

IMPROVING QUALITY OF ADMINISTRATION PROCESS IN HEIs: PROFESSIONAL COMPETENCE PERCEIVED BY ACADEMIC STAFF IN UKRAINE

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Abstract

Research purpose. The research purpose of this paper was to explore the evaluation of skills by academic staff to improve the quality of the administration process in higher education institutions (HEIs) from two perspectives. Firstly, the authors investigated whether there are statistically significant differences between the genders of academic staff in higher education institutions regarding the evaluation of their skills and competencies. Secondly, the study aimed to determine if there are statistically significant differences in competencies perceived between academic staff of STEM sciences and those with academic experience in other sciences in terms of assessing their professional competencies. The purpose was determined by the impact of self-assessment of professional competencies on the improvement of administrative processes.

Design / Methodology / Approach. The survey, using the authors' developed questionnaire, was distributed in Ukraine from 2019 to 2023. 374 respondents were surveyed. To test hypotheses, the authors employed the Mann-Whitney U test for gender-related hypotheses and the Kruskal-Wallis test for hypotheses related to the area of scientific and academic activities.

Findings. Due to the analysis carried out in the present research, the Mann-Whitney non-parametric test showed that there is no statistically significant difference between the gender groups and their professional competencies evaluation, which leads to the rejection of the first hypothesis. The second hypothesis was also rejected, as based on the Kruskal-Wallis's test there is no statistically significant difference between the perception of the professional competencies among the academic staff of STEM and other sciences.

Originality / Value / Practical implications. Unlike other studies, this research specifically focuses on the differences between the self-assessment-based perceptions by genders and STEM sciences academic staff compared to representatives of other branches of science at HEIs in Ukraine. The practical value is achieved by the research thus ensuring administrative staff with defined competencies and self-assessment criteria. The research findings then will allow us to link competencies to administration processes and offer training and development opportunities based on identified competency gaps. The feedback mechanism might be established based on the research data and these self-assessment results might be incorporated into the performance evaluation processes, thus improving the quality of the educational process and its administration in HEIs. Practical implications are related to the state and period of the research, due to the present war in Ukraine.

Keywords: professional competencies, administration process, academic staff, HEI, STEM

JEL codes: I21, I23, J24, M12, M54.

Introduction

The academic staff as a human factor, is a key driver on a way of HEI organisational change. As said by Houston et al. (2006) university academic staff do complex work in an increasingly demanding environment. Historically, HEIs divided the role of academic staff into three pillars: teaching, research, and administration, with a primary emphasis on teaching and research. According to the International Standard Classification of Education (ISCED), “academic staff includes personnel whose primary assignment is instruction, research, or public service. This includes staff personnel who hold an academic rank with titles such as professor, associate professor, assistant professor, instructor, lecturer, or the equivalent of any of these academic ranks. The category includes personnel with other titles, (e.g., dean, director, associate dean, assistant dean, chair, or head of department), if their principal activity is instruction or research” (UN ESCWA, 2001). Modern researchers, such as Lay (2019), state that academic staff is the personnel employed for research and teaching by higher education institutions.

The relationship between improving the quality of administration processes in HEIs and the perceived professional competence of academic staff is encompassed in several critical ways. First, the effectiveness of administration processes in educational institutions is primarily based on the competencies, skills, and overall performance of academic staff. The efficiency of the administration process depends on the academic staff's ability to navigate administrative tasks, provide effective communication, and contribute to decision-making impact on the overall strategic development of the organization.

Secondly, by understanding the perceived professional competence of academic staff, as a result of self-assessment, HEIs can optimize their administrative resources, leading to increased efficiency in handling institutional processes. The quality of the administration process in HEIs requires a comprehensive approach to acknowledge the multifaceted nature of professional competence. It involves not only technical skills but also leadership, adaptability, and collaboration – competencies that directly influence administrative effectiveness.

Finally, acknowledging and improving the perceived professional competence of academic staff can contribute to a more conducive work environment. When staff members feel competent and motivated, they become much more motivated and dedicated. The perceived professional competence of academic staff is directly linked to the enhancement of administrative processes within HEIs, playing a vital role in fostering innovation and creating a competitive institutional environment.

The aim of the research is to investigate the perceptions of academic staff regarding their professional competence, particularly in STEM fields, and to address gender differences in these perceptions. Undertaking research on the perceptions of academic staff regarding their professional competence, particularly in STEM fields and in pertinence to gender differences, is crucial for several reasons. Firstly, it underlines the emerging nature of academic roles. Secondly, such research unveils the disparities between gender differences in perceived competence, discovering a need for systemic changes to ensure the representation of women in STEM sciences. It emphasizes a need for continual professional development, ensuring the ability of academic staff to respond to the needs of contemporary market demands.

Literature Review

The Concept of Professional Competence

The significance of teachers' professional competence and innovative activity in higher education is highly relevant at present (Kutsak et al., 2023). By integrating self-assessment of professional competencies with the improvement of administrative processes, HEIs can create a more cohesive and effective environment, promoting both staff development and institutional growth (Bieńkowska et al., 2019). The perceived professional competence of academic staff members is a critical factor of educational efficacy and quality in the constantly changing field of STEM education (Xie et al., 2015). It is becoming more and more important to comprehend how academic staff members evaluate their professional competencies and attitudes towards continual growth as the demands of the modern world

continue to transform the educational atmosphere. Competency is composed of multiple competencies (Mulder, 2014). The determination of academic staff members' attitudes regarding the necessity of routinely improving their professional competence in response to the changing circumstances of the modern world is at the heart of the research being conducted (Huang et al., 2022). When the improvement of professional competencies is aligned with HEI business administration processes it ensures that the institution operates efficiently, achieving staff to streamline operations, optimize resource allocation, and foster innovation and communication process with the stakeholders, thus ultimately enhancing the HEI's competitiveness and sustainability in the educational market.

The dynamic nature of knowledge and instructional approaches in the field of Science, Technology, Engineering, and Mathematics (STEM) education calls for a persistent dedication to professional development and flexibility. Known as "cross-cutting skills," these abilities cut across academic fields and have the capacity to increase STEM teachers' efficacy (García-Martínez et al. 2019; Nordine & Lee, 2021). This dual emphasis on identifying cross-cutting skills and acknowledging the need for ongoing improvement is in line with larger educational goals seeking to develop competent and flexible teachers able to tackle the difficulties presented by the quickly evolving educational environment.

Importance of Professional Competence in Academic Staff Administration Process

One of the biggest challenges that HEI meets is the improvement of the quality of its educational processes. The process of education can be ensured only in consonance with smooth administration operations. Thus, it is crucial for the administration of the institutions to set new strategies and plans for better management of the current processes (Chalaris et al., 2014). HEIs typically have a variety of administration processes to ensure smooth operation and management. These processes could be divided into those directly related to the education process, such as academic affairs (curriculum development, accreditation, academic policies), human resources (managing faculty recruitment and professional development), research administration (supporting research activities); partly related to the education process (such as student service, and career guidance as a part of it); and related indirectly to the education process (such as admissions, facilities management, and others). These processes may vary depending on the size, type, and structure of the institution, but they are essential for the effective functioning of higher education institutions. Improvement of professional competency within the administration processes is crucial for the overall effectiveness of HEI: competent academic staff can enhance curriculum design to ensure it meets the updating needs of students and stakeholders; those responsible for accreditation processes can navigate them more effectively; supporting faculty members with ongoing improves teaching quality and contributes to a culture of continuous improvement, leading to higher performance and retention rates. As stated by Collinson (2004) and Mashaya et al. (2022), as a cornerstone of the educational process, professional competence among academic staff leads to effective administration in higher education, impacting not only the HEI's present functioning but also its long-term strategic development and overall impact. Furthermore, dedication to continual professional development is required due to the dynamic nature of educational methodologies and the ever-evolving body of knowledge (Martín-Páez et al., 2019).

Maintaining the relevance and interest of curricula requires academic staff members to be able to adjust to new research findings, technological developments, and shifting paradigms in education. Teachers who keep up with the most recent developments in their disciplines help to create new knowledge, which improves the school's standing in the eyes of the academic community and encourages students to be curious about learning (Griffin et al., 2012). Moreover, the significance of professional competence transcends individual accomplishment and encompasses the wider academic community. Strong professional competence is a prerequisite for interdisciplinary research, collaborative projects, and the capacity to mentor and advise colleagues (Care et al., 2017).

Improvement of Professional Competence by Academic Staff

For teachers to have a sense of the importance and prestige of their work, they must experience satisfaction both from the work itself and from the assessment of their work by the administration, which is expressed, among other things, in wages. Administration should regularly evaluate if the existing knowledge and skills of the teachers are sufficient to perform teaching activities in the current environment. Academic staff should regularly improve their knowledge and skills to ensure the quality

of the teaching process, continuous improvement of the competencies of academic staff should be a standard procedure in Higher Education Institutions. To regularly enhance the competence of academic staff, different motivation measures should be implemented to ensure the academic staff positions remain in demand and competitive in the modern changing circumstances (including the introduction of artificial intelligence, digitization, demand for informal education, rising living costs, and other factors). Over the next 10-20 years, the process of teaching in HEIs will undergo significant transformation (such as the possibility of fully remote or blended formats), changing requirements for knowledge acquisition, and altering teaching methods. This leads to new demands on the professional knowledge, abilities, skills, and qualities of a teaching staff member (Safin et al., 2020). The results of obtained professional competence improvement should be applied in the study process in multiple ways, such as enhancement of teaching methods; change of teaching process itself (by utilizing a new software, etc.), curriculum improvement, experience sharing with colleagues, and recognition of competence enhancement by the administration through financial contribution.

Cross-Cutting Skills in Education

The notion of cross-cutting skills in education has garnered considerable attention (Marzo-Navarro & Berné-Manero, 2022), indicating the acknowledgement of diverse competencies required of academic staff to effectively navigate the intricacies of dynamic educational settings. These abilities, which go beyond discipline-specific knowledge and are known as transversal or transferable skills (Sá & Serpa, 2018), are crucial for encouraging flexibility, critical thinking, and comprehensive professional development. The significance of cross-cutting skills in education has been examined in several studies. The importance of abilities like critical thinking, teamwork, problem-solving, and working with diverse others as essential parts of cross-cutting competencies is highlighted by Andrade (2020).

In their thorough analysis of academic staff adaptability, Collie et al. (2018) found that collaborative problem-solving, technological literacy, and flexibility are critical competencies in the face of changing pedagogical approaches and technological breakthroughs. The introduction of cross-cutting skills enables the administration of HEIs to foster a culture of innovation and allocate resources efficiently ensuring an agile and competitive institutional framework (Gibbs & Coffey, 2004).

Gender Differences in Perceived Professional Competence

The prerequisites to study gender differences in perceived professional competence are explained by their impact on the HEI business administration process by influencing leadership dynamics, diversity initiatives, and organizational culture, potentially fostering decision-making processes. According to Casad et al. (2021), there is an underrepresentation of women in STEM faculty positions at research institutions, which shows the causes and effects of gender inequality in STEM. The proportion of women holding faculty positions has not increased in line with the growing number of women receiving doctorates in STEM fields. The underrepresentation is linked to systemic problems, including bad experiences with stereotypes that favour men, especially in STEM fields. It draws attention to elements contributing to gender differences, such as the cold academic environment in STEM fields, increased expectations for women faculty, and lower social capital. Another study by Schoen et al. (2018) examines the relationship between gender and career advancement by combining social network theory and tokenism, with a special emphasis on the influence of network structures on career prospects.

Research Methodology

The study employed a quantitative research design, and the survey was constructed by the authors using the Google Survey platform. The survey, using the authors' developed questionnaire, was distributed in Ukraine from 2019 to 2023. 374 respondents were surveyed. The target respondents for the study were specifically academic staff (representatives of both STEM and other branches of science) of Higher Education Institutions in Ukraine.

The questionnaire consisted of 37 questions, such as "I am satisfied with my job" and "I agree that my existing knowledge and skills are sufficient to perform teaching activities in the current environment," among others. Questions were designed as multiple-choice questions and questions with an evaluation scale. A Likert scale ranging from 1 to 5 was used, where 1 indicates complete disagreement and 5

indicates full agreement. The questionnaire also included questions about overall satisfaction with the teaching process in the current workplace, and working conditions, as well as a request to evaluate the need to improve one's professional skills and competencies in the conditions of today's changing world. The structure of the research is presented in Table 1. Parts A and B of the research paper were utilized, where Part A focused on the respondent's profile, and Part B was used to determine the attitude of academic staff related to competencies and work in Higher Education Institutions (HEI) in general.

Table 1. Research structure (Source: Authors' design).

Part of the survey	Description		
	Types of the questions	Evaluation scale	Codes
A: Respondent's profile	Open/Closed	Multiple-choice	A_1-A_5
B: Attitude (10 statements to rate the attitude of academic staff to the work in the HEI and competencies)	Closed	1-completely disagree; 5 - fully agree	B_1-B_10
C: Professional Competence (7 statements to rate aspects related to increasing professional competence)	Closed	Multiple-choice	C_1-C_7
D: Development (15 statements to rate the development of innovative professional competencies)	Closed	1-completely disagree; 5 - fully agree	D_1-D_15

Table 2 displays the comprehensive descriptive statistics of the respondents, providing an in-depth overview of their profiles for future analysis.

Table 2. Descriptive statistics of the respondents (Source: Authors' design)

Criterion	Response	Number of respondents	Percentage (%)
Gender	Male	149	40%
	Female	225	60%
	Others	0	0%
Age in years	20-29	13	3%
	30-39	29	8%
	40-49	103	28%
	50-59	107	29%
	60-64	43	11%
	60+	79	21%
Experience in years	<10	53	14%
	10-19	73	20%
	>20	248	66%
Area of scientific and academic activity	Natural sciences	50	13%
	Technics and technology	88	24%
	Medical sciences	59	16%
	Agricultural sciences	14	4%
	Social sciences	43	11%
	Humanitarian sciences	120	32%

The data in Table 2 illustrates the diversity of respondents, representing various genders, age groups, experience intervals, and scientific disciplines. Descriptive statistics reveal that 40% of the participants in the study are male, while 60% are female. The largest segment of the sample consists of Higher Education Institution (HEI) staff aged 50-59, comprising 107 individuals, equivalent to 29% of the entire sample. Most respondents (66%) reported experience of 20 years, in total 248 participants.

Regarding the field of scientific and academic activity, Humanities account for the highest proportion with 120 respondents, constituting 32% of the total sample. In contrast, Agricultural Sciences have the smallest representation, with only 14 individuals, equivalent to 4% of the total sample size.

In the analysis, the respondent's profile, gender, and area of scientific and academic activity were considered. To test hypotheses, the authors employed the Mann-Whitney U test for gender-related hypotheses and the Kruskal-Wallis test for hypotheses related to the area of scientific and academic activities.

Results

From the survey, part A as a respondent's profile and part B were used. For the analysis of the responses from Part B of the survey, descriptive statistics in SPSS were employed. The results of this analysis are presented below, providing detailed insights into the data collected.

Analysis of the answers of respondents for the B part of the survey, using frequency analysis, revealed the following trends:

- 72% of the respondents evaluated their perception of the work in HEI as prestigious as "4" and "5";
- 75% of the respondents evaluated their satisfaction with their job in HEI as "4" and "5"
- A significant portion of respondents (28%) expresses dissatisfaction with their salary, with only 18% fully agreeing or agreeing that they are satisfied;
- 83% of the respondents rated their existing skills and knowledge as sufficient to perform teaching activities in the current environment;
- 96% of the respondents chose "4" and "5" where they were asked to agree or disagree with the statement that academic staff should regularly improve knowledge and skills to ensure the quality of teaching.

Based on the analysis of the respondent's profile and the descriptive statistics presented earlier, the authors of the research have identified two main hypotheses. The first hypothesis, which pertains to gender, was subjected to testing using SPSS and the Mann-Whitney U non-parametric test. The second hypothesis, focusing on professional competencies in STEM disciplines, underwent testing through the Independent-Samples Kruskal-Wallis Test

H1 - Male academic staff members tend to evaluate their professional competencies as more than sufficient for carrying out teaching duties in the current educational environment compared to females.

To test the first hypothesis, the authors used the Mann-Whitney non-parametric test. 149 male and 225 female respondents were asked to rate their existing knowledge and skills. The question "I agree that my existing knowledge and skills are sufficient to perform teaching activities in the current environment" was based on a Likert scale, from completely disagree to fully agree.

Mann -Whitney non-parametric test showed that there is no statistically significant difference between the gender groups and their evaluation of existing knowledge and skills, as the SPSS report showed the result of Asymp.Sig. (2-tailed) as $<.0.075$ (as the standard alpha level is 0.05). Based on the calculated results the first hypothesis is rejected.

H2: Academic staff members in STEM disciplines tend to assess their professional competencies as more sufficient for conducting teaching tasks in the present educational context.

For the test of the second hypothesis, the authors used the Kruskal-Wallis Non-parametric test. The results showed that there is no statistically significant difference between academic staff of different disciplines and their evaluation of competencies, as Asymp.Sig. (2-tailed) is .664, (as the standard alpha level is 0.05). Based on the calculations, the hypothesis is rejected.

Conclusions

The primary objective of this paper was to explore the evaluation of skills by academic staff to improve the quality of the administration process in higher education institutions (HEIs) taking into consideration two approaches. Firstly, the authors investigated whether there are statistically significant differences between the genders of academic staff in higher education institutions regarding the evaluation of their skills and competencies. Secondly, the study aimed to determine if there are statistically significant differences in competencies perceived between academic staff of STEM sciences and those with academic experience in other sciences in terms of assessing their professional competencies. The object of research was determined by the impact of self-assessment of professional competencies on the improvement of administrative processes, thus ensuring HEIs in a more cohesive and efficient environment, fostering both staff development and institutional growth.

The critical role that academic staff members' perceptions of their professional competence play in STEM education is underscored by the dynamic nature of this role in response to changing educational demands and HEIs business administration processes. In line with the complexity of modern education and changing market requirements, the historical trajectory of academic professional competence has changed from a limited focus on subject expertise to a more inclusive understanding. The professional competence of academic staff plays a crucial role in creating and sustaining an engaging learning environment, encouraging scholarly innovation, and promoting effective teaching. This has an impact on individual achievements as well as the larger academic community. The idea of cross-cutting skills, that go beyond discipline-specific knowledge, has gained traction, emphasizing the value of adaptability, flexibility, and critical thinking in academic staff development. Moreover, systemic issues contributing to the underrepresentation of women in STEM fields have been uncovered by examining gender differences in perceived professional competence within academia. Stereotypes and higher standards for female faculty, and a decrease in social capital are some of these difficulties. The necessity of ongoing professional development, adaptability, and an inclusive approach to academic competencies are needed in order to guarantee that teachers can successfully negotiate the challenges of contemporary education and make valuable contributions to a lively academic community. The evolving need to improve academic professional competence, especially in STEM education, intersects with the HEI business administration process through a rising need for a multifaceted approach to institution development, introduction of leadership strategies, and continuous adaptation to changing market requirements. Understanding gender differences in perceived professional competence is vital for fostering a diverse environment, enabling effective talent management, and promoting systematic changes which in turn impacts organizational success and innovation leadership.

The first hypothesis was rejected, contrary to the expectation that male academic staff members would tend to evaluate their professional competencies as more than sufficient for carrying out teaching duties in the current educational environment compared to females. However, after testing the hypothesis with the Mann-Whitney U test, the results indicated that there are no statistically significant differences between genders.

The second hypothesis was also rejected, as the Kruskal–Wallis test showed that there is no statistically significant difference between academic staff in STEM disciplines and representatives from other disciplines.

In addition to the research hypotheses, trends emerged within the responses of the participants. Seventy-two per cent of the respondents rated their perception of work in HEIs as prestigious ('4' and '5'), and 75% assessed their job satisfaction in HEIs similarly. Dissatisfaction with salary was noted by 28%, with only 18% expressing complete satisfaction. Furthermore, 83% believed their current skills were sufficient for teaching. Additionally, 96% strongly supported the concept of continuous improvement for teaching quality assurance.

The study has limitations, as it was conducted specifically in Ukraine. Future research should involve multicultural cross-study to determine differences within different countries.

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