Digital Capability and Online Credential Adoption within the UAE Higher Education Institutions through Individuals' Digital Literacy: a Proposed Framework

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ABSTRACT

The rapid digital transformation in higher education, accelerated by global shifts toward remote learning and credential modularity, has prompted UAE universities to adopt online credentials and digital learning models. However, the success of these innovations is dependent not only on institutional readiness but also on individuals' digital literacy. There is a very specific context here when considering this for in UAE or other similar contexts where the use of digital learning through online platforms is not as established and support from faculty is often necessary to drive change. This paper proposes a strategic framework linking digital capabilities, digital literacy, and online credential adoption in UAE higher education institutions (HEIs). We explore how institutional and individual-level factors intersect to enable sustainable digital credentialing in line with the UAE's National Strategy for Higher Education 2030. The research offers practical implications for higher education institutions, policymakers, and faculty development programs, with a focus on enhancing digital competencies and promoting self-efficacy to support the digital transformation of education.

Keywords: Digital Capability, Online Credential, Individuals' Digital Literacy, Higher Education Institutions**,** Proposed framework.

INTRODUCTION

Higher education institutions have been greatly impacted by the rapid evolution of digital technologies which has introduced new possibilities, models and opportunities to teaching and learning. One of these innovations is online credentials that have to provide, to some extent the proof for skills and competencies through an accessible way with being flexible on time and place. According to a report by the UAE Ministry of Education (2025), approximately 90% of higher education institutions in the UAE have adopted some form of digital platform to support remote and hybrid learning models, reflecting the nation's commitment to embracing digital transformation in education, a region known for its rapid development and embrace of innovation, the higher education sector has been at the forefront of this digital transformation (Recio et al., 2025). As of 2021, the UAE government allocated over AED 10 billion towards advancing educational technology infrastructure, highlighting its strategic vision to foster a knowledge-based economy (UAE Government Portal, 2021).The UAE government has positioned digital innovation as a cornerstone of its education strategy(Dafri et al., 2025). In particular, micro-credentials, digital badges, and blockchain-based certifications have emerged as key trends aligned with the UAE's Vision 2021 and the Centennial 2071 agenda. However, while institutional digital transformation has progressed, the adoption of online credentials remains uneven, often limited by faculty and students' digital literacy.

Despite these advancements, there remains a lack of empirical research investigating the underlying mechanisms that drive successful adoption of online credentials. Specifically, prior studies have demonstrated a consistent relationship between digital capability and digital literacy (Lubis et al., 2022), as well as between digital literacy and concerns toward traditional online learning platforms (Pekovic et al., 2020). However, no existing study has empirically examined digital literacy as a mediating variable in the relationship between digital capability and the adoption of online credentials within the context of UAE higher education. This study

therefore addresses a critical gap by proposing that digital literacy may serve as a pivotal mediator in this relationship, helping to explain how institutional digital capabilities translate into meaningful adoption of online credentials by faculty and students. However, despite the widespread adoption of digital platforms, significant challenges remain in fully realizing their benefits. Many faculty members and students continue to struggle with inadequate digital literacy, inconsistent digital practices, and a lack of clarity around the value and implementation of online credentials. A report by EduTech Middle East (2023) indicated that nearly 45% of students in UAE higher education institutions feel that digital platforms do not fully meet their learning needs, highlighting the necessity for a nuanced exploration of students' perspectives on the future of higher education in the UAE. These challenges underscore the need to investigate how digital capability and digital literacy interact to influence the adoption and effectiveness of online credentials in higher education.

The advent of digital literacy as a critical factor in navigating this transformation cannot be overstated. Digital literacy transcends basic knowledge of digital tools, encompassing a comprehensive understanding of the digital environment and its applications. This skill set is essential for both educators and students, facilitating the effective adoption of digital technologies and enhancing the overall educational experience (Khan, 2021). Moreover, the absence of research examining its mediating function highlights a pressing need for further exploration. The role of digital literacy extends beyond facilitating the adoption of new technologies; it is instrumental in fostering an environment conducive to digital innovation and disruption. As the higher education sector in the UAE and globally continues to evolve, digital literacy emerges as a cornerstone, enabling institutions to navigate the complexities of digital transformation and ensuring that they remain at the forefront of educational innovation and excellence. The current study aims to develop a conceptual framework for mapping the digital capabilities and self-efficacy model for promoting online credential adoption through higher education in UAE.

Theoretical literature and hypothesis development

Understanding the adoption of digital technologies and online credentials in higher education requires a theoretical foundation that captures the cognitive, emotional, and practical processes users undergo when introduced to innovation. Theoretical frameworks offer structured models that explain how individuals and institutions respond to technological change, thereby guiding the development of research questions, hypotheses, and analysis. In the context of this study, which investigates online credential adoption in UAE higher education institutions, the Concerns-Based Adoption Model (CBAM) has been selected as the central theoretical framework. CBAM provides a dynamic lens through which the adoption process is viewed not as a single event, but as a series of developmental stages shaped by personal concerns and usage behaviors.

Digital capabilities

Digital capabilities encompass the skills, knowledge, and attitudes required to effectively engage with and utilize digital technologies in various contexts (Abbas and Khalid, 2023). In higher education, these capabilities play a pivotal role in enhancing teaching, learning, and administrative processes. The concept of digital capabilities extends beyond basic digital literacy, incorporating advanced competencies such as digital communication, collaboration, content creation, problem-solving, and ethical digital practices. Digital capabilities can be grouped into six core components, each addressing a distinct aspect of institutional and individual readiness for digital transformation:

ICT proficiency and Productivity

ICT (Information and Communication Technology) proficiency and productivity are fundamental dimensions of digital capabilities within higher education. These competencies encompass the ability to effectively utilize digital tools to improve instructional delivery, streamline administrative operations, and enhance the overall academic experience. In the context of UAE higher education—where digital transformation is a national agenda—ICT proficiency supports innovation, improves institutional efficiency, and prepares both faculty and students for a technology-driven learning environment. In a qualitative study, Almansoori (2021) interviewed 32 faculty members across three UAE universities to explore the integration of Learning Management Systems (LMS), such as Blackboard Learn. The findings showed that faculty members with higher ICT proficiency reported improved instructional design, better course management, and enhanced student interaction.

Participants highlighted increased comfort and engagement with LMS tools when sufficient training and digital support were provided. Alblooshi and Hamid (2019) conducted a survey-based study targeting undergraduate students in two UAE universities to assess digital readiness. Their results indicated that students with higher ICT skills navigated e-learning platforms with greater confidence and satisfaction. The study emphasized that ICT proficiency directly correlates with students' ability to fully utilize online educational resources, affecting performance and engagement.

Information, data, and media literacy

Information literacy refers to the ability to identify, locate, evaluate, and use information effectively. In the digital age, higher education students and faculty often interact with vast amounts of information from a variety of sources. Almansoori (2021) highlights that higher education institutions in the UAE have embraced digital platforms and LMSs, which require students and educators to possess strong information literacy skills to utilize these systems effectively. Similarly, Abbas and Khalid (2023) emphasize that the critical evaluation of online resources is essential for academic integrity and high-quality research. Without these skills, students risk encountering misinformation or relying on unreliable sources, which can compromise their academic success.

Digital learning and development

Digital learning and development generally involve acquiring knowledge and skills through digital means and platforms (Gernal et al., 2023). In this study, it highlights the evolving educational practices were digital tools support continuous personal and professional growth among faculty and students. Digital learning and development represent the continuous process of acquiring and enhancing skills, knowledge, and competencies through the use of digital tools and technologies.

Digital communication, collaboration, and participation

Digital communication refers to the ability to convey information, share ideas, and interact effectively using digital platforms. Almansoori (2021) emphasizes that tools such as email, LMS, and instant messaging platforms have become indispensable for faculty-student communication in UAE universities. These tools enable personalized interactions, real-time feedback, and improved instructional delivery, enhancing the overall educational experience. Platforms like Blackboard Learn and Microsoft Teams have been instrumental in facilitating seamless communication, especially in remote and hybrid learning environments. Similarly, Abdellatif et al. (2023) observed the critical role of digital communication during the COVID-19 pandemic, where video conferencing, email, and discussion boards ensured continuity in academic activities. However, Ahmed and Khan (2021) caution that effective digital communication depends heavily on the technical proficiency of users, as technical challenges and inadequate training can diminish its potential.

Digital creation, problem-solving, and innovation

This concept involves using digital technologies to create new content, address complex problems, and drive innovation (Singh et al., 2023). In the context of this research, it represents advanced digital skills demonstrated by faculty and students in higher education institutions. Digital creation, problem-solving, and innovation are advanced components of digital capabilities that empower individuals to use technology for generating new ideas, addressing complex challenges, and driving progress in educational and institutional practices. These competencies extend beyond basic technology use and focus on the creative and strategic application of digital tools to enhance learning experiences, improve outcomes, and foster innovation. In UAE higher education institutions, where digital transformation aligns with national goals to promote a knowledge-based economy, fostering these skills is critical for preparing students and educators for the demands of a rapidly evolving world.

Digital identity and wellbeing

Digital identity relates to managing one's online presence, while digital wellbeing involves maintaining healthy digital habits (Monteiro, 2019). Here, it includes fostering a positive and safe digital environment within educational settings. Digital identity and wellbeing are fundamental aspects of digital capabilities that

influence how individuals manage their online presence and maintain a healthy relationship with technology. Digital identity refers to the representation of an individual in digital spaces, encompassing academic, professional, and social profiles. Digital wellbeing focuses on safe, balanced, and ethical engagement with technology to promote mental, emotional, and physical health. In UAE higher education, where digital transformation is advancing rapidly, these competencies are essential for sustainable academic and professional success.

Online credential adoption

Online credential adoption generally refers to the acceptance and utilization of digital forms of certification that recognize skills and learning achievements, such as digital badges and micro-credentials (Miao et al., 2023). In the context of this study, online credential adoption specifically denotes the extent to which higher education institutions and their learners in the UAE have embraced these digital credentials as part of their academic programs and recognition systems.

Digital literacy

Digital literacy is broadly defined as the ability to locate, evaluate, use, share, and create content using information technologies and the Internet (Lubis et al., 2022). Digital literacy broadly refers to the skills required to effectively and ethically use digital platforms and tools for communication, information processing, and learning (Almansoori, 2021). In this research, individuals' digital literacy specifically denotes the competencies of faculty members and students to use digital technologies for educational purposes, including learning, communication, and collaboration. Within this study, digital literacy serves as a mediating factor between digital capability and online credential adoption, suggesting that higher levels of digital literacy among faculty and students facilitate the effective adoption of online credentials.

Concerns toward online credential adoption

Concerns about online credential adoption refer to hesitations or uncertainties individuals may have about accepting digital certifications for academic or career advancement (Pekovic et al., 2020). This study examines such concerns within higher education to evaluate the acceptance and perceived effectiveness of digital education innovations.

Summary of empirical researches of digital capability

The studies confirms that digital literacy is a pivotal enabler in converting digital capabilities into meaningful credential adoption. While institutions may invest heavily in technology, without parallel development of human digital competencies, the potential for transformation remains underutilized. Table (1) was developed to outline the main results examined on the basis of the studies evaluated in this study.

Table 1 Summary of discussion study with methodology and finding

Study	Variables studied	Methodology	Key findings
Almansoori (2021)	ICT proficiency, LMS usage	Quantitative analysis, UAE universities	Faculty and students with strong ICT skills benefit more from platforms like Blackboard.
Abbas & Khalid (2023)	Digital capabilities, collaboration, innovation	Mixed methods	Digital skills support collaborative learning and institutional innovation.
Alblooshi & Hamid (2019)	Student engagement, media literacy, elearning tools	Case study, UAE higher education	Media literacy enhances academic integrity; tech comfort improves student engagement.
Ibrahim,	Data literacy, adaptive	Quantitative survey	Data-driven learning improves

Aldawsari, & Abboud (2023)	learning, ICT productivity		outcomes; strong ICT use enhances administrative and teaching tasks.
Ahmed & Khan (2021)	Digital transformation, skill gaps	Surveys, document analysis	Skill gaps hinder innovation; strong digital skills are essential for transformation.
Abdellatif et al. (2023)	Digital identity, digital divide, wellbeing	Mixed methods	Gaps in tech access impact adoption; screen overuse affects wellbeing.
Ahmed & Hassan (2021)	Digital adoption, resistance to change, infrastructure	Surveys, regression analysis	Training reduces resistance; lack of infrastructure delays implementation.
Ashour (2020)	Institutional policy, innovation, digital wellbeing	Policy analysis, expert interviews	Institutional support is key; embedding digital wellbeing is critical.
Al-Mansoori & Abdulla (2023)	Collaboration tools, ICT strategy, infrastructure	Case study in UAE higher education	Strong infrastructure and strategic planning enhance digital collaboration.
Nikou, Reuver, and Kanafi (2022)	Information & digital literacy, tech adoption	Quantitative analysis	Digital literacy significantly influences technology adoption at workplaces.
Aavakare (2019)	Digital/information literacy, tech usage intention	Quantitative, UTAUT model	Literacy positively impacts intention to use digital tech in learning contexts.
Cavalheiro et al. (2020)	Digital literacy, digital tool usage	Survey with microentrepreneurs	Higher digital literacy increases usage of tech in creative industries.
Nikou & Aavakare (2021)	Literacy, digital tech in higher ed	Survey, HE context	Positive correlation between digital literacy and use of educational tech.
Jang et al. (2021)	Literacy, tech use for learning	Comparative study: Korea & Finland	Literacy influences digital tech use for learning in both countries.
Naqvi & Iqbal (2023)	ICT proficiency, teacher performance	Survey with distance teachers	ICT proficiency improves distance learning teaching effectiveness.
Paul & Roy (2023)	ICT awareness, proficiency, usage	Survey, postgraduate students	High ICT proficiency leads to better digital engagement among PG students.
Chen (2023)	Digital learning, soft skills	Mixed methods	Digital learning improves technical and soft skills development.
Hendrawati & Suherman (2025)	Digital content, Society 5.0 learning strategies	**Literature Review**	Strategic content design is vital for future digital education.
Dangprasert (2023)	Digital skills, content development	Learning activity model design	Designed model improved student digital content creation and skills.

Alam et al. (2024)	Digital tools, communication, collaboration	Case study, student-run clinic	Tools enhanced interprofessional communication and satisfaction.
Mickel (2024)	Digital collaboration, positive communication	Conceptual analysis	Positive digital practices enhance collaboration outcomes.
Guerra et al. (2018)	Digital communication competencies	Literature-based framework	Defined indicators for productive digital communication in education.
Alajmi et al. (2025)	Digital capabilities, online credential adoption	Conceptual framework	Digital capabilities and selfefficacy crucial for credential adoption.
Velu (2022)	ICT, design thinking, innovation	Structural model	ICT mediates the effect of design thinking on innovation in HEIs.
Smolander & Yusof (2023)	ICT in early education	Experimental case study	Early exposure to ICT fosters digital talent development.
Marshall et al. (2018)	Digital identity, professionalism	Implementation of training activities	Activities enhanced student awareness of digital professionalism.

In light of the summary of previous studies reported in this study, it is clear that there is a gap in the theoretical contribution, especially when it comes to the context and methods which have led to the above findings.

Hypotheses development

The conceptual framework of this study integrates Digital Literacy and the Concerns-CBAM, offering a fresh perspective on how educators' digital competencies influence their progression through the stages of concern when adopting technology, specifically online credentials, in educational settings. This framework hypothesizes that higher levels of digital literacy empower educators to overcome early concerns and progress toward advanced stages, where they focus on the broader impact of technology.

Digital capabilities and concerns toward online credential adoption

Digital capabilities represent a set of essential competencies required to effectively navigate, utilize, and innovate with digital technologies within professional and educational environments. For educators, these capabilities extend beyond basic ICT skills and encompass a broad range of proficiencies, including the ability to evaluate digital tools, adapt to emerging technologies, collaborate in digital spaces, and critically assess information for pedagogical purposes. In the context of higher education, the development of digital capabilities is increasingly seen as vital for promoting innovation in teaching and learning, particularly as institutions integrate online platforms and credentialing systems into their academic offerings.

Online credential adoption, while gaining momentum globally, is often met with hesitation or concern among faculty members. These concerns may relate to the perceived complexity of digital systems, lack of clarity on institutional support, uncertainty about long-term value, or fears of increased workload (Al-Jarf, 2020). Educators' attitudes toward such technological shifts are influenced significantly by their level of digital capabilities. When faculty members possess strong digital skills, they are more likely to understand, accept, and actively engage with new digital initiatives (Alblooshi & Hamid, 2019).

Previous studies have emphasized that educators with higher digital capabilities are generally more confident and better prepared to implement technological changes in their teaching practices (Hendrawati & Suherman, 2025). This confidence mitigates resistance and fosters a proactive stance toward innovation. For example, educators proficient in digital content creation, data analysis, or virtual collaboration are more inclined to view

online credentials as an opportunity to enhance learning and expand students' career prospects (Abbas & Khalid, 2023; Ali & Raza, 2024). Conversely, limited digital capability can exacerbate concerns, such as doubts about system reliability, the fear of failure in implementation, or the belief that online credentials may not align with traditional pedagogical models (Ashour, 2020).

The Concerns-Based Adoption Model (CBAM) suggests that educators' concerns evolve in stages—from unawareness and personal uncertainty to logistical concerns and, ultimately, impact-focused considerations. Digital capabilities influence these stages by equipping educators with the knowledge and confidence to navigate each phase of concern more effectively. For instance, a faculty member with well-developed digital skills is more likely to progress quickly from the "Self" or "Task" stages of concern to the "Impact" stage, where they evaluate the broader benefits of online credentialing (Ibrahim, Aldawsari, & Abboud, 2023; Ghaith & Ibrahim, 2023).

In the UAE context, where digital transformation in education is actively promoted as part of national development strategies, it is essential to understand how digital capabilities among faculty impact their willingness to adopt and engage with online credentials. Several local studies indicate a positive correlation between educators' digital readiness and their openness to educational innovation (Almansoori, 2021; Alneyadi, Abulibdeh, & Wardat, 2023).

Based on this literature and the CBAM framework, the following hypothesis is proposed:

H1: There is a significant relationship between digital capabilities and concerns toward online credential adoption among faculty members in UAE higher education institutions.

Relationship between digital capabilities and digital literacy

Digital capabilities and digital literacy are closely related constructs, both essential for effective engagement with educational technologies. While often used interchangeably, digital capabilities typically refer to the broader, integrated skills required for professional effectiveness in digital contexts—encompassing problemsolving, critical thinking, adaptability, and innovation. In contrast, digital literacy emphasizes the practical and cognitive abilities to find, evaluate, use, and create information using digital technologies. In the context of faculty development, digital capabilities can be understood as the enabling foundation upon which digital literacy is built and expressed in specific teaching and learning contexts.

Scholars have argued that digital capabilities serve as strong predictors of digital literacy because they underpin how individuals acquire and apply digital knowledge and skills (Hendrawati & Suherman, 2025). Faculty members who possess higher digital capabilities are more likely to demonstrate competencies across multiple domains of digital literacy, including ICT proficiency, digital content creation, communication, and ethical technology use (Ghaith & Ibrahim, 2023; Abbas & Khalid, 2023). For instance, an educator adept in digital collaboration and adaptive learning technologies will also tend to be digitally literate in areas such as virtual instruction, digital resource evaluation, and data-driven decision-making (Ali & Raza, 2024; Allam, Dempere, & Hua, 2024).

The UAE's national digital transformation agenda emphasizes the importance of equipping educators with 21stcentury digital capabilities, recognizing their role in enhancing overall digital literacy levels within the education system. Local research indicates that educators with access to professional development in digital capabilities report higher confidence and proficiency in using digital tools in pedagogically sound ways (Almansoori, 2021; Alneyadi, Abulibdeh, & Wardat, 2023). As digital capabilities increase, educators are more likely to adopt reflective and strategic approaches to technology use—key indicators of advanced digital literacy (Ibrahim, Aldawsari, & Abboud, 2023).

This relationship is particularly relevant in higher education institutions where faculty are expected not only to use technology effectively but also to model digital literacy for students. Faculty with high digital capabilities are positioned to develop richer digital literacy through experiential learning, ongoing adaptation, and reflective teaching practices (Saeed & Qasim, 2023).

Based on this theoretical and empirical alignment, the following hypothesis is proposed:

H2: There is a significant relationship between digital capabilities and digital literacy among faculty members in UAE higher education institutions.

Digital literacy and concerns toward online credential adoption

Digital literacy plays a central role in shaping educators' perceptions of and responses to technological innovations such as online credentials. Faculty members with higher levels of digital literacy are generally more confident, adaptable, and competent in navigating emerging digital systems, which reduces uncertainty and resistance to adoption. In contrast, low digital literacy is often associated with increased apprehension, perceived complexity, and reluctance to engage with unfamiliar technologies (Abbas & Khalid, 2023).

Concerns about adopting online credentials—such as data security, usability, pedagogical relevance, and institutional recognition—are particularly salient in higher education, where faculty are both end-users and key influencers of technological acceptance (Ashour, 2020). Digital literacy enables educators to critically assess such platforms, evaluate their value, and make informed decisions regarding their integration into teaching and learning (Ghaith & Ibrahim, 2023; Allam & Kalota, 2024). Proficiency in areas like ICT usage, data evaluation, media navigation, and ethical digital practice significantly reduces fear and misunderstanding around technology-based solutions like digital badges or micro-credentials (Alneyadi, Abulibdeh, & Wardat, 2023).

Research has shown that digital literacy not only increases awareness of the pedagogical benefits of online credentials but also enhances educators' ability to align these tools with curriculum goals, student engagement strategies, and institutional outcomes (Ali & Raza, 2024). For example, educators who are digitally literate are more likely to understand how online credentials support student employability, track learning outcomes, and promote lifelong learning—reducing concerns that such technologies are unproven or irrelevant (Almansoori, 2021; Ahmed & Khan, 2021).

In the UAE context, where digital transformation is a strategic priority, digital literacy is considered essential for empowering faculty to adopt and champion innovative solutions in education. Studies conducted in regional institutions confirm that digital literacy training improves attitudes toward technology and increases faculty readiness to adopt new tools (Jawad & Said, 2023; Gernal et al., 2023).

Based on these insights, the following hypothesis is proposed:

H3: There is a significant relationship between digital literacy and concerns toward online credential adoption among faculty members in UAE higher education institutions.

The mediating role of digital literacy

Digital literacy serves not only as a standalone predictor of technology adoption but also as a crucial mediating variable between digital capabilities and stakeholders' concerns regarding the adoption of online credentials.

While digital capabilities encompass an individual's access to digital resources and general technical proficiency (Ali & Raza, 2024), digital literacy refers to the application of these capabilities in meaningful, informed, and contextually appropriate ways. Therefore, possessing digital capabilities may not directly lead to reduced concerns about adopting new technologies unless those capabilities are transformed into actionable literacy. Faculty members may have access to digital tools or infrastructure (digital capabilities) but still experience hesitation or concern if they lack the confidence or critical literacy to navigate the pedagogical, ethical, or logistical aspects of integrating online credentials (Ghaith & Ibrahim, 2023). In this context, digital literacy acts as a conversion mechanism that translates technical potential into educational readiness and reduced apprehension (Abbas & Khalid, 2023).

Mediating models in technology adoption literature support the idea that digital literacy bridges the gap between access and effective use (Ali & Raza, 2024). For instance, educators with strong digital capabilities but low digital literacy may still perceive online credentials as complex or risky. Conversely, those who develop sufficient digital literacy—such as evaluating digital content, communicating online, protecting digital identity, and adapting tools for instructional purposes—are more likely to view new technologies as beneficial and manageable (Allam & Kalota, 2024; Ali & Raza, 2024).In the UAE higher education landscape, where digital transformation is rapidly evolving, studies suggest that professional development initiatives targeting

digital literacy—not just technical access—are critical in addressing faculty concerns and enhancing the adoption of digital learning innovations (Jawad & Said, 2023; Alneyadi, Abulibdeh, & Wardat, 2023). Thus, digital literacy serves as a key mediator that enables digital capabilities to influence attitudes and alleviate concerns surrounding online credentialing. Based on this understanding, the following hypothesis is proposed:

H4: Digital literacy mediates the relationship between digital capabilities and concerns toward online credential adoption among faculty members in UAE higher education institutions.

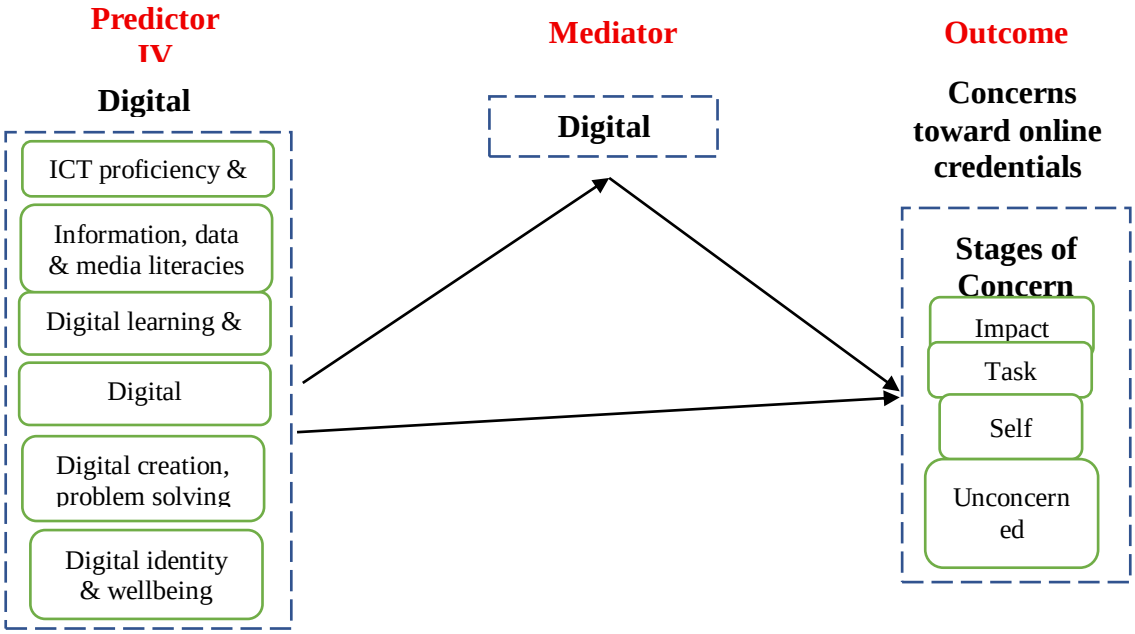
Proposed framework

The conceptual framework of this study intertwines Digital Literacy with the Concerns-CBAM stages, offering a fresh lens on digital technology adoption in education. Central to this framework is the interaction between educators' digital skills and their attitudes towards using technology in teaching. Digital Literacy is broken down into crucial competencies for today's educators, including ICT Proficiency & Productivity for enhanced teaching efficiency, Information, Data & Media Literacies for critical digital content engagement, and Digital Learning & Development for ongoing educational technology growth. Also included are Digital Communication, Collaboration & Participation for interactive digital involvement, and Digital Creation, Problem Solving & Innovation for tech-driven problem-solving and pedagogical innovation, with Digital Identity & Wellbeing covering the ethical use of digital spaces.

The CBAM's Stages of Concern provide a range of educator attitudes towards technology, from 'Unconcerned' to 'Impact'-focused, with 'Task' and 'Self' stages addressing practical application and personal confidence in tech use, respectively. This framework suggests that an educator's digital literacy level directly influences their technology integration stance, with higher literacy potentially aligning with more advanced concern stages. A mixed-methods approach underpins this framework, aiming for a thorough understanding of what drives educators' tech adoption. This conceptual model not only aims to enrich academic discussions on tech adoption in education but also offers practical insights for policy and professional development, geared towards optimizing tech use in educational settings.

The study designates this model as a conceptual framework because it integrates established theories with new constructs specific to the research context, serving as a theoretical foundation that links key variables digital literacy, stages of concern, and online credential adoption. A conceptual framework differs from a purely theoretical framework by offering a synthesized structure that not only explains the phenomena under investigation but also guides the empirical research process, including the formulation of hypotheses and the interpretation of results. By articulating the relationships between constructs and providing a visual and logical map of the study’s core components, the conceptual framework ensures coherence between the research problem, objectives, questions, and methodology, thereby positioning it as the guiding scaffold for the entire investigation. The results of the systematic literature review no doubt played an instrumental role in supporting the research hypotheses. Finally, there are four hypotheses identified in Figure 1.

Figure 1. Conceptual framework



DISCUSSION AND RESULTS

These UAE-based findings are echoed in international contexts. Naqvi and Iqbal (2023), in a study on teachers in distance learning environments, found that **ICT** proficiency had a significant positive impact on work performance and instructional quality. Their research emphasizes that digital competence not only improves teaching effectiveness but also enhances task management, particularly in virtual settings. Similarly, Paul and Roy (2023) conducted a survey of postgraduate students and concluded that higher levels of ICT proficiency were directly linked to increased usage of educational technologies, academic satisfaction, and digital engagement. Their findings underscore the universality of **ICT** proficiency as a key driver of academic success and digital productivity, regardless of regional context.

Globally, researchers have confirmed the importance of **information and digital literacy** in technology adoption. Nikou, Reuver, and Kanafi (2022) found that both information and digital literacy significantly affect individuals' willingness to adopt and use digital technologies in the workplace, with implications for higher education as students prepare for employment. Aavakare (2019) similarly demonstrated that both information and digital literacy have a direct and positive effect on students' intentions to use digital tools for learning. These findings reinforce the need to develop such competencies among learners in UAE institutions.

Data literacy, a key subset of digital literacy, involves the ability to read, analyze, interpret, and communicate data in a meaningful way. Ibrahim, Aldawsari, & Abboud (2023) highlight the increasing reliance on digital tools in UAE higher education, necessitating a strong foundation in data literacy. Faculty members often need to interpret data-driven insights, such as student performance metrics or learning analytics, to make evidence based decisions about their teaching strategies. Students also benefit from data literacy when conducting research or completing projects involving data analysis. Nikou and Aavakare (2021) emphasized that the integration of data literacy into the learning process boosts digital readiness and fosters more informed academic behavior. These competencies thus contribute to improved learning outcomes and institutional decision-making. Institutional support and strategic alignment are crucial. Ashour (2020) advocates for policies that support literacy development, while Abdellatif et al. (2023) emphasize continuous professional development for faculty to model and teach these skills. Embedding these literacies into institutional culture will ensure that UAE higher education systems produce digitally fluent graduates capable of thriving in a knowledge-based economy.

Digital learning has significantly reshaped educational practices in the UAE by providing flexible and adaptive learning environments. According to Almansoori (2021), LMS have been widely adopted across UAE universities to enhance teaching efficiency and student engagement. These platforms allow for the customization of learning materials, enabling educators to address the diverse needs of students and create

more inclusive learning experiences. Similarly, Alblooshi and Hamid (2019) emphasize that e-learning technologies empower students to access educational content at their own pace and convenience, fostering independent and self-directed learning. This flexibility is particularly beneficial in accommodating the varied schedules of learners in the UAE's multicultural and fast-paced academic environment. Internationally, similar outcomes have been reported. For instance, Chen (2023) conducted a mixed-methods study involving surveys and focus group interviews with students from technical education institutions in China. The study found that digital learning environments significantly enhanced both technical competencies and soft skills, such as problem-solving and teamwork. Key findings revealed that interactive digital platforms encouraged student autonomy, collaboration, and practical skill application, particularly when paired with real-time feedback mechanisms. By aligning digital learning initiatives with institutional goals and national priorities, UAE universities can enhance the quality and accessibility of education for all stakeholders.

Despite its potential, fostering **digital communication**, collaboration, and participation in higher education is not without challenges. Ahmed and Hassan (2021) identify resistance to adopting new digital tools, insufficient training opportunities, and technical barriers as significant obstacles to the effective implementation of these skills. Addressing these challenges requires a multifaceted approach. Ashour (2020) advocates for the integration of digital communication and collaboration tools into institutional policies, ensuring that students and faculty are equipped with the necessary resources and skills to engage effectively. Abbas and Khalid (2023) recommend embedding digital communication and collaboration training into the curriculum, enabling both students and educators to develop these competencies through structured learning experiences. **Digital collaboration** focuses on using digital tools to work together toward shared academic, research, or administrative goals. Collaborative tools such as Google Workspace, Slack, and Zoom have become integral to UAE higher education, enabling both students and educators to engage in teamwork and peer-to-peer learning. Al-Mansoori and Abdulla (2023) highlight the growing importance of digital collaboration, particularly in facilitating group projects and interactive learning sessions. For educators, these tools allow the co-creation of teaching resources, collective grading, and collaborative research projects, fostering a culture of teamwork within academic institutions. Abbas and Khalid (2023) further argue that collaborative tools help students develop essential skills such as problem solving, communication, and critical thinking, which are invaluable for both academic success and future employability.Alblooshi and Hamid (2019) note that active **digital participation** enhances students' sense of belonging and engagement in virtual learning environments, fostering stronger connections with peers and instructors. Similarly, Ashour (2020) highlights the importance of digital participation in cultivating motivation, creativity, and critical thinking among students, particularly in UAE universities that serve a diverse and multicultural student population. By engaging in digital communities, students and educators can collaborate, share ideas, and contribute meaningfully to the digital academic ecosystem.

Digital creation involves the ability to design, produce, and share digital content using various tools and platforms. In higher education, this capability is particularly relevant as faculty and students are increasingly required to develop digital resources, ranging from multimedia presentations to research outputs. Almansoori (2021) highlights how platforms like Blackboard Learn and Microsoft Office Suite have enabled faculty in UAE universities to create engaging learning materials, including video lectures, interactive quizzes, and tailored course modules. Similarly, Alblooshi and Hamid (2019) note that digital creation empowers students to express their ideas through innovative projects, encouraging active learning and critical thinking.

Internationally, Alajmi et al. (2025) proposed a conceptual framework linking digital creation with online credential adoption in higher education. Their study, based on a literature review and framework synthesis, emphasized that digital capabilities such as media production and content creation significantly influence students' willingness and confidence to pursue online credentials. Their findings underline the importance of creative digital outputs as a motivational factor in digital learning environments. **Digital problem-solving** is another critical competency that involves analyzing challenges, exploring solutions, and implementing effective strategies using digital resources. Ibrahim, Aldawsari, & Abboud (2023) emphasize that UAE educators increasingly rely on data analytics tools to identify learning gaps and improve student outcomes. For instance, dashboards that track participation and assessments allow early interventions. Similarly, students use tools like Microsoft Excel, MATLAB, and SPSS to conduct data analysis, supporting evidence-based decision-making in their academic projects. **Innovation**, as the culmination of digital creation and problem-solving, refers to developing new ideas, technologies, or practices that improve education. Ashour (2020) notes that

UAE universities have adopted technologies such as VR, AI, and blockchain to support immersive and adaptive learning. Abbas and Khalid (2023) highlight that gamification and flipped classrooms enhance student engagement and foster innovative thinking.

Digital identity in higher education is increasingly critical. Almansoori (2021) highlights that students and faculty in UAE universities utilize platforms like Blackboard Learn, Microsoft Teams, and LinkedIn to communicate, share resources, and showcase achievements. Abbas and Khalid (2023) assert that developing a credible digital identity boosts students' employability and allows faculty to build international reputations through research visibility and online collaboration. Globally, Alajmi et al. (2025) proposed a conceptual framework emphasizing the role of digital capabilities and self-efficacy in online credential adoption. Based on a literature synthesis, their model positioned digital identity as a core factor in students' motivation to pursue micro-credentials and participate in online academic ecosystems. This aligns with UAE initiatives to strengthen digital profiles for academic and career advancement. **Digital wellbeing** is equally vital in higher education, especially amid increased screen time and digital overload. Abdellatif et al. (2023) and Ahmed and Hassan (2021) documented rising reports of burnout, anxiety, and blurred work-life boundaries among faculty and students in UAE universities during remote learning periods. Alblooshi and Hamid (2019) stress the importance of time management, digital detox practices, and mindful engagement with technology. Digital wellbeing also includes security and ethical use. Abbas and Khalid (2023) underline the need for training in cybersecurity, such as recognizing phishing attempts and managing passwords, as these are crucial for maintaining a safe and empowering digital presence.

Strategic implications for the UAE

The integration of digital capabilities, individual digital literacy, and online credentialing systems has far reaching implications for the UAE's higher education landscape and national development priorities.

Workforce Readiness: Aligns higher education with UAE labor market shifts toward skills-first hiring.

Global Competitiveness: Positions UAE universities as digitally progressive, attractive to international learners.

Policy Synergy: Supports UAE's National Higher Education Strategy 2030 and Artificial Intelligence Strategy 2031.

CONCLUSION

The successful adoption of online credentials in UAE HEIs requires more than digital infrastructure—it necessitates a parallel investment in individuals' digital literacy. This paper's proposed framework offers a pathway to align institutional digital capability with human readiness, creating a fertile environment for credential innovation that supports lifelong learning and national development goals. Though the current study reported significant findings, there are some limitations that expose avenues for future research. Since the framework is conceptual, it now requires empirical testing, which is crucial to evaluate its practical utility in varied institutional contexts. Subsequent research should validate this model empirically in different types of higher education institutions to ensure its efficacy and generalizability. Future work should also design focused interventions to increase academic self-efficacy in digital skills among faculty. Such interventions could include customized professional development, peer mentorship and the provision of resources to support a collegial digital atmosphere at their institutions. Validation of this framework through empirical testing and implementing interventions to support faculty competencies will help refine the factors affecting online credential adoption within higher education in future studies.

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