

COMPETENCIES OF THE FUTURE IN THE CONTEXT OF THE INDUSTRY 5.0 – CHALLENGES AND PROSPECTS

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Purpose: The article aims to diagnose the perception of future organizational challenges and the labor market from the perspective of competencies by employers of the industrial sector.

Design/methodology/approach: In order to achieve the main goal, the following research question were asked: *What actions are employers taking to meet future challenges, and which competencies are crucial for the expanding their organization?* Based on the CAPI technique, we obtained a complete set of responses from 10 owners of manufacturing companies distinguished in the Business Gazelles 2023 Ranking. The theoretical part of the work, based on the analysis of the literature on the subject and industry studies, contains primarily a multidimensional view of the competences of the future.

Findings: It was found that entrepreneurs, in the context of future challenges, mainly Industry 5.0. need adaptive processes (mainly technological), recruitment, and organizational changes in their company.

Research limitations/implications: The author is aware that creating a timeless set of desired employee skills is impossible, and predicting a particular direction of change is postulated and carries a high risk of failure to fulfill the assumed forecasts. Moreover, the limitation of the pilot study is the small sample size and its regional affiliation.

Practical implications: Thinking about future competencies has cognitive and practical justification because it allows us to outline the contextual background for the appropriate design of individual levels of teaching, employment, and self-development processes.

Social implications: The obtained research results indicate the desired direction of education and acquiring new competences, which will dominate in the industrial sector in the coming years. They can also constitute a contribution to reflection on deepening the relationship between science and business, enabling the development of specific practical skills already during studies.

Originality/value: The consequence of many factors and trends shaping reality is transformations in the labor market, including visible changes in the demand for specific competencies. Considering the above, it seems reasonable to carry out systematic measurements of the perception and understanding of fundamental market changes occurring in the labor market, which is the aim of this study. The added value of the article is the perspective of contemporary entrepreneurs in the industrial sector relating to the challenges, desired competences and specific actions that they implement in the context of the dynamics of Industry 5.0 development.

Keywords: competencies, Industry 5.0, industrial revolutions, labor market.

Category of the paper: Research paper.

1. Introduction

It cannot be denied that a lack of stability, predictability, and constant variability in many areas of socio-economic life has characterized recent years. For several decades, we have lived in liquid modernity (Baumann, 2008), known in business circles as the VUCA concept (Mack, Khare, 2016). In recent years, as a result of the escalation of megatrends¹ (Infuture.institute, 2024), as well as the occurrence of numerous economic turmoil - including phenomena intensifying the chaos referred to as "black swans" (Taleb, 2013, p. 25) – the assumptions of VUCA were refined to the form of BANI (Cascio, 2020). The world of BANI is a time of conscious, responsible, more attentive people following the path of resilience, i.e., building greater resilience, flexibility, and adaptive skills (Le Roux, Sutton, 2022). The dynamics of change are visible not only in the area of technological solutions used, progressive digitalization, or different models of organizational functioning but also in the labor market, in the context of the interpenetration of many cultures, different generations of employees, and the values they profess, as well as the expectations and needs formulated between the enterprise and the enterprise-employee. It is impossible not to agree with Głomb and Książ (2019, p. 30) that broadly understood progress in many fields requires us to move away from the linear perception of the future as a logical consequence of the past in favor of multivariate, which draws experiences from the present but is different from it separated, increasingly often by sudden civilizational transformations.

The consequence of many factors and trends shaping reality is transformations in the labor market, including visible changes in the demand for specific competencies. The market we know and operate in is constantly changing, resulting in growing competition for jobs with a simultaneous global decline in demand for labor (Janowska, Skrzek-Lubasińska, 2019, p. 60). World Bank experts predict that in the next twenty years, nearly 60% of professions in OECD countries will undergo automation (Acemoglu, Restrepo, 2017, p. 1). In turn, the forecasts of the World Economic Forum show that by 2025, up to 85 million jobs may be replaced by machines, but at the same time, 97 million new professions will be created (WEF, 2020). The estimates of researchers from Oxford are very similar, and they assume that around 2060, artificial intelligence will dominate the labor market (Frey, Osborne, 2013). The Organization for Economic Cooperation and Development predictions indicate that 65% of children currently starting their education will work in professions that are yet to be created. Moreover, they will change their profession at least 6-7 times (OECD, 2016). The above estimates require taking specific actions today, including changing the paradigm of our thinking and formulating a canon of competencies that will ensure the appropriate quality of life. Advanced competencies of the future will become a precious resource sought with much greater intensity. Considering the above, it seems reasonable to carry out systematic measurements of the perception and

¹ 2023 was dominated by: bioera, symbiocene, multi-polarization world, mirror world, demographic changes.

understanding of fundamental market changes occurring in the labor market, which is the aim of this study. In order to achieve the main goal, the following research question were asked:

1) What actions are employers taking to meet future challenges, and which competencies are crucial for expanding their organizations?

The author is aware that creating a timeless set of desired employee skills is impossible, and predicting a particular direction of change is postulated and carries a high risk of failure to fulfill the assumed forecasts. However, conducting research in this area and thinking about future competencies has cognitive and practical justification because it allows us to outline the contextual background for the appropriate design of individual levels of teaching, employment, and self-development processes.

2. A multidimensional perspective on the competences of the future

Both theoreticians and practitioners of management sciences agree that employee competencies are a critical resource necessary for the proper functioning and development of the organization on many levels. They often indicate the efficiency of teams, the smoothness of communication processes and decisions, and the organizational priorities that can be achieved. Therefore, competencies are important not only from the perspective of an individual but also from the point of view of teams, individual organizational units, and even entire organizations. Importantly, competencies resulting from knowledge, skills, and attitudes are cumulative. When shaped appropriately, they increase the chance of finding a creative and effective solution, especially during unpredictable changes.

The construct of competence itself is very complex, confirmed by numerous attempts to capture its essence over the last decades. One of the more common perspectives is to present competencies as a feature of a person or a community, sometimes also a set of inalienable features that are reflected in the work performed (McClelland, 1973; Hogg, 1989; Spencer, Spencer, 1993; Page et al., 1994; Whiddett, Hollyfird, 2003; Oleksyn, 2006; Dubois, Rothwell, 2008). Another approach to competencies, which has been the subject of numerous studies, is to perceive them as an organizational resource that, on the one hand, is dependent on a person and remains at his complete disposal and, on the other hand, if adequately shaped and organized, contributes to achieving specific effects (Selznick, 1957; Day, 1994; Knudsen, 1996; Bratnicki, 2000; Hunger, Wheelen, 2011; Wahl, Prause, 2013; Matwiejczuk, 2014; Khedhaouria, Jamal, 2015; Vendrell-Herrero et al., 2019). Moreover, in the literature on the subject, we find competencies understood as a product, ability, source of value, object of knowledge, or a threatening factor (Szafranski, 2020, p. 23). Undoubtedly, the contemporary definition of competencies has evolved over the years due to the changing socio-economic context and the accompanying challenges. As Lamri (2021, pp. 78-87) emphasizes, at the beginning of the 21st

century, the exclusively technical dimension of competencies was gradually moved away from and over the following years, the spectrum of their importance was expanded, especially to include the "soft" context. In addition to the multidimensionality of competencies, one should be aware of their limited operationalization potential and mobility, especially in the case of narrow specializations. That is why monitoring key trends, factors, and processes that influence the final shape of the desired employee competencies is essential. Taking into account the limited framework of the study, international and national results of current research will be cited here, focusing strictly on the future competencies forecasted based on the dynamics of development of specific trends inscribed in the dominant directions of civilization changes.

Table 1.

Competencies of the future – overview of the available categories

Author	Categories of competencies	
Adecco, 2018, p. 11	Hard skills: 1. IT strategy management 2. Mechanical engineering 3. Forklift operation 4. Marketing and advertising 5. Aeronautical engineering 6. Search engine optimization (SEO) 7. Cybersecurity 8. Data analytics 9. Financial analysis	Soft skills: 1. Creativity 2. Leadership and crisis management 3. Perseverance and resilience 4. Flexible problem-solving 5. Mutual cultural understanding 6. Entrepreneurship 7. Ability to analyze data 8. Dexterity and quick learning
PwC, 2018, pp. 12-26	Experts proposed four alternative scenarios for developing the labor market until 2030, within which dominant competencies were identified. I) Red world of innovation: 1. Ability to create innovative solutions 2. Professional specialization 3. Smoothness of decision-making and project implementation II) The blue world of corporations: 1. Ability to work under time pressure 2. Productivity and efficiency 3. Specific competences III) Green world: 1. Openness to cooperation 2. Communication skills 3. Adaptability IV) Yellow world: 1. Autonomy and self-development 2. Flexibility of operation 3. Ethical and social awareness	
European Council, 2018/ C 189/01	1. Competencies in understanding and creating information 2. Multilingual competencies 3. Mathematical and natural science, technology, and engineering competencies 4. Digital competencies 5. Personal, social, and learning competencies 6. Civic competencies 7. Entrepreneurial competencies 8. Competencies in cultural awareness and expression	

Cont. table 1.

Graczyk-Kucharska et al., 2019	<ol style="list-style-type: none"> 1. Language competencies 2. Teamwork 3. Communication and media competencies 4. Analytical thinking 5. Ability to use specialized programs 6. Self-organization 7. Ability to use own knowledge and information 8. Ability to create a team 9. Self-improvement 10. Ability to work on projects 11. Flexible response to changes/adaptive competencies 12. Interdisciplinarity
World Manufacturing Forum, 2019, p. 32	<ol style="list-style-type: none"> 1. Digital literacy 2. AI and data analytics 3. Creative problem solving 4. Entrepreneurial mindset 5. Physically and psychologically, safely and effectively 6. Inter-cultural and –disciplinary, inclusive, and diversity-oriented mindset 7. Privacy and data/information mindfulness 8. Handle increasing complexity 9. Communication skills 10. Open-mindedness towards constant change
Future Skills, 2020	<ol style="list-style-type: none"> 1. Competencies related to employee development 2. Competencies related to organizational development 3. Competencies related to the development of products/services
Dondi et al., 2021, p. 3	<ol style="list-style-type: none"> 1. Cognitive competencies 2. Interpersonal competencies 3. Competencies in self-management 4. Digital competencies
Dębkowska et al., 2022, pp. 26-44	<p>Experts proposed four alternative scenarios for developing the labor market until 2035 based on the level of virtualization of the labor market and the ability to work in dispersed teams within which dominant competencies have been identified.</p> <p>I) In the cloud:</p> <ol style="list-style-type: none"> 1. Advanced digital competences 2. Transformative competences 3. Ability to cooperate in groups with partnership relations 4. Social competences 5. Predictive competencies in identifying signs of unlikely events and signals of changes in the environment 6. Readiness to enter into intercultural dialogue <p>II) In the smart formula:</p> <ol style="list-style-type: none"> 1. Technical competencies in the field of hybrid work with machines 2. Social and emotional intelligence 3. Creativity 4. Flexibility and openness to new solutions 5. Advanced digital competences 6. Social competences 7. Ability to cooperate <p>III) Offline:</p> <ol style="list-style-type: none"> 1. Continuous training 2. Industry specialist competences 3. Sensitivity to pro-ecological and pro-social solutions 4. Ability to work in stationary teams 5. Ability to work in conditions of uncertainty <p>IV) In digital detox:</p> <ol style="list-style-type: none"> 1. Specialized competences 2. Taking care of work-life balance 3. Self-management 4. Ability to work in a diverse team and environment 5. Involvement in ecological activities

Cont. table 1

Łapińska, Sudolska, Zinecker, 2022, pp. 16-17	<ol style="list-style-type: none"> 1. Cognitive competencies 2. Technical competencies and competencies in the use and management of information and knowledge 3. Social competencies
Marr, 2022	<ol style="list-style-type: none"> 1. Digital competences 2. Competencies in the use of data 3. Technical skills 4. Awareness of digital threats 5. Critical thinking 6. Judgment and decision-making skills 7. Emotional intelligence and empathy 8. Creativity 9. Collaboration and teamwork 10. Interpersonal communication 11. Employment flexibility (emphasizing the gig economy) 12. Adaptability 13. Cultural intelligence and diversity awareness 14. Ethical awareness 15. Leadership skills 16. Networking 17. Time management 18. Curiosity and the process of continuous learning 19. Accepting and celebrating change 20. Taking care of yourself (self-development/self-management)
Symetria, 2023, p. 7	<ol style="list-style-type: none"> 1. Using new technologies and designing them 2. Innovative and analytical thinking 3. Active learning 4. Project management 5. Digital skills
Szczucka et al., 2023, pp. 57-58	<ol style="list-style-type: none"> 1. Communication, relationships, cooperation 2. Organization, management, planning 3. Analytical competencies 4. Digital competencies 5. Development, creativity, innovation 6. Sustainability
OECD, 2023, p. 86	<ol style="list-style-type: none"> 1. Cognitive and meta-cognitive skills 2. Social and emotional skills 3. Practical skills using new technologies
WEF, 2023, pp. 38	<ol style="list-style-type: none"> 1. Cognitive competences 2. Self-management 3. Technological skills 4. Working with others 5. Management skills 6. Engagement skills 7. Ethical awareness 8. Physical skills

Source: own study based on the publications included in the table.

The specific examples or names of sets of future competence categories in Table 1 confirm their multidimensionality. Some of the presented exemplifications of competencies appear in most of the analyzed studies. However, differences are visible in the nomenclature used or in the degree of specification or generalization of given categories. It should be emphasized that regardless of the research methodology adopted, one category of competencies must be balanced over another. In addition to the classic division of competencies into hard skills and soft skills (Adecco, 2018), it is worth mentioning the studies of PwC (2018) and the Polish

Economic Institute (Dębkowska et al., 2022), analyzing this issue in much more detail. The authors of the reports mentioned above formulated separate future development scenarios, thus differentiating the importance of specific competencies desired in the labor market depending on the direction of prediction of given assumptions. Future Skills specialists (2020) took a significantly different approach to categorize future competencies and developed an interactive competency model combining three dimensions: competencies related to employee development, competencies related to organizational development, and competencies related to product/service development. One of the latest and most extensive publications on the competencies of the future is a book by futurists Bernard Marr (2022). In addition to the competencies visible in previous studies, there are three unusual indications - employment flexibility (gig worker, freelancer), accepting and celebrating changes, and taking care of yourself (self-development and self-management). These are three closely related concepts, emphasizing the need to abandon existing patterns and habits in favor of changes in mentality, forms of work, and the nature of tasks performed, as well as striving to achieve homeostasis between professional and personal life. The Morgan Stanley report (2018) predicts that by 2027, freelancers may dominate the American employment market. However, this is more than just a phenomenon in the United States. According to Ernst & Young (2021), in Poland, despite the still limited popularity of flexible forms of employment compared to Western countries, this phenomenon is forecast to intensify and reach the level of 15% giggers in the labor market by 2025. Similarly, intra-organizational structures supporting self-fulfillment through the affirmation of values are gaining importance. Moreover, bottom-up initiatives, building partnerships, and showing trust in employees' activities increase their commitment, responsibility, and level of satisfaction. One of the most currently developed and effective forms of human cooperation is turquoise organizations (Jeznach, 2017, p. 19), which, however, require achieving a specific level of self-awareness, personal motivation, and self-discipline by all members of the organization in order for them to function properly (Laloux, 2015). According to Bernstein et al. (2016, p. 49), by 2030, every fifth enterprise may already operate within self-managing structures, requiring the development of specific individual and team skills.

To sum up, the variety of future competence areas presented in Table 1 above, forecasted by recognized experts and scientists over recent years, allows for the selection of five dominant spheres of competencies: cognitive-analytical, interpersonal-communicative, immune-adaptive, digital-innovative, and ecocentric-moral. The result of the changing environment in which business entities operate is the evolution of human skills toward activities integrated with the work of robots, artificial intelligence, or system automation, which is particularly visible in the context of production and the accompanying Industry 5.0.

3. Community shift towards Industry 5.0.

Historically, each industrial revolution occurred at a time of recognition and limited opportunities for phenomena within a disciplinary unit (Kuhn, 1968, p. 68). The consequence of such a state is a jump to a new paradigm, which is the basis not only for introducing changes in the productivity of economies but also for the transformation of the entire institutional, social, and political order, which leads to a breakthrough. The growing scale of environmental degradation and lifestyle diseases, the COVID-19 pandemic, the war in Ukraine, and, consequently, the global economic crisis are indicated as the main factors accelerating the need to supplement the Industry 4.0 concept and create a new 5.0 framework. Only within a decade of initiating the development path of Industry 4.0 was there a need to look at the adopted assumptions more holistically, considering social and environmental priorities.

Industry 5.0. It should be considered as a correction of Vision 4.0 made by the European Commission rather than its complete alternative. The basic assumptions of the new community economic order were presented in 2021 in a separate report (2021a); the title indicates that the vision of a sustainable industry is focused on people and resistant to shocks and crises. In the Industry 5.0 concept, firstly, humans reclaim their role in the central part of production processes, and as a result, there is a shift in the articulation of only technical accents - i.e., production efficiency and productivity - to the inclusion of the human factor - mainly the pursuit of their well-being, acceleration competences, and self-development. In this concept, technology should serve man, not man of technology. Given the above, it seems reasonable to ensure harmonious cooperation between people and machines and achieve the synergy effect from such integration.

The second pillar of the proposed Industry 5.0 model is sustainable development. While the concept and its assumptions are nothing new, society increasingly felt the consequences of environmental degradation. Therefore, numerous corrective and preventive actions should be taken at the organizational level to deal with future ecological damage. The European Commission recommends basing the development of production systems on, among others, green energy, closed-loop and limiting those activities that may have a negative impact on the natural environment.

The last component of the Industry 5.0 concept is crisis resistance, which has become particularly important after the outbreak of the COVID-19 pandemic, which is radically changing the functioning of society, organizations, and entire economies. One thing is specific, social and market crises have been and will accompany us in the coming years. This is a natural consequence of the world's increasing complexity, the evolution of civilization awareness, and the global trends accompanying these processes. Given the cyclical nature of economic fluctuations, the industry should take appropriate actions and implement strategies to make it resistant to further shocks.

Enterprises and even entire industries have experienced years of intense turbulence and transformation, from which they should draw future conclusions. At the same time, entrepreneurs are aware that this is only the beginning of more profound mental, organizational, and functional changes they will face soon. A key challenge directly related to the development of technology in Industry 5.0. However, education is important because if employees do not have the appropriate competencies to meet the needs resulting from the solutions used, the organization's long-term development may prove difficult. However, human education takes time and, from a historical perspective, as Schleicher (2015) points out, it always tries to catch up with the pace of technological progress. Bearing that the demand for specific skills changes in proportion to technological changes, the European Commission (2021a, p. 20) recommended adapting actions towards developing ten competencies identified by the World Manufacturing Forum (2019)., which is particularly visible in the context of production and the accompanying Industry 5.0.

4. Research methodology and sample characteristics

The analysis and evaluation of employers' perception of future organizational and labor market challenges from the perspective of competencies is based on a section of pilot research carried out at the turn of 2023/2024. Selecting respondents to the research sample was purposeful and dictated by the logistic possibilities of reaching the respondents. A short questionnaire was prepared for the abovementioned study relating to the challenges and competence perspectives on the labor market. Based on the CAPI technique, we obtained a complete set of responses from 10 owners of manufacturing companies distinguished in the Business Gazelles 2023 Ranking. The Gazelle Business Ranking is a popular and reliable list of dynamically developing and transparent companies from the SME sector. In the last edition of the report, 4790 companies from all over the country were recognized (Puls Biznesu, 2024). Table 2 below presents detailed characteristics of the sample.

Table 2.

Characteristics of the sample in the pilot study

Cognitive criterion		Response share (%)
		Owners (n = 10)
Gender	Male	100,0
	Female	0,0
Age	18-28	0,0
	29-39	20,0
	40-50	50,0
	over 50	30,0

Cont. table 2.

Place of residence	Village	0,0
	City up to 300 thousand people	60,0
	City with over 300,000 inhabitants people	40,0
Education	Basic	0,0
	Professional	0,0
	Medium	0,0
	Higher	100,0
Financial situation (business/personal)	Very hard	0,0
	Hard	0,0
	Average	20,0
	Good	70,0
	Very good	10,0

Source: own study based on the conducted research.

All respondents in the first group were men with higher education. As for the age range, half of them were between 40 and 50 years old, two owners were under 40, and three were over 50. The surveyed owners of manufacturing companies lived in urban areas - 6 of them in smaller cities (up to 300 thousand inhabitants) and four of them in larger cities (over 300 thousand inhabitants). The last issue analyzed in the details part is assessing the company's financial situation. The overwhelming majority of respondents described the economic situation as good. 20% of business owners believe that their company's financial situation is average, and 10% of the surveyed owners believe that it is very good. Such indications are optimistic, mainly since recent years have been characterized by unpredictable events that significantly changed market realities.

5. The labor market and the future competencies – the perspective of employers

The next part of the work contains a synthetic analysis and interpretation of the results obtained regarding challenges in the labor market and future competence negotiations in the group of employers. First, employers were asked to what extent (on a scale of 0-5²) they felt the need for organizational transformations as a result of the occurrence and expansion of dominant socio-economic trends - i.e., digitalization, production automation, aging society, diversity of generations on the labor market, climate change, or international tensions. Entrepreneurs almost unanimously (8 out of 10) agreed that the existing megatrends generate the need to introduce appropriate changes in the functioning of most organizational areas. The remaining two owners see the need to introduce changes, but only in some areas of the

² where 0 - I do not see the need to introduce any changes, 1 - I see the need to implement minor modifications, 2 - I feel the need to apply individual transformations, 3 - It is difficult to say clearly, 4 - I see the need for changes in specific organizational areas, 5 - I feel the need to introduce changes in the functioning most organizational areas.

organization they manage. The question complementing the feelings about the necessary changes was a request to indicate whether they were already undertaking such changes and, if so, in what areas. Each of the surveyed entrepreneurs declares that they are already making specific adjustments. The answers obtained regarding individual areas in which changes are implemented are presented below in Diagram 1. The question was open and usually indicated several dimensions of changes, so the sum of the answers obtained exceeds 100%.

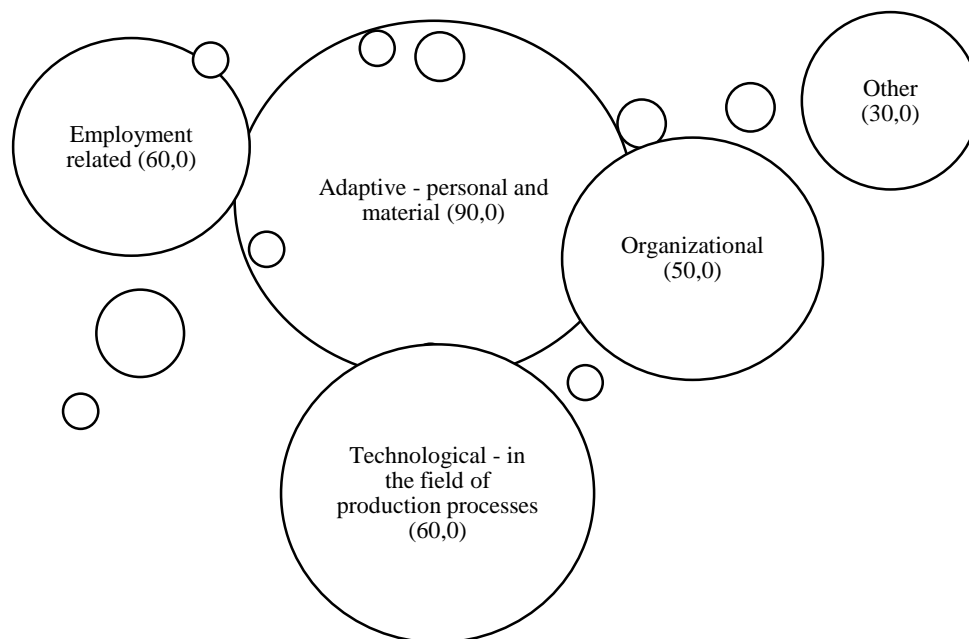


Figure 1. Areas of process adjustments to the challenges of the future (share %).

Source: own study based on the conducted research.

Referring to the results presented in Diagram 1, it should be stated that the largest area of reorganizations introduced are adaptive changes, both about people and equipment - 9 out of 10 surveyed business owners took action in this area. In the context of personal adaptation, entrepreneurs emphasize training that strengthens specific skills or enables them to acquire them, but also on building appropriate relationships and communication between representatives of different generational groups, including intra-organizational mentoring. The nature of the activities undertaken may prove both the entrepreneurs' high level of understanding of the emerging competence gaps among employees and their maturity and awareness of building an organizational culture conducive to the sustainable development of employees and a sense of community. In the case of the second category of adaptation activities undertaken (see Diagram 2), entrepreneurs mainly indicated the need to develop innovative activities in the company in the face of growing consumer demands and the activity of competitive entities. As for the second most frequently indicated group of activities undertaken by entrepreneurs (60.0% each), these were both technological changes necessary to be implemented in production processes and changes related to employment, especially in the context of recruitment processes, forms of work, and diversification of motivational stimuli.

Taking such targeted actions results from the desire to acquire responsible and loyal employees and the need to tailor the benefits package to the various needs of employees. Every second of the surveyed owners of manufacturing companies indicated the implementation of organizational changes in their company, often of a preventive nature - including, among others: securing supply chains against delays resulting from unforeseen situations and even entering into negotiations to create a strategic alliance with external entities. Three entrepreneurs indicated making changes to the structure of their assets or capital or starting specific investments to increase the organization's profitability and ensure its optimal level of financial liquidity. As in the case of specific organizational changes, the visible direction of security activity results from the weight of experiences gained in recent years, which is undoubtedly difficult but also evolutionary.

Entrepreneurs were also asked to indicate the level of industrial revolution their company is currently at. Despite having significant knowledge of the assumptions of Industry 5.0, mentally and organizationally, most of the surveyed companies (7 out of 10) are moving from advanced automation (Industry 3.0) towards digitalization (Industry 4.0). The entire process of transformation requires time and the involvement of many people. Moreover, on some levels, it takes place sequentially; on others, it takes place synchronously, requiring patience and discipline. Three business owners indicated that they have been intensively developing their business by the assumptions of Industry 4.0 for several years, and the new direction of changes 5.0 recommended by the European Commission is familiar to them because they take sustainable actions at every possible step.

The penultimate issue that entrepreneurs were asked about was including the development of robotization, digitalization, and artificial intelligence in the context of possible consequences for their companies (including changes in competencies) into one of the following categories: *only an opportunity*, *only a threat*, *both an opportunity and a threat*. Business owners who took part in the pilot study had trouble giving a clear answer to this question. Several of them emphasized that, of course, innovation-based development is essential, and increasing human-machine cooperation is desirable from the perspective of work efficiency. However, excessive intensification or even machine domination is not the optimal solution. While machines and algorithms have an advantage over people in data and information aggregation, assessing specific solutions' reasonableness, feasibility, and usefulness remains a strictly human domain. Six company owners replied that the abovementioned phenomena should be perceived "*both as an opportunity and a threat*". In turn, four entrepreneurs chose the first answer - i.e., "*only a chance*". Although none of the entrepreneurs marked the answer "*only a threat*," concerns about the activation of cybercrime and increased anxiety and even confusion among employees were emphasized during the conversation. That is why it is so essential to implement subsequent changes gradually and without environmental pressure while combining adaptation activities at the production level with the systematic building of key employee competencies.

The last question addressed to the organization's owners was the issue of the direction of competencies sought in the production industry in the coming years. The obtained categories of answers appearing most frequently in the questionnaire are presented below in tabular form (see Table 3).

Table 3.

Competencies of the future – overview of the available categories

Indication	Percentage of response (%)
Openness (understanding and accepting changes)	100,0
Flexibility (adaptability, upskilling)	100,0
Ability to cooperate horizontally and vertically in a diverse environment (human-human, human-machine/system/algorithm)	90,0
Self-development and self-organization	90,0
Technical skills and knowledge	90,0
Communication and interpersonal skills	80,0
Digital competences	80,0
Creative but also critical thinking	70,0
Ability to observe and respond appropriately	70,0
Responsibility for results (sustainable productivity, loyalty, drawing correct conclusions, security)	60,0

Source: own study based on the conducted research.

The obtained image of the desired future competencies in the manufacturing industry coincides in most categories with the numerous catalogs of competencies presented in the theoretical part of this study. The features unanimously indicated by all surveyed entrepreneurs were openness and flexibility as a consequence of observable changes that require the development of adaptive and transformational abilities - especially in terms of improving existing competencies or acquiring completely new skills. The next three most frequently indicated categories of future competencies focus on people, their development, professional knowledge, and cooperation abilities (not only with people). Going further, owners of manufacturing companies point to specific digital, interpersonal, and cognitive competencies as applicable from their point of view. Six out of ten surveyed entrepreneurs indicated competencies related to a sense of responsibility for results, including: striving for optimal, not critical, processing capacity, loyalty to the team/organization, and the ability to learn from mistakes and draw accurate conclusions that enable preventive actions. The answers obtained confirm the belief that, in addition to professional competencies, the future of the labor market will require candidates to have fluent resilience skills, lifelong learning, as well as key soft skills.

6. Conclusion

The main purpose of the article was to find out the perceptions of the challenges of the organizational future and the labor market from the perspective of competencies made by employers and employees in a pilot study conducted in companies in the manufacturing industry. The results obtained, despite the impossibility of relating them to the entire surveyed population, give cause for optimism.

First, the entrepreneurs participating in the survey are actively undertaking a number of transformational activities due to the intensity of the perceived effects of the numerous socio-economic turbulences and the high variability of market and industry conditions affecting the day-to-day operation of the organization. The dominant planes in which business owners are making changes are adaptive, technological, and organizational in nature and are related to the recruitment and hiring process.

Secondly, although functionally, the surveyed manufacturing companies are at the stage of implementations typical of Industry 4.0, the sustainability of the initiatives undertaken and the development of the competencies of the people employed in the direction of increasing their system-technological integrity are in line with the idea of the Industry 5.0 concept. The approach of business owners to the increased robotization of production processes is characterized, on the one hand, by significant intrigue towards the effects that can be achieved, but on the other hand, a certain distance and humility towards the interference of algorithms or artificial intelligence in work performed, and products created is felt.

Third, the projected direction of the desired competencies of the future, according to the surveyed entrepreneurs and employees, is mainly based on increasing human potential in the face of various challenges visible on many levels. Identified traits such as open-mindedness, flexibility in action, readiness to cooperate, lifelong learning, striving for work-life balance, self-management, resilience, responsibility for the tasks at hand, or thinking outside the box will be sought after by employers and shaped by employees in the years to come.

How do business practitioners assess the future of the labor market and necessary competencies? The aforementioned Symetria report includes the subjective predictions of twelve experts from leading organizations supporting the development of digital products. They point to the following ten areas: *business-centricity of all stakeholders, treating artificial intelligence as a member of a team game, nurturing interpersonal relationships, developing technological imagination, taming a state of constant uncertainty, cognitive resilience and agility, selecting redundant data, ensuring data security, managing employee and customer emotions, and mapping team competencies* (Symetria, 2023, p. 60). It's hard to give a clear indication of what will happen to the Polish labor market in the coming years. Juxtaposing past predictions with the present certainly teaches humility, moderation, and a certain amount of orthodoxy. The apparent discrepancies are due to the fact that the labor market is the aftermath

of the interaction of global, local, and industry trends. The multiplicity and volatility of social, political, technological, economic, or cultural factors require organizations to be vigilant and make the right current, investment, and hedging decisions. The new generation of skills desired in the labor market is a combination of common traditional concepts with the interdisciplinary fields of today, which require a change in both the paradigm of our thinking and flexibility in our actions.

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