
COMMONWEALTH of LEARNING

# Understanding User Satisfaction and Experience with C-DELTA

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The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources, and technologies.





Author: Dr Pritika Reddy, Fiji National University.

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Commonwealth of Learning
505 Burrard Street, Suite 1650, Box 5
Vancouver, BC V7X 1M6, Canada
Telephone: +1 604 775 8200
Fax: +1 604 775 8210
Web: www.col.org
Email: info@col.org

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## Abbreviations

| | |
|---|---|
| C | confirmation of expectations |
| C-DELTA | Commonwealth Digital Education Leadership Training in Action |
| CI | continuance intention |
| COL | Commonwealth of Learning |
| ECM | expectation confirmation model |
| ICT | information and communication technologies |
| IDT | innovation diffusion theory |
| IS | information system |
| LMS | learning management system |
| MOOC | massive open online course |
| NGO | non-governmental organisations |
| OER | open educational resources |
| PLS-SEM | partial least squares-structural equation modelling |
| PU | perceived usefulness |
| S | satisfaction |
| SEM | structural equation model |
| TAM | technology acceptance model |
| UTAUT | unified theory of acceptance and use of technology |

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# Executive Summary

Digital learning is a modern approach to teaching and learning in the 21st century that has revolutionised education. Online courses and platforms, coupled with interactive multimedia content, allow students the flexibility to learn at their own pace and from any location. In recent years, the importance of digital learning has continued to grow, making education more affordable, accessible, and inclusive for diverse learners. As such, the professional development of teachers has become a crucial component of enhancing the facilitation and effectiveness of digital learning. Ongoing training and education keep educators updated on the latest pedagogies, technological advancements, and subject-matter insights. This professional growth can come from workshops, seminars, and specialised courses, as well as modules and open educational resources designed to improve instructional practices, including online learning through platforms. By investing in professional development, schools, other educational institutions, and ministries empower their teachers to refine their skills and knowledge, ultimately enhancing student learning outcomes.

However, digital learning resources such as these platforms must be evaluated to ensure their quality, relevance, and effectiveness in promoting effective and efficient learning. Evaluation and feedback from experts and learners foster continuous improvements and ultimately enhance the educational experience for learners. The assessment criteria may differ from one platform to another or from one researcher to another and may include content quality, user interface design, accessibility features, and user engagement. By focusing on these factors, educators and institutions can decide which online learning resources best suit their teaching and learning objectives, ensuring a more impactful educational experience for all participants.

The Commonwealth Digital Education Leadership Training in Action (C-DELTA) platform, developed by the Commonwealth of Learning (COL), is a digital learning platform for students and teachers to upgrade their skills in using digital technology. The initiative is for all Commonwealth nations, and it works with governments, educational institutions, teachers, and civil society organisations to assess digital education competencies, develop learning materials around digital education skills, provide teacher training opportunities, and support student achievement and success. In this report, analysis of the data gathered from a survey shows that the participants perceived the C-DELTA learning platform as effective and efficient. They were satisfied with the facilitation strategy, learning content, and quality, and the feedback they received on their work. Moreover, the participants appreciated the C-DELTA initiative because the platform not only enabled them to upgrade their skills but also improved their experiences as educators and created an opportunity for lifelong learning and digital citizenship. Although there was an overall high satisfaction and appreciation of the C-DELTA initiative, some recommendations by the participants were as follows: include more modules on topics such as artificial intelligence and basic concepts of ICT; include some virtual sessions by the C-DELTA team; and reach out to other teachers in the Commonwealth nations. This report offers a detailed analysis of the survey and participants' feedback, which COL can use to improve its facilitation of the C-DELTA platform in the future.

# Introduction

The 21st century witnessed a swift integration of information and communication technology (ICT) tools into education, transforming learning and teaching pedagogies. Technological advancements have provided facilitators/teachers with student-centric pedagogies that cater to diverse learning needs and abilities, and digital and interactive platforms have encouraged student participation, critical thinking, and problem-solving abilities (Kalyani, 2024; Yim & Wegerif, 2024). Instruction has thereby expanded beyond classrooms, encouraging self-directed, self-paced, and lifelong learning. Moreover, the ubiquitous nature of technology has given rise to online platforms, virtual classrooms, and digital resources, promising greater accessibility and flexibility. The appropriate use of ICT tools can nurture 21st-century skills such as communication, collaboration, teamwork, literacy, and effective information sharing (Cosculluela et al., 2024; Stavermann, 2024). However, equitable access, effective utilisation, and adoption remain areas of thoughtful consideration for education stakeholders (Srivastava, 2023). Weber and Greiff (2023) stated that the implementation of technology-based learning systems requires appropriate ICT skills training for providers, facilitators, and learners, which will enable them to navigate the platform, switch between pages, select responses, use drag-and-drop features, and successfully complete tasks. The new era of digital education requires users to harness technology's full potential while ensuring it serves as an enabler to learning, not a barrier.

However, online learning platforms can be complex for learners and facilitators. Learners can feel isolated by their hesitation in online communities due to a lack of trust and confidence, the absence of nonverbal communication, and connection difficulties (Szopinski & Bachnik, 2022). Szopinski and Bachnik also noted that facilitators found preparing online course resources time-consuming; in addition, they experienced issues related to intellectual property rights and a lack of appropriate digital skills to upload resources, prepare online assessments, and provide timely feedback to students. Therefore, academic experts strongly encourage continuous professional development for teachers and online facilitators. Ajani and Govender (2023) highlighted that the education system has undergone significant changes due to the adoption and integration of ICT; however, to ensure ICT-driven learning is effective, teachers need to have good ICT competencies. And to ensure that teachers possess the relevant competencies for 21st-century learning and can leverage technology in a meaningful and impactful way, continuous professional development and capacity building for ICT integration are vital. Such ICT training and capacity building can be established by schools internally or organised by ministries of education; alternatively, teachers can enrol themselves in micro-credential courses and online professional development programmes.

Digital online professional development took a new direction with the introduction of massive open online courses (MOOCs), micro-credential courses, and other professional development programmes for teachers (European Union, 2020). Although online self-development and assessment tools enabled teachers and individuals to upgrade their ICT skills, the wider adoption and success of these self-learning tools remained a challenge. Therefore, researchers, academic experts, and online course providers have employed various theories and frameworks to assess user perceptions and satisfaction with online learning platforms as well as the factors that influence their continued use (Maqableh & Alia, 2021; Mohammed, 2022; Pal & Vanijja, 2020). The literature presents some theoretical models used to evaluate the adoption of digital learning platforms, such as the technology acceptance model (TAM) and a unified theory of acceptance and use of technology (UTAUT), the expectation confirmation model (ECM), the structural equation

model (SEM), and the innovation diffusion theory (IDT) (Abbad, 2021; Alshehri et al., 2020; Andoh & Baah, 2020; Cosculluela et al., 2024).

The current study aims to employ a similar approach to evaluate the adoption of the Commonwealth Digital Education Leadership Training in Action (C-DELTA) platform, developed by the Commonwealth of Learning (COL). After providing an extensive literature review, the evaluation intends to use a theoretical model to understand the impact of the platform upon user behaviour toward adopting digital education for teaching and learning.

Realising the importance of digital education and aiming to help prepare schoolteachers and education ministry officials in Commonwealth countries, COL developed a curricular framework (Brown et al., 2016) and a platform for digital education leadership training, called Commonwealth Digital Education Leadership Training in Action[1] in 2018. C-DELTA is a framework for fostering digital learning and developing skilled citizens for lifelong learning. It aims to empower and educate leaders who can demonstrate how to use ICT effectively and who can influence others around them to use digital technology appropriately and effectively for learning and to support sustainable development. The platform offers self-learning modules integrated with a learning management system facilitating interactive learning. Following the launch of the C-DELTA platform in 2018, an evaluation was conducted to assess its effectiveness (Brown, 2019). The study established the usefulness of the platform and its open content availability. It also made several recommendations for further enhancing the implementation of C-DELTA. At that time, the platform had only 3,155 registered users, and the feedback received was limited. As of now, the platform has grown significantly in terms of access and completion. Thus, the current evaluation of the C-DELTA platform will provide better information about the usefulness, satisfaction, and intention of the individuals who completed the modules on the platform, especially from the perspective of the teachers and practitioners.

## C-DELTA Platform

The C-DELTA platform contains courses/modules developed on the conceptualisation of a holistic approach to digital education leadership (Brown et al., 2016). According to Karunanayaka and Mishra (2025), digital education is a process of teaching and learning that is involved in fostering the capabilities needed for an individual to live, learn, and work in a digital society; it is concerned with fostering individuals' capabilities to participate in the social practices that are required to live and thrive in digital-mediated societies. Additionally, digital education involves working with digital resources that include developing new resources and practices (innovation) and the capability and agency to judge and critique the systems of technology production, reproduction and use, as well as the social structures on which they are built. The C-DELTA platform was developed in consultation with experts and launched in 2018. The platform provides self-learning modules for students and teachers. The target users of the platform are students in higher secondary schools and colleges/universities, teachers/practitioners in higher secondary schools and colleges, and educational managers in ministries, educational institutions, and civil society organisations.

The overall objectives of C-DELTA are to help participants develop digital identities and recognise their digital footprints, create and share digital artefacts that can support learning, and engage in

[1] https://cdelta.col.org/

personal learning networks to learn and lead by example. The C-DELTA platform was designed to promote digital education skills training for both students and teachers, and there is the option to join as an institute or a group. The students receive three modules: Module 1 – Developing Digital Identities, Module 2 – Mobilising Resources, and Module 3 – Engaging with Networks. The teachers receive an additional four modules: Module 4 – Enhancing Access, Module 5 – Making Informed Decisions, Module 6 – Capacity Building, and Module 7 – Cultivating Innovation.

When registering on the platform, users are required to specify whether they are learners or teachers/practitioners and to complete a self-assessment test to evaluate their current understanding of digital education. Users who score above 40 are awarded a certificate, which may motivate them to continue exploring the modules. The certificate's level varies based on their score: Beginner (40–59), Intermediate (60–79), or Fluent (80 and above). This scoring system encourages further engagement to improve their proficiency. Once the self-assessment is completed, users gain access to a dashboard where the available modules can be accessed. The participants receive certificates/digital badges as evidence of their digital education skills at various stages: pre-test (initial self-assessment), module completion, and post-test. C-DELTA was originally envisaged as a community of practice (CoP) where participants can share digital education skills and learning resources and critically engage in promoting digital education skills in their institutions. However, this was not effectively promoted due to privacy concerns. The C-DELTA platform requires users to register but keeps minimal information due to data protection issues. The platform is supported by Moodle instances for the seven learning modules. The system provides seamless integration of the platform with Moodle instances through a single sign-on process.

The previous evaluation of C-DELTA by Brown in 2019 tested system quality, service quality, course quality, perceived usefulness, and learner satisfaction (Brown, 2019). The report indicated that the participants were enrolled in the C-DELTA platform to acquire knowledge about technology and make teaching and learning easy and enjoyable. The resources provided on the platform enabled the participants to improve their digital skills, learn about new digital tools, and prepare themselves for a digitally driven society. The participants were satisfied with the learning resources on digital footprint, digital responsibility, information literacy, and digital identity. The report also highlighted some challenges, such as language issues in different countries; for some participants, the content was complex and lacked interactivity, and they recommended providing support for teachers to implement C-DELTA at their schools. Since the 2019 evaluation, C-DELTA has been implemented in many countries and institutions, and a recent case study in Sri Lanka reports on an example of its success (Karunanayaka & Mishra, 2025).

The current evaluation focuses on teachers who have completed C-DELTA, exploring their perceptions of the platform's usefulness and whether it has contributed to any behavioural changes in their digital practice.

## Literature Review

### *21st-Century Skills and Lifelong Learning*

Individuals and organisations must develop key competencies such as digital literacy, critical thinking, adaptability, data analysis, collaboration skills, and continuous learning to maximise their efficiency and productivity in 21st-century workplaces. These indispensable skills enable

individuals to navigate a technologically advanced world, fostering continuous knowledge acquisition, adaptability, and lifelong learning (Abbad, 2021; Cosculluela et al., 2024). Srivastava (2023) added that equipping individuals with the necessary 21st-century skills promotes inclusivity, equity, quality education, achievement of the United Nations Sustainable Development Goals (SDGs), and a continuous culture of lifelong learning. According to Poquet and Laat (2021), lifelong learning refers to self-directed learning, whether professional or personal development and via formal or informal learning, usually supported by technology. The authors stated that lifelong learning and technology are intertwined, so individuals need to adopt new technologies to continue grasping the skills required in the 21st century.

A study by Thwe and Kalman (2024) also highlighted a strong relationship between lifelong learning and professional competencies, self-efficacy, and teaching and learning approaches. Research shows that the quest for lifelong learning and 21st-century skills is the same for individuals, workplaces, and the education sector. Learning institutes and platforms play a crucial role in equipping individuals with the appropriate 21st-century skills that foster lifelong learning, enabling them to survive and thrive in an ever-evolving technological landscape (Kalyani, 2024; Thwe & Kalman, 2024). Together with learning institutes, online learning platforms, MOOCs, and digital learning environments by organisations such as the United Nations and the Commonwealth of Learning, non-governmental organisations are increasingly fostering the continuous development of 21st-century skills globally (Sharma et al., 2024). Therefore, whether it is an academic institution or an NGO that is working on upskilling individuals, they are using technology as the enabler and driver of learning. The education and training system harnesses technology to facilitate learning, which experts call digital education (European Union, 2020). In all phases and stages of education and training, digital education supports learners regardless of their geographical location, caters for the inclusive, and facilitates more personalised, flexible, and student-centred learning. However, availability, accessibility, and facilitator training are important challenges to consider. Learners and facilitators must have relevant digital competencies to participate actively in digital education environments. For learners, competencies such as finding, evaluating, and using online information, proficiency in digital tools and platforms, effective online communication, and adaptability are necessary (Alshehri et al., 2020; Reddy et al., 2023; Fau & Moreau, 2018). Facilitators and educators also need to have the relevant skills, such as effectively using digital tools and platforms and incorporating them into pedagogy, fostering effective digital learning environments, and ensuring that students are aware of and understand the ethics of the digital education environment (Stavermann, 2024; Teo et al., 2021). Having appropriate digital skills for a digital education environment will enable individuals to participate effectively in the learning and teaching processes, thrive in digital workplaces, and foster an environment of lifelong learning.

### *Digital Education and the Professional Development of Teachers*

Digital learning spaces have transformed teaching and learning, creating more opportunities for learners and educators. The learning environment and teachers' roles have changed. Teachers now need specific competencies to support students' active knowledge construction in digital learning environments. According to Karunanayaka and Mishra (2025), with the increased use of digital technologies in learning, teachers' digital literacy competencies and professional development have become crucial, as a lack of teacher competencies hinders the integration and implementation of digital technologies. Stavermann (2024) also states that teachers' digital competencies influence

the quality of teaching and student learning outcomes. Teachers need to understand the effective use of digital technology for teaching, advocating, influencing, and building the capacity of others (Andoh & Baah, 2020). Hence, teacher professional development is being emphasised globally.

According to Ajani and Govender (2023), teacher professional development refers to all activities or programmes that can be organised for teachers to enhance their classroom performance and ultimately boost students' academic achievement. Fogaca et al. 2024 added that professional development involves the development of professionalism, which encompasses behaviours such as ethical engagement, self-reflection, excellence, civility, collaboration, cultural humility, and social responsibility. Experts have also recommended that ICT-driven or ICT-based professional development programmes be organised so that teachers can effectively use ICT in their classrooms to support their pedagogical practices. For example, teachers can engage in specialised or introductory instruction in a variety of areas, professional development opportunities like seminars and education conferences, training and certification plans, online programmes in ICT, MOOCs, and mentoring programmes (Ajani & Govender, 2023). The authors added that ICT can be used as a tool and method and can be integrated into the teaching and learning process. ICT-driven professional development programmes, therefore, will enable teachers to understand how to appropriately and effectively integrate ICT into learning.

Academics, experts, training institutions, and relevant stakeholders must design quality ICT-based professional development activities and programmes ensuring equitable access to improve the quality of education across schools. Online professional development activities for teachers are organised by various stakeholders, and the quality of such activities is evaluated by their duration, the qualifications of the professional development staff, content relevance, active learning, cooperation, and coherence (Karunanayaka & Mishra, 2025; Owusu, 2022; Popova et al., 2022). Experts have also conveyed their concerns about the strategies used to implement and conduct online professional development activities for teachers. According to Owusu (2022), professional development programmes need to be subject- specific so that teachers' appropriate skills are upgraded and sustainable, and the programme must be satisfactory and engaging for participants. The literature bears witness to the many theoretical models being employed to evaluate the effectiveness of online professional development programmes. This study utilises a comparable approach to evaluating C-DELTA as an online professional development programme.

## Theoretical Background for Evaluation of Online Learning Platforms

Several studies have evaluated the usability of online professional development programmes. As mentioned earlier, the evaluation methods, theories, and frameworks differ; however, the studies highlight their set of success factors for an effective and efficient online learning platform. Table 1 presents a summary of selected studies conducted from 2020 to 2025. The search terms "Evaluation" and "Online Learning Platforms," plus evaluation models were used to search for articles. The expectation confirmation model (ECM), technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT), and information system (IS) success model were used to evaluate users' acceptance, behaviour, and continuance intention toward the online learning platforms.

**Table 1. Summary of Studies Based on Evaluation of Online Learning Platforms**

| Source | Paper Detail | Theories Used | Success Factors Identified |
|---|---|---|---|
| Zheng et al. (2025) | Factors influencing behavioral intention to use e-learning in higher education during the COVID-19 pandemic: A meta-analytic review based on the UTAUT2 model | UTAUT2 | Performance Expectation<br>Effort Expectation<br>Social Influence<br>Facilitating Conditions<br>Hedonic Motivation<br>Price Value<br>Habit<br>Behavioural Intention |
| Qi (2025) | A modified technology acceptance model for digital learning in Chinese universities | Extended TAM | Perceived Ease of Use<br>Perceived Usefulness<br>Policy<br>Attitude<br>Perceived Interpersonal Interaction<br>Actual Usage<br>Intention to Continue Use |
| Wut et al. (2024) | A study of continuance use intention of an online learning system after Coronavirus disease 2019 pandemic outbreak | ECM | Perceived Usefulness<br>Confirmation<br>Satisfaction<br>Continuous Use Intention |
| Obeid & Ibrahin (2024) | Extended expectation confirmation model to examine users' continuous intention toward the utilization of e-learning platforms | Extended ECM | Confirmation<br>Computer Self-Efficacy<br>Interactivity<br>Perceived Enjoyment<br>Perceived Usefulness<br>Satisfaction<br>Social Influence |
| Xi & Tian (2023) | A study on the continuous usage intention of an online education system for students of art colleges | ECM-IT model | Perceived Ease of Use<br>Perceived Usefulness<br>Expectation Confirmation<br>Satisfaction<br>Continued Use Intention |
| Lee et al. (2023) | Quality factors that influence the continuance intention to use MOOCs: An expectation-confirmation perspective. | ECM | Perceived Usefulness<br>Expectation Confirmation<br>Satisfaction<br>Continued Use Intention |
| Patil & Undale (2023) | Willingness of university students to continue using e-learning platforms after compelled adoption of technology: Test of an extended UTAUT model | Extended UTAUT | Performance Expectancy<br>Effort Expectancy<br>Social Influence<br>Facilitating Conditions<br>Behavioural Intentions<br>Use Behaviour<br>Gender<br>Age<br>Experience<br>Voluntary Use |
| Zhao & Khan (2022) | The students' flow experience with the continuous intention of using online English platforms | ECM | Confirmation<br>Perceived Enjoyment<br>Perceived Vividness<br>Challenge<br>Situational Involvement<br>Perceived Usefulness<br>Satisfaction |

| Source | Paper Detail | Theories Used | Success Factors Identified |
|---|---|---|---|
| | | | Continuance Intention |
| Zhang et al. (2022) | Assessing quality of online learning platforms for in-service teachers' professional development: The development and application of an instrument | IS success model | Information Quality<br>System Quality<br>Service Quality<br>Usage Intentions<br>User Satisfaction<br>Net System Benefits |
| Dhiman et al. (2022) | User attitude towards e-learning platforms: An insight through the expectation confirmation model and the affordance theory lens | ECM and affordance theory | Technological Affordances<br>Social Affordances<br>Pedagogical Affordances<br>Confirmation<br>Perceived Usefulness<br>Satisfaction<br>Continuance Intention |
| Barreto et al. (2021) | University students' intention to continue using online learning tools and technologies: An international comparison | Modified ECM | Confirmation<br>Perceived Usefulness<br>Satisfaction<br>Continuance Intention<br>Self-Management Learning<br>Anxiety<br>Habit |
| Althahi (2021) | Towards understanding the students' acceptance of MOOCs: A unified theory of acceptance and use of technology (UTAUT) | UTAUT | Performance Expectancy<br>Effort Expectancy<br>Social Influence<br>Facilitating Conditions<br>Behavioural Intentions<br>Use Behaviour<br>Gender<br>Age<br>Experience<br>Voluntary Use |
| Cui et al. (2021) | Research on K-12 teachers' continuance intention of online teaching-based on the extended ECM-IS model | ECM-IS | Confirmation<br>Perceived Usefulness<br>Satisfaction<br>Continuance Intention<br>Self-Efficacy<br>Subjective Norms<br>Information Literacy<br>Perceived Risk<br>Innovation<br>Facilitating Conditions |
| Sihao et al. (2020) | The influence mechanism of students' continuous studying intention on online education live-broadcasting platform | ECM | Perceived Interactivity<br>Perceived Usefulness<br>Confirmation<br>Self-Efficacy<br>Satisfaction<br>Continuous Usage |
| Zhang et al. (2020) | Factors affecting Chinese university students' intention to continue using virtual and remote labs | ECM | Perceived Usefulness<br>Expectation Confirmation<br>Satisfaction<br>Continued Use Intention |

A study by Zheng et al. (2025) used the UTUAT2 model to explore the factors that influenced the use of e-learning in higher education. The key factors evaluated were performance expectation,

effort expectation, social influence, facilitating conditions, hedonic motivation, price value, and habit. Since there was a high correlation between the seven variables, indicating they influence the continuing behaviour of e-learning users, the authors suggested that e-learning providers must focus on all these factors to ensure the successful implementation of an e-learning system. Moreover, the study highlighted the role of facilitators in the e-learning system. Since students need instant feedback and guidance, facilitators must also be appropriately trained to manage the e-learning system well and support students whenever they need assistance. The authors stated that some facilitators might be new and need time to adjust to the e-learning system. As such, e-learning providers should provide professional development programmes for teachers. Qi's (2025) study utilised a modified TAM to study the adoption of digital learning in Chinese universities. The study results showed that users' attitudes influence the continuous usage of digital technology for learning. Other factors such as perceived ease of use, perceived usefulness, policy, and perceived interpersonal interaction also influence the intention to continue using digital technology. The authors recommend that online learning providers focus on the quality of the courses they offer and provide training programmes for teachers and students so that challenges related to digital technology usage in learning can be addressed and removed.

Several studies have used the ECM to investigate the continuance intention to use online learning and have identified that perceived usefulness, confirmation, and satisfaction influence the continuance intention to use, specifically emphasising that learners' satisfaction and the perceived usefulness of the system significantly impact their continuous use (Lee et al., 2023; Obeid et al., 2024; Sihao et al., 2020; Wut et al., 2024; Xi & Tian, 2023; Zhang et al., 2020). Hence, providers should improve the usefulness of their online learning systems. At the same time, teachers should evaluate design, content, and facilitation so that students are satisfied with and continue to use the system. Lee et al. (2023) stated that teachers or facilitators need to be more vigilant and curate learning resources to match different learning needs. This also means teachers need to remain up to date about new technologies and continuously upgrade their digital skills. Interactivity, social influences, computer self-efficacy, and perceived enjoyment also influence learners' intention to use online learning systems.

The studies by Patil and Undale (2023) and Altalhi (2021) used the UTAUT model to study the influence of performance expectancy, effort expectancy, social influence, facilitating conditions, behavioural intentions, and other contributing factors such as gender, age, experience, and voluntary use on whether users would continue to use e-learning systems. The results showed that the performance of the e-learning systems and the availability of resources such as digital devices and a fast Internet connection are crucial determinants for the successful adoption of e-learning systems. One drawback of the Patil and Undale (2023) study was that not all factors initially chosen for the study were relevant to its context. The authors therefore suggested that future research reconsider some of the factors in the UTAUT model when evaluating the adoption of e-learning systems.

Zhang et al.'s (2022) study used the IS success model to evaluate the quality of online learning platforms for optimising learning. The content quality, technical quality, and service quality were used to evaluate the quality of the online learning platform. The findings showed that these three factors have a significant impact on users' learning experience. On the other hand, a study by Dhiman et al. (2022) used the ECM to evaluate users' attitudes towards e-learning platforms. The

results show that the perceived usefulness of the e-learning platform leads to satisfaction and continuance intention to use online systems. Moreover, confirmation leads to the perceived usefulness of technology. The authors therefore suggested that e-learning providers use the ECM to devise better facilitation strategies in technology-facilitated environments.

Barreto et al. (2021) used a modified ECM to evaluate university students' continuance intention to use online learning systems in Spain, Chile, and Jordan. This study used the factors of confirmation, perceived usefulness, satisfaction, continuance intention, self-management, anxiety, and habit. The results showed that different factors significantly influenced the continuance intention of students in the three countries. For example, the factors of perceived usefulness, satisfaction, and confirmation influenced the continuance intention of the students in Chile. In contrast, the Jordanian students perceived usefulness as important but not satisfaction. The students from all three countries perceived self-management of learning as an important factor influencing their continuance intention to use the online learning system.

Researchers, experts, and online learning providers have highlighted that evaluating user perceptions, attitudes, and satisfaction is imperative to ensure the successful adoption and continuous use of online learning platforms. Moreover, evaluating factors such as teacher competency, adaptability, and familiarity with the online learning platform is also essential to ensure successful, more engaging and interactive delivery of the content. Prior studies have shown that facilitating conditions impact the adoption and continuity of online learning platforms.

After a critical evaluation of the various theories in Table 1, the current study uses the ECM to evaluate the effectiveness of the C-DELTA platform. The ECM, which was initially developed by Bhattacherjee (2001), has emerged in the literature as a robust framework for understanding user behaviour in information systems, particularly in online learning environments.

The ECM framework (Figure 1) used in this study consists of four primary constructs that work together to explain user behaviour:

1. ***Perceived Usefulness***: This represents users' perception of the benefits they gain from using the platform. For COLcommons.org, this includes the value of professional development, knowledge acquisition, and certification received through the courses.
2. ***Confirmation of Expectations***: This measures the extent to which users' initial expectations about the platform are met or exceeded through their actual experience. This includes aspects such as course quality, learning convenience, and platform functionality.
3. ***Satisfaction***: This reflects users' overall satisfaction with their platform experience, which is influenced by both confirmation of their expectations and perceived usefulness.
4. ***Continuance Intention***: This represents users' intention to continue using the platform for future learning needs, which is directly influenced by their satisfaction and perceived usefulness. This is also a reflection of the user's behaviour.

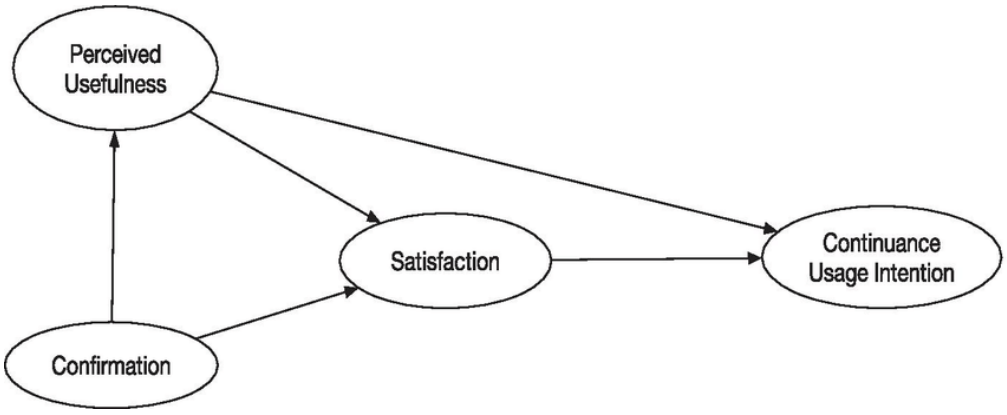


**Figure 1. The expectation confirmation model.**
Adapted from Lee et al. (2023) and Wut et al. (2024).

The findings of this research will enable relevant stakeholders to understand the platform's impact on changing user behaviour to encourage the adoption of digital education for teaching and learning.

***Research Objectives***
The primary objectives of this study are as follows:

1. Analyse the platform data to understand the completion rate for teachers, and the countries where C-DELTA has had more success.
2. Evaluate the relationship between learner expectations and perceived satisfaction with the C-DELTA platform.
3. Identify key factors influencing user satisfaction with the platform.
4. Analyse the determinants of users' continuance intention.
5. Develop recommendations for improving the platform, based on user feedback and analysis.

Based on the theoretical backroad and the expectation-confirmation model, the following hypotheses were formulated for the study:

Hypothesis 1 (H1): Perceived usefulness impacts users' continuance intention to use.
Hypothesis 2 (H2): Perceived usefulness impacts satisfaction.
Hypothesis 3 (H3): Confirmation impacts users' satisfaction.
Hypothesis 4 (H4): Confirmation impacts users' perceived usefulness.
Hypothesis 5 (H5): Satisfaction impacts continuance intention to use.

# Methodology

***Research Design and Instrument Used***
The study used a survey research design to study the perceptions, attitudes, and satisfaction of the users of the C-DELTA platform. The method involves investigating the relationship between the four factors in the ECM, as shown in Figure 1: confirmation, satisfaction, perceived usefulness, and continuance intention. We conducted a review of prior studies using the expectation confirmation model as the theoretical framework (She et al., 2024; Wut et al., 2024; Lee et al.,

2023; Zhao & Khan, 2022; Barreto et al., 2021; Sihao et al., 2020; Zhang et al., 2020; Periera, 2018; Junjie, 2017) to design the survey tool for data collection. Some studies have utilised more than the four factors of the ECM; however, for this study, we finalised 20 items under four dimensions (see Annex 1 and Table 2). Confirmation, satisfaction, perceived usefulness, and continuance intention were used for this study. The items were formulated on a Likert scale of one to five: strongly disagree, disagree, neutral, agree, and strongly agree.

**Table 2. Questionnaire Items**

| Items | Total Number of Items | Cronbach's $\alpha$ |
|---|---|---|
| Perceived Usefulness (PU) | 5 | 0.90 |
| Confirmation (C) | 4 | 0.88 |
| Satisfaction (S) | 6 | 0.94 |
| Continuance Intention (CI) | 5 | 0.93 |
| **Overall** | | **0.97** |

The questionnaire was valid, as the items were reviewed by two experts before being used as the survey tool. For reliability, the Cronbach's alpha test was performed. Table 2 shows the Cronbach's alpha value for each construct and the overall value. Since the values were all greater than 0.88, the questionnaire was deemed to be reliable.

***Population and Sample***

In February 2025, the C-DELTA platform had over 39,520 users from Commonwealth countries, including 11,156 teachers/practitioners. Of these, 5,538 teachers/practitioners had completed C-DELTA and received a certificate, either based on the pre-test score or by completing the post-programme test on the platform. The survey was sent to all these users via an email containing a link to the online survey. We received only 197 responses usable for the analysis. Several researchers suggest a sample-to-item ratio of not less than five to one (Gorsuch, 1983; Memon et al., 2020). Considering there were 20 items in the survey, the response rate was considered adequate.

***Data Analysis***

For data analysis, R Studio version 2024.12.1[2] was used. The mean and standard deviation values were calculated to evaluate the user rating for each construct of the ECM. Partial least squares–structural equation modelling was performed to validate the model and test the hypotheses. The data collected from the platform were also analysed to obtain an overview of the impact of the platform around the Commonwealth.

# Results and Findings

***Platform Data Analysis***

Table 3 presents the total enrolment data for the C-DELTA platform. There were 39,594 participants on the platform, of which 11,195 (28.27%) were teachers/practitioners and 28,399 (71.73%) were students. The female participants were more numerous than the males: 22,995 (58.07%) were females, 16,547 (41.79%) were males, and 52 participants chose not to indicate their gender. With respect to location, 39,520 (99.81%) participants were from Commonwealth

[2] https://posit.co/download/rstudio-desktop

countries, of which 11,156 (28.22%) were teachers/practitioners and 28,364 (71.78%) were students, while 74 enrolled participants were from non-Commonwealth countries.

**Table 3. C-DELTA Enrolment Figures**

| Enrolment on the Platform | Male | Female | Not Indicated | Total | From Commonwealth |
|---|---|---|---|---|---|
| Teachers/Practitioners | 4,002 | 7,152 | 41 | 11,195 | 11,156 |
| Students | 12,545 | 15,843 | 11 | 28,399 | 28,364 |
| **Totals** | **16,547** | **22,995** | **52** | **39,594** | **39,520** |

Table 4 shows that 18,842 participants completed C-DELTA and received a completion certificate. Of these, 5,548 (29.44%) were teachers/practitioners and 13,284 (70.56%) were students. More females completed the course than males: 10,879 (57.73%) were females and 7,949 (42.19%) were males. Commonwealth countries accounted for 18,822 (99.89%) participants, of whom 5,538 were teachers/practitioners and 13,284 were students.

**Table 4. Completion Data for C-DELTA**

| Completion | Male | Female | Totals | From Commonwealth |
|---|---|---|---|---|
| Teachers/Practitioners | 2,015 | 3,519 | 5,548 | 5,538 |
| Students | 5,934 | 7,360 | 13,294 | 13,284 |
| | 7,949 | 10,879 | **18,842** | **18,822** |

Table 5 shows the number of participants by country. The majority of the participants were from South Africa – 3,563 (64.50%), followed by Mauritius – 431 (7.80%), Belize – 376 (6.80%), Sri Lanka – 311 (5.62%), Bangladesh – 255 (4.61%), Saint Lucia – 152 (2.75%), India – 120 (2.17%), and Kenya – 111 (2.00%), while rest of the countries had fewer than 100 participants.

**Table 5. Completed Participants by Country**

| Country | Number of Participants |
|---|---|
| Antigua and Barbuda | 55 |
| Australia | 1 |
| Bangladesh | 255 |
| Belize | 376 |
| Botswana | 1 |
| Brunei Darussalam | 1 |
| Canada | 5 |
| Eswatini | 2 |
| Fiji | 3 |
| Ghana | 4 |
| Grenada | 2 |
| Guyana | 1 |
| India | 120 |
| Jamaica | 1 |
| Kenya | 111 |
| Lesotho | 1 |

| Country | Number of Participants |
|---|---|
| Malaysia | 19 |
| Malta | 1 |
| Mauritius | 431 |
| New Zealand | 3 |
| Nigeria | 6 |
| Papua New Guinea | 3 |
| Saint Lucia | 152 |
| Seychelles | 21 |
| Solomon Islands | 2 |
| South Africa | 3,563 |
| Sri Lanka | 311 |
| Trinidad and Tobago | 2 |
| Uganda | 67 |
| United Kingdom | 3 |
| Zambia | 1 |

Table 6 presents the participants' pre-test and post-test scores. For the pre-test, 4,700 participants (87.37%) scored more than 40, while 222 participants scored less than 40. The post-test was not taken by 2,625 (47.4%) of the participant teachers. The 222 participants who scored less than 40 on the pre-test improved their average post-test scores from 30.85 to 56.6, indicating the effectiveness of the modules. Of those who took the post-test, the scores in the range of 40–59 increased to 30.62%, and those 80 and above increased to 17.51%. This is also indicative of the modules' usefulness for improving learning.

**Table 6. Pre-test and Post-test Scores.**

| Pre-test Score | Number of Participants | Percentage | Post-test Score | Number of Participants | Percentage |
|---|---|---|---|---|---|
| 0–39 | 222 | 4.01 | | | |
| 40–59 | 4,402 | 79.49 | 40–59 | 892 | 30.62 |
| 60–79 | 757 | 13.67 | 60–79 | 1,511 | 51.87 |
| 80 and above | 157 | 2.83 | 80 and above | 510 | 17.51 |

***Respondents' Demographics***

Table 7 presents the demographics of the participants. A total of 197 people participated in the survey, of whom 95 were females (48.22%) and 100 were males (50.76%). Three participants (1.52%) were below the age of 20, 21 participants (10.65%) were 21–30, 65 participants (32.99%) were 31–40, 48 participants (24.36%) were 41–50, 59 participants (29.94%) were 51–60, and three participants (1.52%) were over 60. The participants were engaged in primary, secondary, vocational, college, and university teaching, with teaching experience ranging from one to over 30 years. Fifty-seven participants (28.93%) were from primary schools, 69 (35.00%) were from secondary schools, 13 (6.59%) were from vocational schools, and 51 (25.88%) were from colleges and universities. The participants' qualifications also varied: 23 participants (11.67%) had a diploma, 45 (22.84%) had a degree, 89 (45.17%) had a postgraduate degree, and 19 (9.60%) had a doctorate qualification, while 23 (11.67%) had other qualifications. The participants belonged to

different disciplines: Agriculture and Natural Resources – 3 (1.52%), Commerce and Management – 25 (12.69%), Engineering and Technology – 49 (24.87%), Fine and Performing Arts – 2 (1.01%), Health and Medical Sciences – 1 (0.50%), Humanities – 48 (24.36%), Natural Science – 43 (21.82%), and Social Sciences – 23 (11.67%). Their years of teaching experience were as follows: 1–5 – 37 participants (18.78%), 6–10 – 34 participants (17.25%), 11–15 – 26 participants (13.19%), 16–20 – 27 participants (13.70%), 21–25 – 35 participants (17.76%), 26–30 – 18 participants (9.13%), and above 30 – 21 participants (10.65%).

**Table 7. Demographics of the Participants**

| Criteria | Category | Number of Respondents |
|---|---|---|
| Gender | Female | 95 |
| | Male | 100 |
| | Prefer not to indicate | 2 |
| Age group | Below 20 | 3 |
| | 21-30 | 21 |
| | 31-40 | 65 |
| | 41-50 | 48 |
| | 51-60 | 59 |
| | Above 60 | 3 |
| Engaged in | Primary | 57 |
| | Secondary | 69 |
| | Vocational | 13 |
| | College and university | 51 |
| | Other | 10 |
| Highest educational qualification | Diploma | 23 |
| | Graduate | 45 |
| | Postgraduate | 89 |
| | Doctorate | 19 |
| | Other | 23 |
| Discipline | Agriculture and Natural Resources | 3 |
| | Commerce and Management | 25 |
| | Engineering and Technology | 49 |
| | Fine and Performing Arts | 2 |
| | Health and Medical Sciences | 1 |
| | Humanities | 48 |
| | Natural Science | 43 |
| | Social Sciences | 23 |
| Years of teaching experience | 1–5 | 37 |
| | 6–10 | 34 |
| | 11–15 | 26 |
| | 16–20 | 27 |
| | 21–25 | 35 |
| | 26–30 | 18 |
| | above 30 years | 21 |

### *ECM Descriptive Statistics*

Table 8 presents participants' ratings on using the C-DELTA learning platform. The report employed the ECM to analyse participant feedback using the four constructs: perceived usefulness, confirmation, satisfaction, and continuance intention. The values in brackets are the percentage value of the responses.

**Table 8. Descriptive Statistics on the ECM Scale**

| Variable | Statement | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Mean | SD |
|---|---|---|---|---|---|---|---|---|
| PU1 | The use of the C-DELTA platform improved my performance as a teacher. | 78 (39.59) | 95 (48.22) | 16 (8.12) | 4 (2.03) | 6 (3.04) | 4.18 | 0.89 |
| PU2 | The C-DELTA platform helped me think more clearly and gave me ideas for enhancing my work using online learning platforms. | 58 (29.44) | 89 (45.17) | 17 (8.62) | 6 (3.04) | 4 (2.03) | 4.13 | 0.84 |
| PU3 | The C-DELTA platform helped increase my effectiveness in integrating ICT into teaching and learning. | 65 (32.99) | 85 (43.14) | 15 (7.61) | 3 (1.52) | 5 (2.53) | 4.19 | 0.84 |
| PU4 | Overall, the C-DELTA platform is useful for developing skills related to digital education. | 89 (45.17) | 79 (10.10) | 21 (10.65) | 3 (1.52) | 4 (2.03) | 4.25 | 0.86 |
| C1 | My experience using the C-DELTA platform was better than I expected. | 66 (33.50) | 102 (51.77) | 20 (10.15) | 7 (3.55) | 2 (1.01) | 4.11 | 0.83 |
| C2 | The C-DELTA platform met most of my expectations from an online learning platform. | 74 (37.56) | 96 (48.73) | 21 (10.65) | 3 (1.52) | 4 (2.03) | 4.17 | 0.83 |
| C3 | The service/support provided by the C-DELTA platform was better than expected. | 65 (32.99) | 99 (50.25) | 23 (11.67) | 6 (3.04) | 4 (2.03) | 4.09 | 0.86 |
| S1 | I am satisfied with the services provided by the C-DELTA platform. | 77 (39.08) | 100 (50.76) | 11 (5.58) | 4 (2.03) | 5 (2.53) | 4.24 | 0.79 |
| S2 | I am satisfied with the quality of content provided on the C-DELTA platform. | 75 (38.07) | 100 (50.76) | 12 (6.09) | 5 (2.53) | 4 (2.03) | 4.17 | 0.87 |
| S3 | I am satisfied with the learning process of the C-DELTA platform. | 77 (39.08) | 100 (50.76) | 14 (7.10) | 3 (1.52) | 3 (1.52) | 4.21 | 0.81 |
| S4 | I am pleased with the learning experience on the C-DELTA platform. | 69 (35.02) | 107 (54.31) | 13 (6.59) | 3 (1.52) | 5 (2.53) | 4.16 | 0.85 |
| CI1 | I intend to continue using C-DELTA platform services. | 83 (42.13) | 92 (46.70) | 15 (7.61) | 3 (1.52) | 4 (2.03) | 4.23 | 0.85 |
| CI2 | I strongly recommend the C-DELTA platform to others. | 111 (56.34) | 68 (34.51) | 10 (5.07) | 3 (1.52) | 5 (2.53) | 4.04 | 0.85 |
| CI3 | I am willing to use the C-DELTA platform in the future. | 77 (39.08) | 96 (48.73) | 16 (8.12) | 3 (1.52) | 5 (2.53) | 4.19 | 0.86 |
| CI4 | I foresee using the activities and skills learnt using the C-DELTA platform in the future. | 85 (43.14) | 88 (44.67) | 15 (7.61) | 3 (1.52) | 5 (2.53) | 4.25 | 0.84 |

*Perceived Usefulness*

For *perceived usefulness*, PU1, approximately 39.59% of the participants strongly agreed that using the C-DELTA platform improved their performance as a teacher, 48.22% agreed, 8.12% had

neutral views, 2.03% disagreed, and 3.04% strongly disagreed. For PU2, " The C-DELTA platform helped me think more clearly and gave me ideas for enhancing my work using online learning platforms," 29.44% strongly agreed, 45.17% agreed, 8.62% had neutral views, 3.04% disagreed, and 2.03% strongly disagreed. For PU3, "The C-DELTA platform helped increase my effectiveness in integrating ICT in teaching and learning," 32.99% strongly agreed, 43.14% agreed, 7.61% had neutral views, 1.522% disagreed, and 2.53% strongly disagreed. For PU4, "Overall, the C-DELTA platform is useful for developing skills related to digital education" 45.17% strongly agreed, 40.10% agreed, 10.65% had neutral views, 1.55% disagreed, and 2.03% strongly disagreed.

The participants' mean responses for PU are above four, indicating they agree that they have gained a lot from the C-DELTA online learning course in terms of professional development, knowledge acquisition, and certification received. The participants added that the course had further improved their IT skills, enabled them to upgrade their teaching and learning processes, enhanced their critical thinking skills, and enabled them to promote inclusive education practices in their schools.

*Confirmation*

For the construct *Confirmation*, C1, " My experience using the C-DELTA platform was better than I expected," 33.50% strongly agreed, 51.77% agreed, 10.15% had neutral views, 3.55% disagreed and 1.01% strongly disagreed. For C2, "The C-DELTA platform met most of my expectations from an online learning platform," 37.56% strongly agreed, 48.73 % agreed, 10.65 % had neutral views, 1.52% disagreed, and 2.03% strongly disagreed. For C3, "The service/support provided by the C-DELTA platform was better than expected," 32.94% strongly agreed, 50.25% agreed, 11.67% had neutral views, 3.04% disagreed, and 2.03% strongly disagreed.

The mean for C1–C3 is above four, indicating that the participants' expectations regarding course quality, learning convenience, and platform functionality were above expectations. The participants indicated they were impressed that C-DELTA offered an abundance of information on digital literacy and digital citizenship, and the consistent and pre-recorded modules made their learning easier. Moreover, they appreciated how the course was managed, designed, and facilitated.

*Satisfaction*

For Satisfaction, S1, "I am satisfied with the services provided by the C-DELTA platform." 39.08% of the participants strongly agreed, 50.76% agreed, 5.58% had neutral views, 2.03% disagreed, and 2.53% strongly disagreed. For S2, "I am satisfied with the quality of content provided on the C-DELTA platform," 38.07 % strongly agreed, 50.76% agreed, 6.09% had neutral views, 2.53% disagreed, and 2.03% strongly disagreed. For S3, "I am satisfied with the learning process of the C-DELTA platform," 39.08% of the participants strongly agreed, 50.76% agreed, 7.10% had neutral views, 1.52% disagreed, and 1.52% strongly disagreed. For S4, "I am pleased with the learning experience on the C-DELTA platform," 35.02% of the participants strongly agreed, 54.31% agreed, 6.59% had neutral views, 1.52% disagreed, and 2.53% strongly disagreed.

For *Satisfaction* (S1–S4), the mean values were also above four, indicating the participants were satisfied with their platform experience. The participants were satisfied with respect to content, learning approaches, module usability, organisation and design, badges and certificates, and engagement and collaboration with their peers. The participants also made the following recommendations to the C-DELTA team for how their satisfaction could be further increased:

opening more modules to further upgrade their skills, reaching out to more teachers and schools, integrating more practical exercises, mobile app deployment, providing more OER for each module, making modules more interactive, and including content on artificial intelligence.

*Continuance Intention*

For *Continuance Intention*, CI1, "I intend to continue using C-DELTA platform services," 42.13% of the participants strongly agreed, 46.70% agreed, 7.61% had neutral views, 1.52% disagreed, and 2.03% strongly disagreed. For CI2, "I strongly recommend the C-DELTA platform to others," 56.34% of the participants strongly agreed, 34.51% agreed, 5.07% had neutral views, 1.52% disagreed, and 2.53% strongly disagreed. For CI3, "I am willing to use the C-DELTA platform in the future," 39.08% of the participants strongly agreed, 48.73% agreed, 8.12% had neutral views, 1.52% disagreed, and 2.53% strongly disagreed. For CI4, "I foresee using the activities and skills learnt using the C-DELTA platform in the future," 43.14% of the participants strongly agreed, 44.67% agreed, 7.61% had neutral views, 1.52% disagreed, and 2.53% strongly disagreed. Overall, the participants were satisfied with using the C-DELTA learning platform.

The mean value for CI was above four, indicating the participants intended to continue using C-DELTA. The participants felt the C-DELTA platform provides training opportunities and drives lifelong learning, the modules are relevant to digital education leadership, and the course is affordable.

***Relationship Amongst Different Constructs of the ECM***

This section of the report presents the model's reliability, model fit, the relationship between the different constructs in the ECM, and the findings for the hypothesis test using partial least squares structural equation modelling (PLS-SEM).

*Reliability of the model and model fit*

Table 9 presents the factor loading and Cronbach's alpha values for each variable and construct. This test measured the internal consistency of the constructs in the model. The values lie between 0.87 and 0.97, indicating that the model has good internal consistency, reliability, and validity. The AVE (average variance extracted) and CR (composite reliability) are used to assess convergent validity. For this study, the AVE and CR values are above 0.7, indicating a reliable measurement. Therefore, the responses of the participants are true reflections of the effectiveness of the C-DELTA learning platform.

**Table 9. Reliability of the Model**

| Construct | Variable | Factor Loading | AVE | CR | Cronbach's $\alpha$ |
|---|---|---|---|---|---|
| Perceived usefulness | PU1 | 0.88 | 0.70 | 0.90 | 0.90 |
| | PU2 | 0.90 | | | |
| | PU3 | 0.87 | | | |
| | PU4 | 0.88 | | | |
| Confirmation | C1 | 0.89 | 0.72 | 0.88 | 0.88 |
| | C2 | 0.91 | | | |
| | C3 | 0.90 | | | |
| Satisfaction | S1 | 0.89 | 0.80 | 0.94 | 0.94 |
| | S2 | 0.94 | | | |
| | S3 | 0.94 | | | |
| | S4 | 0.94 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Continuance intention | CI1 | 0.88 | 0.77 | 0.93 | 0.93 |
| | CI2 | 0.91 | | | |
| | CI3 | 0.93 | | | |
| | CI4 | 0.92 | | | |

Table 10 presents the structural model's fit analysis results. According to Lee (2023), TLI (Turker–Lewis index) > .90 and CFI (comparative fit index) > .90 are considered suitable for the study. The results for this study have a CFI value of 0.946 and a TLI value of 0.932, which are greater than 0.90, indicating the ECM model was suitable to use for the study.

**Table 10. Fitness of the Structural Model**

| | $x^2$ | df | $x^2$/df | TLI | CFI | RMSEA* |
|---|---|---|---|---|---|---|
| Structural model | 271.988 | 84 | 18.953 | 0.932 | 0.946 | 0.108 |

Note: *RMSEA = root mean square error of approximation.

*Correlation analysis*

Table 11 shows the results of the correlation analysis between each construct; the values range from 0.83 to 0.91, indicating high internal consistency among the constructs. Cronbach's alpha ranges between 0.7 and 0.95, which is considered acceptable (Tavakol & Dennick, 2011), indicating perceived usefulness, confirmation of expectations, satisfaction, and continuing intention are interrelated.

**Table 11. Correlation Between Constructs**

| | **PU** | **C** | **S** | **CI** |
|---|---|---|---|---|
| PU | 0.833 | | | |
| C | 0.845 | 0.847 | | |
| S | 0.901 | 0.901 | 0.897 | |
| CI | 0.906 | 0.856 | 0.916 | 0.879 |

*p-value < 0.05*

*Estimates of the mediating effect*

Table 12 presents the results of testing the research hypothesis. The results show that perceived usefulness impacted satisfaction and continuance intention to use the C-DELTA platform, as the relationship was established with a *p*-value < 0.01. Confirmation impacted perceived usefulness and satisfaction, with a *p*-value < 0.01 establishing a relationship. Satisfaction impacted the continuance intention of the participants, with a *p*-value < 0.01 establishing a relationship. The standardised (std) and unstandardised (Unstd) values are greater than 0.80, indicating a good relationship between the variables. Figure 2 shows the path model of the relationship established between the constructs.

**Table 12. Estimates of the Mediating Effect**

| **Hypothesis** | **Path** | **Unstd** | **SE** | **P** | **std** | **Result** |
|---|---|---|---|---|---|---|
| H1 | PU → S | 0.917 | 0.032 | < 0.001 | 0.899 | Established |
| H2 | C → PU | 0.839 | 0.038 | < 0.001 | 0.847 | Established |
| H3 | PU → CI | 0.935 | 0.031 | < 0.001 | 0.904 | Established |
| H4 | C → S | 0.910 | 0.031 | < 0.001 | 0.904 | Established |
| H5 | S → CI | 0.929 | 0.029 | < 0.001 | 0.916 | Established |

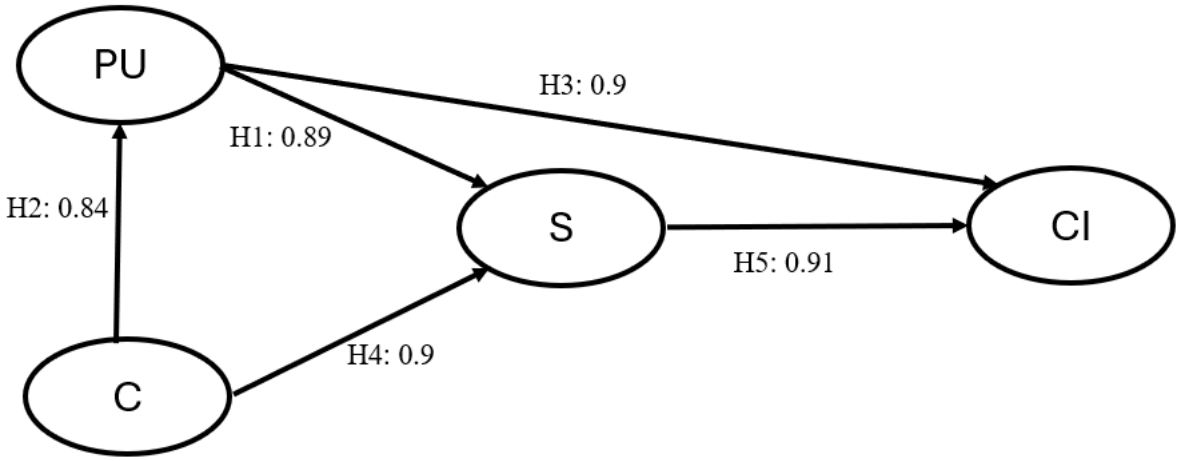


**Figure 2. The path model.**

# Discussion

This investigation aimed to use the ECM to analyse the participants' continuance intention to use the C-DELTA learning platform. The study's findings focused on evaluating the participants' perceptions using the constructs perceived usefulness (PU), satisfaction (S), confirmation (C), and continuance intention (CI), as well as the means and standard deviations of the responses. The findings for each hypothesis are as follows:

*Perceived usefulness impacts satisfaction*

The findings showed that for perceived usefulness, more participants either strongly agreed or agreed (mean value for PU was around four) that the C-DELTA platform was helpful to them in terms of upgrading their skills, enhancing their work, increasing their effectiveness as teachers, and developing their skills related to digital education. Prior studies show that if the participants find a learning platform helpful, there is a high chance that they will be satisfied with the learning content and the services provided (Cui et al., 2021; Dhiman et al., 2022; Lee et al., 2023). Hence, perceived usefulness impacted user satisfaction. The results of moderating the effect for perceived usefulness to satisfaction were also high, so a user's perceived usefulness impacted their response to satisfaction. These findings are similar to those from studies conducted by Tial et al. (2024) and Lee et al. (2023).

*Perceived usefulness impacts users' continuance intention to use*

The findings also showed that since the mean value for users' perceived usefulness was around four, the continuance intention of the users was also high (mean value was also around four). The mediating effect value for the standardised coefficient was greater than 0.90, so a user's perceived usefulness impacted their continuance intention to use the C-DELTA learning platform.

*Satisfaction impacts continuance intention to use*

The participants were satisfied (mean value around four) with the services provided by the C-DELTA learning platform, the quality of the content, and the learning processes and were pleased with the overall learning experience. More participants either strongly agreed or agreed with the variables for the satisfaction construct. Since the responses were mostly positive for construct

satisfaction, users' continuance intention to use was also positive. The moderating effect value for the relationship between satisfaction and users' continuance intention to use was also greater than 0.90. Since there was a higher rate of satisfaction regarding the usability of the C-DELTA platform, the participants intended to continue using the platform and to recommend that others use it.

*Confirmation impacts users' satisfaction*

The construct confirmation also impacted satisfaction. The results showed that most participants strongly confirmed that learning using the C-DELTA platform was better than their expectations regarding the services and learning content provided to them (mean value around four). The mediating effect of the construct confirmation on satisfaction was greater than 0.90, indicating that users' confirmation impacted their satisfaction level.

*Confirmation impacts users' perceived usefulness*

The construct confirmation also impacted users' perceived usefulness. The users in their responses confirmed that they were satisfied with the services provided by the C-DELTA learning platform and the quality of the learning content. Also, they found the platform useful for learning and for upgrading their knowledge. This indicates that the users perceived the C-DELTA learning platform to be useful. The mediating effect value was also in the high range, indicating that confirmation impacted users' perceived usefulness.

The results for all the hypotheses are similar to those from several other studies (Cui et al., 2021; Dhiman et al., 2022; Lee et al., 2023; Tial et al., 2024) in that if users are satisfied, they will want to continue using the system/learning platform. The C-DELTA users had a similar perception, and the findings showed that the majority of the participants either strongly agreed or agreed with using the C-DELTA learning platform in the future and recommended that others use the platform to upgrade their skills in digital literacy and digital learning. The participants commended the team for allowing them to upgrade their digital skills and appreciated the digital certificates and badges received upon completing the modules. Furthermore, the participants felt that this course must reach a broader audience so that others interested in upgrading their digital skills can benefit from it.

*Determinants that impacted the users' continuance intention*

Inferential statistics were used to analyse the determinants that impacted the users' continuance intention to use the C-DELTA learning platform.

The model's reliability was calculated using factor loading and the Cronbach's alpha values. According to Xi (2023) and Lee (2023), if the model has internal consistency and reliability, the Cronbach's alpha values are greater than 0.70. For this study, the factor loading for each variable and Cronbach's alpha values are greater than 0.85, indicating the consistency and reliability of the model used for the study. The correlation of the constructs was also calculated. The correlation coefficients were greater than 0.8. Prior studies conducted by Obied (2024), Wut (2024), Xi (2023), and Lee (2023) stated that a correlation coefficient greater than 0.8 indicates a substantial positive impact. Therefore, the constructs of perceived usefulness and satisfaction significantly impacted the continuance intention of using the C-DELTA platform. Similarly, the construct conformation significantly impacted participants' satisfaction and perceived usefulness. Overall, all the

constructs in the ECM positively impacted the participants' decision to continue using the C-DELTA platform.

The model fit for the study was also tested using the PLS-SEM. The results indicated that the model used for the study was acceptable and defined a good relationship among the constructs, with CFI and TLI values < 0.9. The mediating effect of the constructs was also tested; since the standardised (std) coefficient (Table 8) was greater than 0.85 and the *p*-value < 0.05, the relationship was established for all the study's hypotheses. In other words, perceived usefulness impacted participants' views on satisfaction, confirmation impacted perceived usefulness, perceived usefulness impacted continuance usage, confirmation impacted satisfaction, and satisfaction impacted participants' decisions about continuance usage of the C-DELTA platform. As a result, all the hypotheses of the study are accepted. The results for the mediating effect of the construct also showed that learner expectations and perceived satisfaction — *Objective 1* of the study — are strongly correlated with their intention to continue to use the C-DELTA platform in future. Since participants found the platform helpful and confirmed that the services provided to them by the C-DELTA platform exceeded their expectations, their satisfaction level was higher, and they were highly positive about using the platform in future. *Objective 2* of the study — the key factors that affected user satisfaction — were Perceived Usefulness and Confirmation, with a *p*-value < 0.05 and a standard coefficient around 0.90. Moreover, the determinants PU, C, and S impacted the users' continuance intention to use the C-DELTA platform — *Objective 3* of the study.

*General comments from participants*

The participants were thankful to COL for the course and for providing an opportunity for them to improve their digital literacy skills. They enjoyed the course facilitation and were satisfied with the course content and services provided to them. They confirmed that the course represents one of the best digital learning courses, as it provided them with the opportunity to upgrade their skills and increase their collaboration, and they were appreciative of the online certificates and badges. Participant suggestions included continuing with similar programmes in the future so that they can continue to upgrade their skills; enhancing the user interface and incorporating AI-driven activities; integrating more cultural context and real-life scenarios; including courses on leadership; and including new AI-based content.

# Conclusion

This report presents overall feedback from the teachers who completed C-DELTA. The statistical analysis shows that participants perceive the C-DELTA learning platform as highly useful, significantly contributing to their overall satisfaction and positive attitudes towards continuing to use it. The confirmation from the participants that the platform surpasses other learning platforms they have experienced underscores its competitive advantage. The participants' satisfaction with the platform's services and content indicates that it effectively meets user needs for ease of navigation, interface design, and overall user experience. Moreover, the positive perception of usability is likely to enhance learning outcomes and encourage continuance utilisation of the C-DELTA platform.

The findings highlight the platform's strengths in delivering valuable, user-friendly, effective, and efficient learning experiences. User responses on the platform's usefulness, usability, and continuance intention indicated that the users' expectations were fulfilled and that it has the

potential for long-term success and adoption within educational contexts. The positive perception and attitude of the users support C-DELTA's sustainability and enhance its potential to contribute significantly to the development of digital learning environments and individual skills development.

Specifically, the analysis of the platform data indicated that the top countries where teachers have benefited most include Bangladesh, Belize, Kenya, India, Mauritius, Saint Lucia, South Africa and Sri Lanka. The platform also helped improve learning by supporting the teachers to develop their skills through the modules. The statistical model used in the study indicates that learner expectations and perceived satisfaction are strongly correlated with their intention to continue to use the C-DELTA platform in future. The users also found the platform useful, and it exceeded their expectations, leading to higher satisfaction. User satisfaction with C-DELTA comes from their perceived usefulness of the platform and from having their expectations confirmed. The study indicated that users would continue to use the platform and recommend it to others, due to its perceived usefulness, its confirmation of their expectations, and their overall satisfaction.

A recent study by Mishra (2025) indicated that the cost per module completed is CAD 8.68, which leads to about CAD 60 per teacher trained in digital education leadership. This shows the scalability and cost-effectiveness of the teacher professional development, which was initially envisaged while the C-DELTA programme was being developed. While teachers use the platform in 31 countries, the impact is visible in only some of them. This indicates the need for more work with the ministries of education in other countries to further adopt C-DELTA. The study's findings are largely statistically positive and demonstrate the potential for continued use by teachers; there is also the possibility of further work to enhance the platform and revise the content based on contemporary developments in technology, such as artificial intelligence.

Some recommendations summarised from the participants' open-ended responses are as follows:

i. Add more modules to the platform (which would mean revising the conceptual framework).
ii. Cover issues related to new technologies, including AI (which would mean revising the content of the modules).
iii. Engage with more teachers (which would mean working with ministries to adopt C-DELTA).
iv. Include more visuals, such as video explanations (which would make the course content more interactive).

This study only covers teachers, but the platform also has a large number of students who have used and completed C-DELTA. A study covering students could provide more insights into course content and how C-DELTA has benefited student users over the years after they completed their training on the platform.

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# Annex 1: Questionnaire for Evaluating User Experiences on the C-DELTA Platform

**Demographic Information**

**Country**:
**Gender**: Male | Female | Prefer not to indicate
**Age Group**: below 20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | 46-50 | 51-55 | 55-60 | above 60
**Engaged in:** Primary education | Secondary education | Vocational education | College and university education | Other (specify)
**Highest Educational Qualification**: Doctorate | Postgraduate | Graduate | Diploma | Others (specify)
**Discipline**: Humanities | Natural Sciences | Social Sciences | Engineering and Technology | Commerce and Management | Agriculture and Natural Resources | Health and Medical Sciences | Fine and Performing Arts
**Years of Teaching Experience**: 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26 | 27-30 | above 30 years

**User Experience Survey**
Please rate the 27 statements using the five-point scale of strongly disagree to strongly agree, where 1 is lowest and 5 is highest.

**Note: 1 = Strongly Disagree, 2 = Disagree, 3 Neutral, 4 = Agree, and 5 = Strongly Agree**.

| Sl. No. | Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1 | PU1 | The use of the C-DELTA platform improved my performance as a teacher. | | | | | |
| 2 | C1 | My experience using the C-DELTA platform was better than I expected. | | | | | |
| 3 | S2 | I am satisfied with the quality of content provided on the C-DELTA platform. | | | | | |
| 4 | CI4 | I foresee using the activities and skills learnt using the C-DELTA platform in the future. | | | | | |
| 5 | PU3 | The C-DELTA platform helped increase my effectiveness in integrating ICT in teaching and learning. | | | | | |
| 6 | C2 | The C-DELTA platform met most of my expectations from an online learning platform. | | | | | |
| 7 | S1 | I am satisfied with the services provided by the C-DELTA platform. | | | | | |
| 8 | CI2 | I strongly recommend the C-DELTA platform to others. | | | | | |
| 9 | PU2 | The C-DELTA platform helped me think more clearly and gave me ideas for enhancing my work using online learning platforms. | | | | | |
| 10 | C3 | The service/support provided by the C-DELTA platform was better than expected. | | | | | |
| 11 | S4 | I am pleased with the learning experience on the C-DELTA platform. | | | | | |
| 12 | CI1 | I intend to continue using C-DELTA platform services. | | | | | |
| 13 | PU4 | Overall, the C-DELTA platform is useful for developing skills related to digital education. | | | | | |
| 14 | S3 | I am satisfied with the learning process of the C-DELTA platform. | | | | | |
| 15 | CI3 | I am willing to use the C-DELTA platform in future. | | | | | |

**Open-Ended Questions**

| | CODE | |
|---|---|---|
| 1. | PU5 | In your experience, how does the usefulness of C-DELTA compare to similar systems you have used? |
| | | |

| | | |
|---|---|---|
| 2. | C4 | What specific aspects of C-DELTA have confirmed your initial expectations? |
| | | |
| 3. | S5 | What specific features or aspects of C-DELTA contributed most to your satisfaction? |
| | | |
| 4. | S6 | In your opinion, how could C-DELTA be improved to increase your satisfaction? |
| | | |
| 5. | CI5 | What factors would influence your decision to keep using lessons from the C-DELTA platform? |
| | | |
| 6. | G1 | Any other comment/feedback you would like to provide. |
| | | |

Thank you.

505 Burrard Street
Suite 1650, Box 5
Vancouver, BC V7X 1M6
Canada
Tel: +1 604 775 8200
Fax: +1 604 775 8210
E-mail: info@col.org
Web: www.col.org

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