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FUTURE COMPETENCIES OF STUDENTS IN THE CONTEXT OF LABOR MARKET EXPECTATIONS

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Purpose: The purpose of this publication was to identify discrepancies and points of contact between students' perceived competencies and the actual needs of the labor market.
Methodology: The presented research is a pilot study. Quantitative and qualitative methods were used. A proprietary questionnaire and individual in-depth interviews were developed. The research was conducted in two stages. The first stage involved a quantitative survey of 174 students. The second stage involved individual in-depth interviews with 21 representatives of HR departments and entrepreneurs. Basic statistical measures, MaxQDA software, and narrative analysis were used to analyze the collected empirical data.
Findings: The research revealed both areas of agreement and significant discrepancies between students' perceptions of competencies and the expectations of the labor market.
Research limitations: The authors are aware of the small sample size. However, the presented research is a pilot study and was conducted on a smaller sample.
Practical implications: The results indicate that the key is not developing individual skills, but rather integrating them into a coherent professional profile. This provides a premise for changes in educational programs and development systems within organizations, focused on combining technological, cognitive, and social competencies.
Originality/value: The study provides a dual perspective on competence gaps by comparing students' self-perceived competencies with the expectations of HR professionals and entrepreneurs. It highlights the need to develop integrated competence profiles rather than isolated skills, offering implications for educational program design and organizational talent development.
Keywords: competences, labor market, generation Z.
Category of the paper: Research paper.

1. Introduction

Progressive digitization, the automation of production and service processes, and intensifying globalization are leading to profound changes in the contemporary labor market. These changes generate a demand for competencies that enable functioning in conditions of increased uncertainty, dynamic variability, and constant reconfiguration of organizational models (Stachowicz-Stanuch, Aleksander, 2018). Consequently, the importance of adaptability, the ability to engage in lifelong learning, and the ability to flexibly respond to new professional requirements is growing. Currently, preparing students to fulfill professional roles that meet the current and projected needs of employers is particularly important. However, an analysis of the relevant literature indicates that representatives of the business community are increasingly reporting discrepancies between the level of preparedness of university graduates and the realities of business operations. These discrepancies particularly concern social competencies, practical operational skills, and the ability to independently and effectively solve problems (Sarzyńska-Mazurek, 2021). The requirements placed on young labor market participants currently extend beyond the scope of specialized knowledge. They are expected to possess professional experience, teamwork skills, communication skills, critical thinking, and the ability to function in a remote work environment and efficiently utilize technology (Sarzyńska-Mazurek, 2021). At the same time, forecasts regarding labor market development indicate that a significant portion of currently desired competencies may transform in the coming years, reinforcing the importance of developing so-called competencies of the future. According to the literature, the period of study is considered a significant stage in the development of young people's professional potential. Activities such as participation in projects, involvement in student organizations, and taking up paid employment during studies foster the development of competencies valued by employers (Kwiatkowska, 2024). Despite this, a persistent competency gap is observed, justifying the need for in-depth research on this phenomenon.

2. The essence and importance of competences

The concept of competencies is a key concept used in management and quality sciences, pedagogy, and labor economics. Literature emphasizes its complex and multidimensional nature. It is most often defined as an integrated set of knowledge, skills, experiences, attitudes, values, and personality traits that determine an individual's effectiveness in specific professional and social situations (Kwiatkowska, 2024). In another, broader perspective, competencies encompass three basic components: knowledge, practical skills, and attitudes and motivation to act (Brodzińska, Brodziński, 2009).

Contemporarily, it is emphasized that competencies should be viewed as a dynamic resource, the importance of which changes with digital transformation and the increasing unpredictability of the work environment. Current approaches emphasize the importance of so-called transferable competencies, which can be used in various professional contexts and foster mobility in the labor market (OECD, 2021). In the context of a knowledge-based economy, the ability to continuously learn and develop adaptive competencies is also becoming increasingly important. The literature indicates that future workers should be prepared not only to perform specific tasks but also to change professional roles and function in an environment of frequent organizational and technological change (World Economic Forum, 2023).

Research conducted on graduate employability confirms that employers today primarily expect cross-cutting competencies, such as critical thinking, problem-solving, collaboration, independence, and initiative, which are referred to as employability skills (Succi, Canovi, 2020). Digital competencies also remain an important area of research. Technological changes are making technology literacy, data analysis, digital security, and critical thinking essential in most professions (Van Laar et al., 2020). At the same time, the role of psychosocial competencies, such as mental resilience, stress management, emotional intelligence, and the ability to work under uncertainty, is also emphasized (McKinsey Global Institute, 2021). These implications lead to the need to adapt education systems to the changing demands of the labor market. According to Tomlinson, universities should focus more on developing practical and design competencies, which can increase graduates' employability in the future (2021).

In light of the above analysis of the literature, it can be concluded that the contemporary approach to competencies focuses primarily on universality, transferability, and adaptability to both technological and organizational changes.

3. Methodology

The aim of the study was to identify discrepancies and points of contact between students' perceived competencies and the actual needs of the labor market. The following research questions were formulated:

1. Which competencies were identified as key by business representatives and which by students?
2. What discrepancies exist between student competencies and the needs of the labor market?

The following hypotheses were adopted:

1. Digital competencies are the key competencies identified by business representatives.
2. There are significant discrepancies in the assessment of key competencies between students and business representatives.

The study was conducted in two stages. The quantitative stage of the study was conducted using a survey questionnaire administered to students. The research tool was based on a model of six competency areas identified in the catalog of competencies identified in the Future of Jobs Report 2025, developed by the World Economic Forum. The Future of Jobs Report 2025 identifies these competencies as key to individual competitiveness in the face of digital transformation, process automation, and the growing complexity and volatility of the economic environment. Areas covered in the study included: technological proficiency (AI & Big Data), analytical thinking, creativity and flexibility, leadership and social influence, collaboration and resilience, and lifelong learning. Each block included several diagnostic statements relating to specific behaviors and attitudes, and respondents rated their level of agreement with each statement using a five-point Likert scale.

The quantitative study utilized a proprietary survey questionnaire addressed exclusively to students. Purposive sampling was used. A total of 174 students participated in the study. Basic statistical measures were used to analyze the collected empirical data. Cronbach's alpha was used to assess the reliability of the research tool, with a Cronbach's alpha of 0.76 for the developed questionnaire.

In the second stage of the study, individual in-depth interviews were conducted with company representatives. Again, the sample selection was purposive and included senior management, board members, directors, and HR representatives from Polish enterprises. Based on the results obtained from the quantitative research, a custom-designed scenario for an individual in-depth interview was developed. It included questions clarifying the previously obtained results. The qualitative study identified three main research areas:

1. Research Area A: Key competencies of the future in the opinion of company representatives.
2. Research Area B: Competency areas with the greatest gaps among graduates.
3. Research Area C: Ways and methods for developing new competencies.

Table 1.
The coding system and frequency of occurrence used in the qualitative study

Coding System	Frequency
Coding System - General	62
Competency Areas with the Largest Deficiencies Among Graduates	21
Competencies Most Difficult to "Relearn" After Employment	21
Ways to Develop New Competencies	20

Source: own study based on MaxQDA software.

A total of 21 individual in-depth interviews were conducted. Narrative analysis and MaxQDA software were used to analyze the collected material. Three main subcodes were identified and further analyzed (Table 1).

4. Results

Positive responses dominated in the area of technological competences (Figure 1). A total of 77.0% of respondents agreed with the statements regarding the use of digital tools, AI, data interpretation skills, and the ability to learn new technologies – including 45.4% who selected "I tend to agree" and 31.6% who selected "I strongly agree". Neutral responses ("hard to say") accounted for 17.2%, while negative responses totaled 5.7% (3.4% "I tend to disagree" and 2.3% "I strongly disagree"). The average score for this area falls in the upper range of the scale – above 4.0 – indicating relatively high student self-assessment in the use of digital tools, AI, data interpretation skills, and the rapid adoption of new technological solutions.

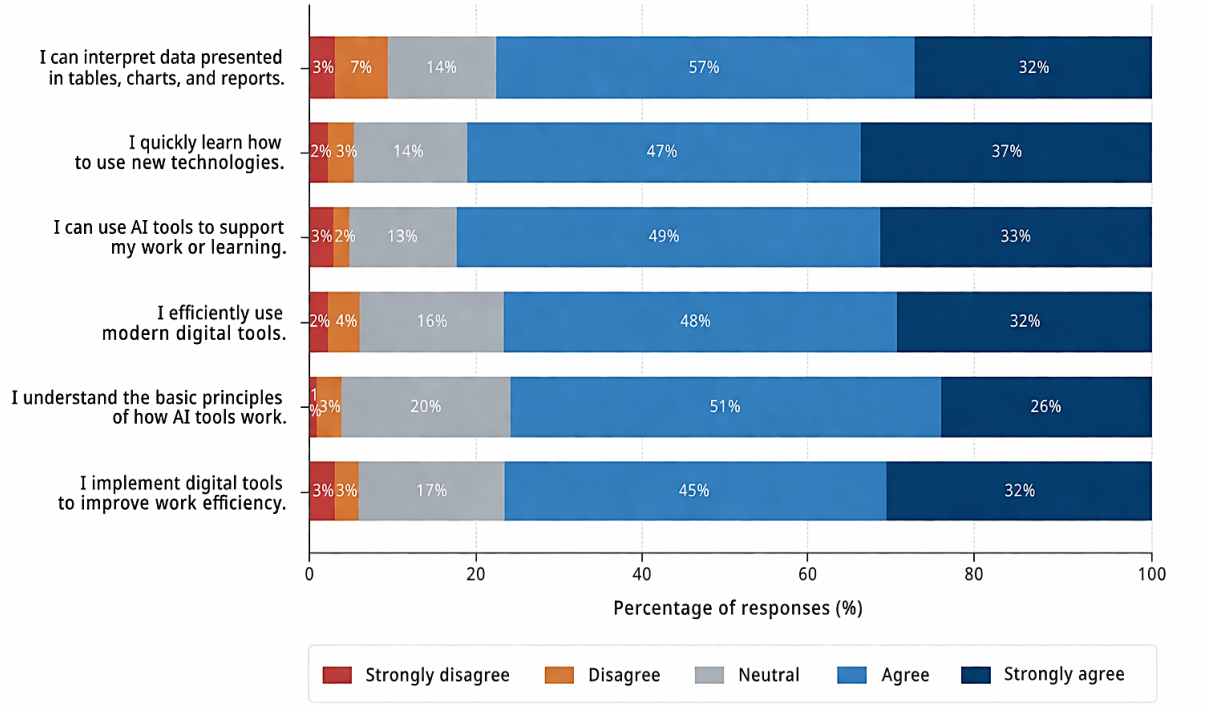


Figure 1. Respondents' self-assessment of technological competences.

Source: own study.

The second area analyzed included competencies related to generating new solutions, combining ideas from various fields, responding to change, and adapting to new conditions (Figure 2). The distribution of responses indicates a clear predominance of positive ratings. A total of 72.5% of respondents selected either "I tend to agree" (48.9%) or "I strongly agree"

(23.6%). Neutral responses ("hard to say") accounted for 19.5%, while negative responses totaled 8.0% (6.3% "I tend to disagree" and 1.7% "I strongly disagree"). The average rating exceeded 4.0 on a five-point scale, indicating a concentration of responses at the upper end of the scale.

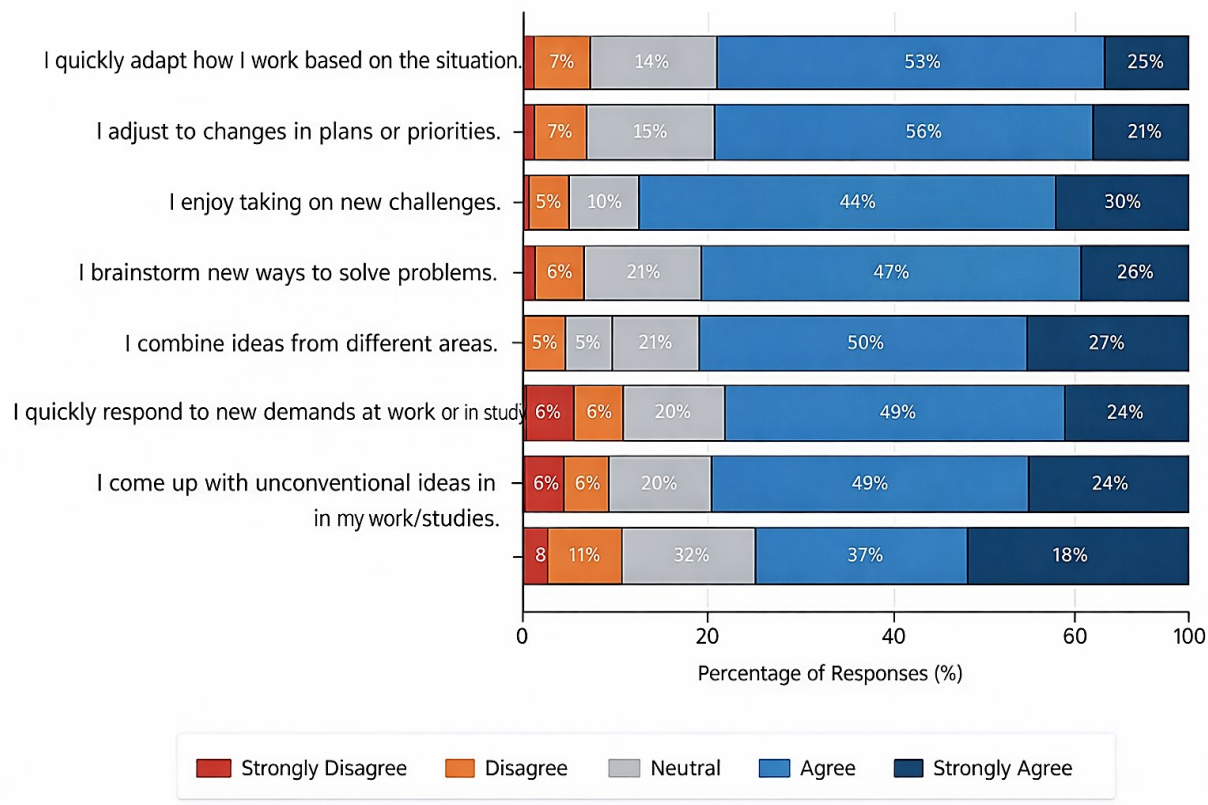


Figure 2. Respondents' self-assessment of competencies in the areas of creativity and flexibility. Source: own study.

In the areas of competencies related to leadership and social influence, the distribution of responses was more diverse than in the case of technological competencies or creativity (Figure 3). A total of 72.5% of respondents selected positive responses – including 39.1% "I tend to agree" and 33.3% "I strongly agree." Neutral responses ("I don't know") accounted for 19.5%, while negative responses totaled 8.0% (6.3% "I tend to disagree" and 1.7% "I strongly disagree").

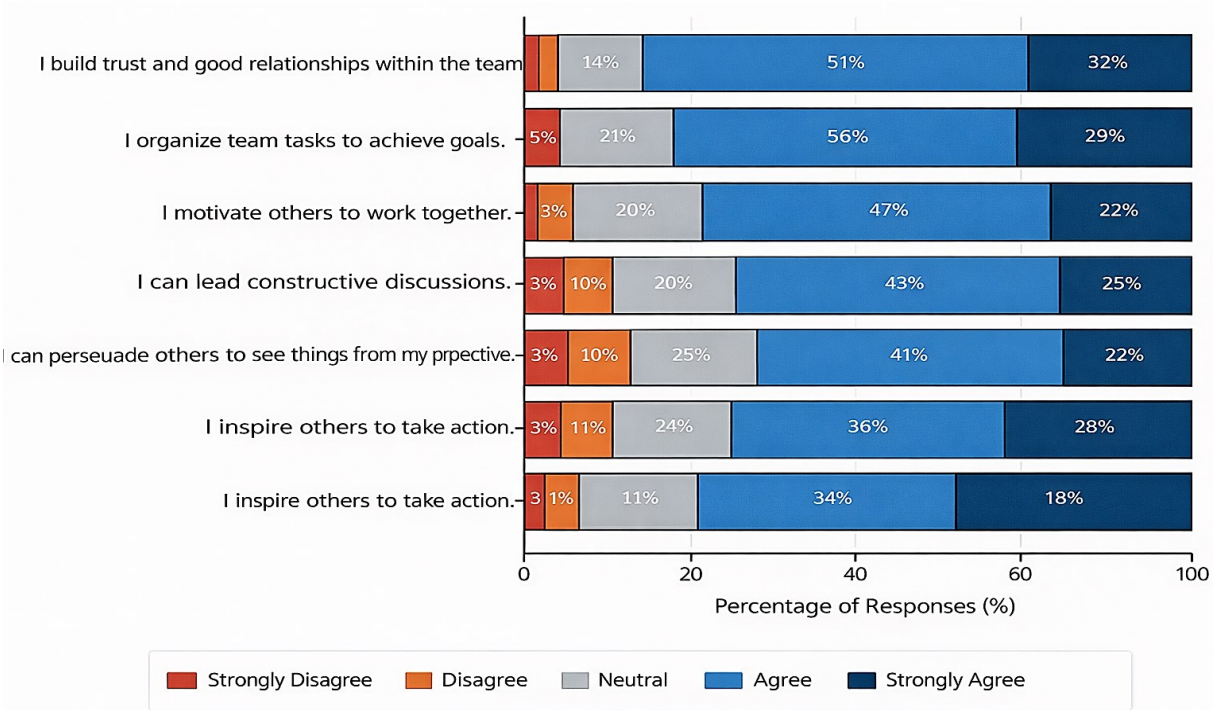


Figure 3. Respondents' self-assessment of competencies in the areas of leadership and social influence.

Source: own study.

Positive responses dominated in the areas of analytical thinking and problem-solving (Figure 4). A total of 77.0% of respondents selected "I tend to agree" (45.4%) or "I strongly agree" (31.6%). Neutral responses ("I don't know") accounted for 17.2%, while negative responses totaled 5.7% (3.4% "I tend to disagree" and 2.3% "I strongly disagree").

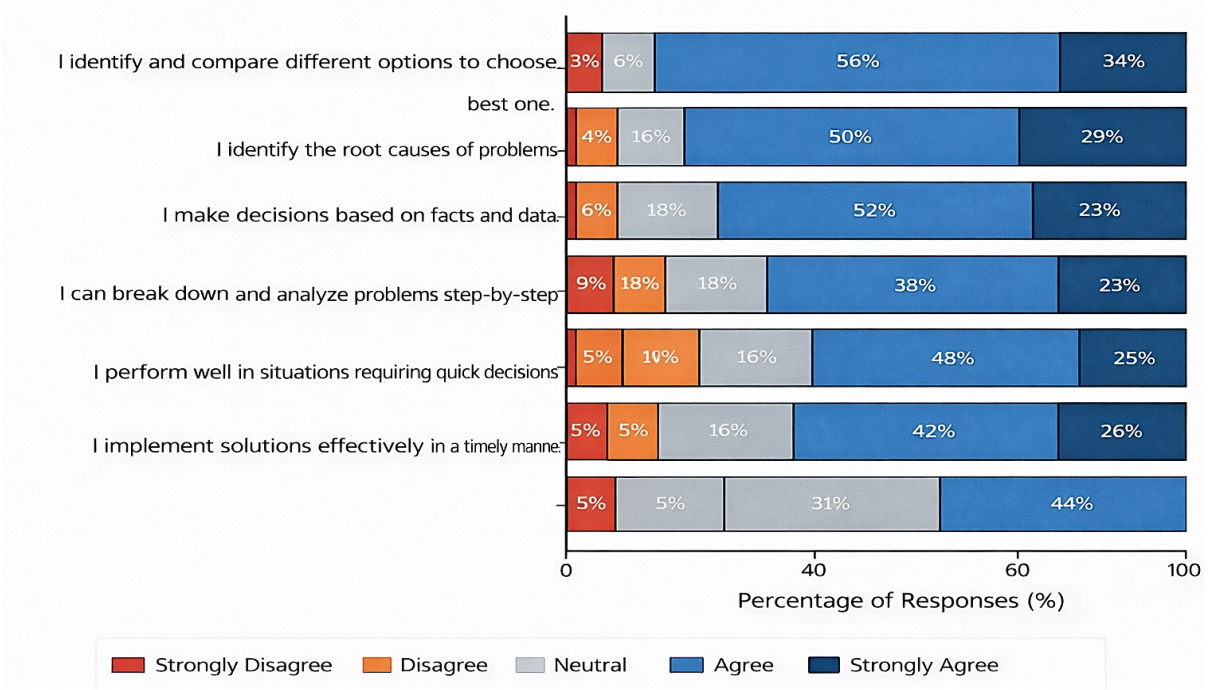


Figure 4. Respondents' Self-Assessment of Competencies in the Area of Analytical Thinking and Problem-Solving.

Source: own study.

Positive responses predominated in the area of collaboration and mental resilience (Figure 5). A total of 72.4% of respondents agreed with the statements regarding teamwork, functioning in online and offline environments, and coping with stressful situations (39.1% "tend to agree" and 33.3% "strongly agree"). Neutral responses accounted for 19.5%, while negative responses totaled 8.0% (6.3% "tend to disagree" and 1.7% "strongly disagree"). The average score exceeds 4.0 on a five-point scale.

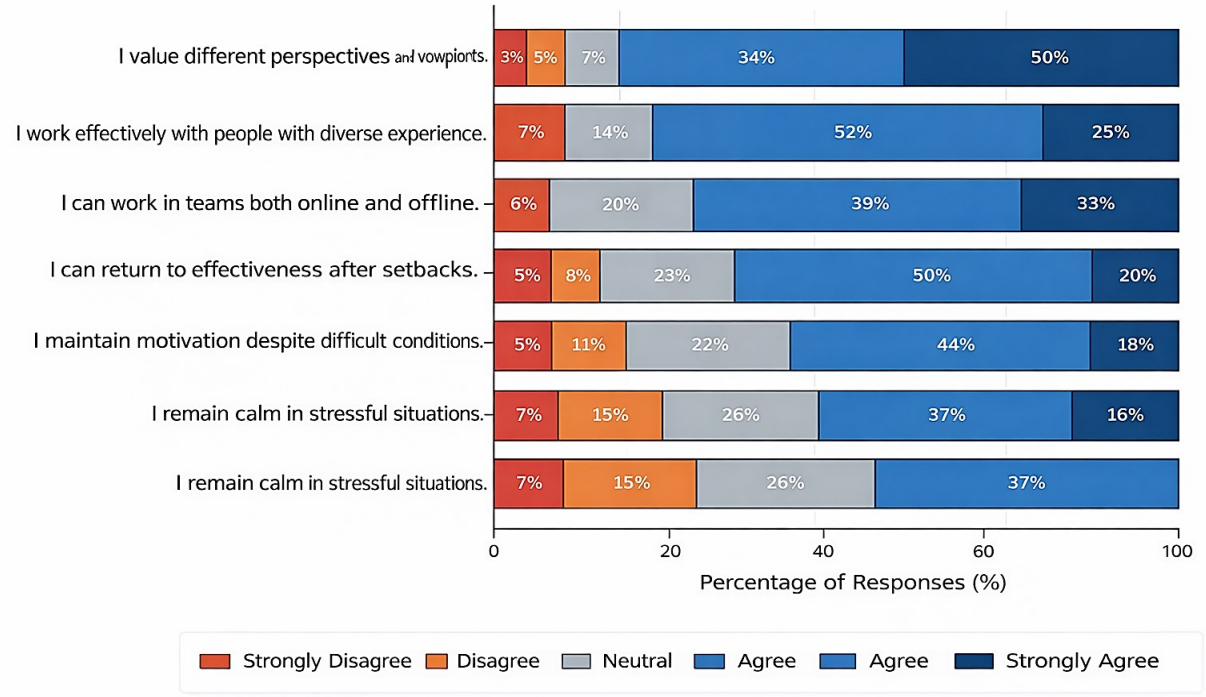


Figure 5. Respondents' Self-Assessment of Competencies in the Area of Collaboration and Resilience. Source: own study.

A detailed analysis of individual statements indicates internal variation within this area. The highest rates of positive responses concern the reported effective collaboration with people with diverse experiences and respect for diverse perspectives. The statement regarding teamwork, both online and offline, also achieved a high level of acceptance. The statement "I remain calm in stressful situations" had a slightly higher proportion of neutral responses than the questions specifically about teamwork.

In the last area analyzed, a high level of positive responses was observed (Figure 6). A total of 77.0% of respondents selected "I tend to agree" (41.4%) or "I strongly agree" (35.6%). Neutral responses accounted for 16.7%, while negative responses totaled 6.3% (4.6% "I tend to disagree" and 1.7% "I strongly disagree"). The average rating exceeds 4.0 on a five-point scale. At the same time, analysis of the distribution of responses at the level of individual statements indicates significant internal variation in this area. The highest rates of positive responses concern issues related to independent learning and updating competencies. A significantly lower percentage of positive responses was recorded for the last statement, regarding o engaging in pro-environmental initiatives.

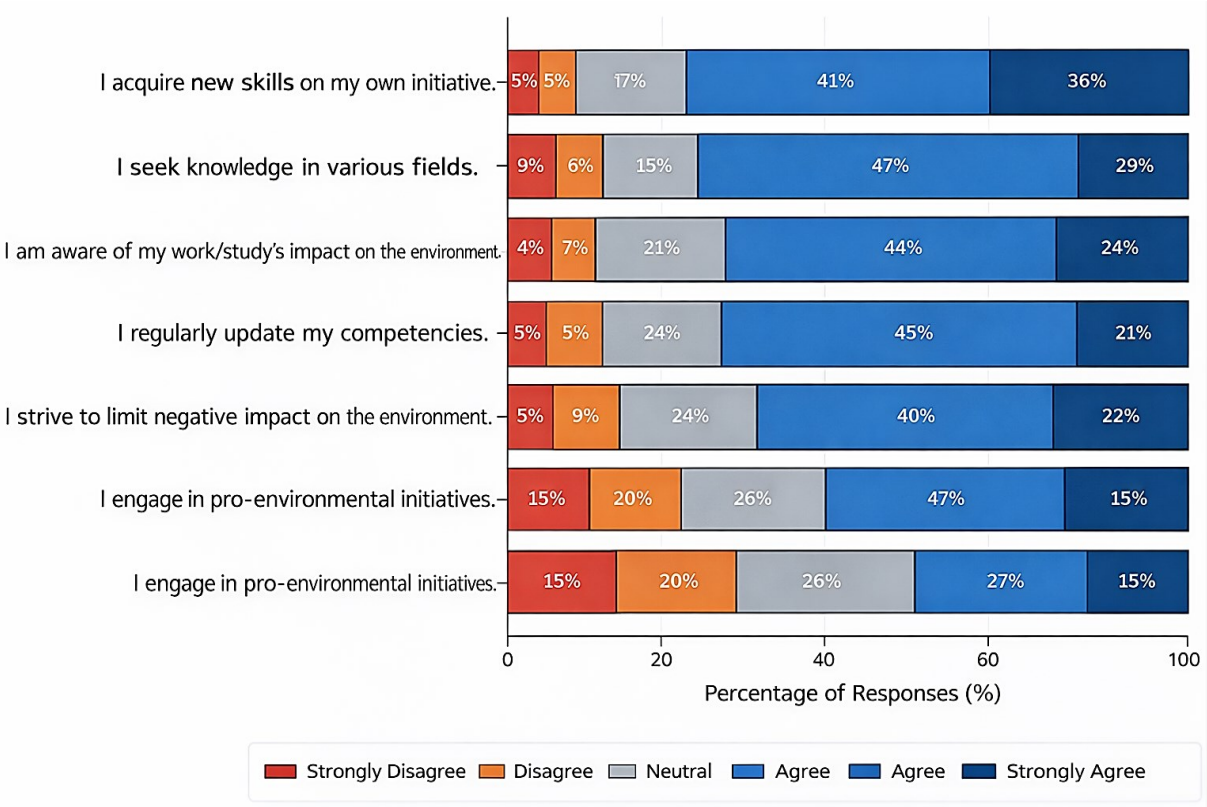


Figure 6. Respondents' self-assessment of competencies in the area of lifelong learning and environmental awareness.

Source: own study.

Another area addressed in the survey questionnaire was the analysis of the importance of each of the analyzed competencies in the context of their significance for the respondents' future careers. The resulting competency profile is clearly hierarchical, as well as the deviation of the arms of the radar chart from its center (Figure 7). The highest rating was given to the competency "Problem-solving" (M = 4.60), whose arm is furthest toward the outer ring of the chart. Competencies with a socio-cognitive profile, such as collaboration (4.47), creativity (4.41), and resilience (4.41), were ranked next.



Figure 7. Importance of competencies for future professional careers according to students.
Source: own study.

To identify points of convergence and divergence, qualitative research was conducted with business representatives. First, we identified which competencies were considered key in the opinion of business representatives (Figure 8). The structure of the single-code model reveals an extensive network of detailed categories centered around the central concept of future competencies. The number of identified subcodes and their equivalent nature suggest that respondents do not limit the meaning of this concept to a single dominant area. The collected responses indicate that future competencies are perceived as a set of complementary skills that complement each other. The lack of a clear hierarchy between subcategories may indicate a belief that professional effectiveness in a changing economic environment does not stem from possessing a single key competency, but from skillfully combining various areas of knowledge, attitudes, and practical skills. This approach indicates a shift from a narrow, specialized understanding of qualifications towards a more holistic approach to the employee profile. In the opinion of business representatives, future competencies are multidimensional, integrated, and dynamic. The expected employee profile is not based on a single specialization, but on the ability to combine cognitive, social, and practical competencies in response to changing market conditions. The most frequently cited competencies were critical thinking,

communication, and adaptability to processes and the organization. This is confirmed by the following statements from respondents: "Ability to communicate effectively, ability to adapt to employer expectations, lack of CV writing and presentation skills during interviews", "Proactivity, logical thinking with application drafting, ownership", and "culture fit / startup environment / cognitive competencies".

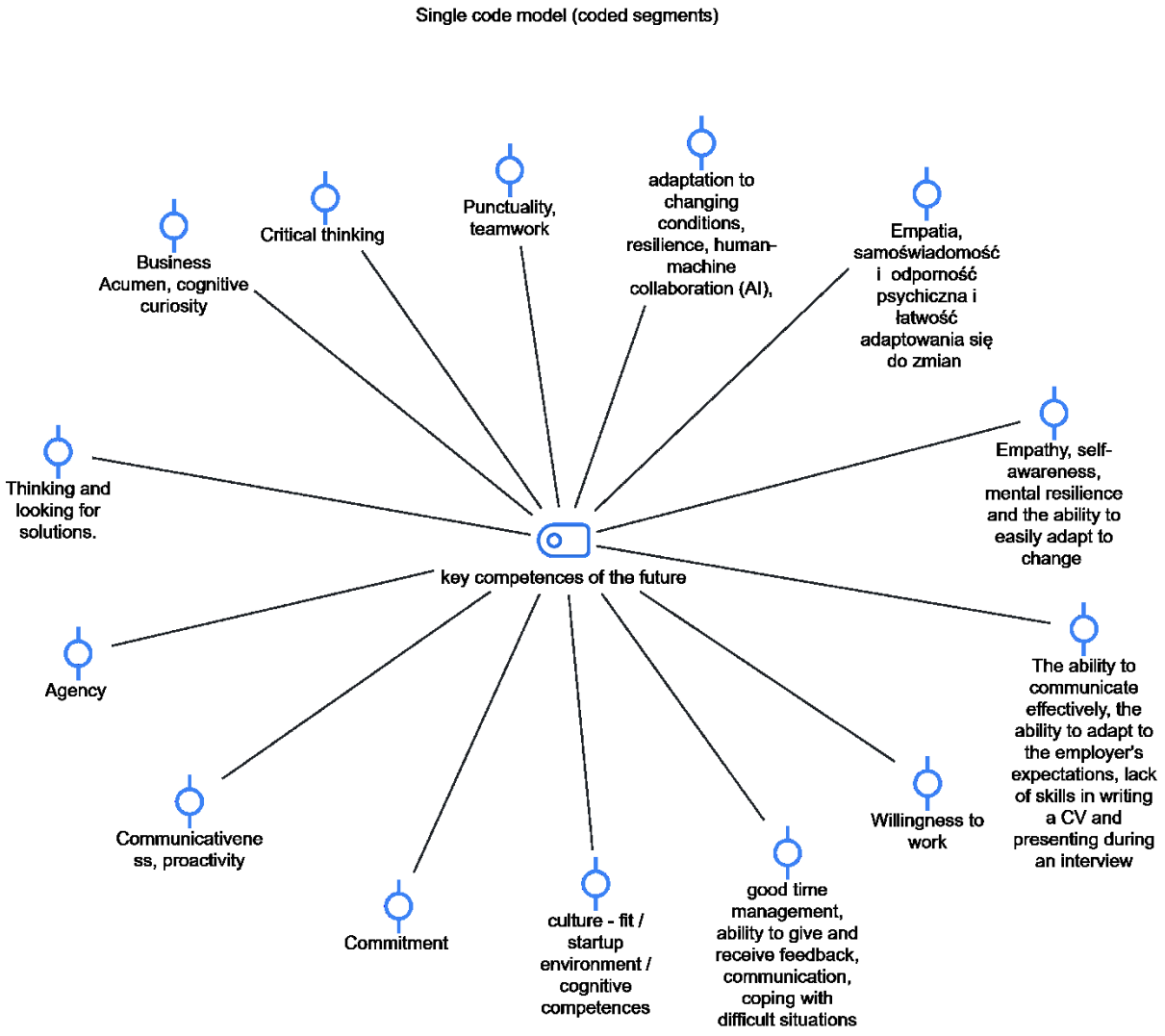


Figure 8. Single-code model for the "key competencies of the future" subcode.

Source: own study based on MaxQDA software.

Analysis of the single-code model for competency areas with the greatest gaps reveals a clearly more concentrated structure than in the case of future competencies (Figure 9). This indicates that company representatives do not perceive competency deficits as a multi-threaded phenomenon to the same extent as they did in the case of expected competencies of the future. Instead of a broad catalog of gaps, there is a clear focus on specific areas that, in the opinion of respondents, are crucial for graduates' functioning in the workplace. Problem-solving, lack of independence, and lack of flexibility were most frequently cited.



Figure 9. Single-code model for the "competency areas with the greatest gaps among graduates" subcode.

Source: own study based on MaxQDA software.

This is confirmed by the statement of one respondent: "Based on my work with interns and young students who formed the teams I managed, I observe the greatest gaps in several competency areas. These most frequently concern: (1) Problem-solving – many young employees expect ready-made solutions instead of independently searching for options and analyzing possible scenarios. (2) Creativity – there is difficulty generating new ideas, thinking outside the box, or proposing alternative solutions. (3) Collaboration – some people prefer to work individually and have difficulty sharing responsibility and accepting feedback within teamwork. (4) Lifelong learning – there is a noticeable lack of cognitive curiosity, a reduced willingness to explore new areas, and limited initiative in independently expanding knowledge".

The final research area in the qualitative studies aimed to identify ways to develop new competencies (Figure 10). Standard training, both internal and external, was the most frequently indicated area. One respondent emphasized the need to develop technological competencies related to artificial intelligence. In addition to standard methods, respondents also indicated: mentoring, functional rotations, and focus groups.

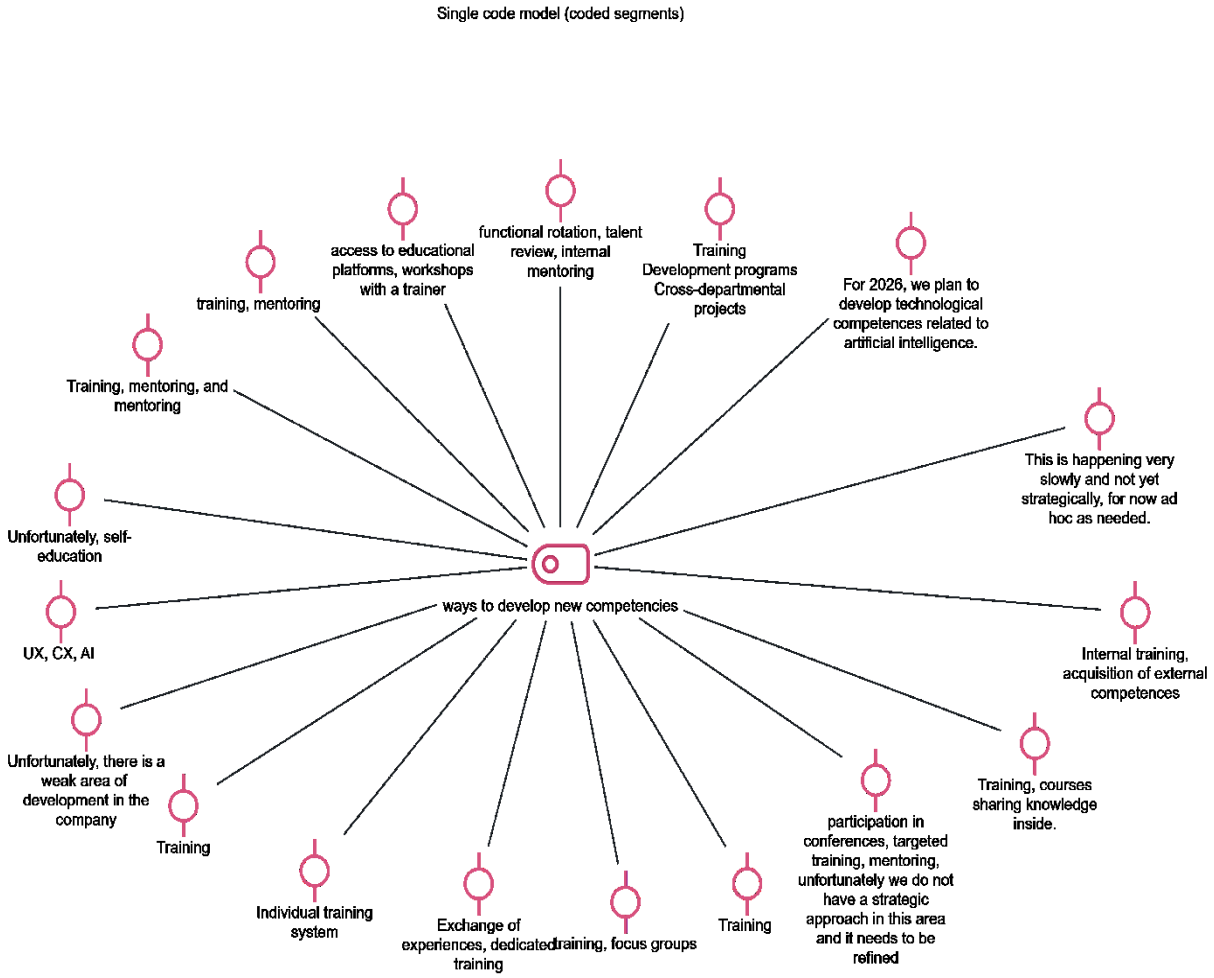


Figure 10. Single-code model for the subcode "ways to develop new competencies".
Source: own study based on MaxQDA software.

Comparing the results of quantitative studies conducted among students with the results of qualitative studies involving business representatives allows us to identify both significant points of contact and significant discrepancies. The quantitative results indicate relatively high student self-assessment in all analyzed competency areas. Average scores exceeding 4.0 on a five-point scale indicate respondents' belief in their good preparation in technological, analytical, and social competencies. Competencies related to problem-solving, collaboration, and creativity received particularly high scores, as they were perceived by students as foundations for future careers. At the same time, technical competencies – including AI & Big Data – although rated positively, were not considered the most important in the hierarchy of future professional success. Environmental awareness ranked lowest in the competency profile.

Business representatives, however, reveal a more complex picture of expectations and mismatches. Declaratively, there is agreement regarding the importance of cognitive and social competencies. Critical thinking, communication, organizational adaptability, and proactivity were among the most frequently cited competencies of the future. However, a significant discrepancy is revealed in the assessment of their level of development. While students declare a high level of readiness in problem-solving, creativity, and collaboration, business representatives identify these areas as lacking. Lack of independence, difficulty generating alternative solutions, limited initiative, and insufficient readiness for lifelong learning were particularly frequently highlighted. This indicates that the competency gap does not relate to awareness of the importance of specific skills, but rather to their practical implementation in the organizational environment. Qualitative research findings also show that employers perceive competencies as an integrated set of abilities functioning within a specific cultural and organizational context, a phenomenon not directly reflected in students' quantitative self-assessments. It can therefore be concluded that the main difference concerns the applied level - students highly evaluate their competences in a declarative sense, while employers conc

5. Summary

Analysis of the six identified competency areas indicates a clear predominance of positive responses across all categories. This indicates that the surveyed students largely identify with the competency profile considered desirable in the modern labor market. The highest rates of positive responses were recorded in the areas of technological competencies, analytical thinking, and lifelong learning. The surveyed students perceive the modern work environment as requiring not only specialized knowledge but, above all, the ability to act in complex situations, teamwork, creative response, and mental resilience. The competency profile derived from the survey participants' responses indicates that cognitive and social competencies are assigned the highest importance, while technical and environmental competencies are complementary. This suggests that, in the respondents' perception, the greatest competitive advantage is gained by individuals capable of independent action, collaboration, and creative and flexible problem-solving, thus equipped with competencies that form the foundation for functioning in a modern, changing labor market. Regarding the hypotheses, it should be noted that the first hypothesis was not confirmed. Digital competencies are considered important, but business representatives equally emphasize the importance of cognitive and psychosocial competencies, such as independence, critical thinking, and adaptability. The second hypothesis was confirmed – the identified competency gap primarily concerns the application level. Students highly value their preparation, while employers indicate difficulties in practically applying the declared competencies, particularly in the areas of independence and initiative.

The study results should be considered in the broader context of labor market transformation, which is redefining the importance of competencies in organizations. According to the Deloitte Global Human Capital Trends 2025 report, companies are increasingly pointing to a structural gap between candidates' declared competency levels and their actual effectiveness in the workplace. Adaptability skills, cross-functional collaboration, and the ability to function in a human-technology collaboration model are becoming particularly important. In this perspective, digital competencies are no longer a distinguishing factor in themselves, becoming a prerequisite that must be supplemented with cognitive and social competencies. These conclusions align with the literature indicating that the future of the labor market relies on the integration of cognitive, technological, and social competencies (Aoun, 2020). The results demonstrate that the problem lies not in a lack of awareness of the importance of future competencies, but rather in the difficulty of applying them in practice. The discrepancy between student declarations and business assessments confirms that the ability to adaptively utilize competencies in real-world organizational settings is crucial. This requires a systematic approach to reskilling in organizations and to the design of university curricula, ensuring that competency development is consistent, continuous, and aligned with labor market needs.

The authors acknowledge several limitations of the presented study. Its pilot nature, the relatively small and purposively selected sample, and the reliance on self-reported competency assessments may reduce the generalizability and explanatory power of the findings. Furthermore, the cross-sectional research design does not fully capture the dynamic and context-dependent character of competency development in the rapidly evolving labor market. Future research should therefore adopt longitudinal and multi-method approaches, include more heterogeneous research populations, and incorporate objective competency assessment tools to provide deeper insight into the mechanisms underlying competency gaps.

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