

# Factors Affecting Video Conferencing Technology Continuance Intention in Malaysia: A Proposed Conceptual Framework

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## Abstract:

Video Conferencing Technology (VCT) has become essential to e-learning and Online and Distance Learning (ODL), serving as a key tool for synchronous communication that fosters interaction and collaboration within virtual classrooms. VCT's unique ability to facilitate real-time dialogue, provide immediate feedback, and encourage active student participation has unlocked new pedagogical possibilities, addressing limitations often found in traditional, asynchronous online learning environments. The use of VCT surged during the COVID-19 pandemic when educational institutions worldwide faced temporary closures, making it a vital tool for maintaining educational continuity. However, questions remain regarding the continuance of VCT use as educational institutions transition to post-pandemic models. This study examines the factors influencing students' intentions to continue using VCT in Malaysia's educational landscape. Drawing on established frameworks such as the Expectation Confirmation Model (ECM), DeLone and McLean Information Systems Success Model (D&M ISSM), and Social Cognitive Theory (SCT), this research identifies six key factors: perceived usefulness, self-efficacy, technostress, confirmation, perceived quality, and satisfaction. By synthesizing insights from previous studies, this study aims to provide a comprehensive understanding of these determinants, offering valuable implications for educational institutions seeking to optimize VCT usage for long-term success in online learning.

**Keywords:** Video conferencing technology; continuance intention; online and distance learning.

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## 1 Introduction

The integration of technology-based learning has become essential in higher education, driven by the rapid growth of internet innovations and digital tools. As institutions work to fulfill both educational objectives and the evolving needs of students, Online and Distance Learning (ODL) has emerged as a key transformative approach. Recognized as a central component of modern education,

ODL supports the 4th Sustainable Development Goal (SDG), which advocates for inclusive and equitable quality education for all learners (United Nations Department of Economic and Social Affairs, 2020). This alignment highlights ODL's role in expanding access to education, particularly for individuals facing geographical, financial, or time-related barriers. Furthermore, the Malaysian Education Plan 2015-2025 (Higher Education) prioritizes online learning as a foundational pillar of Malaysia's higher education framework, aiming to foster lifelong learning and ensure that Malaysian graduates are equipped with the digital skills needed in a rapidly changing global landscape (Ministry of Education Malaysia (MoE), 2015). By embedding ODL into their strategic goals, Malaysian higher education institutions are working to create more flexible, accessible, and resilient learning environments that can adapt to the diverse needs of their student populations.

ODL is not only reshaping educational practices but also ensuring that higher education institutions can maintain continuity during crises, such as pandemics or natural disasters, when in-person learning may be disrupted. With the integration of robust Video Conferencing Technology (VCT) and other digital platforms, ODL empowers students and lecturers to engage in meaningful, real-time interactions, fostering a more inclusive and interactive learning experience. As higher education institutions continue to advance and refine ODL practices, they are positioned to play a crucial role in the global shift toward accessible, technology-driven education. VCT plays a central role in enabling ODL by facilitating real-time communication through video, audio, and text across diverse locations (Ismail et al., 2023). It supports seamless, long-distance learning, creating a virtual classroom experience that bridges physical divides. The recent rise in remote work and virtual collaboration has further popularized VCT (Başaran & Hussein, 2023; Sangole et al., 2022), making it a staple in educational settings. Technological advancements have propelled VCT forward, with emerging tools such as virtual, augmented, and holographic video conferencing enhancing the user experience by enabling more immersive and interactive engagements.

A diverse array of web-based VCT platforms, including Zoom, Skype, Microsoft Teams (MS Teams), and Google Meet, has become integral to modern education. Each platform offers specialized features designed to meet a range of educational needs, from real-time collaboration and group discussions to interactive presentations and breakout rooms for small-group activities. These platforms not only facilitate seamless communication between educators and students but also support a more interactive and engaging learning experience by enabling live feedback, collaborative projects, and multimedia integration. VCT platforms have thus evolved beyond mere tools for virtual meetings to become the backbone of ODL. By supporting synchronous learning, they allow students to participate actively in their education regardless of location, promoting an inclusive and accessible approach to learning. Moreover, VCT enables institutions to reach students across geographic, socioeconomic, and logistical barriers, providing flexible learning opportunities that can adapt to each student's unique needs.

The use of VCT in ODL reached unprecedented levels during the COVID-19 lockdown period from 2020 to 2022, as educational institutions worldwide were compelled to close their physical campuses and urgently implement remote learning solutions to ensure educational continuity (Norazrina Ag-Ahmad, 2021). During this period, both educators and students were abruptly thrust into the world of VCT-enabled ODL, often with minimal preparation or prior experience in virtual teaching and learning environments. The rapid transition exposed numerous challenges, from technical issues to difficulties in adapting to online pedagogy, yet it also underscored the potential of VCT to

sustain educational access amid significant disruptions. As we transition into the post-pandemic era, there is a growing demand for research on the acceptance and continuance intention of VCT among both lecturers and students (Akgul et al., 2024; Başaran & Hussein, 2023). While the pandemic necessitated VCT usage, it is now essential to investigate how educators and students perceive its ongoing value and whether they intend to incorporate it as a staple in their teaching and learning (T&L) practices. Understanding these perspectives is critical, as the post-pandemic environment presents unique challenges and opportunities, such as integrating hybrid teaching models that combine in-person and virtual elements.

This study seeks to develop a comprehensive conceptual framework to assess the continuance intention of educators and students in Malaysian Higher Education Institutions (HEIs) regarding their sustained use of VCT for ODL. Building on established theoretical models such as the Expectation Confirmation Model (ECM), DeLone and McLean Information Systems Success Model (D&M ISSM), and Social Cognitive Theory (SCT), this research will propose an integrated model that addresses factors at both the individual and organizational levels influencing the post-adoption and continued use of VCT in educational settings. This framework aims to capture a holistic view of continuance behavior, incorporating variables related to individual user perceptions such as satisfaction, perceived usefulness, and self-efficacy as well as institutional support and technological quality. At the individual level, factors such as confirmation of expectations, perceived usefulness, and digital self-efficacy will be evaluated to understand how personal experiences and competencies shape ongoing engagement with VCT. At the organizational level, the model will consider system quality, information quality, and support quality, as well as institutional commitment to digital learning, reflecting how the infrastructure and support provided by institutions impact users' long-term adoption of VCT.

By integrating insights from ECM, D&M ISSM, and SCT, this study aims to provide a robust framework for understanding the complex interplay between individual motivations and institutional structures in driving VCT adoption. This framework will contribute to a deeper understanding of the factors that promote sustainable, long-term use of VCT, offering valuable implications for policymakers, administrators, and educators seeking to enhance the effectiveness and resilience of ODL in Malaysia's HEIs. This study focuses on lecturers within Malaysia's HEIs as the primary respondents, recognizing that they play a central role in shaping the teaching methodology employed in their classrooms. As decision-makers in instructional approaches, lecturers have significant influence over the adoption and integration of VCT in their teaching practices. Understanding their perspectives on VCT continuance is crucial for developing targeted interventions that encourage its sustained use, enhancing both instructional effectiveness and student engagement in ODL environments.

## **2 Literature Review**

### **2.1 Continuance intention**

Research in technology adoption has increasingly highlighted the importance of understanding individuals' continued use of technology beyond initial adoption, a concept central to continuance intention. Early studies focused on factors influencing the initial adoption of new technologies, yet researchers soon recognized that the long-term success and sustained impact of these systems depend heavily on whether users continue to engage with them after the novelty has worn off (Maisara et al.,

2024; C. Wang et al., 2023). This shift in focus, driven by Bhattacharjee (2001) foundational work, reframed continuance intention as essential to the "long-term viability of an information system (IS)," emphasizing that continued use is far more critical to an IS's effectiveness and success than mere first-time use. According to Bhattacharjee, continuance intention represents users' ongoing commitment to engage with a technology, which is influenced by factors such as user satisfaction, perceived usefulness, and confirmation of expectations. This perspective has broadened the scope of technology adoption research to include post-adoption behaviors, leading to valuable insights into how individual and organizational factors can support or hinder long-term engagement. By focusing on why users decide to continue (or discontinue) their use of technology, research on continuance intention has contributed to more robust models, such as the Expectation Confirmation Model (ECM) and extensions incorporating social and psychological factors.

According to Hernandez-Ortega et al. (2014), while technology may be successful during its initial adoption phase, users often re-evaluate their decision over time, potentially leading to a decline in continued usage if their expectations are not met or their needs change. This re-assessment is particularly relevant in online learning platforms like MOOCs (Massive Open Online Courses), where students' willingness to continue using the platform plays a crucial role in its sustained success and broader adoption. Given the flexibility of online learning, students can easily disengage from these platforms if they feel dissatisfied or if the technology does not meet their learning preferences, often returning to traditional classroom settings as their preferred option (Mohamad et al., 2018; Rafsanjani et al., 2023). A significant factor contributing to discontinuance is the system's inability to fulfill users' evolving needs, regardless of the initial appeal that led to early adoption (Hussein & Hilmi, 2022). As users' expectations become more nuanced and sophisticated, the technology must continually adapt and improve to maintain engagement. In the case of educational technology, this means that systems like MOOCs must provide not only quality content but also user-friendly interfaces, interactive features, and support systems that address the demands of long-term learners. If these elements are lacking, students may feel disconnected, unmotivated, or unsupported, increasing the likelihood of discontinuing use.

This deeper understanding of continuance intention has proven essential for sectors like education, where sustained technology use is crucial for achieving desired outcomes. Recognizing the factors that drive continuance intention allows organizations to implement targeted interventions, improving user experiences and enhancing the overall value and success of the technology over time.

## 2.2 Theories on Continuance Intention

Numerous studies have examined the use of online learning platforms across various user groups, including lecturers and students, exploring factors that influence technology adoption and sustained engagement. Research in this area often spans three primary stages: pre-adoption (acceptance), adoption, and post-adoption (continuance usage), each with its own theoretical frameworks and models that provide insight into user behavior. During the pre-adoption stage, the Technology Acceptance Model (TAM) is widely used to assess initial acceptance, focusing on factors such as perceived usefulness and ease of use. At the adoption stage, theories like the Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Reasoned Action (TRA), and Theory of Planned Behavior (TPB) are frequently applied to explore users' motivations and behavioral intentions toward adopting the technology.

In the post-adoption stage, where the focus shifts to lecturers' continuance intention and long-term engagement, the Expectation Confirmation Model (ECM) and Social Cognitive Theory (SCT) are commonly employed (Hidayatullah et al., 2022). ECM examines how user satisfaction and confirmation of initial expectations impact the desire to continue using the technology, while SCT considers social and cognitive factors, such as self-efficacy and peer influence, which play a critical role in sustained use. Each of these models provides unique insights into how lecturers accept, adopt, and ultimately continue using online learning technologies. By understanding the various factors across each stage, educators and developers can design and implement platforms that not only attract initial lecturers but also foster long-term engagement. These insights also highlight the importance of refining online learning platforms over time, addressing both technical and experiential aspects to meet lecturers' evolving expectations and needs.

The ECM serves as a foundational framework for examining the dynamics of user beliefs and attitudes toward continued technology use, focusing specifically on the post-adoption phase. Unlike traditional models that center around initial acceptance (pre-adoption), ECM is designed to understand the underlying reasons for a user's continuance intention—the decision to continue using technology beyond the initial adoption phase. This approach provides critical insights into why lecturers choose to re-adopt and integrate technology into their regular routines rather than merely testing it. By distinguishing between initial technology acceptance and long-term acceptance (user experience), ECM highlights that long-term engagement is not simply a continuation of initial behavior but rather a separate phase influenced by different cognitive processes. This focus on continuance intention provides a deeper understanding of users' readiness to either embrace or abandon a technology after the initial trial period. Bhattacharjee (2001) describes continuance intention as the re-adoption process, wherein users make conscious decisions based on their cumulative experiences and satisfaction levels, ultimately determining the technology's sustained success or discontinuation in everyday use. This distinction is essential for developing interventions that support enduring technology use, making ECM a valuable model for organizations seeking to enhance long-term user engagement.

While effective in examining technology continuance, the ECM provides limited insight into intrinsic motivation, a critical factor influencing user engagement and acceptance of technology (Mohamad & Abdul Rahim, 2018). ECM has faced criticism for its primary focus on extrinsic motivators, particularly perceived usefulness, while largely overlooking the impact of users' intrinsic motivators, such as personal satisfaction, curiosity, or flow, which can significantly shape continuance intention (Sjorebø et al., 2009). In ECM-based studies, the adoption of e-learning systems, for instance, has predominantly been attributed to extrinsic factors, whereas studies that examine intrinsic motivations reveal that these personal drivers often play an equally important role in users' decision to continue using a technology (Mohamad & Abdul Rahim, 2018). Another notable limitation is ECM's individual-level focus, which restricts its applicability in organizational contexts where broader factors, such as organizational support, system quality, and motivational structures, significantly influence user behavior (Hossain & Quaddus, 2012; Tawafak et al., 2021). Organizational support, for instance, enhances user confidence, robust system quality mitigates frustration, and motivational programs can encourage sustained engagement. By focusing only on individual factors, ECM potentially overlooks these critical organizational influences, reducing its predictive strength in complex, multi-user environments. To address these limitations, integrating organizational-level

considerations and intrinsic motivators into ECM could create a more comprehensive model that captures both personal and contextual drivers of technology continuance, offering richer insights into long-term technology adoption.

To address the limitations of the ECM, researchers have proposed combining ECM with other theoretical models that consider organizational-level factors and intrinsic motivators. One prominent example is the DeLone and McLean Information Systems Success Model (D&M ISSM), which provides a more comprehensive framework for understanding technology continuance by incorporating dimensions such as system quality, information quality, and service quality (DeLone & McLean, 2003). These factors are critical in assessing technology effectiveness in organizational settings, as they reflect the system's technical robustness, the reliability and relevance of the information it provides, and the quality of support services—key elements that influence user satisfaction and drive long-term engagement within institutions. Additionally, integrating motivational factors from Social Cognitive Theory (SCT) (Bandura, 1991) enriches ECM by addressing individual-level influences on technology continuance. SCT introduces constructs such as self-efficacy and technostress, which highlight how lecturers' confidence in their ability to use technology and the stress associated with technology use can significantly affect their willingness to continue. Self-efficacy enhances lecturers' perceptions of control and competence, making them more likely to engage with technology over time. Conversely, technostress—the pressure and anxiety induced by extensive technology use—can serve as a barrier to continuance, especially in demanding organizational environments.

By integrating ECM with D&M ISSM and SCT, researchers can gain a multidimensional perspective on technology continuance that encompasses both personal and organizational influences. This hybrid approach allows for a deeper understanding of how technology infrastructure, support mechanisms, and individual attitudes intersect to shape long-term technology use. Such an integrated model addresses ECM's limitations by considering the broader ecosystem in which technology use occurs, offering insights into how organizations can foster positive user experiences, reduce barriers to engagement, and sustain user commitment over time. This approach not only refines our understanding of continuance intention but also provides practical guidance for organizations seeking to maximize the long-term impact of their technology investments.

### 2.3 Factors affecting continuance intention

#### 2.3.1 Perceived usefulness

Perceived usefulness in this study refers to the extent to which lecturers believe that using VCT enhances their online teaching and teaching (T&L) effectiveness. This concept is crucial as it directly impacts lecturers' (lecturers and students) willingness to adopt and continue using VCT for their teaching activities. High perceived usefulness implies that lecturers find VCT beneficial in improving their teaching outcomes, leading to greater satisfaction and continuance use of the technology. Perceived usefulness is the key determinant of user satisfaction as it reflects a long-term belief in the expected benefit of the platform or system (Bhattacharjee, 2001).

#### 2.3.2 Confirmation

Confirmation refers to the degree to which lecturers' expectations regarding the use of VCT for online T&L are met. After using VCT, confirmation occurs at the intersection of initial expectations

and actual experiences. According to Bhattacharjee (2001), four key items should be examined to operationalize the confirmation construct in the context of VCT. These items are usage expectation, which assesses whether the actual usage of VCT aligns with the users' initial expectations; benefits expectation, which evaluates the extent to which the perceived benefits of using VCT meet the anticipated benefits; support expectation, which examines whether the level of technical and administrative support provided meets the users' expectations; and confirmation expectation, which considers the overall alignment of VCT performance with what the users expected before its use.

### 2.3.3 Lecturer self-efficacy

Self-efficacy can be defined as 'people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performance' (Bandura, 1991). In the context of T&L, a positive appraisal of teaching capabilities corresponds to the user's confidence in creating an effective learning environment to promote teaching and learning outcomes (Tschannen-Moran & Hoy, 2001). The lecturer's self-efficacy is influenced by prior experience in teaching and attitudes toward educational technology (Kaqinari et al., 2022). Successful experiences increase perceived levels of self-efficacy, while failures decrease it. Lecturers with high levels of self-efficacy are known to positively affect students' performance by selecting more varied teaching strategies and acting proactively in the face of curriculum and other reforms (Matos et al., 2022).

### 2.3.4 Technostress

Technostress, as used in this study, refers to the inability of lecturers to effectively cope with new technologies used in T&L. Techno-stressors or 'technostress creators' are the factors that cause technostress (Khlaif et al., 2023). These stressors are stimuli, events, or demands induced by using ICT. Examples of the stressors are work-home conflict, invasion of privacy, work overload, job insecurity, techno-overload, techno-complexity, role conflict and role ambiguity (Q. Wang et al., 2024). Many studies have demonstrated that technostress leads to detrimental outcomes, such as burnout (Mushtaque et al., 2022), lower satisfaction (Abd Aziz et al., 2021), decrease work performance (Panisoara et al., 2020), and reduced productivity (Gabbadini et al., 2023).

### 2.3.5 Perceived quality

Prior research studied the effect of perceived quality on satisfaction from three dimensions; information quality, system quality, and service quality (Chiu et al., 2005). The constructs of information quality, service quality, and system quality are considered indicators to determine whether or not an IS is successful (DeLone & McLean, 2003). Many studies proved that the quality dimension of the D&M ISSM is an important factor influencing lecturers' intention to use VCT (Başaran & Hussein, 2023; Correia et al., 2020). Therefore, based on the external factors constructed by the D&M ISSM, this study will assess the quality factor of the VCT platform which consists of information quality, system quality, and service quality.

### 2.3.6 Satisfaction

Definition of satisfaction refers to the degree to which lecturers feel content and fulfilled with their experience using VCT for online T&L. Satisfaction is a critical factor influencing their continuance intention, as it reflects their overall evaluation of the VCT's performance and its impact

on their teaching effectiveness. When lecturers feel that VCT enhances their teaching methods, facilitates student engagement, and improves overall learning outcomes, their satisfaction levels are likely to be high. This positive evaluation is essential because, as Bhattacharjee (2001) noted, lecturers are more likely to continue using a technology if they believe in its usefulness and if their initial expectations are confirmed by their actual experiences.

### 3 Conceptual Framework

To propose a comprehensive continuance model for the use of VCT among lecturers in Malaysian HEIs, this study adopts the ECM as its primary theoretical framework. The ECM has been widely recognized for its effectiveness in explaining post-adoption behavior, specifically continuance intention. However, to address the drawbacks involved in the ongoing use of VCT, this study enhances the ECM by integrating it with additional variables from other relevant models and theories. The DeLone & McLean Information Systems Success Model (D&M ISSM) provides insight into the importance of system, information, and service quality, which are crucial in assessing the overall effectiveness of VCT. The Social Cognitive Theory (SCT) adds a psychological dimension, considering factors such as self-efficacy which influence lecturers' motivation to continue using VCT. Furthermore, the inclusion of technostress acknowledges the potential stressors associated with prolonged technology use, particularly in a post-pandemic educational landscape. By integrating these diverse but complementary perspectives, the proposed model aims to offer a more holistic and robust framework for understanding and predicting VCT continuance intention among HEIs lecturers, ultimately contributing to the improvement of online learning environments in Malaysian HEIs.

The conceptual framework in this study consisted of five major constructs: perceived usefulness, confirmation, perceived quality, technostress, lecturer self-efficacy, satisfaction, and continuance intention. The conceptual model is developed based on literature review, research objectives, research questions, and hypotheses. Eleven hypotheses have been developed in this study. The outcome of this research framework is a proposal on how these six variables affect continuance intention as shown in Figure 1.

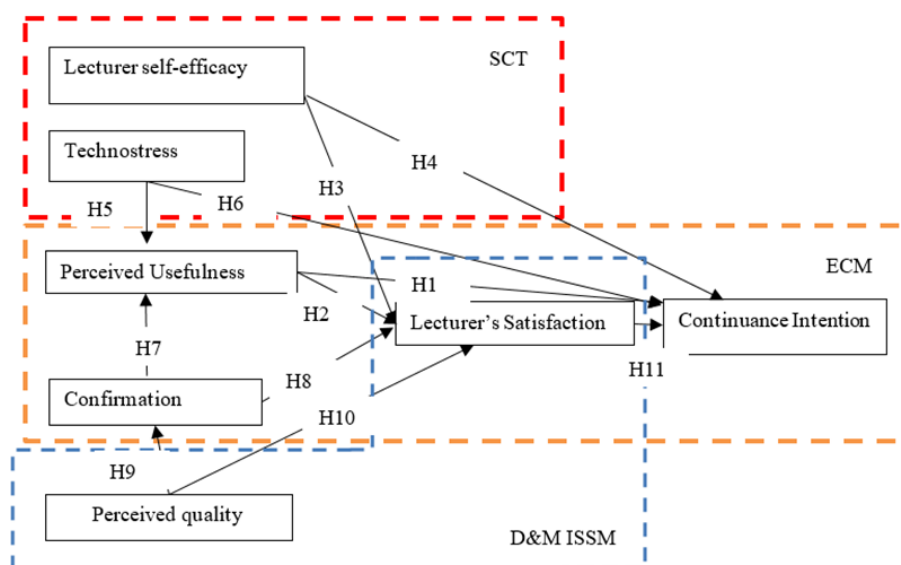


Figure 1. Model for Paper

#### **4 Implications of This Study**

By analyzing post-adoption experiences from respondents, this study proposes a comprehensive framework that integrates key constructs from the ECM, D&M ISSM, and SCT. This integrated approach is intended to enhance the explanatory power of the ECM by incorporating additional constructs such as perceived quality, as well as addressing psychological dimensions through the inclusion of technostress and lecturer self-efficacy. By doing so, the study aims to provide a more holistic theoretical perspective on VCT continuance intention. The proposed framework is not only expected to offer valuable insights for understanding technology continuance in the context of Malaysian HEIs but also to contribute significantly to the broader body of knowledge in this area by offering a more in-depth understanding of the factors that drive long-term VCT adoption and usage.

This study proposes a new integrated model that empirically contributes to the literature on lecturers' satisfaction and continuance intention to use VCT in the HEIs sector, an area that has not been adequately addressed in previous research. Previous studies on continuance intention have focused on new technologies such as mobile apps, web-based services, and cloud-based e-learning. This study extends the research to the higher learning sector and focuses more on satisfaction to continue using technology. The model includes elements such as perceived quality, technostress, and self-efficacy, which may have a relationship with satisfaction and continuance intention. Identifying the factors that impact the intention to continue using VCT for online learning is crucial in the field of education. This is particularly important for designing and enhancing distance education platforms that offer improved learning experiences and enable more efficient and precise evaluations of online learning for continuing education.

In terms of the practical implication of this study, the empirical data collected will shed light on the relationship between various factors and lecturers' intentions to continue using VCT. This includes analyzing how different factors, such as perceived usefulness, technostress, self-efficacy, confirmation, perceived quality, and satisfaction, impact their willingness to integrate VCT into their teaching practices. The study also examines the effects of these factors on lecturers' satisfaction and their subsequent continuance intention, providing a comprehensive view of the dynamics at play. By providing detailed empirical evidence, this research aims to offer actionable insights for Malaysian HEIs. The findings will highlight areas where improvements can be made to enhance the effectiveness and acceptance of VCT in the TVET curriculum. For instance, understanding the barriers and enablers for lecturers can help institutions tailor their professional development programs, ensuring that educators are well-equipped to leverage VCT for optimal learning outcomes.

#### **5 Conclusion and Recommendation**

Research on continuance intention has garnered significant attention, especially within the context of ODL, where understanding the factors that promote ongoing technology use is crucial for sustainable adoption (Abd Aziz et al., 2021; Masrani et al., 2023). However, despite the widespread use of VCT in ODL, relatively few studies have specifically focused on the factors influencing VCT continuance intention, particularly in Malaysia. Existing research largely overlooks the unique features and functionalities of VCT, such as real-time interaction, screen sharing, breakout rooms, and user-friendly interfaces that may significantly impact user satisfaction and long-term engagement. This gap in the literature highlights the need for targeted studies that examine VCT-specific factors, offering

insights into how these unique attributes contribute to or hinder the sustained use of VCT for educational purposes.

Given that the implementation of VCT in Malaysian academia is still in its early stages, there is an urgent need for research that explores not only user acceptance but also the factors that support ongoing use among educators and students. Investigating these factors can provide a comprehensive understanding of the challenges and enablers in VCT adoption, allowing educational institutions to address potential barriers and capitalize on opportunities for improvement. This research will also fill an important gap in the global literature on VCT in ODL by providing insights specific to the Malaysian context, where technological infrastructure, institutional support, and cultural factors may influence continuance intention differently than in other regions. By identifying the factors that drive long-term engagement with VCT, this study can guide policymakers, educators, and technology developers in refining VCT platforms to better meet the needs of the Malaysian higher education landscape. Such research is essential for building resilient, flexible, and effective ODL frameworks that are prepared to adapt to the rapidly changing demands of modern education.

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