

### Abstract

This study explores the potential of micro-credentials to address the evolving competency needs within administrative sciences. A survey of 258 undergraduate and graduate students revealed a significant gap between the perceived importance of skills such as digital literacy and adaptability, and students' self-assessed proficiency levels. Respondents demonstrated a clear preference for short-term, targeted training programs, reflecting the increasing relevance of micro-credentials. The findings suggest that micro-credentials can effectively bridge this competency gap, enhance student engagement, and promote lifelong learning. Practical recommendations are offered for higher education institutions to integrate micro-credentials into their curricula, develop partnerships with employers, and provide flexible learning pathways. Academics are encouraged to embrace micro-credentialing by designing engaging, competency-based content, collaborating with sectoral partners, and fostering self-directed learning. Students are similarly urged to seek out relevant micro-credentials proactively to enhance their employability and career prospects. This research contributes to the growing body of literature on micro-credentials, offering specific insights into their application within administrative sciences and highlighting their potential to transform education and professional development in this field.

**Keywords:** higher education, administrative sciences, micro-credentials, competency profiles.

## COMPETENCY PROFILES IN ADMINISTRATIVE SCIENCES. AN ANALYSIS OF THE STUDENTS' PERCEPTIONS AND POSSIBLE CURRICULAR RESHAPES THROUGH MICRO-CREDENTIALS

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## 1. Introduction

Administrative sciences are poised to face a critical social test in the near future. The resilience of public administration systems will be challenged as they interact with an increasingly advanced, technologically driven society. Concurrently, these systems will be tested on their capacity to adapt to the evolving needs and expectations of citizens, whose demands and preferences are undergoing profound changes. In this context, significant shifts in education and training for public administration professionals are anticipated. These shifts are expected to reshape the competency profile of graduates, placing greater emphasis on adaptability, technological proficiency, and interpersonal skills. Furthermore, a re-evaluation of professional development pathways is likely, with a continued focus on initial training complemented by an increased emphasis on continuous learning and specialized development programs. This shift may involve moving away from traditional, conservative curriculum design towards more innovative and responsive models.

Recent developments in curriculum design, particularly those influenced by the implementation of the European Universities Strategy, have introduced new concepts with substantial potential for education in administrative sciences. One such concept, regarded by many experts as a 'philosophy of training program construction', is micro-credentials. This study examines the potential of micro-credentials to enhance both initial and continuous training in administrative sciences. Key questions include: How can micro-credentials improve training delivery? What are the expectations of educational stakeholders and students? These questions are addressed with insights from both the fields of education and administrative sciences. While international reports suggest that micro-credentials can be transformative at an individual level, this study explores whether they have the capacity to revolutionize training programs in public administration. By investigating how micro-credentials can address specific challenges and opportunities in this field, this research aims to contribute to the broader discussion on innovative approaches to professional development in the public sector.

Administrative sciences and public administration focus on the management and implementation of public policies and programs (Fuchs, 1948). This includes the analysis and evaluation of governmental and institutional structures, processes, and practices to ensure the effective and efficient delivery of public services. Administrative sciences draw on various disciplines, including political science, economics, sociology, and law, to better understand the complexities of public administration (Halling and Bækgaard, 2023; Denhardt, 2001). A key component is the analysis of administrative data, which refers to information collected and maintained by governmental agencies and organizations for administrative purposes (Schmidt *et al.*, 2015). Such data may include demographics, health records, education, employment, and other relevant factors (Hinds *et al.*, 2016). Used across specific fields, such as population-based sciences and assessment of administrative processes, this data also plays a role in defining medical conditions or healthcare programs (Schmidt *et al.*, 2015; Khokhar *et al.*, 2016; Fiest *et al.*, 2014; Lui and Rudmik, 2015). Administrative sciences also explore the concept of administrative burden, referring to

the challenges individuals face when interacting with administrative systems (Box, 2022). This involves examining the impact of administrative burden on individuals' experiences, the legitimacy of administrative processes, and proposing strategies to reduce it, such as streamlining procedures and improving communication between citizens and government agencies (Halling and Bækgaard, 2023).

In higher education, administrative sciences have a multidisciplinary history, drawing from sociology, political science, economics, and engineering (Farrell, Hatcher and Diamond, 2021). Administrative sciences offer valuable insights into the analysis of higher education learning outcomes as management tools (Bleiklie *et al.*, 2017) and can play a crucial role in reshaping the higher education system to better respond to societal needs (Anderson and Whitford, 2016). Integrating new and existing skills into public administration curricula can foster the development of public administration education and facilitate the effective implementation of principles (Overton and Kleinschmit, 2021). However, there are ongoing concerns about the overall implementation and outcomes of public administration education in certain social contexts (Braga, 2020). The field of public administration in higher education is still evolving and has yet to fully meet the needs of practitioners (Azizuddin and Hossain, 2021).

The objectives of administrative sciences programs vary across specific regional and local contexts. In South Korea, for instance, the primary goal of public administration education is to prepare students for public service roles (Jeong and Kim, 2021). There is a recognized need to cultivate fundamental knowledge, research, and experience-informed advice for academic administrators in public administration programs (Overton, 2021). In Central and Eastern European countries, the institutionalization of public administration education is a relatively recent development (Staroňová and Gajduschek, 2016), yet it is already the focus of significant research exploring its multiple dimensions and implications.

## **2. Conceptual and theoretical foundations**

### ***2.1. Current trends in administrative sciences***

Understanding current trends in administrative sciences is crucial for researchers, practitioners, and policymakers to stay informed and make evidence-based decisions. One prominent trend is the integration of insights from psychology and related fields. Grimmelikhuisen *et al.* (2016) highlight how specialists in public administration are increasingly drawing on theories and methods from psychology to enhance their research. Such integration offers a deeper understanding of human behavior and the decision-making processes within administrative contexts. By combining insights from psychology and public administration, researchers can develop more effective strategies for addressing administrative challenges and improving organizational performance. Another significant emerging trend in administrative sciences is the focus on sustainability. Battistella, Grohmann and Velter (2013) conducted a study identifying key areas of interest within sustainability and administration. Their findings revealed that sustainability is a major

research area, with scholars exploring topics such as sustainable development, environmental management, and corporate social responsibility. This trend reflects the growing recognition of the importance of embedding sustainability principles into administrative practices to promote long-term social, economic, and environmental well-being.

The use of emerging technologies is also reshaping the field of administrative sciences. Rotolo, Hicks and Martin (2015) define emerging technologies as those in the early stages of development but with the potential to create significant societal impacts. The adoption and integration of technologies such as artificial intelligence (AI) and data analytics are transforming administrative processes and decision-making. These technologies present new opportunities to enhance efficiency, effectiveness, and innovation in administrative practices. Similarly, the impact of the COVID-19 pandemic on administrative science education programs in higher education has spurred the development of online learning resources. Profiroiu *et al.* (2022) argued that this has further supported the digital competency development of students in administrative sciences.

Alfadli and Al-Mehaisen (2019) studied the reality of administrative empowerment among recently employed administrators. Their findings emphasized the critical role that administrative empowerment plays in improving performance and job satisfaction. This trend underscores the importance of empowering administrators by providing them with the necessary resources, autonomy, and support to make informed decisions and contribute to organizational success. Additionally, there is an increasing emphasis on diversity, equity, and inclusion in administrative sciences. Cuellar and Gándara (2020) examined the policies and practices of community college baccalaureate programs designed to promote access and equity for underrepresented racial minorities. The findings highlighted the importance of outreach and support initiatives in ensuring equal opportunities for educational advancement. This trend reflects the need to address systemic barriers and promote inclusivity in administrative practices, with the aim of creating more equitable and diverse organizations. Moreover, administrative sciences are increasingly exploring the role of empathy in public administration. Edlins (2019) argues for the inclusion of empathy as a guiding principle in public administration, allowing administrators to better understand and respond to the needs and concerns of citizens. This trend signifies a shift towards more human-centered approaches in administrative practices, resulting in more effective and responsive public services.

## ***2.2. Competency profiles in administrative sciences***

Competencies in administrative sciences programs are essential for preparing students for careers in public service, encompassing a wide range of skills, knowledge, and attitudes necessary for effective public administration. Although specific references directly addressing competency profiles in administrative sciences are limited, several sources provide valuable insights into competencies relevant to higher education and administrative roles. For example, Avaristo and Ubeda (2021) propose five broad groups of competencies for development in this field: leadership, participation in policymaking, problem-solving,

ethical behavior, and effective communication (Tabsh, Kadi and Abdelfatah, 2012). Similarly, Nurlybaeva (2022) outlines the competencies required in graduate programs in administrative sciences, identifying five areas: leading and managing in the public interest, participating in the policy process, analyzing and synthesizing information, applying a public service perspective, and communicating and interacting productively within a diverse workforce. While these models are not unique to the field, they offer good examples of how competency profiles can be designed. Many researchers emphasize specific components of these profiles, as seen below, aiming to understand the connection between each dimension and the expected outcomes for such programs.

Entrepreneurship education programs have been found to positively impact the entrepreneurial competencies and intentions of university students (Chou, Shen and Hsiao, 2016; Burgoyne, O’Flynn and Boylan, 2010; Sánchez, 2011). This suggests that students in administrative sciences programs could benefit from entrepreneurship education to enhance their competency profiles. The individualization of student training and the creation of conditions conducive to self-education and self-realization are also important aspects of developing future graduates’ competency profiles (Leushina and Leushin, 2019; Williamson *et al.*, 2018). These studies highlight the need for personalized approaches to education that cater to the specific needs and interests of students in administrative sciences programs. From a more content-oriented perspective, incorporating diversity, social justice, and equity into the curriculum is another critical consideration in developing competency profiles in higher education, not only in administrative sciences but across disciplines (Gillung *et al.*, 1992; Charoensakulchai and Kantiwong, 2020; Elias and D’Agostino, 2019). Students in administrative sciences programs should engage in coursework and experiences that promote cultural competence and foster an understanding of social justice issues. The development of leadership competencies is also crucial, as public administrators often need to lead and manage teams effectively (Capobianco *et al.*, 2018; Seemiller, 2016).

In today’s digital age, digital competencies are increasingly important for all students, particularly those in administrative sciences (Overton and Kleinschmit, 2021; Protska, 2021; Wild and Heuling, 2020; Jacob, 2020; Oh *et al.*, 2008). These students must develop digital literacy and proficiency in using technology for a variety of administrative tasks. The acquisition of practical skills through internships and experiential learning is equally vital for competency development (Shek, Siu and Lee, 2007; Shek, Ma and Sun, 2008a). Such experiences allow students to apply their knowledge in real-world settings, gaining hands-on experience in administrative roles. Interpersonal skills are another essential component of competency profiles, as they significantly impact job satisfaction among administrative staff (Balyer and Özcan, 2017; Schafer, 2015). Administrative sciences programs should focus on developing strong interpersonal skills to enhance students’ professional effectiveness. Additionally, research skills and the ability to critically evaluate information are essential competencies (Morçöl *et al.*, 2020; Shek *et al.*, 2008b). These skills enable students to conduct research, analyze data, and make informed decisions in administrative

roles (Groves and Schoeffel, 2018). Finally, Mergel (2016) identifies three key skills necessary for working with big data: data management, data analysis, and data visualization. These competencies are becoming increasingly important as data-driven decision-making plays a larger role in public administration.

### ***2.3. Micro-credentials and higher education curriculum***

Micro-credentials have garnered increasing attention in higher education as labor market aligned, short units of learning that can be certified and stacked towards a higher education qualification (Wheelahan and Moodie, 2021). The implementation of micro-credentials in higher education holds the potential to drive a strategic reset and catalyst change (Olcott, 2021; Iucu *et al.*, 2021). However, concerns have been raised about their role in the privatization of education and the potential blurring of boundaries between public and private higher education provision (Desmarchelier and Cary, 2022). Micro-credentials offer several benefits, including low-cost skill acquisition, increased accessibility of education, and the promotion of barrier-free learning (Tamoliūnė *et al.*, 2023; Brown *et al.*, 2021). For higher education institutions, micro-credentials can be advantageous as they are often delivered digitally, potentially boosting enrolment rates (Tamoliūnė *et al.*, 2023; Carțiș *et al.*, 2023). Nonetheless, the use and perceived value of micro-credentials in both higher education and employability remain areas of ongoing research (Carțiș *et al.*, 2023; Kumar *et al.*, 2022; Iucu *et al.*, 2021).

Higher education institutions are increasingly exploring the implementation of micro-credentials into both course-based and program-based settings (Iucu *et al.*, 2022; Clausen, 2022). However, a key challenge is that micro-credentials are often pursued by learners who have already completed higher education and possess greater financial resources, which risks exacerbating existing inequalities (OECD, 2021). Despite their potential advantages, the impact of short courses or micro-credentials on skill development and employment outcomes is not yet fully understood (Boud and Jorre, 2021). Micro-credentials represent an alternative to traditional study programs, offering the opportunity to acquire independent, formal qualifications in higher education (Kušić, Vrcelj and Zovko, 2022). They have the potential to enhance employability, create new pathways from vocational education to higher education, and promote social inclusion for disadvantaged learners and workers (OECD, 2023). Major colleges and universities are increasingly recognizing and granting micro-credentials (McGreal *et al.*, 2022). However, the implementation of micro-credentials in higher education requires careful consideration and strategic planning to ensure their meaningful delivery, portability, and sustainability within the higher education ecosystem (McGreal and Olcott, 2022; Selvaratnam and Sankey, 2021a). Furthermore, micro-credentials can serve for delivering specific skills and raising awareness in areas such as academic integrity, helping to prepare students for both university studies and their subsequent careers (Ruddy and Ponte, 2019).

#### ***2.4. Micro-credentials and administrative sciences programs***

The integration of micro-credentials into higher education curricula has the potential to reshape educational pathways and provide students with targeted, competency-based learning opportunities. While micro-credentials have been widely explored in various fields, their relevance within administrative sciences is gaining attention. Administrative sciences programs, which prepare students for careers in public administration, increasingly require flexibility, adaptability, and specialized skills to meet the evolving demands of the public sector. Micro-credentials offer an innovative approach to address these needs by enabling students to acquire specific competencies aligned with public sector and societal expectations. By embedding micro-credentials within administrative sciences curricula, institutions can enhance the employability of graduates, support lifelong learning, and foster the development of skills critical for public service delivery.

Teaching cultural competency within university-based administrative sciences programs could pave the way for public agencies to incorporate cultural competency programs, strategies, and practices in public service delivery (Rice, 2007). Micro-credentials, as public sector-aligned, short units of learning that are certified or credentialed, often ‘stack’ or count towards a higher education qualification (Wheelahan and Moodie, 2021). These micro-credentials are generally based on competencies and represent an incursion of vocational education models into higher education, where they originated and dominate (Wheelahan and Moodie, 2022). Universities require a robust ecosystem of policies, infrastructure, and skilled personnel to ensure success in offering micro-credentials (Selvaratnam and Sankey, 2021b).

Questions persist regarding how administrative sciences study programs address the topic of e-government education and how it is conceptualized and taught to develop e-government competencies. According to Hunnius, Paulowitsch and Schuppan (2015), e-government competencies refer to the skills and knowledge required for effectively implementing and managing tools and processes in public administration. These competencies can include digital literacy, data governance, cybersecurity awareness, understanding of digital platforms for public service delivery, and the ability to analyze and manage large datasets (Mergel, 2016). Micro-credentials have the potential to bridge this gap, offering students opportunities to develop specialized skills in areas such as digital service design, e-governance frameworks, online public engagement, and the ethical management of digital public services. By equipping students with these targeted competencies, their education can better align with the demands of the evolving digital public sector. Competencies acquired in higher education (at both undergraduate and postgraduate levels) in public administration are evaluated by employers within the public sector (Stare and Klun, 2018). Micro-credentials could positively impact this by offering low-cost skill acquisition, enhanced employability, and promoting barrier-free learning (Orman, Şimşek and Çakır, 2023).

Micro-credentials are increasingly viewed as a mechanism for achieving lifelong, competency-based learning, enabling individuals to remain adaptable and competitive in their



profession (Diab and Zhang, 2023). The use of rubrics can provide a solid foundation for assessing student competencies in administrative sciences programs (Sandberg and Kecskes, 2017), although competency-based curriculum mapping remains a relatively new initiative. These curriculum maps link competencies to strategic demands of public administration (Avaristo and Ubeda, 2021), while tools and curricular philosophies such as micro-credentials offer opportunities to redesign and customize learning and training initiatives for students across administrative sciences programs. However, this approach requires further exploration, particularly in terms of transparent and clear competency analyses.

### **3. Methodology**

This study utilized an online form to administer a 25-item survey to bachelor's and master's degree students studying administrative sciences and related disciplines. A convenience sampling method was employed for the purpose of this research. The researchers ensured that all responses were fully anonymous and that no identifying information was collected. Compliance with data protection regulations was rigorously maintained throughout the study, particularly regarding personal data such as demographic information. The survey included demographic questions (age, gender, area of origin, parents' education level, number of individuals living in the same household, average household income, professional status, distance between place of origin and current residence, etc.) to provide a contextual framework for the respondents and to support the data analysis. Additionally, the survey gathered information regarding the respondents' professional aims and objectives in relation to their current academic paths.

The core component of the survey involved a hierarchical analysis of 15 competencies considered essential for the successful professional integration of administrative sciences graduates. The list of competencies used in this study was designed in accordance with several European Union recommendations, such as the 'Communication from the Commission [...] Improving Competences for the 21<sup>st</sup> Century: An Agenda for European Cooperation on Schools' (European Commission, 2008), 'Recommendation on key competences for lifelong learning' (Council of the European Union, 2018). Relevant studies and reports from the OECD (2014) and CEDEFOP (2020) were also consulted, alongside other pertinent studies on the topic. The list of competencies had been previously employed in a study analyzing the relationship between key competencies and the professional profile of public administration graduates in initial education (Iucu and Iordache-Platis, 2018). It consists of the following 15 competencies and their corresponding descriptions (see Table 1).

Respondents were asked to rate the importance of each of the 15 competencies provided in the survey using a scale from 1 to 10, where '1' indicated 'not important at all' and '10' represented 'extremely important'. This allowed researchers to capture the perceived value of each competence from the students' perspective. Using the mean value for each



**Table 1:** Competencies for administrative sciences students

Competence	Description
Communicating in the mother tongue	Ability to express and interpret concepts, thoughts, feelings, facts, and opinions both orally and in writing, including drafting and argumentation techniques
Communicating in a foreign language	Emphasis on mediation skills and intercultural understanding in the managerial and administrative assistance field
Technological competencies	Ability to apply knowledge and technology to perceived human needs, such as communication
Public administration competencies	Drafting administrative documents and understanding concepts, regulations, and practices related to public administration
Communication and interaction	Empathy as the ability to understand and share the feelings of others, overcoming specific interaction-related situations
Digital competencies	Confident and critical use of information and communication technologies for work, leisure, and communication
Multitasking and transversal competencies	Capacity to operate in a diverse professional environment, managing multiple tasks simultaneously while achieving high-performance
Documenting and archiving	Skills in gathering information from both traditional and digital sources, as well as archiving frequently used documents
Learning how to learn	Ability to effectively manage one's learning, both individually and in groups, adapting to the flexible and open nature of the field
Social and civic competencies	Ability to participate effectively in social and working life, particularly in increasingly diverse societies
Initiative and entrepreneurship	Ability to turn ideas into action through creativity, innovation, and risk-taking, with a focus on planning and managing projects
Media and public discourse analysis	Ability to appreciate the creative and emotional significance of ideas, experiences, and emotions across various media
Style and etiquette	Understanding behavior, attitude, dress code, the politeness strategies
Protocol	Organizing events, attending ceremonies, and managing official correspondence
Ethical and deontological competencies	Understanding and applying the European Code of Good Administrative Conduct

Source: Adapted from Iucu and Iordache-Platis (2018)

competence, a hierarchy was developed to present the competencies ranked by importance according to the students' view. Subsequently, respondents were invited to self-assess their proficiency level in each of these competencies, selecting from the following categories: 'beginner', 'intermediate', 'advanced', or 'expert'. Comparative analyses were then conducted to examine the relationship between the perceived importance of each competence and the self-assessed proficiency levels of the respondents.

**Table 2:** Scale Reliability Analysis

	Mean	SD	Cronbach's $\alpha$	McDonald's $\omega$
Scale	8.41	1.79	0.970	0.972

Source: Authors' calculations

To verify the reliability of the scale, a Cronbach's  $\alpha$  test was performed on the set of 15 competencies. The scale passed the reliability test with Cronbach's  $\alpha = 0.970$ , indicating a high level of internal consistency and reliability for the data collected in this study. This result can be seen in the reliability analysis table, confirming that the scale is suitable for use in this research. Further statistical tests were applied on the collected data, including descriptive analyses, normality tests, independent t-tests, and correlation analyses. These tests were conducted to better understand the relationships between the competencies included in the scale and to explore potential insights for designing and developing innovative micro-credentials offerings. Such offerings could be based on the specific competency-profile needs of students in administrative sciences, ensuring that future educational initiatives align more closely with the skills students deem important for their professional success.

#### **4. Results**

A significant number of students ( $N = 276$ ) responded to the survey administered through an online form. Respondents represented several age groups, ranging from 18 to over 56 years old. However, since 99.93% of the respondents fell within the first two age categories (18–22 years old and 23–28 years old), 18 responses were excluded from the analysis to ensure a normal distribution of the sample size. As a result, the number of respondents included in the study was reduced to 258.

The sample exhibited an overall normal distribution on key demographic factors such as age, place of origin, gender, distance from place of origin to current residence, parents' highest education level, number of household members, and average household income. The distribution of the study sample was nearly symmetrical, apart from gender (Skewness =  $-2.67$ ), as most respondents (89.92%,  $N = 232$ ) identified as female. Although this percentage is higher than the typical proportion of female students in the analyzed fields, which generally ranges from 62% to 70%, according to data from the Ministry of Education in Romania (2021), it aligns with overall trends in Romanian higher education.

The sample also showed a balanced distribution across academic levels, with 52.32% ( $N = 135$ ) of respondents being bachelor's degree students and 47.68% ( $N = 123$ ) being master's degree students. Additionally, a significant proportion of respondents (45.34%,  $N = 117$ ) were employed in the private sector while pursuing their studies, whereas only 6.20% ( $N = 16$ ) worked in the public sector.

##### ***4.1. Students' perceptions of the competency profile***

The students' perceptions regarding the competency profile did not exhibit a normal distribution, as indicated by the Kolmogorov-Smirnov distribution test ( $p < .001$ ), with a statistic value ranging between 0.189 and 0.363. However, the responses were deemed significant for the purposes of the study, showing a medium effect size based on the  $t$  test results (Cohen's  $d = 4.001$ ). Among the 15 competencies analyzed, the majority ( $N = 12$ ) received scores between 8.01 and 8.99 on a scale from 1 to 10, where '1' represents 'not

important at all’, and ‘10’ signifies ‘extremely important’. These results suggest that students generally perceive the competencies list as balanced in importance. The competencies ‘Documenting and archiving’ (M = 7.68) and ‘Ethical and deontological competencies’ (M = 7.90) were rated as the least important, while ‘Communicating in the mother tongue’ (M = 9.07) was considered the most important, closely followed by ‘Communicating in a foreign language’ (M = 8.88).

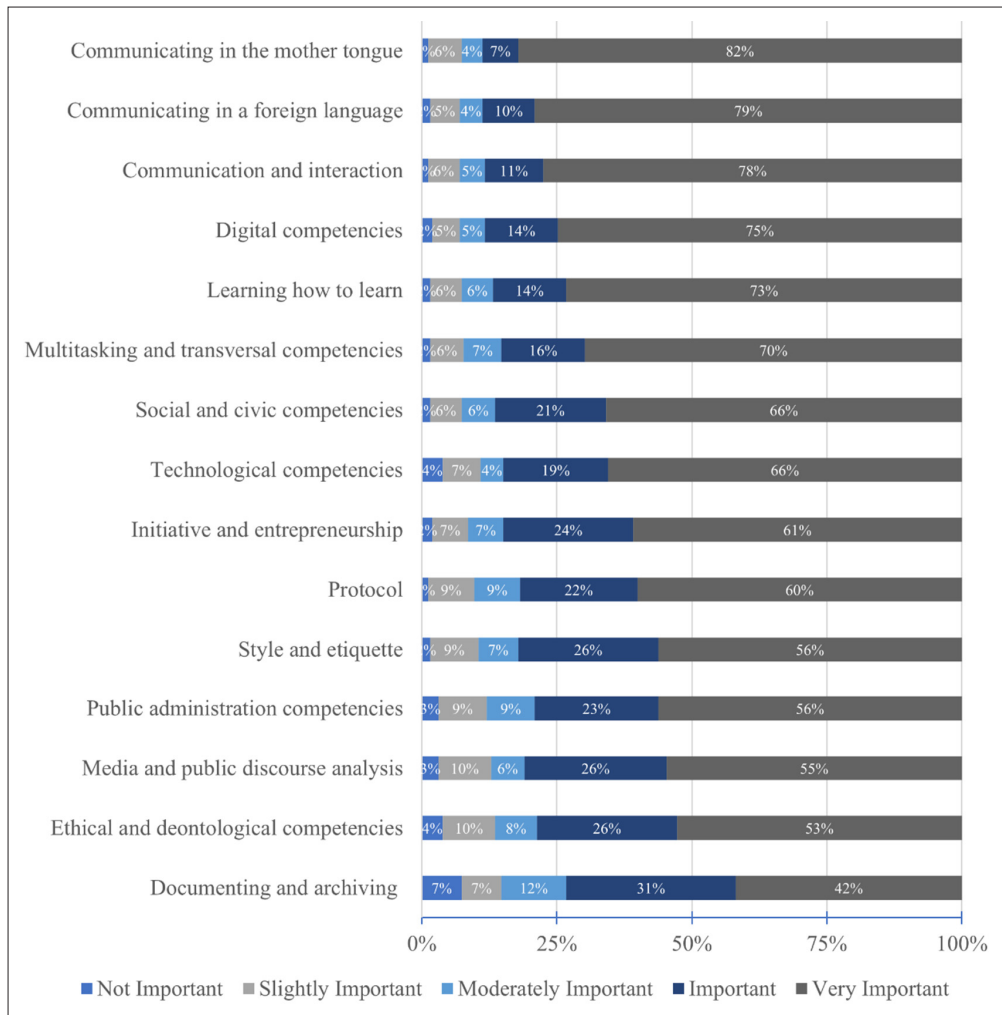


Figure 1: Competencies ranking based on students' perceptions (N = 258)

Source: Authors' calculations

Other competencies were frequently mentioned by respondents, such as ‘adaptability’ (N = 16), ‘teamwork’ (N = 15), and ‘emotional intelligence’ (N = 14). When asked to describe the ideal employee in their field, considering the competency profile and their

own perspectives, almost 33% of the respondents (N = 85) used characteristics such as ‘punctual’, ‘organized’, ‘accountable’, and ‘respectful’. Other responses highlighted the importance of integrating into a team and possessing strong communication skills. When students were asked to what extent they believe their perceptions of the competency profile align with those of employers, more than two-thirds indicated that their views matched employers’ perceptions, with only 2% stating that their perceptions did not align at all.

Students were also asked to identify additional skills they considered important but were not included in the initial list. Frequently mentioned soft skills included emotional intelligence (‘Skills that refer to emotional intelligence’), empathy (‘Empathy’), active listening (‘Learning to listen actively’), adaptability (‘Adaptability’), and teamwork (‘Teamwork’), underscoring the importance of interpersonal and self-management abilities for their desired career paths. Technical skills such as financial analysis (‘Financial analysis skills’), programming (‘Programming and data analysis’), and marketing (‘Marketing skills’) were also highlighted, suggesting that students see value in a diverse skill set that combines both interpersonal and technical competencies.

These findings highlight the importance of adopting a holistic approach to skills development, addressing both personal and professional competencies to prepare individuals for success in their chosen careers. Micro-credentials could play a key role in facilitating the development and recognition of these competencies, providing targeted, flexible learning opportunities and verifiable certifications to validate the acquisition of specific skills. While some students considered the initial list comprehensive (‘The list includes all the skills’), others suggested the inclusion of basic economic and financial knowledge (‘I think it would be important to have basic economic and financial notions’). These diverse responses underscore the potential value of micro-credentials in tailoring skills development to individual needs and preferences.

When asked to justify the three most important competencies they had selected, the results revealed a strong emphasis on communication, digital literacy, and adaptability. These competencies were perceived as critical for both personal and professional success. Students consistently highlighted the importance of communication skills, both in Romanian and foreign languages, for effective collaboration, relationship building, and clear expression of ideas. One respondent remarked, *‘It is impossible not to come across another person in life who speaks another language besides Romanian, and also, employers are looking for people who speak another language (English)’* (R27). Another student emphasized the importance of being able to *‘communicate correctly grammatically and express ourselves regarding the decisions we want to make’* (R132).

Digital literacy was perceived as crucial due to the growing digitalization of various sectors. Students recognized that tasks such as data analysis, online communication, and project management are increasingly dependent on technological competencies. As one student put it, *‘In today’s world, everything is done on the computer.’* (R24), emphasizing the ubiquity of digital tools in the workplace. Continuous learning and adaptability were also regarded as vital for career advancement and personal growth. Students acknowledged the need to

remain competitive in an evolving job market, acquiring new knowledge and adapting to change. One student noted, *'You learn throughout your life and many times you are forced to adapt.'* (R 256), highlighting the importance of lifelong learning and flexibility.

While communication, digital literacy, and adaptability were the most frequently mentioned competencies, other skills such as administrative law, protocol, ethics, and social skills were also recognized for their role in professional success, particularly in specific contexts. However, the emphasis on communication, digital literacy, and adaptability underscores the students' understanding of the core skills required to thrive in today's changing job market. Micro-credentials offer a flexible and modular approach for learners to acquire and demonstrate specific skills, complementing their existing qualifications and enhancing their employability in a rapidly evolving job market. Further research could investigate the relative importance of each skill within different professional contexts and explore how these competencies contribute to success in public administration and related fields. Such insights could inform the design and implementation of micro-credential programs that are better aligned with the specific needs of students in administrative sciences, thereby enhancing their career prospects and meeting the demands of the modern workforce.

#### ***4.2. Level of self-assessment***

The students' self-assessment levels across the 15 competencies provided in this analysis did not show a normal distribution, as indicated by the Kolmogorov-Smirnov distribution test ( $p < .001$ ), with a statistic value ranging between 0.208 and 0.348. Despite this, the responses were deemed significant for study, demonstrating a medium effect size based on the  $t$ -test results (Cohen's  $d = 3.358$ ). Most students rated their proficiency at an intermediate level in the majority of competencies (13 out of 15), scoring less than 3 points on a scale from 1 to 4, where '1' corresponds to 'beginner', '2' to 'intermediate', '3' to 'advanced', and '4' to 'expert'. This indicates an overall low level of proficiency in most of the competencies. However, for two competencies, 'Communicating in the mother tongue' ( $M = 3.50$ ) and 'Communication and interaction' ( $M = 3.01$ ), students self-assessed their proficiency at the 'advanced' level.

When comparing students' perceptions of the importance of competencies with their self-assessed proficiency, it becomes evident that the competency perceived as most important—'Communicating in the mother tongue'—also received the highest proficiency rating. This correlation is not as strong for 'Communication and interaction', where the proficiency level, though higher than others, does not match its importance, as illustrated in the diagram below.

The results indicate a general trend where proficiency levels somewhat align with students' perceptions of the competencies' importance. However, with a few exceptions, this comparison suggests that further analysis is needed to determine whether there is a direct correlation between the perceived importance of competencies and students' actual proficiency in them. The study also examined factors contributing to low proficiency levels in some competencies, aiming to identify the underlying causes.

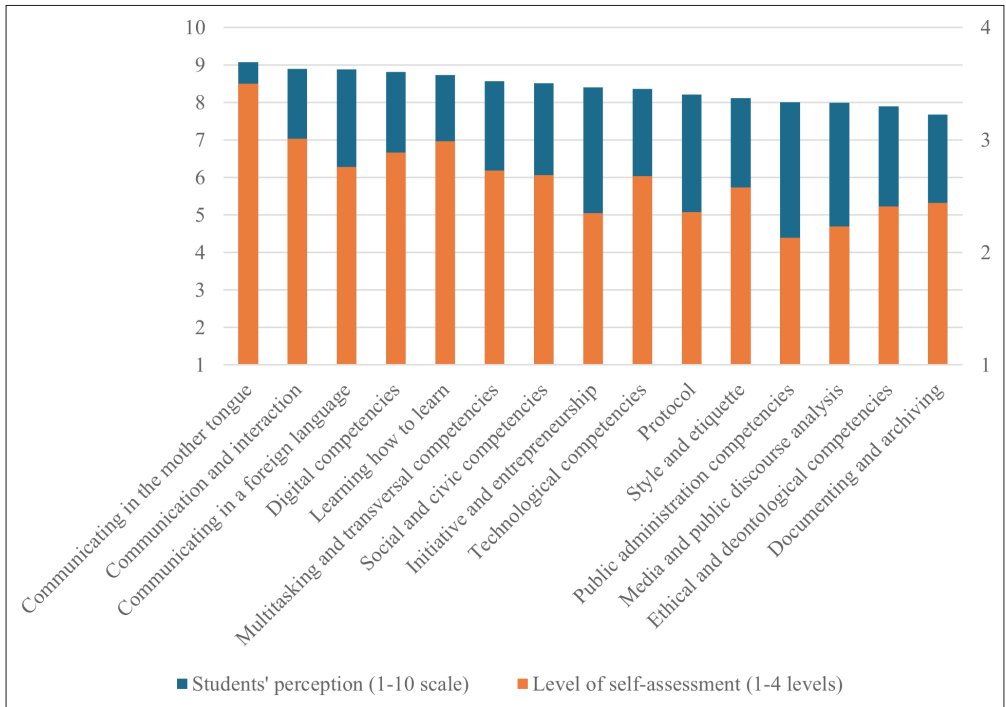


Figure 2: Comparison between students' perception and level of self-assessment (N = 258)

Source: Authors' calculations

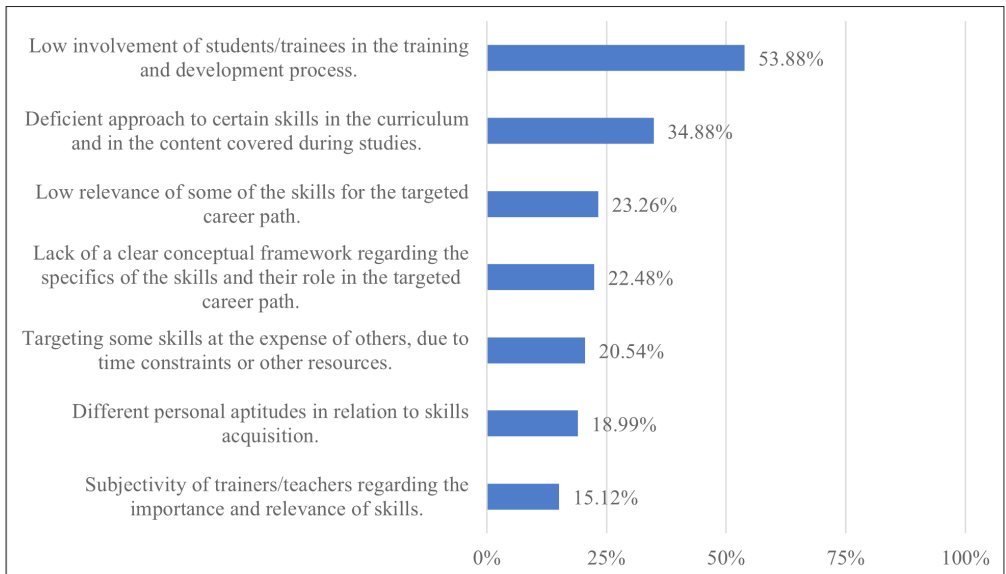
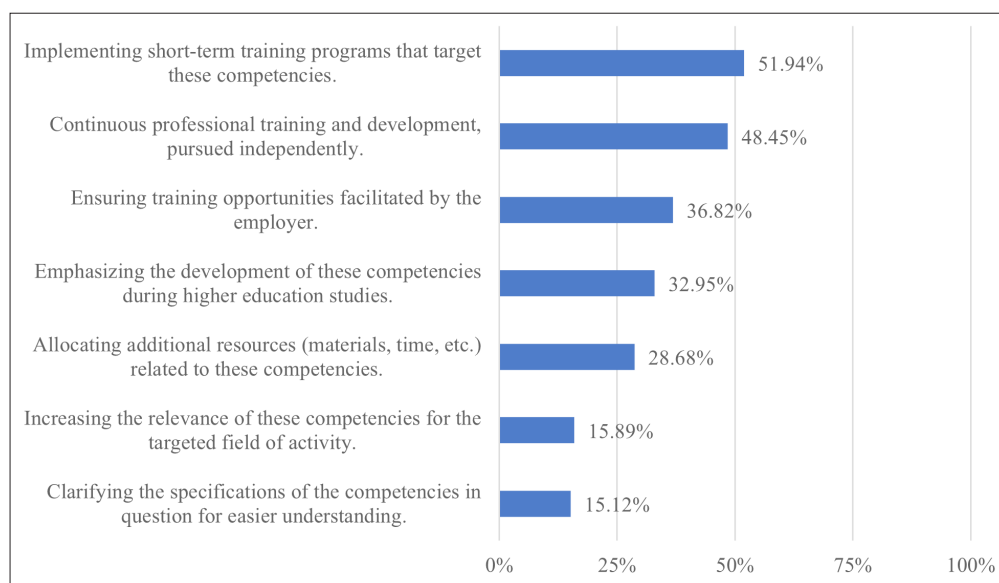


Figure 3: Potential reasons for low proficiency of some competencies, based on students' perspective (N = 258)

Source: Authors' calculations

Interestingly, despite expectations that a deficient didactic and methodological approach in curriculum design and delivery would be the primary factors, over half of the respondents (53.88%) identified their own attitude and lack of involvement in training programs as the main causes of low proficiency. In contrast, the subjectivity of trainers, teaching staff, and their teaching methods were seen as the least significant contributors to this professional shortfall. Additionally, the perceived low relevance of some competencies and a convoluted conceptual framework surrounding their career usefulness were recognized as nearly equal contributing factors. Together, these causes form a ‘median’ of factors explaining the limited effectiveness of certain competencies, as shown in the diagram above.

In exploring potential solutions to address the competencies with the lowest proficiency levels, students provided valuable insights into their trust and motivation regarding continuous professional development (CPD), whether it involves short-term training programs, self-selected programs based on personal motivations and expectations, or those facilitated by employers. The data reveals that half of the respondents (51.94%) believe short-term training programs targeting specific competencies are the most effective solutions to improve proficiency. Additionally, nearly half of the students (48.45%) indicated that independently pursued continuous professional development, based on personal motivation and expectations, could mitigate low proficiency levels.



**Figure 4:** Potential solutions to support the development of low-proficiency competencies (N = 258)

**Source:** Authors' calculations

Regardless of the funding mechanism or the provider, training programs should aim to increase the relevance of these competencies and facilitate their deeper understanding



throughout one's professional career. The students' responses suggest a strong sense of 'training/ learning readiness' for new CPD programs based on the micro-credential philosophy, which, though not yet extensively tested in the field of administrative sciences, shows promise for addressing these gaps.

## 5. Discussions and practical approaches

The analysis of student perceptions and self-assessment levels in administrative sciences reveals significant opportunities for integrating micro-credentials into both educational and professional development pathways. The results show a clear mismatch between the perceived importance of certain skills—such as digital literacy and adaptability—and students' actual proficiency levels. For instance, students rated the importance of digital literacy highly ( $M = 8.88$ ), yet their self-assessed proficiency in this area remains at an intermediate level (below 3 on a 1-to-4 scale). Similarly, adaptability was recognized as crucial by over 70% of respondents, but their proficiency was similarly moderate. This gap highlights the potential of micro-credentials to address these deficiencies through short-term, targeted training programs that directly respond to these needs (Wheelahan and Moodie, 2021).

The study also highlights that students prefer personalized, self-directed learning experiences. Over 50% of the respondents expressed a preference for short-term, independent training programs, emphasizing the need for flexible, modular learning solutions. As Selvaratnam and Sankey (2021a) have noted, such preferences align with broader trends in higher education, where students seek to take more control of their learning pathways. By incorporating micro-credentials into the administrative sciences curriculum, universities can offer students a customized and efficient way to acquire in-demand skills. For example, a student interested in public policy analysis could pursue a micro-credential in data analytics for policymaking, while another student focused on human resources might explore conflict resolution – illustrating how micro-credentials can be tailored to meet diverse professional goals.

Developing these micro-credentials should start with thorough needs assessments and labor market analyses to identify critical skills gaps. The study's findings specifically highlight competencies like digital literacy, adaptability, financial analysis, and project management as areas where students recognize their importance but report lower proficiency levels. Collaborative partnerships with sector experts and alumni can help ensure that the content reflects current workplace demands and that students are prepared to handle real-world challenges (Brown *et al.*, 2021). By designing micro-credentials that address these specific gaps, universities can directly respond to the needs identified by both students and employers (Cartiş *et al.*, 2023). Micro-credentials offer flexibility in their implementation, allowing for integration into existing curricula in various ways. They can be offered as elective courses, stackable credentials, or embedded within existing modules. This flexibility is crucial, as it allows students to tailor their learning experiences according to their career needs.

Offering micro-credentials through online platforms, hybrid models, or intensive workshops ensures that they are accessible to a wide range of learners, including working professionals (Tamoliūnė *et al.*, 2023). The use of digital tools and simulations further enhances learning, providing students with interactive and engaging ways to develop the skills they need in the workplace. Moreover, the study suggests that continuous professional development (CPD) is a priority for many students, with a strong preference for self-directed learning. More than 50% of students indicated that short-term CPD programs would be effective in addressing their skill gaps. Extending micro-credential offerings beyond graduation would enable alumni and working professionals to upskill and reskill throughout their careers, allowing universities to play a leading role in supporting lifelong learning (OECD, 2021). As Diab and Zhang (2023) note, continuous learning is becoming an essential component of professional development, especially in fields like administrative sciences, where labor market needs and technologies are constantly evolving.

For academics, micro-credentials represent an opportunity to broaden their teaching impact beyond traditional classroom settings. By developing and delivering focused micro-credential courses, academics can showcase their expertise and ensure that their teaching remains relevant in an ever-changing educational landscape. To make these courses engaging and effective, academics should incorporate real-world scenarios, case studies, and practical exercises that align with current professional practices (Boud and Jorre, 2021). As one student in the study noted, *'In today's world, everything is done on the computer.'* (R24), highlighting the need for content that reflects the digitization of public administration. Additionally, collaborating with public administration professionals ensures that the material is both up-to-date and practically applicable, enhancing students' learning experiences and their career prospects (Sánchez, 2011).

For students in administrative sciences, embracing lifelong learning and continuous self-assessment is key. The findings of this study suggest that students should critically evaluate their current skill sets, particularly in areas like digital literacy and adaptability, where proficiency gaps were most prominent. One respondent noted, *'You learn throughout your life, and many times you are forced to adapt.'* (R256), underscoring the importance of ongoing learning. Prioritizing micro-credentials that focus on closing these gaps will help students become more competitive in the job market. Furthermore, students should diversify their skill portfolio by pursuing micro-credentials that develop both technical and interpersonal competencies. While technical skills like data analysis and project management are in high demand, interpersonal skills such as communication and teamwork are equally valued by employers. The findings of this study reveal that students rate communication in both their native language ( $M = 9.07$ ) and foreign languages ( $M = 8.88$ ) as highly important, yet gaps in other areas, like teamwork and adaptability, persist. Pursuing micro-credentials in these areas will allow students to develop a well-rounded skill set that meets the needs of today's dynamic workplace.

Additionally, students should take advantage of the flexibility that micro-credentials offer. As more than 50% of respondents indicated, short-term and flexible learning options

such as online platforms and self-paced modules provide the ideal balance between academic responsibilities and the need for continuous skills development. Building a professional portfolio that includes micro-credentials alongside traditional academic qualifications and work experience will demonstrate to employers that students are committed to lifelong learning and have a diverse skill set that extends beyond their degree (OECD, 2021). Engaging with peers, mentors, and professionals who are also pursuing micro-credentials can further enhance students' learning experiences. Sharing achievements and insights on professional platforms helps build connections and expand networks, which are increasingly important in public administration careers.

By adopting these practical approaches, higher education institutions, academics, and students can fully leverage the potential of micro-credentials to create a more personalized, relevant, and engaging learning experience. The integration of micro-credentials strengthens the university's reputation as an innovative institution, responsive to the evolving needs of the job market. For students, micro-credentials offer a clear pathway to developing the competencies needed for career advancement in administrative sciences, demonstrating their commitment to professional development and increasing their employability. The findings of this study suggest that micro-credentials have the potential to play a transformative role in bridging the gap between student preparedness and employer expectations. As the nature of work continues to evolve, particularly in fields like administrative sciences, universities that embrace micro-credentials will be at the forefront of educational innovation, equipping students and alumni with the skills they need to succeed.

## **6. Conclusions**

The evolving landscape of administrative sciences, driven by rapid technological advancements and shifting societal demands, necessitates a re-evaluation of traditional educational and professional development approaches. This study addressed a gap in the current literature by exploring the potential of micro-credentials to enhance the acquisition and recognition of essential competencies in this field. Through the analysis of student perceptions of competency profiles, self-assessed proficiency levels, and preferences for learning formats, this research has provided valuable insights into the opportunities and challenges associated with implementing micro-credentials in administrative sciences.

A key finding of this study is the significant discrepancy between the perceived importance of certain skills and students' actual proficiency levels. While communication skills—both in Romanian and foreign languages—are highly valued and well-developed, areas like digital literacy, adaptability, and specialized knowledge present clear opportunities for growth. These gaps underscore the need for targeted interventions that focus on addressing specific skill deficiencies, ensuring that graduates are equipped with the competencies required for success in the modern workplace. This aligns with the broader trend toward more responsive, flexible learning models that empower students to meet the demands of an increasingly digital and fast-paced job market.

Moreover, the study reveals a strong preference among students for self-directed, short-term training programs, which aligns closely with the micro-credentials model. This suggests that micro-credentials can be a powerful tool for empowering learners to take ownership of their education and customize their learning journeys according to their individual career aspirations. The flexibility and modular nature of micro-credentials make them particularly well-suited to addressing some of the challenges associated with traditional education, such as outdated teaching methods or rigid curricula. By offering an agile and responsive learning experience, micro-credentials provide students with opportunities to develop specific skills that are directly applicable to their professional contexts.

Higher education institutions can leverage these findings to create more personalized and adaptive learning environments. By collaborating with public sector organizations and sectoral partners, universities can design and deliver micro-credentials that are directly aligned with the skills needed in public administration. Incorporating these credentials into curricula can provide structured pathways for skill development. Offering micro-credentials through diverse delivery modes—such as online platforms, hybrid models, and workshops—can accommodate different learning preferences, making education more accessible. Additionally, interactive elements like simulations and case studies can enhance student engagement and facilitate the application of theoretical knowledge to real-world situations in public sector settings. Recognition frameworks, such as integrating micro-credentials into hiring practices or granting academic credit, further increases their value and encourages broader adoption by both students and employers in the public sector.

Academics play a pivotal role in this transformation. By embracing micro-credentials, they can extend their influence beyond the traditional classroom and actively contribute to the development of more relevant, engaging content that responds to current public administration demands. Collaborating with public administration professionals ensures that micro-credentials remain current and applicable. Academics can also promote self-directed learning by offering guidance and advising students on how to strategically pursue micro-credentials that align with their career interests. For example, a professor might recommend a micro-credential in contract management for a student interested in public procurement, providing tailored support that enhances the student's employability. For students, the findings suggest that they should proactively seek out relevant micro-credentials to address skill gaps and enhance their career prospects. By engaging with flexible learning options and building a portfolio of micro-credentials alongside their academic qualifications, students can demonstrate a commitment to lifelong learning and display a diverse skill set. Networking with peers, public administration professionals, and mentors further enhances their career opportunities, allowing them to stay connected to the latest trends in administrative sciences and related fields.

In conclusion, this study demonstrates the transformative potential of micro-credentials in revolutionizing the way administrative sciences are taught and learned. By adopting a learner-centric approach and tailoring educational opportunities to individual needs, micro-credentials can empower both students and professionals to acquire the competencies

required to thrive in the 21<sup>st</sup>-century workplace. As the field of administrative sciences continues to evolve, the integration of micro-credentials can ensure that graduates possess the skills and knowledge necessary to navigate the challenges and opportunities of the future. This study contributes to the growing body of knowledge on micro-credentials by providing specific insights into their application within administrative sciences, paving the way for further research and innovation in this area. Future studies should continue to explore the broader impact of micro-credentials on career development, professional growth, and their long-term value within the evolving landscape of higher education and public administration.

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