Micro-credentials at Higher Education Institutions: Towards Smooth Sailing Ahead

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Abstract. Micro-credentials have gained tremendous popularity in education particularly over the past few years. This is largely due to the continual economic demands for lifelong and life-wide learning of all adults to remain employable, adaptable, and productive. The job market today has demonstrated urgent needs for Micro-credentials – short learning chunks that focus on specific professional skill sets. As a result, many higher education institutions (HEIs) today is offering micro-credentials both to working professionals as well as students. They ensure that the qualification earned will meet industry-specific needs and is relevant and recognized by future employers. Despite all the benefits gained from Micro-credentials, it has not yet been extensively adopted even with guidance from UNESCO through The Global 2030 Agenda and MQA through the Guidelines to Good Practices (GGP) in Malaysia. There are a lot of hurdles to overcome before micro-credentials can sail smoothly ahead. This paper aims to examine the challenges faced by HEIs in implementing micro-credentials. The review will pro- video input to HEIs to facilitate a more efficient implementation of their micro- credential programmed.

Keywords: micro-credential, flexible, lifelong learning, challenges.

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1 Introduction

A micro-credential is like a short course administered for the purpose of up- skilling or reskilling. It has gained much focus and attention in recent years due to the increasing demand to close the skills gap that exists in the industry. Skills and competencies are now taught or delivered at a much narrower scope compared to the full- fledged, wide range of skills previously delivered through both extensive and intensive training programmed. Skills or knowledge gained through a micro-credential will not be as comprehensive but are more focused and specific. Successful completion of these bite-size courses leads to the award of digital credentials or certifications. Micro- credentials are in line with the United Nations Sustainable Development Goals (SDGs), specifically SDG4 - "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". Due to the flexible nature of micro-credentials, they open opportunities for lifelong learning especially for working adults. Micro- credentials certainly have an important role in the achievement of SDG4 whereby their role should be defined further in accordance with appropriate quality standards, youth requirements, industry stakeholders, and recognition conventions [1].

Micro-credentials implementation also fits our national strategic initiatives, the Malaysian Education Blueprint 2015-2025, the Higher Education 4.0 initiative, and Malaysia's Shared Prosperity Vision 2030 which all emphasize on lifelong learning policies and producing competent and skilled workers to meet the needs of the fourth industrial revolution [2]. The Malaysia Qualifications Agency (MQA) has taken steps to support the implementation of micro-credentials in Malaysia to fulfil the demands in closing the skills gaps in this digital economy [3] as cited in [4]. Though micro-credentials are gaining popularity in Malaysia, the potential benefits to be gained from them are still largely unknown. A Google Trends investigation shows a staggering increase, particularly after the Covid 19 pandemic, in the number of searches using the term micro-credential on Google search which peaked in 2021 [4]. According to the researchers, the countries where the term was most frequently searched for were Australia, Malaysia, Canada and the United States of America. This reflects the increasing awareness of micro-credentials.

The COVID pandemic has accelerated the shift to online learning, providing a chance to re-evaluate curricula and pedagogies. Many parties, including governments, business associations, academic institutions, and students, are necessary for the success of the implementation of micro-credential programmed. The way that learners perceive micro-credentials, the readiness of HEIs, technology advancements, industry support and awareness, and logistical readiness and capacities are some of the issues that need to be considered in the implementation of micro-credentials [5]. Be- fore micro-credentials can be truly accepted by both individuals and organizations or employers alike, numerous aspects such as standards and frameworks, as well as trust and validity issues must be clarified [6]. Areas related to the definitions, delivery and assessment, and stack ability and transferability of micro-credentials need to be clearly addressed. This paper aims to examine the challenges faced by HEIs in implementing micro-credential programmed. The review will provide input to HEIs to facilitate more efficient implementation of their micro-credential programmed.

2 Literature Review

The demand in micro-credentials and brief learning experiences has increased ever since the Covid-19 pandemic, as governments attempt to put people back to work, try to fill new jobs in areas of growth, and address specific skill gaps [7]. It is also strongly believed that micro-credentials have the potential to further the cause of equity, providing accessible and cost-effective targeted learning and skill development opportunities to vulnerable populations, ultimately con- tributing to the attainment of United Nations Sustainable Development Goal 4 on quality education and lifelong learning.

According to the Malaysia Education Blueprint 2015–2025, the Malaysian government is committed to changing higher education, with the goal of raising educational standards to match those of other countries and preparing Malaysians for the future. Ten shifts were specified in the blueprint including producing more holistic and balanced graduates (shift 1), promoting lifelong learning (shift 3), improving online learning (shift 9), and transforming higher education delivery (shift 10). These four shifts are directly relevant to the development and delivery of micro-credentials. According to Brown et.al (2021) [7], the term 'micro credentials' first appeared in google trends data in Malaysia in 2013. This implies that the notion of micro-credentials started gaining attention and awareness in Malaysia around 2013.

The implementation of micro-credentials at HEIs entails many different challenges. Identifying and analyzing these challenges is crucial so that micro-credential courses can be delivered more efficiently and effectively. Understanding the challenges will also help HEIs strategies better in order to obtain a wider and more positive reception from learners and organizations. Below are the main challenges identified based on review of literature:

2.1 Paradigm Shift

Corcoran (2021) [8] notes that among the main challenges in micro-credential implementation is how a paradigm shift is required in accepting micro-credentials as an alternative to the traditional learning approach. A paradigm shift is required as the key stake- holders involved in macro-credential are now tasked with spearheading the implementation of micro-credentials. Several aspects regarding micro-credentials need to be understood, namely, lifelong learning, adult learning, online learning, flexible learning, and micro-learning, and these aspects are different from those associated with macro-learning and the traditional learning pathway. Therefore, the key stakeholders, ranging from the management to the course developers and instructors, need to alter their perspectives on these aspects. Based on the comprehensive literature review that was done, four key stakeholders have been identified in making sure micro-credential is a success. Learners, higher education institutions, employers, and governmental entities make up the stakeholders [9]. If this paradigm shift is not achieved, the implementation of micro-credentials will be negatively impacted due to the lack of support and commitment. As highlighted by Hidayah et al. (2021) [10], commitment issues were noted as one of the main challenges in micro-credential implementation in Malaysia.

2.2 Definition of Micro-credential

The second problem derives from the absence of a universal definition of what micro-credential is. McGreal (2022) [11] states that micro-credentials lead to certifications of competencies achieved via short duration of a learning process and these competencies may or may not be accumulated towards a larger unit of certification such as a diploma or degree. Ralston (2020) [12] uses the word "compact" to describe micro-credentials reflecting the notions of mini yet concise learning content. Micro-credentials are also referred to as alternative credentials, developed to fulfil the needs of employability, and delivered, usually online, within a duration that is shorter than the usual courses [13]. An important perspective to the definition of micro-credentials is that they are aligned to industry needs [14]. UNESCO (as cited in [8]) notes that the different definitions of micro-credentials can lead to more confusion. Resei et al. (2019) [15] refer to this issue as micro-credentials having "chaotic terminologies". This finding is in line with Hidayah et al. (2021) [10] who state that different perceptions of what micro-credentials are by the stakeholders as among the challenges in micro-credential implementation. Cowie and Sakui (2022) [16] concur that the value and adoption of micro-credentials may be hampered by the absence of agreed-upon definitions of what they are. The ambiguity with micro-credential definition is further compounded by the different

range of learning duration noted across different experts and countries [8] [16].

2.3 Accreditation and Quality Assurance

Another challenge in micro-credential implementation relates to accreditation and quality assurance. The accreditation of macro-credential is often clearly mapped to the national qualifications' framework but the standards against which micro-credentials are accredited/audited are not clear [8] [15]. This entails different standards across different micro-credentials offered by different HEIs. Such differences will affect the stack ability and transferability of the micro-credentials particularly across different HEIs. In Malaysia, the absence of a governing body responsible for tracking and archiving micro-credentials was seen as a significant obstacle to recognizing micro-credentials as a viable alternative learning pathway [17]. This implies the great role that the MQA must play in ensuring standards and providing extensive guidelines to HEIs in micro-credentials implementation.

2.4 Awareness and Acceptance of Micro-credentials

Acceptance by the government and recognition of learning acquired via micro-credentials has been identified as one of the challenges in micro-credential implementation [8]. This is fortunately not an issue in Malaysia as the MQA supports and regulates the implementation of micro-credentials by Malaysian HEIs. Nonetheless, the lack of awareness and acceptance of micro-credentials by professional bodies and employers poses a challenge in micro-credential implementation. It was found that 59% of employers in Canada have not heard of micro-credentials [4]. This lack of awareness can lead to an individual's or employer's reluctance to pay for the courses. Hidayah et al. (2021) [10] identify the lack of awareness on micro-credentials among Malaysians as one of the challenges in micro- credentials implementation. In research done by Navanitha et al. (2022) [4], a significant proportion of learners were found to lack familiarity with the concept of micro-credentials, while some learners remain unaware of the underlying rationale or objective be- hind micro-credentials implementation. The researchers also highlighted that the industry may lack the knowledge and understanding of how to align their needs with the benefits that micro-credentials can offer. In another research, it was found that the government's endeavors and initiatives to promote and facilitate micro-credentials adoption were not perceived by employers within the technology-related industry in Malaysia, hence leading to low acceptance level [17]. According to the researchers, the acceptance of micro-credentials is also further affected by the perception that conventional qualifications as in the forms of degrees and diplomas are seen as the more reliable qualifications compared to micro-credentials certificates or digital badges that can be earned in a much shorter period i.e., from two weeks to six months. This finding directly relates to the need of a paradigm shift as mentioned earlier, in accepting micro-credentials as a new way of learning.

2.5 Institutional Readiness

Institutional readiness poses a significant hurdle for the effective adoption and implementation of micro-credentials in Malaysia, as noted by Hidayah et al. (2021) [10]. HEIs must be ready to provide the necessary support in terms of both financial and human resources [9]. Offering micro-credentials entails the development of self-instructional materials such as videos and interactive video presentations that would require studio recording facilities as well as content authoring tools. Additionally, it is imperative to account for the expenditures related to staff training, the recruitment of additional personnel, and the development of or subscription to a suitable learning management system (LMS). This increased cost involved in the implementation micro-credentials may be a deterrent for many HEIs. As reflected in a systematic review by Varadarajan et al. (2023) [9], only 15% of the examined papers demonstrate institutions linking micro-credentials to increased revenue or enrolment. Conversely, only 18% of

the studies indicated that institutions perceived micro-credentials as beneficial for reducing costs.

A pertinent aspect of micro-credentials that must be considered regarding institutional readiness is the fact that they are pedagogically innovative. Micro-credentials offer a new and motivating way of learning that appeals to millennials. Not all HEIs are ready to embark on this learner-centered, flexible way of learning that demands courses to be unbundled to be offered at smaller, more manageable learning units and part ways with the conventional methods of learning. This would require the institutions to re-evaluate their strategy and policies regarding the offering of traditional courses [9].

These challenges presented are not comprehensive, but they are among the frequently highlighted issues in existing literature pertaining to micro-credential implementation. The next section examines strategies on how these challenges can be met.

3 Discussion

This section examines potential strategies that can be employed to effectively address the challenges encountered during micro-credential implementation. They are discussed according to the themes presented earlier to address each challenge systematically:

3.1 Paradigm Shift

Emphasizing the advantages of micro-credentials to HEIs can catalyse a transformative paradigm shift among stakeholders. By effectively highlighting the benefits, HEIs can inspire and influence stakeholders to embrace the potential of micro-credentials, fostering a fundamental change in their perceptions and attitudes. Pirkkalainen et al. (2022) [18] state how short courses like micro-credentials can serve as an alternative revenue stream for HEIs. According to them, collaborations between HEIs, ministries, and employers in the creation of these courses can create alternative avenues for financial sustainability. Furthermore, Selvaratnam & Sankey (2021) [19] assert that universities need to reassess their business practices to capitalize on partnerships, thereby broadening their reach to a wider audience and catering to the needs of students seeking credentials rather than traditional awards or degrees. Micro-credentials can also potentially reduce student drop-out rates (through the offering of unbundled subjects that can be taken and stacked) [18].

The emphasis on these benefits can help develop a more receptive and open-minded attitude among the stakeholders in embracing the concept of micro-credentials. The recognition and promotion of these advantages will be able to foster a greater understanding and acceptance of micro-credentials, paving the way for their successful integration into educational systems and professional development practices.

3.2 Definition of Micro-credential

Due to the various definitions of micro-credentials used by different experts, institutions and countries across the world, UNESCO has suggested the following definition based on consensus among experts [8]:

- *"a record of focused learning achievement verifying what the learner knows, understands or can do;*
- *includes assessment based on clearly defined standards and is awarded by a trusted provider;*
- *has stand-alone value and may also contribute to or complement other micro-credentials or macro-credentials, including through recognition of prior*

learning;
- *meets the standards required by relevant quality assurance."*

In Malaysia, HEIs should adhere to the definition of micro-credential as clearly stated on page 4 of the MQA GGP. It is defined as "digital certification of assessed knowledge, skills and competencies in a specific area or field which can be a component of an accredited programmed or stand-alone courses supporting the professional, technical, academic and personal development of the learners." The key com- ponents in the definition are:

a. *Digital certification*
b. *Knowledge skills or competency*
c. *A specific area or field*
d. *Component of accredited programmes or stand-alone courses*
e. *Serves professional, technical, academic and personal development interests of learners.*

Adhering to this definition ensures standardized interpretation of what the key characteristics of micro-credentials are.

3.3 Accreditation and Quality Assurance

In Europe, the EU MOOC Consortium (EMC) has been aligning its micro-credential framework with the national qualifications framework to address credit calculations, stack ability and transferability issues in micro-credentials [6]. The EMC aims to develop one single framework that can be used in multiple countries and institutions in Europe. The researchers also note that the New Zealand Qualifications Authority (NZQA) has developed a very clear framework (which is based on pre-existing qualifications framework) for the implementation of micro-credentials in New Zealand. Other than HEIs, the work development councils have been tasked with developing standards for micro-credentials that are industry approved. In Malaysia, the MQA regulates the implementation of micro-credentials. The GGP has clearly stated that micro-credentials can be unbundled from existing academic courses. This places micro- credential as part of Malaysian higher education framework. Nevertheless, there were no actual guidelines on how exactly the courses can be unbundled into micro-credentials. As such, more specific and practical guidelines are needed to ensure that the GGP is not misinterpreted by HEIs. The MQA will soon launch a new micro-credentials policy [20]. The recent GGP published on APEL.M is also a testament to the government's support of this lifelong learning initiative.

3.4 Awareness and Acceptance of Micro-credential

To increase the level of acceptance for micro-credentials, key stakeholders must be made aware of their benefits. Micro-credentials provide a practical alternative for learners, specifically the working professionals, to obtain more relevant skills and upgrade themselves within a duration and price that are more attractive and affordable. This helps boost their career prospects and professional development even among entry-level employees. Micro-credentials also enable employers to have more scalable training programmes. They are a cost-effective way to equip the employees with up-to-date skills needed to meet the market demands. More organisations and companies are found to have more favourable attitudes towards alternative credentials such as micro-credentials which is reflected in the increase in employment made based on skills and competencies that the employees have [21].

Providing incentives to employees has been found to be an effective strategy to increase the acceptance of micro-credentials in Malaysia [17]. This reflects the importance of both sponsoring employees' enrolment in micro-credential courses as well as recognizing their achievement in micro-credentials courses relevant to their skills and career development. The researchers also found that recognition of micro-

credential by the industry is the most significant factor in boosting the likelihood of an employee signing up for a micro-credential. In the context of higher education, micro-credentials should be recognized as a valuable complement or a supplementary tool to traditional academic qualifications, as acknowledged by [15]. It is imperative to ensure that students are adequately informed about the role of micro- credentials in enhancing their employability. Notably, a study conducted by Ahmed and Jassim (2021) [21] involving 157 students unveiled a positive attitude towards these courses, accentuating the potential of micro-credentials in meeting students' aspirations and enhancing their professional prospects.

3.5 Institutional Readiness

While it may be tempting to jump on the bandwagon and hastily adopt the latest fad, HEIs must demonstrate a thorough understanding and robust preparedness for the intricacies entailed in the implementation of micro-credentials. Policies and procedures need to be in place to ensure quality and overall efficiency of all processes involved [22] [23] [24] [25]. The establishment of a dedicated coordinating centre, staffed by competent professionals, plays a pivotal role in conducting rigorous monitoring and ensuring quality assurance processes for micro-credentials. This includes conducting rigorous monitoring and quality assurance processes, for instance, in ensuring internal consistency in mapping of knowledge and assessment especially for credit- bearing micro-credentials. HEIs that are ill-prepared for the implementation of micro-credential courses may face significant consequences, such as inadequate allocation of financial and human resources, as highlighted by McGreal et al. (2022). [26]. Another negative implication is the lack of incentives provided to faculty and staff. The provision of incentives holds significant importance in fostering commitment and motivation among those involved in the development of micro-credentials. In this regard, Hidayah et al. (2021) [10] suggest the implementation of a comprehensive approach encompassing both financial incentives (monetary rewards for developers) and non-financial incentives (such as guidelines and technical support) to effectively cultivate a conducive environment for the successful development and implementation of micro-credentials.

To address enrolment challenges, escalating expenses, and the necessity to adapt to a dynamic global economy, HEIs must go through a transformation process that includes a more innovative approach to teaching and learning. Learners' needs should be addressed by developing learning pathways that connect micro to macro-credentials and by collaborating or connecting with the industry [9]. The development of personalized learning pathways that connect micro to macro-credentials allows for flexibility and customization, enabling learners to tailor their education to their specific interests and career goals. In addition, developing microcredentials through collaboration with industry partners can ensure that the skills taught align with current industry needs. This collaboration between HEIs and industry fosters a closer connection between academia and the job market, enhancing both the employability of graduates and the career development of employees.

4 Conclusion

This paper examines the primary challenges encountered during the implementation of micro-credentials by HEIs. The identified challenges encompass paradigm shift, vague definitions, accreditation and quality assurance, acceptance, and awareness, and institutional readiness. To address these challenges effectively, educators, policymakers, and other key stakeholders must attain a comprehensive understanding of the problem that micro-credentials aim to resolve. It is crucial to develop robust and coherent national and international credential frameworks that acknowledge the multifaceted contributions of micro-credentials in areas such as employability, lifelong learning, and citizen- ship education. It is imperative to emphasize that micro-

credentials should serve as vehicles to support these overarching concepts rather than existing as standalone ideas [7]. Collaboration among all stakeholders is essential to ensure the successful implementation of micro-credentials, thereby aligning with the objectives outlined in the Malaysian Education Blueprint 2015-2025 and the United Nations SDG 4, which emphasizes inclusive and equitable quality education and lifelong learning opportunities for all.

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