quality: adaptability, availability, reliability, response time and usability. Other dimensions are convenience, access, flexibility, integration, sophistication, system speed, navigation and network speed, and user interface consistency (Alla, 2013). Despite the fact that scholars have identified different dimensions of system quality, it is postulated that system quality affects both the user and user satisfaction (Mulhem, 2020), beliefs about the system, and the user's intention to use the system (Ramayah et al., 2010). Hence, the hypothesis is that perceived system quality influences users' perceived enjoyment of online learning.

1.3 Perceived usefulness

Perceived usefulness refers to the level at which a technology's end user believes that the technological tools used in teaching and learning will enhance the end user's work and study performance in comparison to other methods of teaching and learning (Liu et al.,

2009). According to Rizun and Strzelecki (2020), perceived usefulness influences the end user's decision to accept or reject a particular technology. Enjoyment of something, or taking pleasure in it (e.g., online learning), is related to perceived usefulness (Cicha et al., 2021), and it positively affects learning (Hernik and Jaworska, 2018). Cicha et al. (2021) report that students who participated in their study believed that it was possible to gain more knowledge when learning online because of their knowledge of technological tools. Paradoxically though, their study revealed that the students were dissatisfied with online learning and did not enjoy it. Similarly, Rizun and Strzelecki (2020) found that students perceived online learning as useful due to its use of technological tools, but at the same time they reported enjoying and preferring studying in traditional educational settings, where they can interact with peers and academics, receive in-person feedback, and experience the campus environment. By contrast, a study by Pham et al. (2021) revealed that students perceived online learning during COVID-19 as useful, because it is exciting and time-saving and makes learning easier and less costly, and the students therefore enjoyed online learning. Thus, it can be concluded that students may not always find online learning through the use of technologies enjoyable, but may still perceive the use of technologies as useful (Camilleri and Camilleri, 2019). However, some studies have indicated a relationship between enjoyment and usefulness, and, as such, this relationship will be confirmed in a different setting, as indicated in the conceptual model.

1.4 Perceived ease of use

Perceived ease of use refers to the level at which an end user believes a particular technology can be effortlessly and conveniently used (Esteban-Millat et al., 2018). According to Pham et al. (2021), online learning is designed to easily share and obtain knowledge on a day-to-day basis, and perceived ease of use in this context includes aspects such as accessibility, transmission speed, and learning adaptability. A study conducted during the COVID-19 outbreak found that students' positive attitude toward acceptance and use of online learning was partly due to its perceived ease of use (Drueke et al., 2021). Drueke et al. (2021) found that factors of perceived ease of use, such as data availability, general media affinity, and technical infrastructure, improved the students' positive attitude to accept online learning. Another study conducted during COVID-19, which included a sample of students who experienced a shift to completing online learning, revealed that there was an interdependent relationship between perceived ease of use and perceived enjoyment (Muñoz-Carril et al., 2021). The study found that perceived ease of use positively affected the students' attitudes, causing perceived enjoyment of online learning. Similarly, Cicha et al. (2021) found that enjoyment correlated with ease of use of online teaching and learning technologies. Therefore, perceived ease of use is expected to be related to perceived enjoyment in the South African context.

1.5 Perceived cognitive benefits

Perceived cognitive benefits refer to improved understanding and application and positive perception of the learning material as a result of the online learning environment (Lee et al., 2010). Baturay (2011)

found a strong positive relationship between cognitive learning reported and student satisfaction with an online course. The scholar further reports that cognitive learning and final exam scores were only moderately related, which indicates that good grades do not necessarily mean that cognitive learning has taken place at a deep level. For example, a student could memorize and understand learning content but may not be able to apply and analyze the content. However, due to the relationship established between cognitive learning and student satisfaction, it is postulated that perceived cognitive benefits will be positively related to perceived enjoyment.

Helyer (2015) states that reflection is about looking back at events that happened in the past, to obtain a better understanding of what happened, make sense of the experiences, and discover possible mistakes, to avoid repetition of the mistakes. Perceived reflective learning is also regarded as a process that leads to reflection on knowledge sources and experiences of students and collective groups, which may contribute to a better understanding of their learning journey (Colomer et al., 2013). Bubnys and Žydžiūnaitė (2010) suggest that reflective learning is a continual process that enhances learning outcomes for individuals and collectives. Chang (2019) supports the latter view and asserts that reflection in learning is a necessary process, as it provides an opportunity for students to revisit their learning, document the learning journey, and provide suggestions to improve the learning experiences of future students. Previous research (Invernizzi et al., 2019) has shown that perceived reflective learning positively contributes to enjoyment and satisfaction in face-to-face learning. It is suggested that perceived reflective learning will also lead to increased enjoyment of learning in online approaches.

Against this background, the following hypotheses are tested:

H1: There is a positive statistically significant relationship between perceived system quality and perceived enjoyment.

H2: There is a positive statistically significant relationship between perceived usefulness and perceived enjoyment.

H3: There is a positive statistically significant relationship between perceived ease of use and perceived enjoyment.

H4: There is a positive statistically significant relationship between perceived cognitive benefits and perceived enjoyment.

H5: There is a positive statistically significant relationship between perceived reflective learning and perceived enjoyment.

The aim of the study was to establish the extent to which selected factors related to the online learning experience influence perceived enjoyment of online teaching and learning. The reason for conducting the study was that higher education institutions were not prepared to transition to online teaching and learning, and this lack of preparedness could have influenced students' enjoyment of the online learning experience. Furthermore, previous studies found that students perceived online teaching and learning negatively (Van der Walt and Nkoyi, 2022) which could contribute to a lack of student

engagement, and high dropout rates (Baturay, 2011). Another reason is that there is a dearth of research studies focusing on the antecedents of perceived enjoyment of online teaching and learning. Therefore, the primary objective of the study was to establish whether selected variables, namely perceived system quality, perceived usefulness, perceived ease of use, perceived cognitive benefits and perceived reflective learning, influence perceived enjoyment of the online learning experience.

2 Methods

2.1 Study design

This study followed a deductive approach, because hypotheses based on previously conceived theories were tested (Saunders et al., 2012). It was deemed appropriate to use a quantitative research design, since the study aimed to describe the influence of selected factors related to online teaching and learning on perceived enjoyment thereof. To collect the quantitative data, an online survey was administered once-off using a structured questionnaire. Therefore, a cross-sectional design was utilized (Creswell and Creswell, 2018).

2.2 Population and sampling

The target population of the study was students enrolled at traditional universities, universities of technology and comprehensive universities in South Africa. Convenience sampling was used, as recommended by Jordan et al. (2015), since only readily accessible students were requested to participate in the research study. The final sample consisted of 501 students.

The demographic information of the respondents is summarized in Table 1.

The sample comprised more females (62.5%) than males (36.7%). The main fields of study were management (16%), followed by IT (14.2%), education (13.4%), humanities (11.4%), engineering (11.2%), and law (10.0%). The majority of the respondents (86.4%) were first-year students (20.6%), second-year students (32.9%), and third-year students (32.9%). A total of 83% of the respondents were studying at a traditional university (39.9%) or a university of technology (43.1%).

2.3 Data collection

The QuestionPro platform was used to create the online survey. A customized template was used on this platform to create the structured questionnaire which was used to collect the data. In the first section of the questionnaire, biographical questions were posed, which were used to describe the sample. Perceived enjoyment was measured using five items, an example being "Using online teaching and learning is pleasant." Four items measured perceived usefulness, an example being "Online teaching and learning is useful in supporting my learning," and three items measured perceived ease of use, an example being "Overall, I think the online program used by the university is easy to use." Perceived cognitive benefits were measured with four items, an example being "Online teaching and learning helps me to understand the content easier," and perceived reflective learning was

TABLE 1 Demographic information of the respondents.

Demographic information		<i>n</i>	%
Gender	Male	184	36.7
	Female	313	62.5
	Other	4	0.8
	Total	501	100.0
Field of study	Humanities	57	11.4
	IT	71	14.2
	Engineering	56	11.2
	Management	80	16.0
	Science	46	9.2
	Law	50	10.0
	Education	67	13.4
	Health sciences	38	7.6
	Agriculture	6	1.2
	Veterinary sciences	2	0.4
	Other	28	5.6
	Total	501	100.0
	Year of study	1st year	103
2nd year		165	32.9
3rd year		165	32.9
4th year		58	11.6
Master's level		8	1.6
Doctoral level		2	0.4
Total		501	100.0
Type of university	Traditional university	200	39.9
	University of technology	216	43.1
	Comprehensive university	85	17.0
	Total	501	100.0

measured with four items, an example being “Online teaching and learning enables me to reflect on my own understanding.” Perceived system quality was measured with five items, an example being “The information on my university’s e-learning website is up to date.” Responses were indicated on a five-point Likert scale, with response options ranging from “Strongly Disagree” to “Strongly Agree.” To gather data from a representative sample, the survey was distributed explicitly to students studying at a higher education institution in South Africa through selected social media channels and online platforms commonly used by these students. The survey was distributed to the sample in November 2020, and it remained open for 3 weeks.

2.4 Data analysis

SmartPLS version 3.2.9 was used to analyze the data. Both descriptive and inferential data analyses were done. To analyze the structural relationship between the variables included in the study, Structural Equation Modeling (SEM) was employed which combines factor analysis and multiple regressions (Ramlall, 2017). Data analysis

comprised two stages: assessment of the measurement model (the inner model), followed by assessment of the structural model (the outer model). Hair et al. (2019) provide the following guidelines for assessing a reflective measurement model, which was the model followed in this study. First, item reliability must be assessed. The outer loading of items should be above 0.708 to show that the construct explains more than 50% of the variance in the item. Hair et al. (2011) present an exception to this guideline. They suggest that items with outer loadings less than 0.7 but higher than 0.4 can be retained in the measurement model as long as they do not threaten the reliability and validity of the measurement model. Next, Hair et al. (2019) state that the internal consistency reliability must be confirmed by inspecting the composite reliability (CR) and Cronbach’s alpha indices of each factor’s measures. For both indices, there was sufficient evidence of internal consistency reliability, as the outer loadings were higher than 0.7. The third step is to confirm the convergent validity of each construct’s measures. Evidence of convergent validity is that the average variance extracted (AVE) of the items measuring a construct is higher than 0.5. Lastly, the discriminant validity of the construct measures must be confirmed. Adequate discriminant validity between the construct measurements is when the squared inter-construct correlation (the shared variance between the two constructs) is not higher than the AVE of each of the two constructs.

Assessment of the structural model starts with inspecting the variance inflation factor (VIF) between the independent factors (Hair et al., 2019). The VIF should be close to 3.0 or lower. If collinearity is not an issue in the structural model, the R^2 of each endogenous factor can be examined to determine the in-sample explanatory power of the structural model. The guideline for interpreting the R^2 -value is that values of 0.75, 0.50, and 0.25 can be considered substantial, moderate and weak in-sample explanatory power, respectively (Hair et al., 2019). To accept or reject the hypotheses represented by structural paths in the structural model, the path coefficients and their statistical significance ($\alpha=0.05$, two-tailed) were examined. In partial least squares structural equation modeling, the p -values are obtained using the bootstrapping procedure (Hair et al., 2019). In this study, 5,000 subsamples were used in this procedure.

2.5 Ethical considerations

Ethical considerations such as informed consent, voluntary participation, confidentiality and anonymity were ensured by means of a participant information sheet, which was included in the research instrument. Questionnaires were completed anonymously to ensure confidentiality, and participants were assured that data would only be used for research purposes. Only the lead researcher had access to the questionnaire responses, which are password-protected.

3 Results

3.1 Results of the assessment of the measurement model

The initial assessment of the measurement model yielded acceptable item reliability, internal consistency reliability and convergent validity. However, evidence of discriminant validity

between the measurement of perceived cognitive benefits and perceived reflective learning was not supported by the results of the assessment of the measurement model. The cross-loading matrix was inspected to identify items that could contribute to the lack of discriminant validity between the two constructs. The results in the cross-loading matrix showed that the highest cross-loading was REFT3 on perceived cognitive benefits (0.772). The item was removed, and the results of the revised measurement model are reported in Table 2.

Table 2 summarizes the measurement model assessment results required to complete the first three steps in assessing the model. All outer loadings were statistically significant, but two outer loadings were less than 0.708 (REFT1 = 0.669; SYS1 = 0.567). Although these two items did not meet the criterion of item reliability, the items were retained in the measurement model, as they did not threaten the reliability and the validity of the model. As reported in Table 2, all constructs in the measurement model have a Cronbach's alpha and a CR above 0.7, except for perceived reflective learning (Cronbach's alpha = 0.670). The Cronbach's alpha was deemed acceptable, as it was close to 0.7, taking into account that the Cronbach's alpha is a not-so-precise measure and a conservative

estimate of reliability (Hair et al., 2019), and the fact that the CR value exceeded 0.7. Also, the AVE of each construct was higher than 0.5. The measurement model assessment results in Table 2 provide sufficient evidence of internal consistency reliability and convergent validity.

Discriminant validity results are reported in Table 3.

Table 3 summarizes the AVE of constructs compared to the squared correlation between constructs, to assess the discriminant validity in the measurement model. As shown in Table 3, after excluding REFT3 from the measurement model, the AVE of the two constructs is higher for each pair of constructs than the squared correlation between the constructs. Thus, the revised measurement model showed acceptable discriminant validity to continue assessing the structural model.

3.2 Descriptive statistics

To describe the student sample's responses to the variables included in the study, measures of central tendency (mean, median, and standard deviation) were determined.

TABLE 2 Measurement model assessment results.

Factor	Item	Outer loading	p-value (two-tailed)	Cronbach's alpha	CR	AVE
Perceived cognitive benefits	COGB1	0.745	0.000	0.864	0.908	0.714
	COGB2	0.882	0.000			
	COGB3	0.885	0.000			
	COGB4	0.860	0.000			
Perceived enjoyment	ENJ1	0.751	0.000	0.92	0.941	0.762
	ENJ2	0.888	0.000			
	ENJ3	0.912	0.000			
	ENJ4	0.896	0.000			
	ENJ5	0.906	0.000			
Perceived ease of use	PEU1	0.788	0.000	0.806	0.885	0.721
	PEU2	0.856	0.000			
	PEU3	0.899	0.000			
Perceived usefulness	PUSE1	0.830	0.000	0.863	0.907	0.709
	PUSE2	0.891	0.000			
	PUSE3	0.788	0.000			
	PUSE4	0.857	0.000			
Perceived reflective learning	REFT1	0.669	0.000	0.670	0.819	0.604
	REFT2	0.837	0.000			
	REFT4	0.814	0.000			
Perceived system quality	SYS1	0.567	0.000	0.825	0.879	0.598
	SYS2	0.748	0.000			
	SYS3	0.858	0.000			
	SYS4	0.837	0.000			
	SYS5	0.818	0.000			

TABLE 3 Discriminant validity results.

	Perceived cognitive benefits	Perceived usefulness	Perceived ease of use	Perceived enjoyment	Perceived reflective learning	Perceived system quality
Perceived cognitive benefits	0.714 ^a					
Perceived usefulness	0.537 ^b	0.709				
Perceived ease of use	0.360	0.424	0.721			
Perceived enjoyment	0.646	0.608	0.408	0.762		
Perceived reflective learning	0.516	0.432	0.341	0.462	0.604	
Perceived system quality	0.250	0.198	0.331	0.236	0.279	0.598

^aOn the diagonal of the AVE of constructs. ^bBelow the diagonal of squared correlations.

TABLE 4 Measures of central tendency for the measured variables.

Variable	Minimum	Maximum	Median	Mean	SD
Perceived usefulness	4	20	16.00	15.10	3.855
Perceived ease of use	3	15	12.00	11.56	2.705
Enjoyment	5	25	20.00	18.05	5.283
Cognitive benefits	4	20	16.00	14.73	3.856
Reflective thinking	4	20	16.00	15.31	3.203
System quality	5	25	20.00	19.86	3.400

From the results presented in Table 4, it is evident that respondents perceived all the constructs measured negatively (i.e., comparing the mean score with the median or middle score). The respondents' negative perception of perceived usefulness and perceived ease of use, show that they perceive online teaching and learning as problematic, possibly negatively affecting their engagement and performance. Their negative perception of cognitive benefits implies that they perceived the learning material, and the understanding and application thereof negatively. In terms of reflective thinking, their negative responses are indicative that they did not find online learning activities mentally challenging. The respondents' negative assessment of system quality shows that they mostly disagreed that the system used by the respective university, is accessible, reliable, and available. Lastly, the results show that the respondents did not enjoy online teaching and learning.

3.3 Results of the assessment of the structural model

All VIFs were less than 3.0. The highest VIF was 2.830. Thus, collinearity was not an issue that could invalidate the results of the assessment of the structural model.

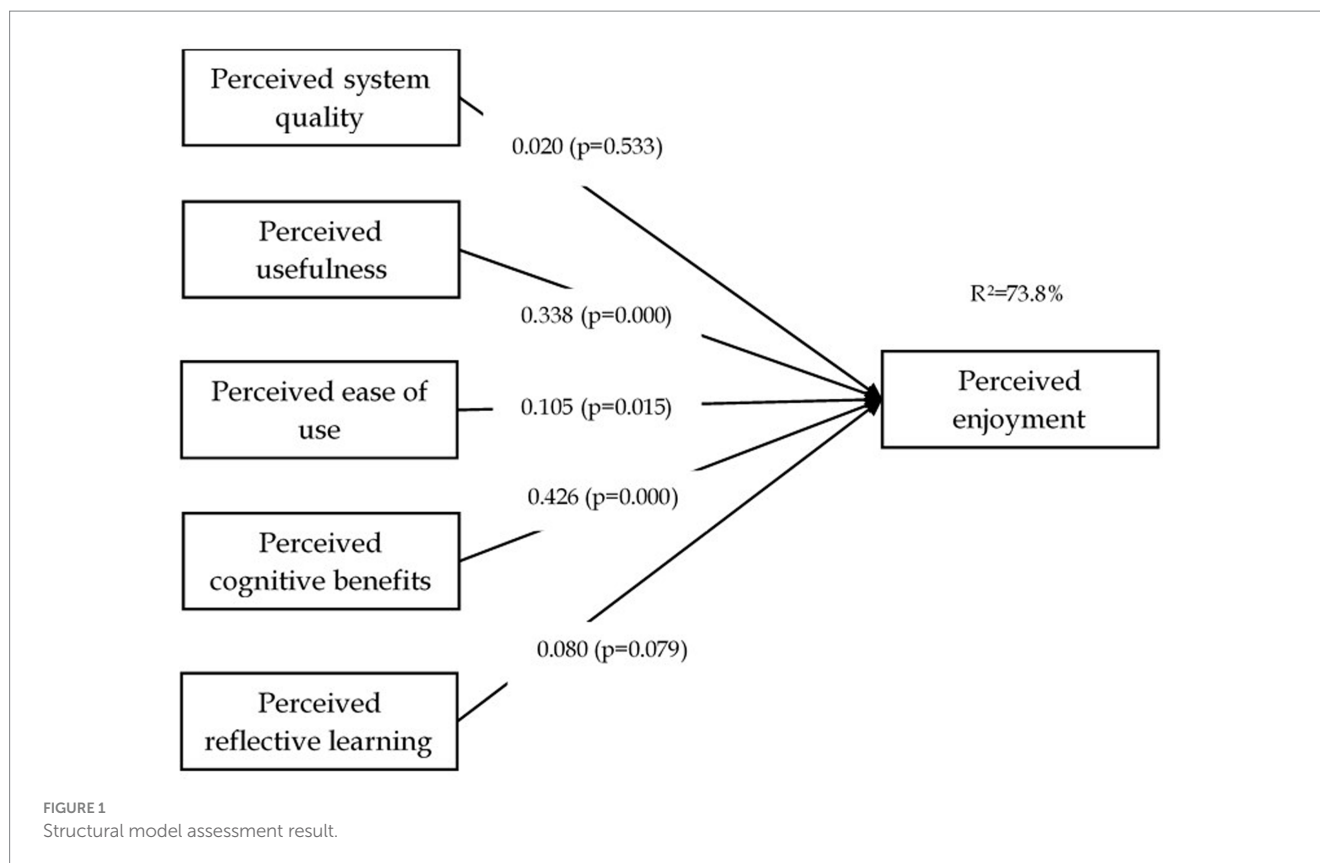
The structural model assessment results are depicted in Figure 1.

The five determinants of perceived enjoyment explained 73.8% of the variance in perceived enjoyment. Thus, the in-sample accuracy of the structural model is substantial. The structural model assessment

results in Figure 1 show that H1 was not accepted, as the influence of perceived system quality on perceived enjoyment was not statistically significant ($p > 0.05$). Both perceived usefulness and perceived ease of use influenced perceived enjoyment positively and statistically significantly ($p < 0.05$). Thus, H2 and H3 were accepted. The statistically significant positive influence of perceived usefulness on perceived enjoyment was stronger than the influence of perceived ease of use on perceived enjoyment. Overall, perceived cognitive benefits had the strongest positive statistically significant influence on perceived enjoyment. Based on the statistical significance of the positive influence, H4 was accepted. H5 was rejected, as the influence of perceived reflective learning on perceived enjoyment was not statistically significant ($p > 0.05$).

4 Discussion

The purpose of the study was to establish the extent to which selected factors related to online teaching and learning influence perceived enjoyment of students exposed to it. From the results presented in Figure 1, it is evident that the factors included in the study, namely perceived system quality, perceived usefulness, perceived ease of use, perceived cognitive benefits and perceived reflective learning, explained 73.8% of the variance in perceived enjoyment. This shows the importance of considering several factors when designing online teaching and learning. It also shows that factors other than those related to performance should be considered



to promote student enjoyment of online teaching and learning. This implies that online course designers and lecturers should adopt a holistic approach considering various factors, such as technological infrastructure, system functionality, and student-related factors. Furthermore, lecturers should think beyond the traditional performance matrix. This can be done by focusing more on reflective and reflexive learning and system quality to promote online learning enjoyment. Most important, however, is to support students to have access to technology, as many South African students are still struggling with internet access, high data costs, and resources such as laptops and computers (UNESCO, 2020; Van der Walt and Nkoyi, 2022).

The two factors that influenced perceived enjoyment the most were perceived cognitive benefits and perceived usefulness. As far as could be established, the relationship between perceived cognitive benefits and perceived enjoyment of online teaching and learning has not previously been studied and confirmed. However, Baturay (2011) reported a strong positive relationship between cognitive learning and student satisfaction, and satisfaction and enjoyment are closely related (Armenteros et al., 2013). Thus, it is postulated that when students are satisfied with an online course, they will be more inclined to enjoy it. The relationship between perceived cognitive benefits and perceived enjoyment shows the importance of well-designed online instruction. Holmberg (1995) asserts that to promote real and deep learning, online learning should remain learner-centered. Furthermore, when designing online courses, cognitive learning strategies should be considered to promote learners' capacity for in-depth information processing, the transfer and application of knowledge in a novel context, and to foster improved and longer-lasting learning retention (Winn et al., 2019). In this regard, it is suggested that modern trends such as integrating neuroscience into instructional design practices

be utilized to align the learning environment with the brain's natural processes which may enhance the overall learning experience of students. Furthermore, peer discourse can be used effectively to promote deep learning and stimulate cognitive learning.

To promote enjoyment, it is suggested that learning outcomes should be carefully formulated and should gradually become cognitively more advanced, that is, they should move from memory to understanding to application of knowledge and analysis thereof. This assertion supports the constructivist understanding of knowledge construction, which suggests that learners should actively build a mental representation in working memory (Mayer, 2019), which implies meaningful learning. To facilitate meaningful learning, different technology-enabled modes, or modalities, can be used (Masyhudianti and Fauziati, 2017). However, academics should guard against technological and information overload. In this regard, Laadem and Mallahi (2019) propose that to avoid overload, teaching modalities should be non-repetitive, focused and organized. It is further suggested that a multimodal approach to online teaching and learning should be adopted to ensure student satisfaction and enjoyment and that higher education institutions should remain relevant in a post-COVID-19 environment. This is of particular importance to the South African context, where the higher education student population is dispersed over a large geographical area, and although most universities are situated in urban areas, students often reside in remote rural areas without connectivity and financial resources to purchase expensive data.

The finding that perceived usefulness and perceived enjoyment are correlated is similar to Cicha et al. (2021) finding that enjoyment or taking pleasure in something (e.g., online learning), is correlated with perceived usefulness. Similarly, Şahin and Şahin (2021) found that perceived enjoyment of the e-learning system affects students'

perceptions regarding the perceived usefulness thereof and consequently their willingness to learn using online learning management systems. This finding that perceived usefulness is correlated with perceived enjoyment is thus to be expected, especially if one takes into consideration that Blackboard and Moodle as learning management systems are similar to other social online platforms, such as YouTube, Facebook and Instagram (Bair and Stafford, 2016), which most students are familiar with. This finding suggests that learning management systems such as Blackboard and Moodle can be used effectively to promote perceived enjoyment, due to the perceived usefulness thereof. However, due to the expensive cost of data and the fact that the majority of students in developing countries, such as African countries, do not have access to the Internet (UNESCO, 2020), it remains imperative that higher education institutions provide facilities to students to access learning management systems. The assumption that all students are technologically experienced also needs to be challenged. Due to the socio-economic divide evident in many countries, especially developing countries, digital literacy should be part of the core first-year curriculum (Van der Walt and Nkoyi, 2022), to ensure that meaningful online learning takes place.

4.1 Recommendations

The findings of the study show that students' perceived enjoyment of online teaching and learning is influenced by several factors. Most importantly, lecturers should ensure that course content is cognitively stimulating, and that learning management systems are used that are easy to operate and accessible to students despite data and connectivity challenges. Due to increased uncertainty in the external environment, the looming Fourth Industrial Revolution, and the fact that the student population is becoming more diverse, it is unlikely that higher education institutions will return to traditional face-to-face teaching and learning (Van der Walt and Nkoyi, 2022). As such, research must continue regarding students' e-learning experience, their satisfaction and enjoyment thereof, and the instructional design of online courses to promote high-quality teaching and learning. Consideration should also be given to the perceived usefulness of online teaching and learning and perceived system quality. Very few studies have focused on variables that could possibly influence perceived enjoyment, and, as such, the current study contributes to existing knowledge regarding the intention of continued use of online teaching and learning.

4.2 Limitations of study

Despite the noteworthy findings of this study, the study had some limitations. Although the intention was to draw a sample using simple random sampling, this was not possible, and we had to rely on convenience sampling. Since, the sample do not necessarily represent the population from which the sample was drawn, the findings cannot be generalized to a wider population. However, the sample was diverse in terms of the socio-demographic variables measured, and care was taken to confirm the measurement model. It is therefore recommended that future research should consider using simple random sampling or another more robust sampling method to avoid sampling and response bias. A cross-sectional research design was used and, as such, there is limited causality inference. However, the sample was adequate in size. It is further recommended that the established relationships

be interrogated using qualitative research, to understand how the variables influence perceived enjoyment of online teaching and learning. More research is also needed to understand how perceived reflective learning can be used to enhance perceived enjoyment on an online platform.

5 Conclusion

The aim of the study was to establish the extent to which selected factors related to the online learning experience influence the perceived enjoyment of online teaching and learning. From the findings, it is evident that the variables included in the study, namely perceived system quality, perceived usefulness, perceived ease of use, perceived cognitive benefits, and perceived enjoyment collectively explain a significant variance in the dependent variable, perceived enjoyment. This shows that lecturers need to consider a number of factors when designing online instruction to promote student enjoyment and quality teaching and learning.

In particular, perceived usefulness and perceived cognitive benefits are the two most important factors influencing perceived enjoyment. From the findings, one may conclude that lecturers should seek to stimulate cognitive engagement and consider perceived usefulness, as it will influence students' willingness to learn using online learning management systems. Should lecturers not promote the perceived enjoyment of students, it is likely that they will continue to grapple with low attendance rates and disengaged students. Not only is this problematic for lecturers but also for the higher education leadership and governments that seek to build nations through quality teaching and learning.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

FW: Writing – original draft, Writing – review & editing. AN: Writing – original draft, Writing – review & editing. MT: Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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