Perception of Education and Industry Leaders on Micro-Credentials and their Potential in Higher Education

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Keywords	Abstract
micro-credentials, higher education, Mauritius	Micro-credentials are certifications that evaluate knowledge and skills acquired through specific learning experiences. This research explores the perceptions of education and industry leaders in Mauritius regarding recognition, ease of application, and value of micro-credentials in higher education. Interviews were conducted with 10 education and four industry leaders. The findings indicated that while the respondents lacked a deep understanding of micro-credentials as an educational model, they recognised the need to formalise its adoption within frameworks such as the National Qualification Framework (NQF) and a National Credit System. Additionally, there is a pressing need for reliable, competency-based assessments and structured pathways to map micro-credentials to university credits, leading to recognised qualifications. These insights from Mauritius can provide valuable lessons for other developing nations seeking to integrate micro-credentials into their higher education systems, helping to address skills gaps, promote lifelong learning, and create flexible educational pathways that align with local and global workforce demands.

Introduction

Micro-credentials are certifications that evaluate knowledge and skills acquired and mastered through the completion of specific learning experiences especially in technology-enabled learning contexts. Micro-credentials are defined in different ways by agencies like the Malaysian Qualifications Agency, the European Commission, the OECD, and UNESCO. The main driver behind the uptake of micro-credentials, according to the World Economic Forum and Boston Consulting Group (2015), is the widening gap between traditional higher education and the skills needed to work in the contemporary digital world.

Micro-credentials have the potential to play a fundamental role in the higher education system as they can be one of the key assets that can respond to learners' needs by customising education pathways (Friedler 2018). Several higher education institutions, such as Griffith University (Australia) and Loyola University Maryland, offer micro-credential programmes to increase graduate employability (Ahmat et al., 2021).

In Mauritius, although the potential of micro-credentials looks promising, it is essential to know whether (i) education leaders are ready to incorporate them in the educational ecosystem and (ii) industry leaders and potential employers are willing to recognise them as alternative

'credentials' that could be acquired from diverse learning pathways. The world view is that micro-credentials can: (i) help to bridge the skills mismatch between academic learning and competency development for the world of work (McGreal et al., 2022; Maina et al., 2022); (ii) foster lifelong learning for continuous professional development in a rapidly evolving and technology-driven work environment (Resei et al., 2019), (iii) accelerate the development of the knowledge society (Lovrec & Tič, 2023) and (iv) reflect the future of higher education with a redefinition of the teaching and learning landscape of universities (Selvaratnam & Sankey, 2021). Drawing from this world view, we drew our research questions on the perceived potential for micro-credentials in higher education and the enabling environment that is required for the adoption and recognition of micro-credentials.

Literature Review

According to the OECD (2021), there is an increasing interest in micro-credentials among key players in the education sector as a means of upskilling and reskilling, academic advancement, and personal development. Micro-credentials recognise and validate learning achieved from short training or educational activities, emphasising the development of competency and skills (McGreal & Olcott, 2022).

Beverley (2022) defined a micro-credential as: (i) a record of learning achievement verifying the learning outcomes and the competencies acquired by the learner, (ii) one that includes a reliable mode of assessment based on clear assessment criteria, (iii) being awarded by a trusted entity, (iv) having stand-alone value, which can complement other qualifications or be combined to form new qualifications, and (v) adhering to established quality standards.

Micro-credentials share similarities with the European Credit Transfer System (ECTS), which standardises student learning outcomes and uses credit points for workload transfer (Wagenaar, 2019). Fischer, Oppl, and Stabauer (2022) further suggest that ECTS can serve as a key metric in the micro-credential framework, helping to measure the depth of learning outcomes relative to the level of education.

Gauthier (2020) found that employers prefer using micro-credentials alongside academic transcripts to confirm skills for jobs. However, they stressed the importance of ensuring the reliability of these credentials. Resei et al. (2019) reported that employers consider that it is important to establish standards and to ensure recognition of micro-credentials to raise awareness specifically among employers. Diab and Zhang (2023) reported that micro-credentials help close skills gaps by offering short, affordable learning options, helping individuals and companies stay competitive. Employers increasingly see their value in upskilling and reskilling. Harvey, Wilde, and Roy (2023) also reported that employers found that micro-credentials offer accessible learning, address skills gaps, and validate competencies. However, Miller and Jorre De St Jorre (2022) noted that employers still have concerns about the practical use and reliability of micro-credentials.

NextSkills (2020) outlined four future scenarios for universities based on a Delphi study: the future skills university, the networked university, the my-university scenario, and the lifelong learning scenario. Each emphasises student mobility, personalised learning, micro-credentials for lifelong learning, and developing future skills, like critical thinking and problem-solving, to shift focus from knowledge acquisition alone.

The European Distance and e-Learning Network (EDEN) published a list showcasing its members' efforts in developing and applying micro-credentials within their institutions. McGreal and Olcott (2022) note that universities entering this field aim to achieve short-term, meaningful

impacts, such as improving employee skills and competencies, and helping companies stay competitive in the marketplace (Brown et al., 2021).

However, Brown et al. (2023) highlight concerns about the lack of knowledge and understanding of micro-credentials among educational leaders, which poses challenges for integrating them into higher education institutions. The OECD (2021) also identifies this as a barrier to their practical implementation. Furthermore, McGreal and Olcott (2022) postulate that there is a "serious lack of senior leaders who understand micro-credentials or who are willing to act as change agents, therefore, resulting in the lack of resources, both financial and human, allocated to institutional implementations" (p. 6).

Linking or mapping micro-credentials to academic credit is seen as a major impediment for acceptance and integration within formal education systems (Beverley 2019; Boud 2021). Ehlers (2018) also elaborated on the necessity for micro-credentials to be integrated into the learning ecosystem with a technical infrastructure capable of storing, managing, and organising micro-credentials.

To address the challenges highlighted by various researchers (McGreal & Olcott, 2022; Kato et al., 2020; Beverley, 2019), there is a need to establish well-defined frameworks for the mapping, benchmarking, and stacking of micro-credentials to lead to qualifications recognised in national and international qualification frameworks. There have been attempts in this domain, such as the European MOOC Consortium (2020), which developed the Common Micro-Credential Framework that is aligned with the ECTS model.

Research Questions

The research was designed to provide insights on the following questions:

RQ1: To what extent are education and industry leaders familiar with the concept of micro-credentials?

RQ2: To what extent can micro-credentials be integrated into the credit systems of higher education institutions?

RQ3: What is the perceived value of micro-credentials in recognising the acquisition and application of knowledge and skills in a professional context?

Methods

Research Methodology

In this study, a qualitative research methodology was employed, focusing on exploratory interviews with key stakeholders. We conducted semi-structured interviews with 10 educational leaders from both public and private higher education institutions, as well as four industry leaders from sectors closely aligned with academia, such as ICT and finance in Mauritius. The interviews were recorded with the participants' consent, and questions were sent in advance to ensure thoughtful responses. Analysis of the data allowed us to identify emerging themes and patterns regarding the perceptions of micro-credentials. This approach provided valuable insights into the potential barriers and opportunities for integrating micro-credentials into the education and industry sectors in Mauritius.

Population and Sample

The research was mainly qualitative and reported the main observations from the exploratory interviews with 10 educational leaders of public (six) and private (four) higher education providers and four industry champions who were also potential employers. We purposively

selected leaders from key educational institutions in Mauritius and industry leaders engaged in academia-industry collaborations. This approach was chosen to gather insights from individuals directly influencing the adoption of micro-credentials. Random sampling was not suitable, as the study required participants with specific expertise in shaping policy, skills development, and educational innovations.

Instruments

The research team drafted and refined the interview questions to ensure reliability and validity of the interviews. A core set of questions was common to both education and industry leaders, with specific questions tailored to each group. A pilot test with three colleagues helped identify and correct any ambiguities or biases. The semi-structured interviews were designed based on the study's research questions and the relevant literature, with amendments made to provide sufficient context for interviewees and to improve the overall reliability of the instrument.

The interview focus was on the following themes:

- Definition, knowledge, and understanding of micro-credentials.
- Perceptions about the compatibility and ease of integration between academic credits and micro-credentials.
- Insights about the national qualification frameworks, the regulatory bodies, and the future potential of micro-credentials in formal higher education.
- Acceptance and perceived value of micro-credentials with respect to skills validation for employability.

Data Collection and Analysis

With participants' consent, the interviews, lasting 40-60 minutes, were recorded. Questions were sent in advance to allow preparation, and each interviewee was assigned a designated team member. The team finalised protocols to ensure consistency and shared specific notes before each interview. Transcripts were validated by the participants. Given that discussions on micro-credentials are in the early stages nationally, a thematic analysis was conducted to explore participants' perspectives. Responses were systematically clustered into key themes such as implementation challenges, benefits, and strategic considerations to identify common patterns across groups.

Results

RQ 1: Definition, Knowledge, and Understanding of Micro-credentials

Educational leaders described micro-credentials as a type of accreditation for knowledge transfer in a specific context. When asked about their perception of micro-credentials, they mentioned short courses aimed at personal learning and professional development, typically involving some form of recognition or evaluation. They also emphasised that micro-credentials are defined by their limited size and time frame:

> Credit to small units of work, smaller chunks of teaching and learning (UTM), or short courses, which are nevertheless competence-based, they are not just attendance. They are based on an assessment of competence and constitute less than a full qualification of full-year qualification […] anything less than 120 credits (Middlesex).

Interestingly, the industry leaders generally shared a nuanced definition of micro-credentials, talking more on some form of qualifications other than short courses. The respondents were of the view that micro-credentials are basically:

> […] mini-personalised qualifications (Ceridian).

> credentials that help a student to build up the complete competency profile required to do the job, [and] you can use it to top-up for a diploma or a degree (Fintech Emtel).

Although there was general agreement on the broad definition of micro-credentials, interpretations of their specific implementation varied. For example, one industry leader did not distinguish between a certified micro-credential and a short course that only provides a certificate of attendance. However, this leader emphasised the importance of acquiring deeper knowledge and being formally assessed.

Therefore, some kind of formal assessment was expected to ensure credibility, validation, and recognition of the earned competencies. For the respondents, micro-credentials could take the form of formal qualifications, despite them not having a clear idea how, or the form of, badges to demonstrate they achieved a particular level of mastery or competence. The badge is used for recognition of whatever the student has achieved but it is still not an official qualification at the national level. Although the respondents were familiar with the concept of micro-credentials, the concept of badges was less familiar:

> Yes, I've heard about badges. I haven't really studied them in detail. (Middlesex University)

> […] there might be some small differences between the two that I'm not aware of, because I've not implemented either. (UTM)

For some, the badge was mostly an emerging concept, the applicability or relevance of which is still unofficial. The badge is used for recognition of whatever the student has achieved but it is still not an official qualification at the national level. For those familiar with the concept, badges are interconnected to microcredits:

> a badge is a shield or something...with the name of the person and certified this and that […] And I think they [badges and microcredits] must go hand in hand. So, I wouldn't say that one will exist without the other. But I think it can be kind of complements. Yeah, they need to […] kind of coexist." (Ceridian).

> Others thought that badges and micro-credentials were similar:

> I think they could be equivalent. If you asked me, I'll tend to say that they are equivalent […] (Jubilee Insurance)

> First, I mean, they are there as a tool, recognising the achievement of the student. Right? So, for us, it's an achievement. And second it also helps to motivate, these are the similarities. (Open University)

> [Badges and microcredits] should be the same thing, really a micro credential results in having a badge. (UTM)

Still, others thought badges are different from micro-credentials. It is important to highlight that respondents used the terms micro-credits and micro-credentials interchangeably:

> No, if I use the, if I use the Mauritian terminology, […] according to me, a badge would be more of a non-award programme. Whereas a micro-credential would be one that would be longer and where an award can be added on. Yes, that can be added on to build something bigger down the line. (Amity Mauritius)

Badges are a representation of the microcredits earned, but the latter is used for accreditation, rather than badges:

> So they [the students] got the badge. And then the credits that they acquired that helped them to move further. The badges may not be an official stamp. (Open University)

RQ2: Compatibility and Ease of Integration between Academic Credits and Micro-credentials

The question of systems integration was addressed by a preference for a hybrid micro-credential model, although it is uncertain how easy that would be to do. Most of our respondents would welcome a flexible model across the supply-demand chain between industry and academia, the national regulatory and policy framework, and online and digital learning trends. Dynamic, agile, and adaptive were some themes that described a seamless integration addressing each stakeholder's needs. A flexible credit transfer model means that the awarding body could keep its existing credit system or that the latter would be subject to minimal change to avoid disrupting the complete educational credit framework. This would, at the same time, enable conversions to micro credits. This idea of a hybrid model of recognising skills would also be welcomed by industry:

> I think it would be easy to have a hybrid model using the model that we currently make use of for credit points, but then having a way of integrating a micro credential-based system into that. However, I'm not sure it would be that easy […] (Middlesex University)

> [….] and the hybrid model will be something that is going to be adopted by, I would say, all companies [...] (Ceridian)

> […] and there is a kind of hybrid education that happens, both at the university level, and with badges and other models, like micro credentials. (JTC Group)

According to respondents, Micro-credentials would not only allow students to learn at their own pace but to choose their own learning paths as well. When asked about seeing micro-credentials integrated into the current educational model, or existing as a separate one that is more geared towards continuous professional development (CPD), our respondents thought that it could be both, meeting different needs:

> Yes and no … Yes, because it will mean responding to the needs of the day. But no, because if it is part of your programme, then that student comes out in four, three, or two years' time, whatever. So, by that time, are the skills still relevant? … But now if you embark on a micro-credential programme that takes a year or more, it defeats the purpose. (Amity Mauritius)

For some of the respondents, in general, micro-credentials would address industry demands in a timely manner, allowing for different learning paths to both focus on core skills and add other skills as and when required. Furthermore, the turnaround time being reduced by micro-credentials would greatly benefit industry, which would, at the same time, most likely be driven by the latter's demands:

> It depends, you know, it really depends on the industry, because the whole purpose according to me, at least the whole purpose of micro-credential would be to respond quickly to the demand of the industry… (Amity Mauritius)

Others opined that the IT sector could be a starting point for the implementation of micro-credentials at the tertiary level, but one main concern would be that of the programme's

enrolment. The number of students enrolled in a course could also influence the early adoption of micro-credentials in that field.

RQ3: Perceived Value, Future of Micro-credentials, and Enabling Environment for Higher Education

The general tendency of the respondents was that micro-credentials in higher education would be a disruptive innovation. Consequently, it cannot be applied and integrated straight away into the higher education system. One industry leader confided that recognition of such qualifications is still vague for now:

> I think at the moment micro-credentials, the fact that it's, it's not very common… So, I can't say, we will accept, or we will not accept. (Ceridian)

Therefore, a prudent approach, focusing on incremental implementation, experimentation and prototyping in some areas, is recommended. This is evident from the interview with an education leader who highlighted:

> […] I would prefer it is kept for professional development to boost knowledge in a particular field or area. This is my short-term view as it can really disturb the learning ecosystem. In the longer term, as we have formalized structures and a framework to ensure the quality and level, it can become part of Bachelor or Master. (Education Leader 1)

From the perspective of education leaders (public and private), micro-credentials, open certification and badge systems were seen as the future of the education system for several reasons. Most of the respondents thought that "*this new type of certification is gaining momentum*" or that "*they are the backbone of a future in the education system*". Furthermore, education leaders think that micro-credentials would play an important role for recognition and accreditation purposes:

> We're so used to a form of education that is theoretical, that is boring. And this is what we attribute to the right education. And I think our perception of this needs to shift […] So, from that point of view, it's a question of mindset. (Education Leader 2)

> 100%. I believe that, […] the university in 25 or 30 years' time, […] would be like a hypermarket of those modules where students can come and pick and choose [….]" (Open University)

Yet, a few respondents, industry and education leaders alike did not think micro-credentials would define the future because of the rigidity of our current systems and they perceived that micro-credentials would only partly influence the education system:

> I wouldn't say that the whole future is going to be that. […] So, it would not replace, it will just be, I think, complement it in a certain way. But yes, it's part of the future, but not the whole future. (Jubilee Insurance)

To achieve this, our respondents agreed that recognition of learning, whether formal or informal, should be relevant in the National Qualifications Framework (NQF). However, the industry leaders were of the view that reviewing the existing regulatory framework is not sufficient, as finding the right balance between quality and flexibility might be challenging:

> But what is much more of a challenge is how do we assess those courses unless it is from a reputed organization like Udemy, Coursera, or other well reputed organization. (JTC Group)

Moreover, the National Quality Framework (NQF) must adapt to informal learning, too:

> We need to be able to disaggregate the NQF over time. And this isn't just my opinion. […] It's a bit my opinion that I think we're never going to solve the mismatch in skills and prepare our human capital for the challenges of tomorrow until and unless we have a more nimble and agile framework. (Industry Leader 1)

This requirement for an adaptive regulatory system could also be a major challenge as the industry leaders thought it is more about the mindset and the policies together. For industry, policies should not be blocking points to innovation.

Discussion

Definition, Knowledge, and Understanding of Micro-credentials

The responses led to a consensus and willingness to accept micro-credentials within the community of education and industry leaders in Mauritius. This willingness shows that local stakeholders recognise the need for higher education to adapt to global changes and the "new normal" shaped by Covid-19. It aligns with the growing global micro-credential movement, supported by key organisations like UNESCO and the European Commission.

The respondents had varying views on the potential micro-credential landscape, from non-award, short courses with certificates of attendance to credit-bearing, university modules. This diversity in opinions was expected, as there is no universal definition of micro-credentials yet, though progress has been made (Beverley, 2022).

Compatibility and Ease of Integration between Academic Credits and Micro-credentials

However, in the local context, a particular frame of reference must be adopted concerning what is meant by a micro-credential. A micro-credential must basically have the attributes highlighted by Beverley (2022) and the OECD (2021).

Furthermore, in line with Brown et al. (2021), we found that employers want academic institutions to adopt micro-credentials while, at the same time, shifting their focus from an academic orientation to a more skill and competency-focused approach that could bridge the so-called skills mismatch. However, they highlighted the need for the credentials acquired to be verifiable and of academic quality.

This leads us to the issue of reliable assessment and evaluation to preserve the integrity and validity of an issued micro-credential. While traditional models of assessment would suffice, they would not necessarily be relevant when it comes to certifying demonstrable skills and competencies. Alternative modes of assessment by recognised awarding bodies (e.g., a university) would increase the confidence of employers in recognising micro-credentials. On the other hand, employers, must engage in a review of job profile descriptors, where, most of the time, qualifications in the form of degrees, and diplomas from recognised institutions are highlighted. The extent of their readiness to transform qualification requirements into competency profiles is key to the acceptance and adoption of micro-credentials by universities and prospective employees who are either first-time job seekers or in-service persons.

McGreal and Olcott (2022) viewed this as a major impediment to getting micro-credentials recognised in formal education systems. Educational leaders opine that for micro-credentials to be recognised in the formal education system, there is a 'need to map them within the existing qualification framework and credit systems of their institutions'. In other words, they need to be comparable across the sector to guarantee acceptance and mobility between learning places. This opinion from local actors is echoed as well by the members of the EDEN network,

where member institutions offer micro-credentials-based short courses in the form of academic credits and transcripts as well as diplomas.

Future of Micro-credentials and Enabling Environment for Higher Education

The need for an evolution of the Mauritian National Qualifications Framework (NQF) was raised by most of the respondents. It is necessary to have a framework for the implementation of micro-credentials that is validated by the institutions, recognised by the regulatory bodies, and integrated in a phased manner into the educational ecosystem, namely in the NQF. This has been advocated by the OECD (2021) as well. The problem with the NQF recognising micro-credentials will reside in the NQF levels and descriptors that will determine where a micro-credential lies. This is a complex process as micro-credentials can be of different granularity, NQF levels, and in different fields (e.g., IT, business, law, health, etc.).

Accumulating a set of micro-credentials may not necessarily mean that a person has achieved a particular level in the NQF. Therefore, it may not be necessary for the NQF to have level descriptors for micro-credentials but rather to recognise that micro-credentials can be part of any level as appropriate, and which can add up to ensure a student achieves the equivalent amount of 'micro-credits' in the form of one or different micro-credentials that can add up, based on pre-defined learning pathways to match the level descriptors. Once a person reaches a particular level, he or she achieves eligibility to proceed to studies at a higher level. Hence, based on the findings of this study, and, as hinted at by Beverley (2022), McGreal and Olcott (2022), and the OECD (2021), a competency-based approach, coupled with reliable assessment methods, university credit mapping, and qualification pathways at NQF levels, are important elements for the recognition and uptake of micro-credentials in higher education in Mauritius.

Other countries, particularly developing nations, can draw valuable lessons from Mauritius' approach to micro-credentials. Our case study highlights the importance of integrating micro-credentials into national qualification frameworks, ensuring they are recognised and aligned with formal education pathways like university credits. This approach helps bridge the gap between traditional education and industry needs, addressing skills shortages and fostering lifelong learning. Additionally, the collaborative efforts between education and industry leaders in Mauritius offer a model for other countries to engage key stakeholders in developing relevant and credible micro-credential systems. Our focus on competency-based assessments and quality standards could serve as a blueprint for creating a robust micro-credential framework that supports both academic recognition and industry acceptance.

Conclusion

While micro-credentials were still not fully understood by many of the education and industry leaders interviewed, there was broad agreement on their importance and the need to integrate them into educational and professional systems, especially in response to global changes and the impact of the Covid-19 pandemic. However, leaders pointed out the lack of a national framework for micro-credentials, with institutions operating their own credit systems. It is recommended that micro-credentials be integrated into a unified framework, allowing them to contribute toward recognised university credits and be accepted by employers. Micro-credentials should formalise various learning forms and enhance opportunities for employment and career growth.

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