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THE ROLE OF EDUCATIONAL POTENTIAL IN SHAPING THE LABOR MARKET: HOW UNIVERSITIES CAN SUPPORT GRADUATES' EMPLOYABILITY

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Purpose: The article on the educational potential of students in Poland could focus on the various factors influencing students' opportunities and development within the educational system. The educational potential of students refers to the capacity they possess to learn, grow, and develop skills and knowledge, given the right conditions. It's a multifaceted concept, shaped by various internal and external factors that influence a student's ability to succeed academically and personally. This article can serve as a tool for students of any year of study as well as for academic teachers.

Design/methodology/approach: This study adopts a mixed-methods approach, combining quantitative analysis of systemic data from a case study university (University X) and qualitative assessments based on student surveys. The main objective is to evaluate the educational potential of a university program (Program Y) and its alignment with labor market expectations. Quantitatively, the research utilizes a mathematical model based on vector functions and weighted coefficients to evaluate various resource streams (e.g., didactic, material, financial) and their contribution to educational, scientific/social products, and operational losses. These streams are analyzed using formula-based calculations and visualized through bar charts to illustrate the proportional impact on final outcomes. Qualitatively, the study involves structured student surveys covering three main categories: academic standards, economic efficiency, and educational usefulness. Each factor was rated by students on a scale from 0 to 10. The collected data are used to compute the overall educational potential score, which is then normalized using a derived mathematical function. The theoretical framework is grounded in human capital theory, systems theory in education, and educational potential modeling (Piwnik et al., 2020). The scope of the paper includes institutional educational efficiency, student learning outcomes, and labor market alignment, with an emphasis on supporting the development of management tools for higher education institutions.

Findings: The study found that the analyzed university program achieved approximately 68% of its maximum educational potential, with economic efficiency being the strongest component. While academic standards and educational usefulness showed moderate results, areas such as student participation in research and international exchange were identified as weak points. The mathematical model demonstrated that resource optimization can significantly enhance the value of educational outcomes.
Research limitations/implications: The main limitation of this study lies in its focus on a single university and one academic program, which may restrict the generalizability of the results to other institutions or educational systems. Additionally, the weights and variables used in the mathematical model were selected based on assumptions rather than empirical standardization, which may influence accuracy. Future research should aim to validate and refine the model across diverse academic institutions and incorporate longitudinal data to assess changes in educational potential over time.
Practical implications: The research provides a structured framework for universities to assess and enhance their educational potential by quantitatively analyzing resource streams and aligning them with labor market needs. Institutions can use the presented model to optimize resource allocation, improve academic standards, and better prepare graduates for employment. Implementing these changes can lead to increased graduate employability, stronger ties between academia and industry, and a more efficient use of public and institutional funding, contributing to the economic sustainability of higher education institutions.
Social implications: This research highlights the importance of aligning higher education with labor market demands, which can lead to greater social mobility, reduced graduate unemployment, and improved quality of life for students. By promoting the development of both technical and social competencies, universities can contribute to creating a more adaptable, ethically conscious, and socially responsible workforce. Additionally, the findings may inform public policy by encouraging investment in education systems that foster inclusive development, support lifelong learning, and respond to evolving societal and economic challenges.
Originality/value: This paper introduces a novel, quantifiable model for assessing a university's educational potential through the integration of resource stream analysis, student feedback, and labor market alignment. Its value lies in offering a systemic and data-driven approach that can support university administrators, educational policymakers, and employers in improving academic outcomes and graduate employability. The model serves as a practical tool for strategic decision-making in higher education, bridging the gap between education systems and the dynamic needs of the labor market.
Keywords: Educational potential, Educational indicators, Adaptation of education to the labor market, Educational ethics.
Category of the paper: Research paper, Case study.

1. Introduction

This article was developed on the basis of the concept of "Educational Potential" of a student and its metrication in higher education institutions. The authors emphasize the importance of standardization and the quantitative and qualitative monitoring of factors impacting the educational process, aiming to improve institutional efficiency (Piwnik et al., 2020).

This article addresses the issue of educational potential in the context of higher education institutions, analysing the systemic structure that plays a key role in the organisation and effectiveness of the educational process. A model is presented, describing resource streams and components that influence the quality of education and achieved outcomes. The discussed systemic approach takes into account various factors, such as academic standards, economic efficiency, and the market relevance of education, which are essential in the context of changing societal needs and demands (Piwnik et al., 2020). The systemic model includes financial, material, and technological aspects that significantly contribute to building both scientific and social products. The article also introduces a mathematical approach to educational potential using vectors and statistical algorithms, which allows for a more precise assessment of its individual components. The considerations in the article focus on developing norms and standards that can serve as tools to support university management, particularly in effectively utilizing resources and enhancing educational processes.

2. The Education System and Its Goals

The educational potential of the university is characterized by a set of resources, such as the educational potential of the socio-cultural, socio-educational, information-technical (human resources and materials) and integration-communication of the university. Updating the above-mentioned aspects ensures the optimal formation of the didactic potential of the university, which affects the student's experience in the field of scientific knowledge.

The educational system has several key goals, which are more detailed and focus on various aspects of individual and societal development. Existing educational systems around the world vary greatly, however they share some common goals and face similar challenges (Dhar, Chowdhury, 2013). Every educational system is more or less focused on teaching aspects in order to prepare students for the labor market. However, the goals of higher education may differ from the expectations of a potential employer. For instance, in the British job market, higher education is more important, while in Eastern Europe, skills are more important than having a university degree when it comes to employment (Xiong, 2024). However, there are professions where education plays a major role, such as the medical industry, academic

teachers, etc. Table 1 presents a comparison of the objectives of higher education, developed on the basis of the learning outcomes in higher education in Poland, and the expectations of the labor market towards graduates, developed on the basis of recruitment surveys (Zsigmond, Sarkozi, 2021).

In recent years, the global landscape of education and employment has been shaped by profound socio-economic transformations. Rapid technological advancements, such as digitalization, automation, and artificial intelligence, are redefining the skills and competencies expected from university graduates. At the same time, demographic shifts, climate change imperatives, and migration trends are exerting additional pressure on education systems to adapt.

As highlighted in the World Economic Forum's "Future of Jobs Report 2025", employers increasingly value adaptability, critical thinking, and digital fluency over traditional academic credentials. This necessitates a redefinition of educational goals and closer alignment between higher education and labor market realities (WEF, 2025).

Consequently, the higher education system must not only ensure academic excellence but also respond dynamically to these megatrends by embedding future-oriented competencies within curricula.

Table 1.
The effects of education in higher education institutions and the expectations of the labor market towards graduates

No	Goals of higher education systems for students	Potential employer's expectations from graduates
1.	General and Specialized Knowledge	Intellectual development: Possessing knowledge in various areas related to the position/specialization
2.	Practical Skills	Development of social and interpersonal skills
3.	Research and Analytical Skills	Emotional and psychological development: Ability to cope with stress and emotions
4.	Critical Thinking and Problem-Solving	Preparation of the workforce: Vocational and technical education
5.	Communication Skills	Moral and ethical development: Ability to learn value systems
6.	Ethical and Social Responsibility	Civic education: Ability to consciously participate in social and political life
7.	Lifelong Learning and Adaptability	Creativity and innovation
8.	Interdisciplinary knowledge	Adaptation to social and technological changes
9.	Global awareness and cultural competence	Supporting individual development

Source: Own elaboration on based Universities and the Labour Market Graduate Transitions from Education to Employment

The table 1 demonstrates a strong alignment between educational goals and labor market expectations. Higher education systems not only prepare students for specific jobs but also shape them as adaptable individuals capable of working in international environments and approaching personal and professional development responsibly. The integration of educational programs with labor market needs is essential for ensuring graduates' competitiveness and meeting employers' expectations in a global context (Frankowska et al., 2015).

This alignment can be observed through various theoretical lenses, including human capital theory, social learning theory, adaptability in a dynamic labor market, cultural awareness, critical thinking, and sustainability principles. By fostering a well-rounded set of competencies, educational institutions contribute to the creation of a workforce that is not only skilled but also ethically conscious and equipped to handle diverse and evolving challenges.

This article takes into account both the key factors of higher education and important factors for the employer when hiring a graduate (Piwnik et al., 2020).

3. The systemic structure of the university and its impact on the student's educational potential

The educational potential of a student depends on the existing educational system and the internal structure of the University (Piwnik et al., 2020). The article presents an analysis of data from University X and its study program Y. The University offers a wide range of study options, including Bachelor's (first cycle), Postgraduate (second cycle), Postgraduate, MBA and PhD programs. The teaching methodology standards at the University emphasize a practical and modern approach, aimed at equipping students with the skills they need in the job market. Building trust between universities and students, as well as between academia and the labor market, is a key mechanism for ensuring the effective transfer of skills and knowledge, supporting both employability and long-term economic development (Akberdiyeva, Antczak-Jarząbska, 2023). The analysed program of study Y has existed on the Polish market since the first decade of the 21st century, and has been actively offered by universities for the last 10 years. A qualitative method based on Table 2 below was used to assess the systemic structure of University X.

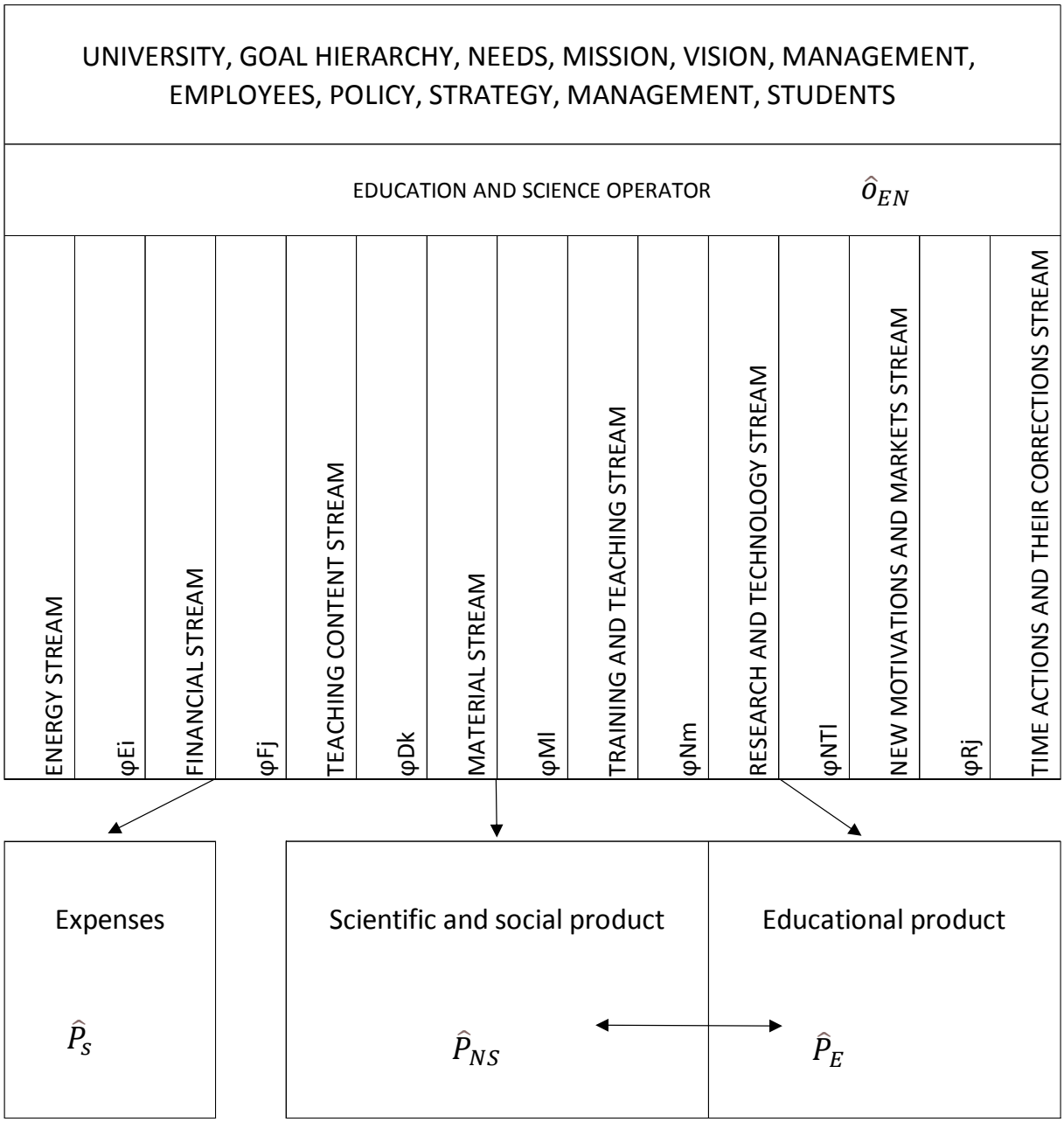

Figure 1. The systemic structure of the University.

Source: (Piwnik et al., 2020).

In the illustration, the analytical diagram presents a structure reflecting the systemic model of the university, in which different "streams" of resources and activities lead to specific outcomes in the form of scientific, social and educational products, as well as losses.

Table 2.
Interpretation of streams

No	Stream Symbols	Description	Indicator	Unit of measurement per year	Wieght	
1		Energy Stream - includes the energy resources required for the university's operations.	7600	units of energy	38,66	Financial stream
2		Financial Stream - financing that fuels other activities within the university.	3000	financial units (zł)	15,26	
3		Educational Content Stream - educational material that forms the foundation of the teaching process.	360	units of educational content (teaching materials)	1,83	Educational stream
4		Material Stream - material resources, such as educational aids, equipment, buildings.	80	material units (equipment)	0,41	
5		Training and Teaching Stream - pertains to the qualifications of the teaching staff and the teaching process.	8104	units for staff training (teaching hour per year)	41,22	
6		Research and Technology Stream - research conducted by the university and applied technologies.	70	units for scientific research	0,36	Scientific and social stream
7		New Market Motivation Stream - understanding market needs that influence educational directions.	350	market motivation units	1,78	
8		Activities Over Time and Corrections Stream - continuous improvement and adaptation of university activities.	95	units for activities over time and corrections	0,48	

Source: Own elaboration based on the system structure of the University.

Assuming each stream affects the final products in a particular way, we can propose a mathematical model, for example:

$$\hat{P}_E = 1{,}83 * \varphi_{Dk} + 0{,}41 * \varphi_{Ml} + 41{,}22 * \varphi_{Nm}; \quad (1)$$

$$\hat{P}_{NS} = 0{,}36 * \varphi_{NTi} + 1{,}78 * \varphi_{Rj} + 0{,}48 * \varphi_{TKm} \quad (2)$$

$$\hat{P}_s = 38{,}66 * \varphi_{Ei} + 15{,}26 * \varphi_{Fj} - (\hat{P}_{NS} + \hat{P}_E); \quad (3)$$

substituting the values into the equations:

$\hat{P}_E = 1{,}83 * 360 + 0{,}41 * 80 + 41{,}22 * 8104 = 334\,176{,}77;$

P^_NS=0,36*70+1,78*350+0,48*95=693,96

$\hat{P}_s = 38{,}66 * 7600 + 15{,}26 * 3000 - (334\,176{,}77 + 693{,}96) = 4134{,}28;$

In the presented analysis, we assumed that each stream in the university's system has a specific impact on the final educational products, scientific/social products, and losses. Here's a detailed explanation of the starting assumptions:

1. Resource Streams - Each stream (energy, financial, didactic, material, etc.) is defined as a resource that supports various university processes:
   φ_{Ei} - Energy stream, which may affect the efficiency of the university's infrastructure.
   φ_{Fj} - Financial stream, representing the budget allocated for various university activities.

φ_{Dk} - Didactic content stream, indicating the number of hours dedicated to preparing and conducting classes.

φ_{Ml} - Material stream, covering physical resources like equipment and materials necessary for teaching.

φ_{Nm}, φ_{NTi}, φ_{Rj}, φ_{TKm} - The remaining streams (training, research, market initiatives, corrective actions) support education, research and development, and adaptation to market changes.

2. Stream Weights - Each stream is assigned a weight that reflects its importance for the output products: For instance, the energy stream (φ_{Ei}) constitutes 75% of the educational product value, meaning it significantly impacts educational activities. Similarly, the financial stream (φ_{Fj}) influences the educational product by 25% etc. These weights were chosen arbitrarily, meaning they could vary in reality, depending on the analysis of a particular university and its specifics.
3. Formulas for Final Products - We created formulas for the two main university products: Educational Product (PE) calculated as the sum of the weighted values of individual streams impacting education. Scientific and Social Product (PNS), which is generated through streams related to research and staff training. Expenses ($\hat{P}_S$) were calculated as the difference between the total resource (1000 units) and the sum of $\hat{P}_E$ and $\hat{P}_{NS}$, showing how much of the resources were lost or not utilized efficiently.
4. Assumption of Total Resource - We assumed that the system's total resource capacity is 1000 units, allowing for the calculation of losses ($\hat{P}_s$). This is a nominal value representing the overall system capacity, meaning the limit of resources that the university can process effectively. These assumptions aimed to simplify the analysis and demonstrate the impact of individual streams on the university's outcomes. In real-world conditions, the weights, stream values, and formulas would be more complex and tailored to the specific operational data of a university.

Based on these results, a bar chart was created to illustrate the values of the university's outcome products $\hat{P}_S, \hat{P}_{NS}, \hat{P}_E$:

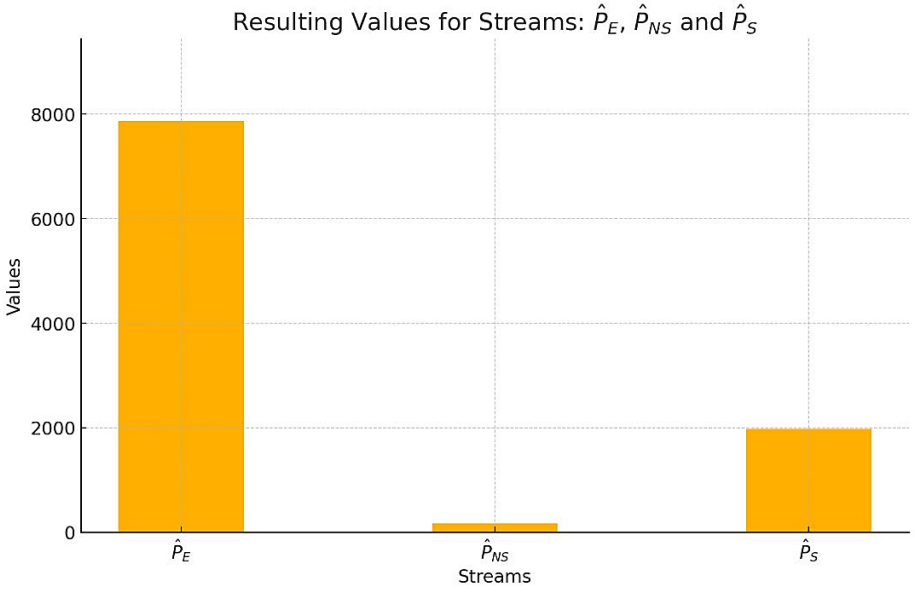

Figure 2. Contribution of resource streams to university products.

Source: Own elaboration based on calculations from Table 2

Educational Stream has the highest value of the three. In the context of a university, it represents resources or efforts that significantly contribute to educational outcomes, such as the quality of teaching, infrastructure, or access to educational materials. A high value for an educational stream suggests that the educational stream has a strong, positive impact on the university's ability to effectively deliver final educational products. In turn, Scientific/Social Products Stream has the lowest value, indicating that its contribution to the university's final output is relatively smaller. It may reflect resources or efforts focused on scientific or social products that are not as heavily emphasized or are less resource-intensive compared to the educational stream. This lower value could suggest a need for increased funding or attention if the university aims to enhance its scientific and social impact. The last stream shows that the intermediate value represents the support functions or potential losses incurred by the university. This may include facilities maintenance, administrative costs, or inefficiencies that subtract from the net result. Although its value is not as high as the value of educational potential, it is still significant, indicating that support and operational efficiency are essential for the institution to function well.

The distribution of values suggests that the university's structure places a strong emphasis on educational outputs, with moderate resources or impacts associated with support and losses, and relatively less focus or impact from scientific/social products. This could reflect the university's priorities, where educational quality and infrastructure are critical, while scientific and social initiatives may play a supporting but less central role. If the university wants to balance its impact across these areas, it may need to redirect resources or optimize certain operations to boost scientific and social output while maintaining its educational strengths. This model suggests that improving the university's efficiency could involve optimizing resources to minimize losses and enhance the value of the final products.

4. Student learning outcomes

A survey was conducted among Y program students based on factors related to academic standards (Piwnik et al., 2020). The survey was developed based on the factors presented in Figure 3. Full-time and part-time students participated in the study as respondents.

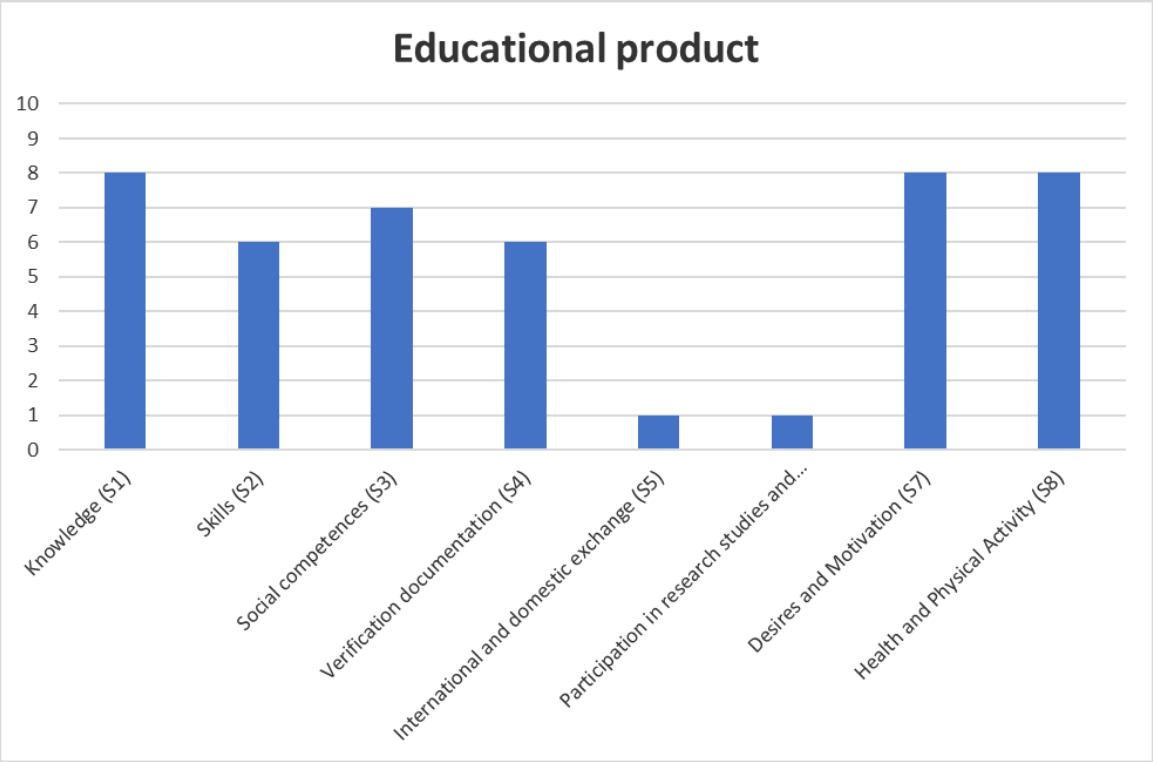

Figure 3. Student educational product (S)

Source: Own study based on respondents' answers

Based on the presented graph, it can be concluded that the survey results refer to the assessment of individual aspects of the Y programme, made by students, who assessed each aspect on a scale from 0 to 10, where 0 means a very low assessment and 10 means a very high assessment. Here's the interpretation of the results:

1. Knowledge (S1): This received a very high score (9 points), indicating that students view the knowledge gained from the program as a key and highly valued aspect.
2. Skills (S2): With a score of 7, it shows that the skills taught in the program are also highly appreciated but slightly less so than the knowledge.
3. Social Competences (S3): This category scored 6 points, suggesting that social competences are rated at an average level.
4. Verification Documentation (S4): Also scored 6 points, similar to social competences, indicating that this aspect is seen as positive but not outstanding.
5. International and Domestic Exchange (S5): Rated at 2 points, which reflects a low rating for the opportunities for international and domestic exchange within the program, indicating that this area may need improvement.

6. Participation in Research Studies (S6): Scored 1 point, meaning that students either rarely participate in research or this aspect of the program is underdeveloped.
7. Desires and Motivation (S7): With a score of 2 points, this suggests a low level of motivation or insufficient support for student aspirations within the program.
8. Health and Physical Activity (S8): Scoring 8 points, it indicates that students highly value the health and physical activity aspects of the program.

Overall, the results show that students most appreciate knowledge, health, and physical activity, while aspects related to international exchange and participation in research are rated the lowest. It would be beneficial to focus on improving these weaker areas.

Economic efficiency is denoted by the vector E, it contains 7 factors and is presented in the figure below.

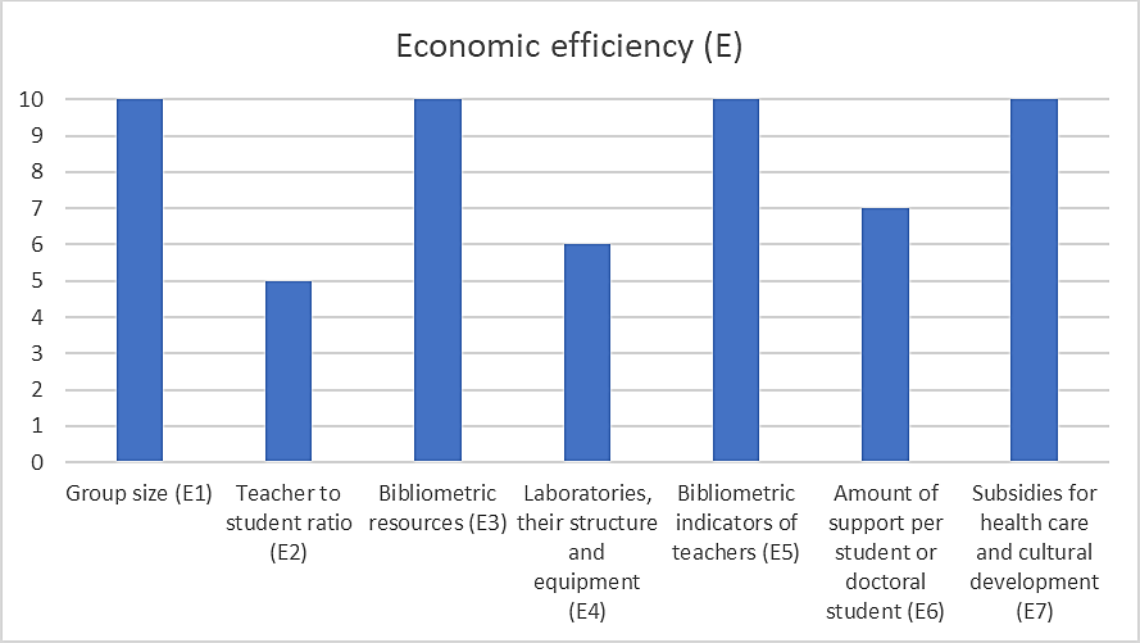

Figure 4. Economic efficiency of universities (E).

Source: Own developed based on the curriculum and university resources.

Based on the presented chart evaluating economic efficiency on a scale from 0 to 10, here's the interpretation of the results:

1. Group size (E1): Received the maximum score (10 points), indicating that the size of student groups is optimal and meets the expectations for providing comfortable conditions for both students and lecturers.
2. Teacher to student ratio (E2): Scored 5 points, suggesting that the ratio of teachers to students is average. There may be room for improvement here to enhance the quality of education.
3. Bibliometric resources (E3): Also received 10 points, meaning the bibliometric resources are of a very high standard and meet the needs of both students and faculty.

4. Laboratories, their structure and equipment (E4): Scored 6 points, indicating that the laboratories and their equipment are in relatively good condition but not ideal. This may suggest a need for improvement in infrastructure.
5. Bibliometric indicators of teachers (E5): With 10 points, this shows that the bibliometric indicators of teachers are very high, likely reflecting their research activity and competence.
6. Amount of support per student or doctoral student (E6): This category scored 7 points, indicating a decent level of financial or material support for students, though there is room for further improvement.
7. Subsidies for health care and cultural development (E7): With a maximum score of 10 points, this suggests that subsidies for health care and cultural development are well-developed and meet student expectations.

In summary, the strengths are the optimal group size, high-quality bibliometric resources, strong teacher bibliometric indicators, and sufficient subsidies for health care and cultural development. Areas for improvement include the teacher-student ratio and the infrastructure of laboratories.

The Usefulness of education is the third parameter of educational potential, which is represented by the graph below.

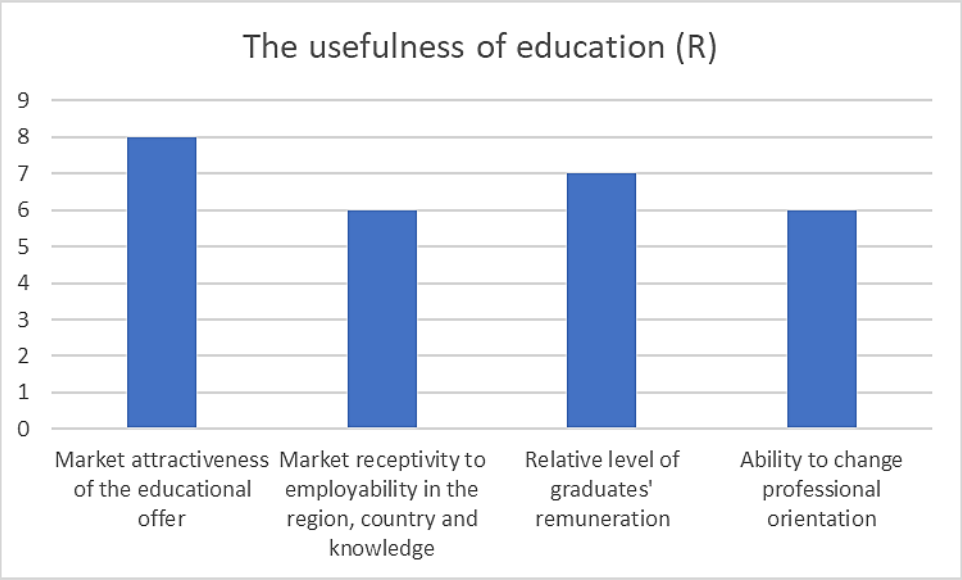

Figure 5. The usefulness of education for students.

Source: Own study based on respondents' answers.

Based on the presented chart evaluating the usefulness of education, here's the interpretation of the results as rated by students:

1. Market attractiveness of the educational offer: This received the highest score (8 points), indicating that students perceive the educational offer as highly attractive in the market. The program seems well-aligned with job market demands and student expectations.

2. Market receptivity to employability in the region, country, and knowledge: Scored 6 points, suggesting that the job market is moderately open to graduates of this program in the region, country, and in relation to the knowledge gained. There may be a need to better align the program with local job markets.
3. Relative level of graduates' remuneration: With a score of 7 points, this suggests that graduates' salaries are relatively good, though there is room for improvement.
4. Ability to change professional orientation: Scored 6 points, indicating that students view the program as moderately flexible when it comes to the ability to shift career paths.

Overall, the results suggest that the program is seen as market-attractive, providing graduates with relatively good career prospects and salaries. However, there are areas like flexibility in career changes and better alignment with local job markets that may require further improvements.

Thus, taking into account the above-mentioned factors, we can indicate the educational potential.

EDUCATIONAL POTENTIAL		
ACADEMIC STANDARDS (S)	ECONOMIC EFFICIENCY (E)	EDUCATIONAL USEFULNESS (R)
$\vec{S} = \sum_{L=1}^{8} \vec{S}_i$	$\vec{E} = \sum_{L=1}^{7} \vec{E}_i$	$\vec{R} = \sum_{L=1}^{4} \vec{R}_i$
$\vec{S} = 8 + 6 + 7 + 6 + 1 + 1 + 8 + 8 = 45$	$\vec{E} = 10 + 5 + 10 + 6 + 10 + 7 + 10 = 58$	$\vec{R} = 8 + 6 + 7 + 6 = 27$
$\overrightarrow{P_E} = \vec{S} + \vec{E} + \vec{R}$ = 45+58+27 = 130		

Figure 6. Educational potential.

Source: Own developed based on the curriculum and university resources.

Based on the presented table and calculations, the educational potential (PE) is 130 points out of a possible 190. The table evaluates three key indicators.

Academic Standards (S), Economic Efficiency (E), and Educational Usefulness (R).

Detailed Interpretation shows:

1. Academic Standards (S): The total points scored here is 45 out of a possible 80 (each of the eight factors was rated up to 10 points). This suggests that academic standards are at about 56% of their potential (45/80 * 100), indicating room for improvement, particularly in areas like participation in research (S6) and international exchange (S5), which received low scores previously.

2. Economic Efficiency (E): This category scored 58 out of a maximum of 70, or around 83% of its potential. High scores in group size (E1), bibliometric resources (E3), teacher bibliometric indicators (E5), and subsidies for healthcare and cultural development (E7) show that the program is efficiently managing its resources. However, the teacher-student ratio (E2) and laboratory conditions (E4) might need further optimization.
3. Educational Usefulness (R): In this category, 27 out of a maximum of 40 points were scored, representing 67.5% of its potential. The educational offer's market attractiveness (R1) was rated highest, but other indicators like the ability to change careers (R4) and regional employability (R2) indicate gaps that might limit the overall educational usefulness.

For further analysis when evaluating the values of the moduli of the component vectors, it is more convenient to write the expression in normalized form.

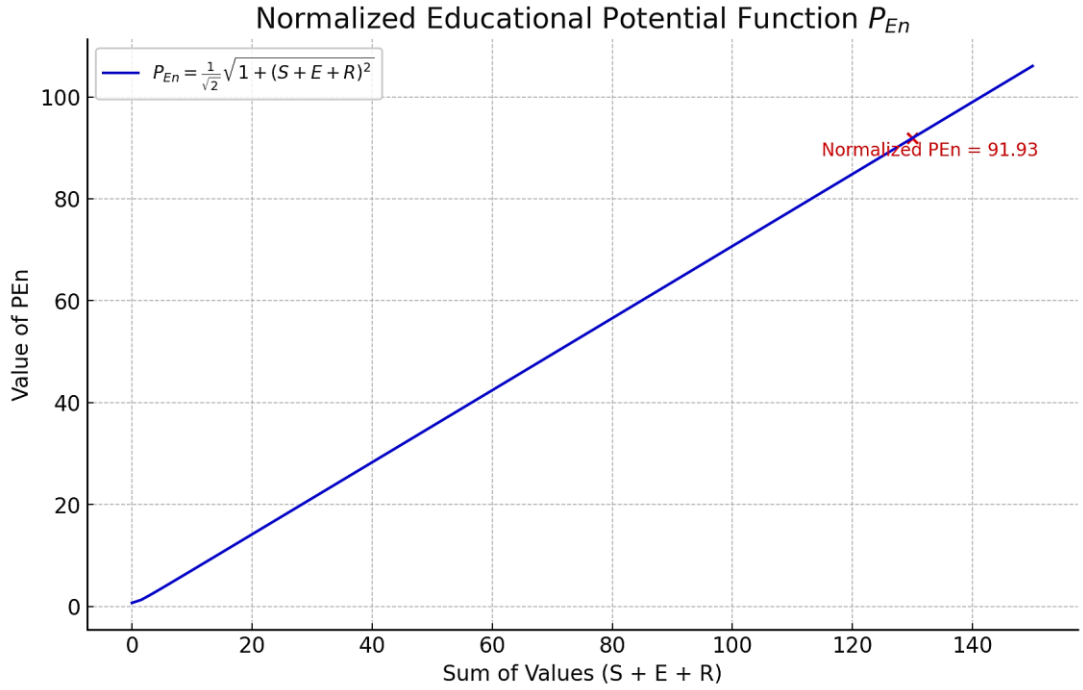

Figure 7. Function of Normalized Educational Potential.

Source: Own developed based on the curriculum and university resources.

The normalized educational potential PEN calculated based on the given values (Academic Standards S = 45; Economic Efficiency E = 58; Educational Usefulness R = 27) is approximately 91.93. This value is marked on the function graph above, which plots the function:

$$P_{EN} = \frac{1}{\sqrt{2}}\sqrt{1+(S+E+R)^2} \tag{4}$$

against the sum of $S + E + R$.

This chart helps visualize how the educational potential PEN increases with the combined values of the three components. The point marked in red highlights the specific normalized potential based on the input values.

5. Summary

The final score of 130 out of 190 means that the program achieved about 68% of its maximum educational potential, which is a good but not perfect score. Economic efficiency is the strongest area, nearing its maximum potential, suggesting that the program is well-managed in terms of material and staff resources. Academic standards and educational usefulness still have room for improvement, especially in providing better practical career opportunities and supporting students' adaptation to labor market demands. These conclusions suggest that the program is strong in infrastructure and resource management but should focus on better aligning academic content and career development opportunities with market needs and student expectations.

Additionally, increasing opportunities for international exchange and participation in research could significantly enhance the academic experience and broaden graduates' competencies. The integration of soft skills and digital literacy into curricula is also essential, given the evolving demands of modern work environments. Finally, continuous collaboration with employers and labor market analysts may help universities anticipate changes and proactively adjust their programs. Strengthening mentorship systems and individualized academic support could further improve student outcomes, particularly for those at risk of underperformance.

Implementing feedback mechanisms where students can regularly evaluate the relevance of course content may also guide timely curriculum updates. Enhancing interdisciplinary learning pathways can promote creativity and innovation, better preparing graduates for complex, real-world challenges. Ultimately, a more dynamic, student-cantered approach to education is key to unlocking the full potential of academic programs and ensuring graduates are truly career-ready.

References

1. Akberdiyeva, A., Antczak-Jarząbska, R. (2023). Trust as an element of social capital and factor of economic growth. *Scientific Papers of Silesian University of Technology. Organization and Management Series*, *166,* 9-18. https://doi.org/10.29119/1641-3466.2022.166.1
2. Aloi, S.L., Gardner, W.S., Lusher, A.L. (2003). A framework for assessing general education outcomes within the majors. *Journal of General Education*. https://doi.org/10.1353/jge.2004.0009

3. Cox, L. (2021). *Great expectations: The effect of unmet labor market expectations after higher education on political behavior*. Retrieved from: https://thedocs.worldbank.org/en/doc/b70155b90f7c15aae42571579a5f2da9-0050022021/original/Great-Expectations.pdf
4. Dhar, B.K., Chowdhury, R. (2013). Current education system of the world: The best practices. *A research Journal for Child Development*. ISSN: 1991-3699.
5. Frankowska, A., Glowacka-Toba, A., Rasinka, R., Prussak, E. (2015). Students entering the labour market, their hopes, expectations and opportunities in the context of sustainable economic development. *Journal of International Studies*, *7(3),* 209-222. https://doi.org/10.14254/2071-8330.2015/8-3/17
6. Green, W. (2018). Engaging students in international education: Rethinking student engagement in a globalized world. *Journal of Studies in International Education*. https://doi.org/10.1177/1028315318814197
7. Jelonek, M. (2023). *Universities and the labour market: Graduate transitions from education to employment.* Routledge.
8. Pinevich, E., Safaryan, O. (2020). Methods for improving the educational potential of students. *E3S Web of Conferences*, *210*, 1803. https://doi.org/10.1051/e3sconf/20202101803
9. Piwnik, J., Kurowska-Wilczyńska, K., Wilczński, K. (2020). System structure of the online learning process at higher education institutions. *Aparatura Badawcza i Dydaktyczna*, *25(2).*
10. Piwnik, J., Kurowska-Wilczyńska, K., Wilczński, K. (2020). The concept of student's 'educational potential' and its metrisability at universities. *Aparatura Badawcza i Dydaktyczna, 25(3).*
11. Soumelis, C. (1979). *A quantitative analysis of the demand for higher education*. Retrieved from: https://www.jstor.org/stable/3446265
12. World Economic Forum (2025). *The Future of Jobs Report 2025*. Geneva: WEF.
13. Xiong, Z. (2024). Global comparison of education systems. *Education System Reform.* https://doi.org/10.1007/978-981-99-5861-0_8
14. Zsigmond, T., Sarkozi, B.S. (2021). *Graduates in the labor market: Expectations and opportunities.* Retrieved from: https://www.researchgate.net/publication/356944661