

## ***Micro-credentials for information literacy skills education development in academic libraries***

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### **Abstract**

**Introduction.** This paper investigates the role of micro-credentials and digital badges in reinforcing information literacy and professional development within academic libraries. It assesses the benefits and challenges of these tools in continuous education at the University of Lagos, Nigeria.

**Research Methods.** Using a descriptive survey design, the study involved 406 undergraduate and postgraduate students selected via stratified random sampling from the Faculty of Education.

**Data Analysis.** Data were collected using a validated questionnaire and analysed using descriptive statistics (frequency, percentage and mean). Hypotheses were tested using T-test and ANOVA at a 0.05 significance level.

**Results.** The results show that overall participation was fairly low, even though respondents generally believed the programme was beneficial for improving employability and supporting lifelong learning. The analysis also found clear differences across age groups: older professionals were more actively involved than younger ones. Perceptions of benefit differed by level of education as well: participants with associate degrees rated the programme as most valuable, while those with doctoral degrees perceived the least benefit.

**Conclusion.** Micro-credentials serve as vital tools for verifiable skill acquisition. However, tailored strategies are necessary to address demographic variations and increase adoption rates for effective professional development.



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## A. INTRODUCTION

Continuing education and skill development have become essential in today's increasingly dynamic labour environment, where the lifespan of specific skills is shrinking rapidly (Akintolu & Adewoye, 2024). The fast-moving boundaries of technology and automation, along with changing business demands, impede the ability of traditional educational approaches to equip individuals with the right tools for current market needs. While traditional degrees and certifications remain a valuable foundation, they are often rigid, time-consuming and expensive, meaning they might not always be sufficient for professionals looking for quick, easy and affordable solutions to improve their skills. In this current landscape, the concept of "lifelong learning" has shifted from an aspirational goal to a professional survival strategy. Consequently, there is a growing demand for educational models that enable granular, just-in-time learning that can be immediately applied in the workplace.

In response to this evolving education landscape, micro-credentials (MCs) and digital badges have emerged as innovative solutions to bridge the skills gap. As defined in contemporary literature, micro-credentials are "visual representations of MCs granted once a learner has demonstrated mastery in the required skill" (Peisachovich et al., 2021). Micro-credentials are formal records that recognise what a person has learned through short, focused learning experiences. They make these achievements visible through certificates, digital badges or endorsements, issued either online or on paper, and can be combined over time to count toward a larger qualification (Shapiro et al., 2020). Unlike traditional transcripts that list course titles, these alternative credentialing systems offer a flexible, modular approach to learning that highlights specific competencies. They cater to the dynamic needs of both learners and employers by recognising and validating diverse skills that may not be captured in a standard degree programme (Maxwell et al., 2017). By breaking down learning into manageable units, these systems allow

individuals to curate a personalised portfolio of competencies that reflects their unique professional journey and expertise (Maxwell & Gallagher, 2020).

However, the integration of these credentials into continuous education is not without significant challenges and scepticism. Because this is a relatively new frontier in accreditation, significant concerns exist regarding the credibility, uniformity and long-term worth of digital badges, as well as their acceptance by established educational institutions and corporate companies. Without standardised frameworks, there is a risk that these badges may be viewed merely as participation awards rather than proof of rigorous skill acquisition. Furthermore, the rapid proliferation of credentialing platforms can confuse employers and learners alike, making it challenging to evaluate the legitimacy of a particular badge or micro-credential. This ambiguity creates hesitation among employers to fully rely on these credentials for hiring or promotion decisions, highlighting a critical gap between the potential of the technology and its practical application in the labour market.

Within the specific context of Library and Information Science (LIS), there is a pressing need to investigate how these tools can be purposefully used to modernise the profession. This research examines the role of micro-credentials and digital badges within academic libraries by exploring how they can be used to reinforce information literacy competencies, enhance LIS education and encourage professional development in librarianship (Levesque, 2024). Libraries are no longer just repositories of books but are active hubs of digital literacy and research support. Therefore, this research investigates how micro-credentials can prove that educators and librarians have mastered particular abilities for consolidating key areas of information literacy (Zdunek et al., 2024). This approach moves beyond general training to specific, verifiable skill sets required in the modern information age.

By using an unreliable sources of information can mislead an organizations and

professional body, leading to poor and costly decisions. To prevent this, most especially among teachers, who are key players in advancing knowledge, they need skills that can help them recognize credible online information sources. Scholars argue that metacognitive ability strengthens people's capacity for advanced and critical thinking. To avoid relying on questionable information, it is better to search through reputable academic databases that are formally approved by professional bodies. This process helps maintain quality standards, particularly within the academic community (Durodolu and Ngoaketsi, 2019).

This study offers scientific novelty by examining how these credentials can be operationalised to update curricula and support career advancement. Specifically, the research explores how micro-credentials can validate mastery in critical areas such as information retrieval, source evaluation, ethical and legal information use, and digital tool integration for various research endeavours (Duggineni, 2023). By allowing students and professionals to show that they have mastered these specific skills through flexible and personalised learning options, micro-credentials can assist in keeping the LIS curriculum relevant (Ward et al., 2024). This specificity ensures that the educational output aligns precisely with the specialised needs of the library sector, rather than relying on generalised educational outcomes.

This research addresses a critical gap in empirical evidence on the efficacy of these tools. The study is urgent because it provides data on the benefits of micro-credentials for both individuals and employers, serving as a crucial feedback mechanism for stakeholders navigating the digital age. Currently, many individuals who should benefit from these offers are unaware of their value, and employers lack the data to justify investment in such programmes. By analysing participation levels and perceived benefits, this study will inform policy and practice, helping employers encourage employees to improve their self-development through engagement in micro-credentials. It also

provides the necessary justification for integrating these tools into formal professional development strategies, ensuring that the workforce remains agile and competent.

Information literacy has become a necessary skill in today's global, knowledge-driven world. Schools are responsible for preparing future citizens who can think creatively, reason critically, and continue learning throughout their lives. To achieve this, schools need to introduce information literacy programmes that deliberately train both students and teachers to develop the abilities required to learn and work independently (Durodolu, Adekanye & Olorunfemi, 2013).

Consequently, this paper aims to assess the benefits and challenges associated with implementing micro-credentials and digital badges in continuous education. To achieve this, the study addresses the following research questions: (1) What demographic factors (e.g., age, gender, socioeconomic status) influence the adoption of micro-credentials among adult learners? (2) What are the perceived benefits of earning these credentials on professional skills development, career prospects and ongoing learning among professionals? (3) What are the primary motivations for individuals to earn them?

Furthermore, to provide statistical rigour, the study tests two null hypotheses: (a) There is no significant difference between the participation level of young and old professionals in programmes offering micro-credentials; and (b) Individuals who have earned micro-credentials are not significantly different from those who do not, based on the benefits.

## **B. LITERATURE REVIEW**

This section presents a comprehensive review of the existing literature regarding the implementation of micro-credentials and digital badges within higher education, with a specific focus on Library and Information Science (LIS). It critically analyses the pedagogical benefits, the evolving role of academic libraries and the challenges

inherent in adoption. Furthermore, this section establishes the theoretical framework underpinning the study, detailing how the Association of College and Research Libraries (ACRL) Framework for Information Literacy is operationalised through micro-credentialing systems.

### **The Evolution of Micro-credentials and Digital Badges in Higher Education**

The landscape of higher education is undergoing a paradigm shift, moving away from exclusive reliance on traditional, time-intensive degree programmes toward more flexible, granular forms of certification. In this context, micro-credentials have emerged as a critical mechanism for validating specific competencies that may be overlooked in broad academic curricula. Micro-credentials are generally defined as short, competency-based recognitions that allow learners to demonstrate mastery in discrete skills. Associated with these credentials are digital badges, which are visual, metadata-rich representations of these achievements that can be shared across digital platforms like LinkedIn or e-portfolios.

Recent literature highlights that the primary driver for this shift is the need for "lifelong learning" in a rapidly evolving labour market. Traditional transcripts often fail to capture the nuanced soft skills or specific technical competencies, such as information literacy or digital research proficiency, that employers increasingly demand. By offering a modular approach to education, micro-credentials cater to the dynamic needs of learners who require just-in-time skill acquisition rather than multi-year commitments. This evolution suggests that credentialing is becoming more learner-centric, allowing individuals to curate a personalised portfolio of skills that bridges the gap between formal academic education and professional practice.

### **Micro-credentials in Academic Libraries and LIS Education**

Within the specific domain of academic libraries, the adoption of micro-credentials represents a strategic transposition of the

library's role from a repository of resources to an active centre for pedagogical engagement. This research examines how these tools can be purposefully used to reinforce information literacy competencies and encourage professional development in librarianship (Levesque, 2024). Empirical studies collectively suggest that micro-credentials offer a valuable pedagogical framework for library instruction, particularly in teaching information literacy and digital skills (Scott et al., 2024).

For LIS education, this approach is transformative. It allows library educators to update curricula rapidly without the bureaucratic hurdles of changing entire degree programmes. By integrating digital badges into library instruction, students can earn verifiable proof of their information-literacy skills, such as database searching, copyright compliance and data management, which strengthens their employability and academic success.

Moreover, the utility of these credentials extends to the librarians themselves. For practising librarians, the research highlights micro-credentials as a valuable tool for continuous professional development (CPD). In an era of rapidly changing library technologies, digital badges support librarians in acquiring new instructional, technological and managerial competencies (Newby & Cheng, 2020). They offer a structured, transparent way to document ongoing learning, promoting professional accountability and supporting career advancement by making "invisible" work and skill acquisition visible to administration and peers.

### **Pedagogical Benefits: Engagement, Personalisation and Verification**

The pedagogical efficacy of micro-credentials lies in their ability to foster engagement and accommodate diverse learning styles. Recent literature indicates that these tools enhance learner engagement, personalise learning pathways and provide verifiable proof of competency (Kayyali, 2025). Unlike traditional one-size-fits-all workshops, micro-credentials facilitate self-

paced, modular learning, helping students to engage with instructional units aligned to their specific academic or disciplinary needs (Lim et al., 2025). A key factor in this engagement is the gamification element inherent in digital badges. Incorporating gamified features, such as progress tracking, levelling up and tiered credentialing, has been shown to significantly enhance learner motivation (Roman et al., 2020). The badges' visual nature serve as an immediate reward, providing a dopamine feedback loop that encourages persistence in mastering complex topics.

Furthermore, micro-credentials move assessment beyond simple attendance records. They offer robust evidence of learning through authentic assessments. Instead of merely attending a lecture, a student earning a badge might be required to submit annotated bibliographies, reflective search narratives or research strategy maps. This shift ensures that the credential reflects actual competency, providing higher assurance to stakeholders about the learner's capabilities.

### **Challenges in Implementation: Validity and Sustainability**

Despite the clear benefits, integrating micro-credentials is not without significant hurdles. Previous research highlights critical weaknesses and challenges that must be addressed. A primary concern is the validity and currency of the badges. The rapid proliferation of credentialing platforms can confuse employers and learners alike, making it difficult to assess the legitimacy of a particular badge. The long-term success of these credentials depends heavily on institutional recognition, strategic alignment with academic curricula and the sustained capacity of libraries to design and maintain high-quality learning modules (Ullah & Usman, 2023).

If badges are issued for trivial tasks, they risk "credential bloat," where the value of the badge is diluted. Conversely, if the requirements are too rigorous, adoption rates may plummet. Additionally, there is the challenge of interoperability: a badge earned

in one library system must be recognised or understood by faculty in another department or by external employers. The evidence thus points to both significant opportunities and important considerations for libraries seeking to adopt micro-credentials as part of their instructional portfolio (Reed, 2023). This research aims to address the gap in understanding how these challenges, specifically regarding adoption factors and perceived benefits, play out in practice.

### **Theoretical Framework: Operationalising the ACRL Framework**

The theoretical basis for this study is grounded in the Framework for Information Literacy for Higher Education, articulated by the Association of College and Research Libraries (ACRL). This framework outlines how learners develop essential information literacy competencies through six (6) basic concepts, or "frames", which are: Authority is Constructed and Contextual; Information Creation as a Process; Information Has Value; Research as Inquiry; Scholarship as Conversation; and Searching as Strategic Exploration (Fullard, 2016; Chen, 2023). While this intellectual construct is vital for defining what it means to be information literate, a recurring criticism in the literature is that these concepts can appear abstract or intangible to many students and even some faculty. Concepts like "Scholarship as Conversation" are difficult to assess through traditional multiple-choice tests.

To solve this problem, this study posits that micro-credentials provide an organised mechanism for operationalising these concepts by turning the Framework's theoretical components into concrete, assessable competencies (Ward et al., 2024). By making use of digital badges and certificates, academic libraries can outline specific skills, such as source evaluation techniques, ethical citation practices and strategic search design, that mimic the learning outcomes embedded within each frame (Levesque, 2024).

For instance, a badge titled "Strategic Searcher" could require a student to demonstrate the ability to modify search

terms and use Boolean operators, directly mapping to the “Searching as Strategic Exploration” frame. Similarly, a “Copyright Champion” badge could operationalise the “Information Has Value” frame. Positioning micro-credentials within the ACRL Framework facilitates a more efficient integration of information literacy teaching in a departmental curriculum (Keeley, 2025). This collaboration ensures that students receive continuous, high-quality training and can present their earned badges on various professional platforms, thereby enhancing their academic and career readiness (Antad et al., 2024). Thus, the theoretical alignment between micro-credentials and the ACRL Framework serves as the foundation for analysing the efficacy of these tools in this study. It transforms abstract educational goals into a tangible ecosystem of verifiable achievements, providing a robust lens for evaluating the impact of digital badges on professional and academic development.

### C. RESEARCH METHODS

The study used a descriptive survey design. The population consisted of all undergraduate and postgraduate students in the Faculty of Education at the University of Lagos, drawn from the Departments of Adult Education, Arts Education, Science Education, and Vocational and Technology Education. In total, the population comprised 1,943 students. Using stratified random sampling, 406 students responded to the research instrument. Data were collected through a questionnaire. Students from the Faculty of Education were chosen as the study sample because they represent a key user group of academic library systems and services.

A self-developed 16-item questionnaire was used in the study, with a varied response scale including an adapted Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and Neutral (N). Respondents were required to tick [✓] the appropriate column corresponding to the degree to which they agree or disagree with statements made in the questionnaire. To ensure the instrument's validity, the

questionnaire was vetted by experts from related departments, such as Statistics and Educational Foundations before being sent to the field as a pilot study for assessment. This was done to ascertain the face and content validity of the instrument. The experts' comments, modifications and suggestions helped the researcher adapt the instrument before using it in the main study.

A pilot study was carried out to test the questionnaire before the main study. Thirty participants were part of this trial but were not included in the final sample. Their responses helped the researchers identify areas for improvement and refine the questionnaire and data collection process.

A reliability test using Cronbach's alpha was conducted, yielding an alpha of 0.84, indicating that the instrument was highly reliable and internally consistent. The final questionnaire was administered via Google Forms. The survey link was shared with selected students through WhatsApp, and responses were collected electronically. Each questionnaire included a brief introduction explaining the study's purpose and requesting participants' cooperation. All participants provided informed consent, and the study posed no risk of harm to anyone involved. The data collected was analysed using descriptive statistics. The research questions were analysed using percentages, frequency distributions and means. T-test and ANOVA were used to test the hypotheses at 5% significance level.

### D. RESULTS AND DISCUSSION

This section presents a comprehensive analysis of the study's findings, discussing them in relation to the research questions and hypotheses established in the introduction. The data, collected from 406 respondents, offers a detailed look into the demographic landscape, adoption rates, perceived benefits and motivational drivers of micro-credentials and digital badges within the context of continuous education and information literacy.

## **Demographic Profile and The Early Adopter Landscape**

The demographic composition of the respondents provides critical context for interpreting the study's findings. The analysis reveals that the participant base is predominantly young, with 76.6% of respondents aged 18 to 34 (41.6% aged 18–24 and 35.0% aged 25–34). Only a marginal 2.2% of respondents were above 55 years. This age distribution indicates that the perspectives gathered largely reflect the "digital native" generation, that is, individuals who have grown up in a ubiquitous digital environment. While this offers valuable insight into the future workforce, it also suggests that the data may underrepresent the specific challenges faced by late-career professionals who are often the primary targets for re-skilling initiatives.

Regarding gender distribution, the study recorded a higher participation rate among females (62.6%) than among males (37.4%). This aligns with global trends in the Library and Information Science (LIS) and education sectors, which have historically been female-dominated. Senarathna & Amarasooriya, (2024). Consequently, the findings regarding the "value" of micro-credentials may be implicitly influenced by the career trajectories and professional development needs specific to women in these fields.

An analysis of the educational background shows that the sample is well educated but is still in the formative stages of professional qualification. The majority hold a bachelor's degree (44.8%) or a high school certificate (30.5%), while those with advanced postgraduate qualifications (master's and doctorate) represent a smaller fraction. This correlates with occupational status: 71.4% identified as students and 18.2% as educators. This high concentration of students suggests that the study captures the sentiment of the "aspirational workforce": those currently preparing to enter the labour market, rather than established veterans.

A critical finding regarding adoption is the split in experience: 53.9% of respondents reported no prior experience with micro-

credentials, while 46.1% had engaged with them. This near-even split indicates that we are currently in a transition phase or an early majority stage of adoption. Micro-credentials are no longer a fringe concept, but they have not yet achieved ubiquity. Furthermore, among those who have engaged, the depth of adoption is shallow: 51.7% have earned only 1–2 badges, whereas only 6.7% have earned more than 10. This data suggests that while awareness is growing, the ecosystem has not yet matured enough to support a stackable credentialing culture where learners systematically accumulate badges to build a comprehensive portfolio.

## **Perceived Benefits: Validating the "Invisible" Skills (RQ2)**

To answer the second research question regarding the perceived benefits of micro-credentials, respondents evaluated the impact of these tools on their professional trajectory. The results, detailed in Table 1, show an overwhelming consensus. The highest agreement was found in Item 1, with 80.5% (Strongly Agree and Agree combined) affirming that micro-credentials provide "tangible proof of skills". This is a profound finding when viewed through the lens of the ACRL Framework, specifically the concept that "Information Has Value". In traditional education, soft skills, such as information literacy, critical thinking and digital research strategies, are often embedded in larger courses and thus remain "invisible" on transcripts. The high agreement here suggests that digital badges successfully solve the problem of credential transparency. They isolate and validate specific competencies, making them visible to the learner and potential employers. This supports Lockley, Derryberry & West (2016), who argued that the primary utility of digital credentials is their ability to offer a verifiable representation of granular achievements.

Furthermore, 72.2% of respondents agreed that these credentials improve employability and career prospects (Item 3). This perception aligns with the reality of the shifting labour market described by Narayanaswamy et al. (2024), where

employers increasingly value specific, job-ready skills over generalist degrees. In an economy where technology evolves rapidly, a degree earned five years ago may be less relevant than a micro-credential earned last month. The respondents clearly perceive badges as a mechanism for signalling currency and relevance in the job market.

The psychological impact of badges is significant as well. A total of 80.8% respondents indicated that badges motivate them to continue learning (Item 4). This supports the gamification theory in education, where the visual and immediate reward of a badge triggers extrinsic motivation, which, over time, can cultivate intrinsic motivation for lifelong learning (Alt, 2023). This is crucial for LIS education, which aims to foster self-directed learners. If badges can serve as milestones that encourage students to persist in mastering complex information literacy concepts, they become more than just certificates; they become pedagogical tools for engagement.

### **The Puzzle of Motivation**

The study investigated the primary drivers behind the pursuit of micro-credentials. Table 2 illustrates a complex motivational landscape that challenges some conventional assumptions. While "Increased motivation for lifelong learning" was a significant factor (27.6%), highlighting the alignment between micro-credentials and personal growth, the most striking finding is the dominance of the "Other" category (43.8%). This suggests that nearly half of the respondents are driven by motivations that do not fit into the standard categories of employer recognition, personal satisfaction or networking.

This anomaly warrants critical discussion. It is plausible that the "Other" category encompasses pragmatic, short-term goals such as fulfilling specific course requirements, curiosity about the technology itself or mandatory compliance set by instructors. As Hunt et al. (2020) argue, the flexibility of micro-credentials means they are often used to address highly

individualised needs that standardised surveys fail to capture.

Conversely, the low percentage for "Recognition from employers" (9.1%) is a concern. While respondents believe badges help employability (as seen in Table 1), they do not cite employer recognition as a primary motivator. This discrepancy suggests a gap between the perceived potential of badges and the current reality of the job market. It implies that while learners value the skills, they may not yet feel that employers are actively demanding or rewarding the badges themselves. This validates the chicken-and-egg problem in credentialing: employers wait for a critical mass before recognising badges, while learners wait for employer recognition before mass adoption.

### **Generational Paradox in Participation (Hypothesis 1)**

The study tested the null hypothesis that there is no significant difference in the participation levels of young professionals and their older counterparts. The results of the independent t-test are presented in Table 3. The analysis yielded a p-value of 0.005, which is significantly lower than the 0.05 threshold. Therefore, the null hypothesis is rejected. However, the direction of the difference is counter-intuitive and highly revealing. The mean participation score for older professionals ( $M=1.68$ ) was significantly higher than that of younger professionals ( $M=1.50$ ).

The rejection of the null hypothesis confirms that age remains a statistically meaningful variable in participation behaviour, but the interpretation must avoid deterministic assumptions about generational capability. Research on work engagement shows that participation and engagement often increase with age, partly because older professionals possess stronger emotional regulation, professional identity, and workplace commitment developed over time. This opinion is supported by Mori, et al. (2024).

This finding challenges the stereotype that digital tools are the exclusive domain of the youth. In the context of professional

development, older professionals appear to be more active consumers of micro-credentials. Several reasons exist for this generational paradox:

1. **The Urgency of Re-skilling:** Older professionals, having been in the workforce longer, may feel a more acute pressure to demonstrate that their skills are not obsolete. Micro-credentials offer a quick, verifiable way to prove digital competency (e.g., in new library software or data management) without returning to university for a full degree.
2. **Degree Reliance:** Younger professionals (mostly students or recent graduates) typically rely on the currency of their recent formal degrees. They may perceive their Bachelor's or Master's degree as sufficient proof of their capability, rendering micro-credentials redundant in their eyes.
3. **Professional Autonomy:** Older professionals often have more clarity on their skill gaps and the autonomy to choose their learning paths, whereas younger professionals may be constrained by rigid academic curricula that have not yet fully integrated micro-credentials.

This implies that LIS continuing education programmes should not assume that digital badges are only for "students". Instead, they are a vital tool for mid-to-late career librarians seeking to modernise their portfolio.

### **The Gap-Filling Function of Credentials (Hypothesis 2)**

Finally, the study examined whether individuals with different educational qualifications perceive the benefits of micro-credentials differently. The ANOVA results in Table 4 provide a nuanced picture of value perception. The ANOVA resulted in a p-value of 0.016, rejecting the null hypothesis. There is a statistically significant difference in how different educational groups value these credentials. The data reveals a clear hierarchy of perceived value. Individuals with Associate degrees reported the highest

mean benefit ( $M=5.17$ ). This suggests that for those with intermediate qualifications, micro-credentials serve as a powerful ladder. They allow these individuals to bridge the gap between their 2-year degree and the demands of the professional workforce, effectively topping up their credentials to compete with Bachelor's degree holders. In contrast, those with Doctorate degrees reported the lowest perceived benefit ( $M=4.00$ ). For individuals at the apex of academic qualification, a short-course digital badge offers diminishing returns. Their professional authority is already constructed and validated by the prestige of the PhD.

From a critical perspective, however, the "gap-filling" narrative should be interpreted cautiously. While micro-credentials may democratize access to skills development, they may also reinforce credential fragmentation and neoliberal responsibilization, where individuals are expected to continuously accumulate certifications to remain employable. Reviews of micro-credential ecosystems emphasize challenges such as lack of standardization, uneven recognition, and uncertainty about long-term academic equivalence (Varadarajan, Koh & Daniel, 2023).

Interestingly, Master's degree holders reported the second-highest benefit ( $M=4.52$ ). In the LIS field, where the MLIS is the terminal professional degree, this indicates that even qualified librarians value micro-credentials for specialisation. A librarian with a generalist MLIS might use a badge to pivot into a specialised role like "Data Repository Manager" or "OER Specialist". The effect size (0.074) indicates that while education level is a significant predictor, it explains only about 7.4% of the variance. This implies that other factors, such as personality traits, specific career goals and organisational culture, play a larger role in determining how much value an individual places on these credentials.

### **Synthesising with the ACRL Framework**

The practical implications of these findings are profound when viewed through the study's theoretical lens: the ACRL

Information Literacy Framework. The results demonstrate that micro-credentials are not merely administrative add-ons but are effective mechanisms for operationalising the framework. The high value placed on "tangible proof" (Table 1) directly addresses the difficulty of assessing abstract concepts like "Scholarship as Conversation". By breaking these concepts down into badgeable activities (e.g., a badge for "Citation Tracking" or "Peer Review Understanding"), libraries can provide the concrete scaffolding that learners, especially those with Associate and Bachelor's degrees, desperately need. The fact that older professionals are actively engaging suggests that the framework is not just for undergraduates but is a lifelong continuum.

The argument presented in the study can be interpreted as part of a broader scholarly effort to translate the conceptual orientation of the ACRL Information Literacy Framework into assessable pedagogical practices. From a critical standpoint, the claim that micro-credentials operationalise the Framework raises both pedagogical opportunities and epistemological tensions within information-literacy education (Gross, Latham & Julien, 2018).

First, the ACRL Framework itself deliberately resists reduction to measurable competencies because it is grounded in threshold concepts and metaliteracy, emphasizing dispositions, reflection, and participation in knowledge communities rather than discrete skills. The frame "Scholarship as Conversation", for example, conceptualizes knowledge production as a dialogic and evolving process rather than a checklist of technical abilities (Rapchak, 2019).

In conclusion, the results paint a picture of a promising but uneven credentialing ecosystem. Adoption is driven by the desire for employability and proof of skills, yet hampered by a lack of clear employer demand. The technology is being utilised most effectively by older professionals for re-skilling and by intermediate-degree holders for up-skilling. For academic libraries, this signals a mandate to design micro-credential

programmes that are not one-size-fits-all, but rather segmented to address the unique gap-filling needs of different demographic and educational groups.

## E. CONCLUSION

This research underscores the pivotal role of micro-credentials and digital badges as transformative tools for fostering lifelong learning and professional development within the dynamic landscape of academic libraries. The study successfully achieved its objectives by confirming that these digital assets provide essential, verifiable proof of skills, thereby enhancing professional visibility and employability in a technology-driven labour market. However, the findings challenge conventional assumptions regarding adoption. The rejection of the study's null hypotheses highlights a critical demographic nuance: contrary to the expectation that digital tools are primarily for youths, older professionals and individuals with intermediate educational qualifications (such as Associate degrees) demonstrated significantly higher engagement and perceived value compared to younger students or doctoral holders. This leads to the conclusion that micro-credentials currently function most effectively as bridging tools for re-skilling established professionals and up-skilling those seeking to elevate their qualifications, rather than serving as mere supplements for recent graduates or advanced scholars. Despite the clear benefits, the overall adoption rate remains moderately low, largely due to a disconnect between skill acquisition and formal employer recognition. Consequently, it is suggested that academic libraries and LIS educators abandon a one-size-fits-all approach. Instead, tailored strategies are required: programmes for younger learners should be integrated into formal curricula to ensure relevance, while offerings for advanced professionals must focus on niche, high-level specialisations. Employers are urged to formalise the recognition of these credentials to incentivise participation. Future research should pivot to qualitative explorations to understand the diverse, individualised motivations driving

learners, ensuring credentialing ecosystems evolve to meet specific career stages.

### AI Use Declaration:

Artificial intelligence (AI) tools were used solely for grammatical editing and language refinement in this manuscript. All ideas, analysis, interpretations, and conclusions presented in this work are entirely those of the authors.

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## TABLE LIST

Table 1 Benefit of earning professional skills and competencies in micro-credentials or digital

| S/N | ITEMS                                                                                   | SA (%)        | A (%)         | N (%)         | D (%)       | SD (%)     | TOTAL (%)      |
|-----|-----------------------------------------------------------------------------------------|---------------|---------------|---------------|-------------|------------|----------------|
| 1.  | Micro-credentials and digital badges provide tangible proof of my skills and knowledge. | 124<br>(30.5) | 203<br>(50.0) | 71<br>(17.5)  | 7<br>(1.7)  | 1<br>(0.2) | 406<br>(100.0) |
| 2.  | They have enhanced my CV and LinkedIn profile.                                          | 91<br>(22.4)  | 173<br>(42.6) | 123<br>(30.3) | 15<br>(3.7) | 4<br>(1.0) | 406<br>(100.0) |
| 3.  | They have improved my employability and career prospects.                               | 101<br>(24.9) | 192<br>(47.3) | 96<br>(23.6)  | 14<br>(3.4) | 3<br>(0.7) | 406<br>(100.0) |
| 4.  | They motivate me to continue learning.                                                  | 130<br>(32.0) | 198<br>(48.8) | 69<br>(17.0)  | 3<br>(0.7)  | 6<br>(1.5) | 406<br>(100.0) |
| 5.  | They help me stay up to date on industry trends and skills.                             | 120<br>(29.4) | 195<br>(48.0) | 80<br>(19.7)  | 9<br>(2.2)  | 2<br>(0.5) | 406<br>(100.0) |

Source: Durodolu, Aitokhuehi & Akintolu (2025)

Table 2 Primary motivations for individuals to earn micro-credentials or digital badges

| S/N | Variable                                   | Frequency | Percent |
|-----|--------------------------------------------|-----------|---------|
| 1.  | Recognition from employers                 | 37        | 9.1     |
| 2.  | Increased motivation for lifelong learning | 112       | 27.6    |
| 3.  | Enhanced personal satisfaction             | 48        | 11.8    |
| 4.  | Networking opportunities with peers        | 31        | 7.6     |
| 5.  | Other                                      | 178       | 43.8    |
|     | Total                                      | 406       | 100.0   |

Source: Durodolu, Aitokhuehi & Akintolu (2025)

Table 3 Independent t-test result of the participation level of young and old professionals

| Variable | N   | Mean | Std. Deviation | Std. Error Mean | df  | t      | Sig. (2-tailed) |
|----------|-----|------|----------------|-----------------|-----|--------|-----------------|
| Younger  | 325 | 1.50 | .501           | .028            | 404 | -2.838 | .005            |
| Older    | 81  | 1.68 | .470           | .052            |     |        |                 |

Source: Durodolu, Aitokhuehi & Akintolu (2025)

Table 4 Analysis of Variance (ANOVA) on perceived benefits by educational qualification

| Source         | Sum of Squares | df  | Mean Square | F    | Sig. |
|----------------|----------------|-----|-------------|------|------|
| Between Groups | 6.894          | 5   | 1.379       | .615 | .016 |
| Within Groups  | 896.596        | 400 | 2.241       |      |      |
| Total          | 903.490        | 405 |             |      |      |

Source: Durodolu, Aitokhuehi & Akintolu (2025)

Post-hoc Mean Scores: Associate degree (5.17) > Master's (4.52) > Bachelor's (4.49) > High school (4.46) > Doctorate (4.00).