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A Conceptual Framework for Online Credential Adoption: The Role of Digital Capabilities and Self-Efficacy in Higher Education

Hamad A S Z M Alajmi
Faculty of Educational Studies, Universiti Putra Malaysia

Habibah binti Ab Jalil
Faculty of Educational Studies, Universiti Putra Malaysia

Suriani binti Ismail
Faculty of Educational Studies, Universiti Putra Malaysia

ABSTRACT

This paper presents a conceptual framework examining the relationship between digital capabilities, self-efficacy, and online credential adoption in higher education, with a particular focus on faculty development. In the context of Kuwait's evolving education landscape, the study highlights the critical role of digital capabilities such as ICT proficiency, digital collaboration, and information literacy in fostering faculty readiness for integrating online credentials. The framework also underscores the importance of self-efficacy as a mediating variable, shaping faculty attitudes and mitigating concerns toward the adoption of digital credentials. Addressing a notable gap in the literature, this study explores how self-efficacy enhances the impact of digital capabilities on faculty confidence, ultimately facilitating the successful adoption of online credentials. By integrating the Teaching Staff Digital Capability Framework and the Concerns-Based Adoption Model (CBAM), the paper provides a comprehensive analysis of the adoption process. 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: Online Credential Adoption, Digital Capabilities, Self-Efficacy, Higher Education.

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 (micro-credentials, digital badges and certificates) that have to provide, to some extent the proof for skills and competencies through an accessible way with being flexible on time and place [1]. These certifications meet rising need of developmentally focused continuous learning and a lifelong education, so that learners are able to obtain specific skillsets related requirement by organization and personal career needs [2]. Online credentials change what and how academics teach, and where students want to learn. In order for these credentials to be widely utilized by higher education institutions, faculty like those who are completing this course will need the digital skills and the capacity to

effectively engage with however these technologies develop [3, 4]. Faculty members are required to possess digital competencies such as ICT skills, information literacy and digital collaboration in order to use digital platforms, generate and curate online content, participate in virtual environments [5, 6]. While competency models improve instruction, they also make it easier for online credentials to be woven into the curriculum and enhance education.

Faculty self-efficacy, which refers to the belief of an individual in his own ability to perform specific tasks, affects faculty attitudes toward adopting technology [7-9]. Faculty with high self-efficacy will probably be more open to new technologies [10, 11], navigate technological complexity better and implement online credentials in their teaching practices. On the other hand, low self-efficacy has been described as a cause of resistance and reluctance thereby impeding uptake and diluting what online credentials can offer not only to educators in delivery and to learners in attainment [12].

A recognized need exists to understand the ways in which digital capabilities and self-efficacy can inform faculty concerns and attitudes regarding the adoption of online credentials in higher education [9, 13, 14], yet research into these areas remains limited. The focus of existing literature has largely been on the advantages to learners from online credentials, paying little attention to the criticality of faculty in this regard [15]. Although numerous studies have underscored the need to foster educators' digital skills [1, 16], none investigated the interrelation among digital competencies and faculty self-efficacy as well as their apprehension with adopting online credentials. Enhancing investment in education acknowledges the importance of essential soft skills, yet bolstering training and development can support educators to improve within their profession as is still widely perceived [17]; this holds true even in the context of Kuwaiti higher education which may be experiencing a nascent period related to moving toward online credentials that may place faculty at odds with digital awareness near-support. In this region, cultural, technological and infrastructural factors typically influence faculty perceptions and readiness we are unable to comment on the ability of this MOOC or online credentials in general to seamlessly become an integrated part of existing Higher education scenarios [18]. Thus, what is required is a holistic model that addresses these components and helps institutions to guide their faculty in the adoption of online credentials.

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 Kuwait. This research will contribute to knowledge about how digital capabilities enable faculty members' incorporation of online credentials into teaching, and what role self-efficacy plays in mitigating adoption concerns that affect the attitudes and behaviors of faculties. This framework will not only contribute to theoretical developments, but also provide recommendations for practice, helping higher education institutions support faculty development and improve adoption of online credentials. This study contributes to the literature of technology adoption in higher education by filling a gap in research focusing on faculty, who will be instrumental for how effectively online credentials can be integrated [11, 19]. These results reinforce the need for faculty development programs promoting both technical skills and confidence in using digital tools. There is a very specific context here when considering this for universities in Kuwait 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.

THEORETICAL FOUNDATIONS

Digital Capabilities

Digital capabilities are a complex of competencies needed to interact successfully with technology in educational contexts All three of these items (ICT proficiency, digital creation and digital collaboration) are inherent internal to online credentialing in higher education. ICT capability is when someone can execute numerous tasks electronically, such as communication and data analysis, in a way that frees them from needing to rely on the manual completion of work. It is a basic teacher skill in his/her trials with more virtual educational settings, progressed online certificate integration into their curriculum [3, 20]. Digital creation is using technology to innovate and come out with digital products in such a way that these potential resources for the well-being of students can be utilized by educators as online learning materials that would help both learners' engagement and enhanced learning outcome [21-23]. Finally, digital collaboration in higher education highlights the work undertaken by educators inside digital spaces and how they collaborate across platforms to enhance learning experiences and sustain academic community connections [24, 25]. Much of the educational research highlights the relationship between digital capabilities and technology adoption. Faculty high on digital proficiency are motivated to use and practice with such tools in their teaching, skills; therefore, they can easily accept the use of technological modes like online credentials [15]. Second, digital competences play a helpful role in the preparation and adaptability of educators to new educational technology, which is necessary for fostering innovation at universities [8]. This implies that up-scaling of the digital capabilities among the faculty in higher educational institutions is a necessary step towards institutional adoption of online credentialing systems, thereby promoting lifelong learning and professional development [26].

Self-Efficacy

The term of self-efficacy attributed to Bandura and Wessels [27], relates to the belief an individual holds in the capacity of being able to perform actions required for attaining goals. Self-efficacy is a major predictor of whether faculty believe they can use new technologies in their teaching. Educators with higher self-efficacy were more likely to adopt and use online badges, as they have higher confidence in their ability to operate and apply these features [28]. Professionals with high self-efficacy may more easily embrace new tools and change the way they work as a consequence of fewer barriers, which in turn facilitates the release of technologies; while professionals who report low levels of technological competence fear to experience failure or inadequacy in construct mastery, leading to slower progress at joining digital learning tools within an institution. Interested in how self-evaluative beliefs are formed, Bandura and Wessels [27] writes that mastery experiences or performance outcomes contribute most to the development of a strong sense of efficacy [27]. Therefore, in the realm of online credentials, educators who are comfortable using different digital platforms would typically be more open to embracing the online credentialing systems [7]. In addition, faculty who witness the successful uptake of these technologies by their peers may experience vicarious learning leading to increased self-efficacy [29]. Increased technology self-efficacy encourages the use of technology and innovation, as teachers who are confident will be more likely to experiment with new tools and pedagogical approaches [6, 30].

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Online Credentials

The adoption of online credentials is informed by research that suggests credential uptake is also dependent on institutional and individual factors. Key drivers at the organizational level are needed by supportive leadership, digital media resource, and strategic workforce demand alignment [31]. On the individual level, faculty attitudes towards technology, self-efficacy and digital competence were also important factors in terms of incorporating online credentials to their teaching [32]. Faculty concern with the verifiability and legitimacy of online certificates is a barrier to the broader adoption in this area, making strategies required to reassure these comments [13, 33, 34]. With information being divided into these categories, along with the shift to micro-credentials and certificates in a department of education online format, students began to see greater flexibility which catered more to their needs. Competency-based and skill-focused, these credentials permit learners to show mastery of only specific competencies and skills, often resulting in a smaller time investment than traditional degrees [35]. The demand for non-degree minors, distributed degrees, completing courses in other member institutions has been gradually increasing among young and adult students who are seeking skills to get a better job promotion or seeking career improvement without any need to commit for the full master's degrees [36, 37].

Concerns-Based Adoption Model (CBAM)

Theories such as the Concerns-Based Adoption Model (CBAM) capture a more encompassing review of how individuals assimilate new innovation, like online credentials. Additionally, CBAM Errabo, Paguio [38] identifies seven stages of concern educators have as they go through the process from awareness to collaboration and refocusing. The model is especially powerful in determining faculty concerns with online credentials and assistance at every stage of adoption [5]. When using CBAM to the adoption of online badges, educational institutions can align their interventions by identifying specific areas that concern users: for instance, credibility of competencies or technical problems in implementation [39]. By understanding these concerns, institutions can focus professional development and create an environment where teachers are safe with the implementation of new educational technologies [36]. In addition, as Alam, Hafaz [2], Framner, Fischer-Hübner [40] highlight CBAM could also help in capturing the readiness from faculty members to adopt online credential which could further provide insights about ways institutional leaders could instill a more supportive and innovation conducive climate.

Teaching Staff Digital Capability Framework

The Teaching Staff Digital Capability Framework is a plan to support teaching staff in developing their digital expertise such that they are able to meaningfully incorporate online credentials into curriculum. Primarily, the framework focuses on developing competencies in five core areas: ICT proficiency, digital creation, digital communication & collaboration and professional learning [8]. When institutions work to ensure this in two areas, they create conditions that make it more possible for faculty members to integrate and effectively use online credentials in their curriculum. This is accompanied by the necessity of continual development on the part of professionals with respect to their digital competencies [24, 41, 42]. The figure also points the constituent leadership takes placing infrastructures and achieving digital competency [31]. The Teaching Staff Digital Capability Framework provides a framework that guides higher education institutions in smoothly sailing through digital

transformation transit, enabling an ecosystem for educators and students to enjoy conducive digitally empowered learning environment [26].

LITERATURE REVIEW

Digital Capabilities and Concerns toward Online Credential Adoption

A critical determinant in triggering the uptake of online credentials in the higher education ecosystem represents digital capabilities, and related literacies like ICT literacy, information literacy, and digital learning capabilities: each such dimension interprets with its own content inside variation to each other which sheds light on the anxiety's educators might have about integrating those technologies into their pedagogical practices. ICT proficiency is simply the usage of digital devices and platforms that have a strong basis for the application of technology in education [8, 43]. Faculty are less concerned about adopting new practices if they have greater ICT aptitude and believe they can navigate the technical requirements of online credential platforms. There is evidence in the study that familiarity, and comfort with technology helps reduce resistance to its adoption [26]. Accordingly, tentatively expect that the higher the ICT proficiency is, lesser would be online credential-using concerns. In the current digital information environment, educators must also develop this "information literacy" to evaluate, manage and leverage digital content wisely [18]. Faculty possessing greater proficiency in these literacies are more able to see the possible upsides and pitfalls of adopting online credentials, therefore decreasing reservations over their use. This relationship is reinforced by research suggesting that educators who are more digitally literate reported feeling less anxious or hesitant about embedding further digital tools [24].

Framner, Fischer-Hübner [40] argued that to be able to effectively implement online credentials, it is important to have digital learning capabilities, which comprise the ability for institutions offering these credentials, to develop and transmit educational content digitally. For faculty accustomed to such digital literacies, online credentials can be seen as a logical extension of their pedagogical toolkit and present fewer concerns. Research on digital capabilities has shown a large and robust negative correlation with the diffusion rate of new technologies [15], as educators who have expertise in digital pedagogies tend to adopt new tools more quickly. So, the theory is, as digital-learning capabilities improve, the more comfortable we all become in accepting the fact that online credentials are not going away. One of the essential determinants regarding online credentials adoption is self-efficacy; confidence about their capabilities to perform actions required to attain specific goals, which plays an important role in all educational innovations. Greater self-efficacy is related to higher consideration and lower scepticism towards new technologies. In this regard, faculty having higher self-efficacy are assumed to be more confident in adopting online credentials and implementing them more effectively with less worrying about their embedding into teaching practices [7]. Studies on self-efficacy in education environments assert that people who have confidence in their abilities are more likely to engage with difficult tasks and adjust well to different surroundings [6, 16]. Therefore, we would like to investigate whether greater self-efficacy will be related with reduced concerns regarding online credential adoption.

Therefore, we hypothesize that self-efficacy will mediate the path linking (1) digital learning capabilities and (2) concerns towards online credential adoption. Even faculty with the most advanced digital learning capabilities remain wary of online credentials if they are not convinced, they have mastered these tools. Nonetheless, the benefit of digital learning

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capabilities in mitigating concerns is stronger when self-efficacy is higher [19, 21]. Hence, we propose self-efficacy will be a mediator to reduce concerns which result from lack of digital learning capabilities among learners as higher self-efficacy may strengthen digital learning capabilities and effectively lessen the level of concerns.

Digital Capabilities and Self-efficacy

This interaction between digital capacities and self-efficacy is kind of a central element in understanding faculty concerns surrounding online credential adoption. In this study, self-efficacy affected both the perceived digital skills of educators and moderated the relationship between these skills and concerns about adoption of new technologies. Although a necessary but not sufficient condition, knowledge of ICT, however, may only partially resolve faculty concerns regarding online credential adoption if they lack confidence in their abilities. Here, self-efficacy mediates the inverse relationship between ICT proficiency and concerns [32, 44]. Faculty members low in self-efficacy may be less likely to use their ICT skills in a potentially productive manner, leading to further concerns about online credentials. Based on the SCT model, we theorize that self-efficacy will moderate the relationship between concerns and ICT proficiency (the stronger the resistance, the higher necessity for a high level of proficiency in order to use eHealth). Fosters sense of efficacy among faculty digital capabilities -ICT proficiency, Information literacy and Digital learning skills. As comfort with digital growth grows, educators are feeling better equipped to handle and include new technologies in their teaching [45-47]. This increase in self-efficacy blunts concern s prior to online credential adoption, given it makes faculty more confident and competent with the associated challenges of said appliances [29]. We therefore propose that digital literacy will positively affect self-efficacy thus reducing the concern towards online credential adoption.

GAP IN LITERATURE

Digital Capabilities and Technology Adoption

Digital capabilities as related to the adoption of online credentials is an emerging field of research, but past studies were mainly theoretical and focused on technology adoption in education per se, not with respect to digital capabilities regarding online credentials. A number of research discuss digital competencies more generally within the wider context, such as e-learning or digital pedagogies [15, 48]. Still, very few have set out to study the potential association of the use of digital capacities in general, but especially with respect to Information Communication Technology (ICT) proficiency as well as literacy and media literacies on online credential uptake. Though there is understanding that digital literacy plays importance in successful technology implementations in education, the literature does not elaborate significantly on the relationship to adoption of online credentials.

While, for example, the research by Bubou and Job [8] focuses on personal innovativeness, and e-learning readiness without a detailed examination of how digital capabilities such as ICT proficiency or digital creation specifically associate with faculty use of online badges. Similarly, the part of computerized coordinated effort and its commitment in allaying burdens over innovation reception have likewise not been enough tended to Nyathi [26]. The lack of research is a significant gap in the knowledge of what drives or hinders online credential adoption and uptake, from the standpoint of specific digital skills for example, within higher education settings.

Self-Efficacy as a Mediator

Self-efficacy is known to be closely related to the adoption of technology, which was well established in literature [49-53]. This stands in stark contrast with how self-efficacy mediates the relationship between digital capabilities and faculty attitudes toward online credential adoption, where non-significant relationships remain over a very wide testing range. Technology adoption is impacted through self-efficacy; that consider whether an individual believes in own capability to do specific task [6]. However, little empirical work to date has sought to understand how self-efficacy works as a mediator between digital skills and faculty concerns of imminent danger that cause them to avoid the adoption of technology. Research on self-efficacy largely concentrates on direct outcomes such as individual performance and innovation adoption while overlooking the potential mediating role it may play in specific educational technology contexts [11]. As an illustration, the mediating role of self-efficacy in the relationship between digital capabilities and online credential concerns among faculty has not been explored enough [32], even if it is well known its contribution to reduction on anxiety or resistance towards change with respect to digital education settings. This gap is of particular relevance as faculty who are skilled in digital technologies and increasingly confident could have a big impact on whether they perceive online credentials as more risky or beneficial. This void in the knowledge base is a missed opportunity when it comes to understanding the mechanisms that might promote greater adoption of online credentials throughout higher education.

Contextual Gap in Kuwaiti Higher Education

There is a distinctive lack of research that delves into online credentials take-up and digital skills acquisition in the framework of Kuwaiti higher education. There are more research works of digital transformation, especially in the process of credential adoption, in either Western countries or technologically advanced regions [18, 40], however, the exploitation on these thoughts into developing economies educational systems such as Kuwait is relatively scarce. There is little empirical research on how the faculty in Kuwait, as to higher education institutions perspective and use online credentials in terms of digital capability or self-efficacy. This gap is alarming as the issues and prospects of technology adoption could be different in the context of Kuwait than some other regions because of cultural, institutional and infrastructural variations. These include work such as that by Chauke and Ngoepe [3] on digital transformation in professional contexts in South Africa but we are not aware of a substantive study undertaken on the context of higher education like this in Kuwait. While some research is available on the barriers to or facilitators of online credential adoption in Kuwait, these have been investigated globally rather than within the socio-educational context of institutions specific to that country. Insight to these considerations is vital for strategies that will improve digital skills and drive the use of novel educational technologies in Africa.

Comprehensive Conceptual Frameworks

The existing literature on online credential adoption, digital capabilities, and self-efficacy has been limited with few overarching conceptual frameworks to interlink these constructs to explain an entire picture of faculty concerns regarding online credentials. Despite the plethora of studies, however, most research has emphasized one or another separate component such as for instance whether digital literacy matters to the change of teaching practices [54] or how self-efficacy affects technology use [5], without offering a more integrative model that links these elements in understanding faculty attitudes and behaviors towards online credential

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adoption. There is a lack of an integrated framework that clarifies the interrelations between digital capabilities, self-efficacy and faculty concerns. Although stages of technology adoption [18] in have been investigated using the Concerns-Based Adoption Model (CBAM), it has not been applied to online credentials in higher education. Additionally, few models exist that incorporate how digital capacity characteristics connect with the necessary factors to reduce resistance and enhance adoption self-efficacy. However, existing research on this topic has not provided a framework for understanding how all these variables interact together to influence the acceptance of online credentials [55]. This absence of frameworks within which to explain the process or circumstances that may affect technology adoption undoubtedly holds back a more comprehensive study of the higher education context, such as Kuwait University.

CONCEPTUAL FRAMEWORK DEVELOPMENT

Digital Capabilities and Online Credential Adoption

One area that will help enable the integration and actualization of online credentials in higher education is digital capability. Instructional tools on digital environments as online credentials Bubou and Job [8] provide the faculty with key insights to be effective at teaching, assessing, and professional development. Key among many dimensions of digital capabilities are ICT literacy and digital collaboration that are essential for assuring online credentialing. Digital literacy proficiency is defined as the ability to use Digital technologies for purposes of problem solving, communication and access to information [15]. Faculty, who need to incorporate online credentials into their courses, get used to using digital credentialing platforms if they want to be proficient with ICT. Previous studies have reported that teachers with higher levels of ICT skills tend to be more willing to use digital tools as a part of their teaching which consequently led to better learning experience [40]. ICT competencies not only empower educators to develop and manage digital assessments but also create a more confidence in accessing the online infrastructure for credentials.

Another integral part of digital capabilities is that of digital collaboration where it refers to the act of using online tools to work with peers, students and external stakeholders. In the field of online credentials adoption, this aspect of digital capacity is critical because it enables educators to design courses, assessments and certifications in a collective way that respects global standards [54]. Faculty can digitally collaborate to experience shared learning, co-create content, and have a continuous professional development which are essential to being successful at implementing online credentials. Accordingly, faculty with greater digital collaboration capabilities may better embraced online credentials as a result of their ability to harness these competencies in the pursuit of more effective teaching practices and participation in professional networks that can attest to the quality of online credentials.

Self-Efficacy as a Mediator

Significant mediation roles of self-efficacy are observed both on the paths from digital capabilities to faculty concerns about adopting online credentials and from social influence on faculty concerns about adopting online credentials, as previously mentioned in Figure 1. Bandura's social learning theory postulates that self-efficacy plays a pivotal role in determining an individual's confidence in performing certain behaviors, especially under challenging conditions [7]. Self-efficacy in the context of online credential adoption, then, directly influences how comfortable faculty members are about incorporating these credentials into their academic spaces and using them. Online credential adoption poses less of a challenge to faculty

members with high self-efficacy and they are likely to see it as an opportunity to improve their professional practice. Self-efficacy studies show that educators with a higher level of self-confidence regarding their ability to use digital platforms have lower concerns about technology integration [21]. In other words, faculty members who have high self-efficacy believe that they can become competent in using online learning platforms and digital tools – and thus their resistance to new technologies (like online credentials) is reduced. Digital capabilities also reinforce the extent to which self-efficacy lowers privacy and security concerns related to online credential adoption. However, even the most pedagogically suitable and digitally collaborative ICT-savvy educators may struggle to apply these skills in an online credential adoption [13]. Creating a sense of self-efficacy can make faculty more likely to use their digital skills to problem-solve through technical issues, relate and interact on digital platforms, and follow through with novel credentialing practices. One important piece of the puzzle is the mediating role self-efficacy plays between digital competence and its transformation into practical, actionable behaviors which can be instrumental in spurring online credential adoption.

Proposed Framework Overview

This theoretical model connects digital proficiency, self-efficacy and online credential adoption that offer a broad-based model to study the relationship among those variables which is essential for faculty readiness to adopt online credentials. The basic premise of the framework is that digital abilities, ICT skill competencies, and technological cooperation are facilitators for the incorporation of online credentials in higher education [15]. We also find that self-efficacy is an important aspect of digital capabilities, one that mediates the relationship between digital capabilities and credential adoption thereby enabling diverse faculty to support online credentials and address implementation concerns. It builds upon the Teaching Staff Digital Capability Framework and those elements of essential digital capability that are necessary for to get the most from online credentials. It focuses on the ability to use ICT competences, engaging in digital collaboration and communication necessary for adequately routinizing faculty readiness for uptake and utilization of online credentials [26]. The Teaching Staff Digital Capability Framework offers a systematic process to support staff in becoming digitally ready, by aligning the online credential system with the digital competence development of faculty.

Includes the Concerns-Based Adoption Model (CBAM) to chart faculty adoption of online credentials. IO Exception the Harvard model of CBAM – Change Implementation and Acceptance Model, a structured approach to examining the concerns and perceptions people face as they adopt new technologies [3]. Given the use of online credentials as an innovation, CBAM can be used to track longitudinal shifts in faculty concerns especially around their ability and self-efficacy digitally. The model suggests that controller relations are developed as controllers become more digitally competent and achieve better self-efficacy, reducing faculty concerns about the online credentials in terms of technical difficulty, relevance or trustworthiness. We suggest that digital capabilities are the foundational layer that allow faculty to interact with online credentials, and self-efficacy is a key mediator (the wind beneath the wings) which enhances these capabilities by alleviating anxieties and fostering positive attitudes towards using online learning platforms and tools. CBAM is used to monitor the progression of faculty members at each stage of adoption so interventions can be more specifically targeted to the concerns most relevant for that point in time. By integrating the Teaching Staff Digital Capability Framework (TSDCF), also guarantees staff across a range of

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large-scale institutions worldwide have the skill set to support online credentials, leading to widespread uptake in HE providers as well.

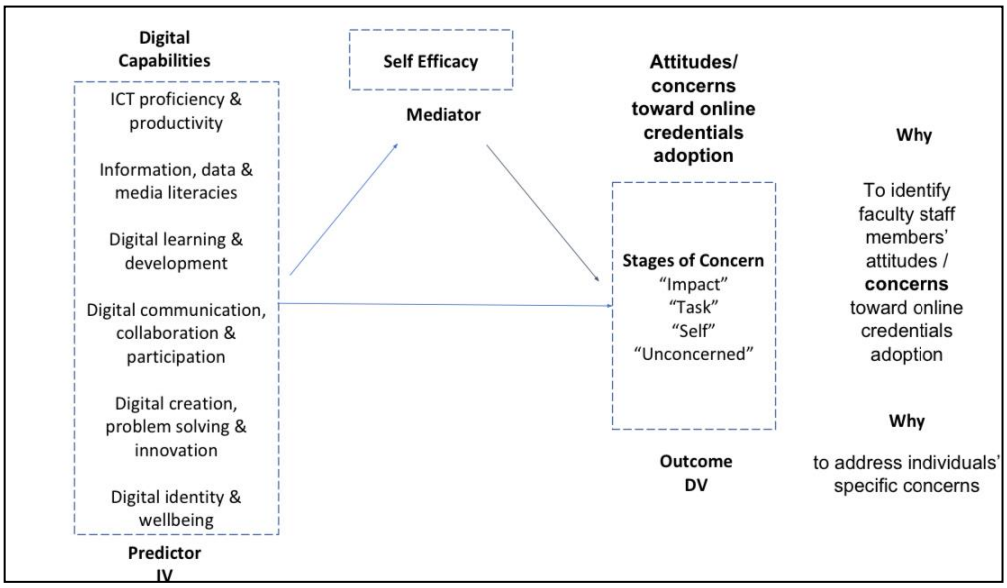

Figure 1: Conceptual framework

PRACTICAL IMPLICATIONS

Higher Education Institutions

Building a pedagogical foundation for online credential adoption to encourage the widespread adoption of digital credentials in higher education, institutions must implement initiatives that support faculty digital capabilities. This is where targeted training programs to increase competencies in ICT, which are a precondition for the assimilation of online credentials, come into play. Provide faculty with the experience of developing digital skills through online badge-awarding platforms. This may be done through structured digital literacy workshops or rather by integrating basic concepts of information and communication technology into the system at large during normal in-service training. In addition, they should stimulate digital collaboration in their ranks so that teachers create and use online credentials as part of their teaching practice. This would help in embedding a culture of collaboration and ensure educators learn to be digitally competent not only in tool use but also skillful application for teamwork and creativity. Another key strategy to minimize resistance to online credential adoption is increasing self-efficacy among faculty members. The faculty development programs will help them to enhance their self-efficacy of using digital tools in teaching. An option too may be establishing peer mentorship programs where online credential adoptees can be paired with experienced educators who already hold online credentials. Institutions may also provide faculty with low-stakes, supportive spaces to play with digital tools and gain some level of confidence working within them. In addition, ongoing feedback and acknowledgment of effective uses of digital innovation in instruction contributes to positive results (and enhanced self-efficacy), continuing to drive faculty engagement around online credentials.

Policy Makers in Education

Policy makers, on the other hand have a significant role to play in putting forth a supportive regulatory framework for the adoption of online credentials through national level policies

focused on faculty development efforts. Receiving this support will begin with educational policies where digital literacy is made a core part of teacher professional development [6], which seems absolutely necessary. This calls for policy makers to push up programs of iterative digital education for faculties. They are being regularly skilled every time to adopt these very online credentials in their curricula. It is important for these programmers to consider the promotion of self-efficacy as well, understanding that digital skills themselves are not enough if people do not have confidence to practice them. Because of this, National education frameworks must consider an explicit strategy for promoting faculty development design in HE once it was presented more developed especially towards digital competences and self-efficacy. Institutional Investment in Digital Infrastructure: Policy makers will need to invest in building the infrastructure to support online credentialing at universities and colleges. And that means ensuring institutions have access to working technology platforms and robust broadband, as well the tech support systems many higher eds are struggling with for their faculty. All the digital skills and self-efficacy in the world are not going to help you implement full online credentials effectively without this infrastructure. Policies need to also facilitate the public-private partnership in technology-enabled scale solutions in online credentialing platforms that are accessible, non-top heavy, and facilitative for educators.

Faculty Development Programs

Design faculty development programs to enhance the digital capability and self-efficacy of educators. Modular courses that provide a flexible pace of learning to the faculty in increasing order of digital literacy levels seems to be another appropriate strategy. Furthermore, the courses should encompass from basic ICT skills to more advanced digital collaboration tools and content creation with a reciprocal advantage for educators to become more comfortable using online credentialing platforms. Training must also focus on the hands-on use of these skills in the online credential's environment, so faculty knows how to integrate digital certifications within their curriculum. Online self-efficacy training, informed by theoretical models, should be included in higher education professional development for faculty, along with building digital competencies. These might include sessions on how educators develop a more appropriate willingness to experiment with different digital tools. The inclusion of peer coaching and group projects that other faculty can engage in together to discuss their successes, failures, and practices concerning online credentialing would be beneficial components of the plan. This social learning among faculty helps to build a community of practice, which has been shown to reduce resistance of digital change for less confident staff. Furthermore, add continuous support and service models like tech leveraged help desks or online learning support teams to the landscape of the institution. Support Mechanisms for Guarantees of Continuity of Faculty: These support mechanisms are to ensure that faculty has continuous help and resources into the transformation due to online credential adoption in place to promote online credentials in higher education, therefore, faculty development programs must cater to the needs of both part-time instructors who lack disciplinary experience and Ph.D.'s unprepared for societally relevant teaching and research.

CONCLUSION

From a virtue perspective, digital capabilities and self-efficacy represent key enablers, which can support the growth of online credentials within higher education institutions. We identified the necessity of digital capabilities (i.e. ICT literacy and digital collaboration) in enabling lecturers to integrate online credentials effectively in their teaching practices, also based on

those layers of interoperability between internal structures, disciplinary expertise and educational practices. Then, the mediating effect of self-efficacy is important in improving confidence in use of digital tools among educators leading to lessening their concerns and resistance to change use of new technologies. This study brings together these two important factors digital capabilities and self-efficacy in a conceptual framework to support an understanding of how faculty can successfully navigate the adoption process of online credentials. Yet, the abstract nature of this framework leaves the theoretical underpinnings as a prevailing theme, and it now needs to be tested in real time and space contexts throughout education as explanatory or phenomenological research, confirmatory factor analysis or causal modeling. 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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