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Factors Influencing the Choice of Minor Additional Educational Programs

Abstract

Introduction. The study addresses students' decision-making in the selection of minor additional educational programs in higher education. Minor programs enhance academic flexibility, interdisciplinary learning, and professional development by allowing students to complement their primary field of study with additional knowledge and competencies aligned with their interests and career aspirations. However, the factors influencing students' choices of Minor programs remain insufficiently studied. *Methodology and Methods.* The study employed a quantitative research design based on an online survey aimed at examining students' perceptions, preferences, and factors influencing the selection of Minor courses. Particular attention was paid to course choice determinants, preferred areas of study, and sources of guidance. *Results.* The findings indicated that students primarily consider instructor expertise, future career opportunities, expected professional benefits, personal capabilities, and the desire to acquire new knowledge when choosing Minor courses. Experienced peers, family members, and official information sources were also found to influence students' decisions. *Scientific novelty.* The scientific novelty lies in identifying the key motivational, professional, and informational factors that determine students' selection of Minor programs. *Practical significance.* The results can be used to improve the design, promotion, and organization of Minor programs in higher education, strengthen student guidance mechanisms, and align Minor courses with students' needs and career expectations.

Keywords: higher education system, minor additional educational program, minor program, major program, quality of education, additional specialty.

Introduction. Currently, minor additional education programs are widely used in the higher education system in order to increase the professional competence of students. These programs offer students the opportunity to receive additional education in addition to their main specialty, thereby increasing their competitiveness in the labor market (Damron-Martinez et al., 2013). According to modern researchers, the first use of the terms "Major" and "Minor" appeared in 1877-78 on a second-year flight from Johns Hopkins University. In the statement, students were instructed to choose basic and additional courses from among subjects in six different departments,

two of which had a high level of proficiency. The "Major" course is one that the candidate must take in any subject that he presents as one of the two main parts of his work; the "Minor" course must take place in every subject that is taken as a supplement (Payton, 1961).

At first, these terms were not widely accepted. In the Register of February 1878, the terms "basic academic subjects," "additional," and "similar subjects" were used when describing curricula in Greek and Latin. However, the curricula specifically referred to as "Major" courses and "Minor" courses were defined in French and German, Mathematics, Chemistry, Biology, and Physics. These subjects are often

described according to their content focus, while the expected weekly time commitment remains largely unspecified. Even before 1881, curricula or individual courses for the English language and historical and philosophical subjects had not been developed. In his third annual report (1878), President Daniel S. Gilman provided specific examples to illustrate the selection of students' major and minor courses, a practice that is corroborated by evidence published in the early issues of the Register magazine (Payton, 1961).

In many European countries, the formation of the European Higher Education space and the Bologna reforms have contributed to the market orientation of the higher education sector (Ministry of Science and Higher Education of the Republic of Kazakhstan, 2022). The Bologna Process provides Kazakhstan universities with additional educational programs (Minor) along with the main educational program (Major). Minor programs are interdisciplinary educational programs. Minor programs aim to meet the needs of the labor market, achieving skills and learning outcomes in several key specialties, professional areas, or areas of Education (Ministry of Science and Higher Education of the Republic of Kazakhstan, 2022). Due to the introduction of the Bologna reforms, the University of Applied Sciences in the Netherlands has restructured its traditional educational programs and developed undergraduate-level curricula that correspond to a professional bachelor's degree. This reform and marketing trend introduced the concept of "major-minor" (Van Deuren, 2012). In this system, the main (major) forms the largest part of the undergraduate program and consists of a compulsory curriculum. The additional specialty (minor) forms a minor part of the undergraduate program and can be chosen by students at their discretion. In terms of marketing, the choice of an additional specialty (minor) allows students to adapt to the undergraduate program to suit their personal goals and interests (Van Deuren, 2012).

Today, many higher education institutions are introducing additional minor education programs, providing students with the opportunity to receive additional education in accordance

with their interests. This system is becoming especially popular among multidisciplinary specialties, as it creates conditions for students to acquire additional skills and knowledge along with the main one. In their research, Nielsen & Ulriksen (2025) describe how second-year students "pave the way" between institutional constraints and personal interests, emphasizing the role of counseling and schedule/consistency in the study of electives and secondary subjects. Within an elective-rich curriculum, major/minor selection is iterative: students probe courses, update beliefs about fit and outcomes, then adjust plans (Dalberg et al., 2024), which helps explain late switches into or away from optional minors when signals about ability or enjoyment change. Many employers also ensure that candidates have competence in several areas and are competitive in the labor market (Van Deuren, 2012).

As indicated above, Minor additional education programs contribute to the enhancement of students' analytical thinking, creativity, and adaptability (Rugen, 1934). The main objective of the Minor program is to provide students with interdisciplinary education as a complement to the main major (Jacobsen et al., 2020). At the course level, fresh evidence using the Theory of Planned Behavior shows attitudes, subjective norms, and perceived control predicting enrollment into new/elective offerings-proximal drivers that often precede declaring a minor (Dahl et al., 2024). All countries of the world, including the Republic of Kazakhstan, attach special importance to the development of the education system. In March 2010, Kazakhstan officially joined the Bologna Declaration, becoming the 47th member of the European Higher Education space and the first country in Central Asia to be recognized as a full-fledged member of this space (Balmagambetova, 2019; Kozhakmet et al., 2013). During this period, significant changes took place in the areas of ensuring the quality of educational programs, internationalization of education, increasing the mobility of students and teaching staff, and improving the qualification system (Jia et al., 2019).

Since the adoption of the Bologna Declaration by the Republic of Kazakhstan in 2010, the Minor system has been introduced at Nazarbayev University (NU) for the first time. Nazarbayev University began to implement this system in the system of academic freedom and credit education, which allows students to choose additional subjects in addition to the main specialty (Nazarbayev University, n.d.). In 2019, at EKVU, named after S. Amanzholov, a minor additional education program was introduced into the main educational programs, and students began to receive additional specialties. The implementation of the Minor Program, an important component of the new undergraduate education model, began in 2020 at Kostanay Regional University named after Akhmet Baitursynov (Mustafina, 2022). In 2021, the Eurasian National University named after L.N. Gumilyov (ENU) began to introduce the Minor additional education program, which can only be selected by undergraduate students (L. N. Gumilyov Eurasian National University, n.d.). Later, a Minor additional education program began to be introduced in other higher educational institutions of Kazakhstan.

However, despite the official existence of the Minor additional education program in priority universities of Kazakhstan, the possibility of selective implementation has not been systematically established. Before offering Minor courses to students, it is necessary to emphasize how important the courses offered are and identify the factors that influence them. The choice of a Minor additional education program is influenced by various factors that contribute to the personal and professional development of students. At the course level, fresh evidence using the Theory of Planned Behavior shows attitudes, subjective norms, and perceived control predicting enrollment into new/elective offerings-proximal drivers that often precede declaring a minor (Gamage & Dehideniya, 2025).

The purpose of the present research work is to identify the main factors influencing students' choice of Minor additional educational programs. By analyzing these factors, the study aims to gain a deeper understanding of students'

learning motivation and to contribute to the improvement of university educational policy.

Research objectives:

- to identify the main factors affecting students' choice of Minor programs;
- to assess the influence of individuals and information sources, including parents, friends, students with Minor experience, and official websites;
- to identify the most popular profession-related Minor courses among students majoring in Biology and Chemistry-Biology;
- to analyse the attractiveness of Minor courses offered in general subject areas.

Materials and Methods. This study employed a quantitative survey research design to identify the factors influencing students' choice of Minor additional educational programs. The survey method was selected because it enables the systematic collection of information about students' perceptions, preferences, and decision-making processes related to Minor program selection. The study focused on examining the factors that influence students' choices, identifying the preferred Minor courses, and determining the sources of advice that affect students' decisions.

Participants. The participants were undergraduate students enrolled in the educational programs 6B01517 Biology and 6B01716 Chemistry-Biology at Korkyt Ata Kyzylorda University. A total of 191 students from different years of study participated in the research. The inclusion of students from various academic levels provided a broader understanding of students' attitudes toward Minor programs. Participation in the study was voluntary, and all respondents agreed to take part in the survey.

Data collection instrument. Data were collected using a structured online questionnaire developed on the basis of the study conducted by Van Deuren (2012), which examined variables influencing students' selection of Minor programs. The questionnaire consisted of 9 questions divided into two main sections. The first section included demographic and academic information, such as gender, year of study, educational program, grade point average, and the voluntariness of choosing the current field of study.

The second section focused on the main objectives of the research and included four thematic blocks. The first block examined factors influencing the choice of a Minor program, including personal interests, career prospects, logical connection with the Bachelor's program, content of educational materials, opportunity to gain practical experience, assessment methods, employment prospects, influence on future success, reputation of the Minor course, reputation of the department offering the course, professional level of teachers, academic workload, convenience of the schedule, location of classes, individual capabilities, desire to learn something new, and connection with other Minor courses.

The second block examined sources of advice and information in choosing Minor courses, including parents, friends, students who are also choosing Minor courses, students with real Minor experience, and the official Minor Catalog website. The third block focused on profession-related Minor courses for students of the educational programs Biology and Chemistry-Biology. These courses included Biotechnology, Genetic Engineering, Plant Selection, Phytopathology, Neurobiology, Plant Ecology, Parasitology, and Training on Biological Online Platforms. The fourth block examined students' preferences regarding Minor courses in general subject areas, including foreign languages except English, programming, artificial intelligence, cybersecurity, financial literacy, SMM, targeting, marketing, and creative arts such as singing, dancing, visual arts, composing, directing, writing, and sculpture.

Responses were measured using a seven-point Likert scale, where higher scores indicated

a greater level of importance, influence, or preference. The survey was administered online using Google Forms. The questionnaire link was distributed electronically to students enrolled in the selected educational programs. Before participation, respondents were informed about the purpose of the study and the voluntary nature of their participation. The online format enabled efficient data collection and facilitated participation from students representing different academic years and educational programs. After the completion of data collection, all responses were reviewed and prepared for statistical analysis.

Data analysis technique. The collected data were analyzed using SPSS statistical software. Descriptive statistical procedures were employed to summarize participants' demographic characteristics and identify the factors affecting students' selection of Minor programs. Mean scores and standard deviations were calculated to evaluate students' preferences and perceptions. To assess the reliability and internal consistency of the questionnaire, Cronbach's alpha coefficients were calculated for each thematic dimension. The findings were interpreted in accordance with the objectives of the study and used to explain students' preferences, motivations, and decision-making processes regarding Minor additional educational programs.

Results. Students of the educational programs 6B01517 Biology and 6B01716 Chemistry-Biology of Korkyt Ata Kyzylorda University participated in the research. A total of 191 students took part in the study. Table 1 presents the main demographic and academic characteristics of the surveyed students.

Table 1

General characteristics of survey participants

Variable	Average value	Standard deviation	Min.	Max.
Gender (1= male, 2 = female)	1.19	0.40	1	2
Course (1-4 course intervals)	2.54	1.07	1	4
Educational program (1 = Biology, 2 = Chemistry-Biology)	1.31	0.46	1	2
GPA Level (1 = high, 3 = low)	1.85	0.46	1	3
Voluntary choice of profession (1 = yes, 2 = no)	1.13	0.34	1	2

Female students predominated in the sample, which corresponds to the general gender distribution in these educational programs, where approximately 80% of students are female. The mean value for gender was 1.19, indicating that about 81% of the participants were female and 19% were male. The standard deviation was 0.40, which shows variation in gender distribution; however, female students clearly represented the majority of respondents. The minimum and maximum values were 1 and 2, respectively, indicating that both male and female students were included in the study.

The average year of study of the participants was 2.54, meaning that most respondents were second- and third-year students. The standard deviation was 1.07, indicating a certain variation among students from different years of study. The minimum value was 1 and the maximum value was 4, confirming that students from the first to the fourth year were represented in the sample.

The majority of respondents studied in the Biology educational program, as indicated by the mean value of 1.31. The standard deviation was 0.46, showing that both educational programs were represented. The minimum and maximum values were 1 and 2, respectively, corresponding to Biology and Chemistry-Biology. The average GPA level was 1.85, indicating that students' academic performance was generally above average. The standard deviation was 0.46, which shows that the academic performance

levels of the respondents were relatively similar. The minimum value was 1, and the maximum value was 3, meaning that students with high, medium, and low academic performance were included in the study.

Regarding the voluntary choice of profession, the mean value was 1.13. This result shows that the vast majority of students chose their profession voluntarily, which may indicate a high level of academic and professional motivation. The standard deviation was 0.34, demonstrating little variation in the respondents' answers. The minimum and maximum values were 1 and 2, respectively, indicating that although most students chose their profession voluntarily, some students did not.

To assess the internal homogeneity of the survey structure, Cronbach's Alpha (Cronbach's Alpha) coefficients were calculated on four main thematic blocks (Jia et al., 2019). This analysis aims to determine the internal consistency of each scale, that is, the stability in the responses of the respondents. All four scales of Cronbach's Alpha coefficients are in the range of 0.965–0.995. These indicators indicate a very high level of reliability. According to the scientific literature, values above 0.9 indicate a very high internal consistency of the scale (George & Mallery, 2024). Thus, the results presented in Table 2 show that the measuring instruments used in the study have a high level of reliability and are suitable for systematically measuring students' perceptions regarding the choice of Minor programs.

Table 2

General reliability analysis based on the survey results (Cronbach's Alpha ratio)

Department name	Number of variables	Kronbach Alpha
Factors affecting the choice of Minor	16	0.995
Influence of consultants	5	0.968
Minor courses related to the profession	8	0.978
Minor courses in general subjects	8	0.965

The choice of Minor additional education programs by students has a significant impact on their professional and personal development. In this decision-making process, students try to choose subjects that are compatible with their main educational program and meet their

goals. Personal interests and values are widely recognized as key factors influencing students' decisions when selecting educational programs. However, students' limited decision-making experience can complicate this issue. In addition, the small amount of data on specific factors

influencing the choice of additional education programs in Minor indicates the need for a deeper study of this field. In order to identify factors influencing the choice of additional education programs in Minor, we experimented on the following research questions.

What are the most important factors that Minor takes into account when choosing an additional education program?

Table 3, presented in the results and analysis section, shows the average scores and standard deviations for the main factors that students consider important in choosing a Minor additional education program. According to the results of the study, the factors that most contribute to the choice of students are as follows: professional level of teachers - average score 5.97, standard deviation 1.68. The impact of the program on future success- average score 5.96, standard deviation 1.66. Development of individual capabilities and interest in acquiring new knowledge - average score 5.95.

These data show that the main focus of students when choosing Minor courses is professional development and future financial stability. In addition, their desire for self-development and the acquisition of new knowledge and skills also plays an important role. That is, students believe that it is important not only to focus on a specific profession but also to achieve comprehensive personal growth. In addition, factors such as “Opportunity to gain practical experience” (average score = 5.91) and “Assessment methods” (average score = 5.92) are also considered important. These indicators indicate that students in the course of their studies pay special attention not only to theoretical knowledge, but also to its consolidation through

practice and the acquisition of specific practical skills. In addition, it is observed that a fair and understandable assessment system also plays an important role in their decision-making.

Although the minimum score (5.76) belongs to the “Personal interest compliance” factor, this figure is also quite high. This data shows that, in addition to professional development and future opportunities, personal interests and inclinations are also important for students. That is, when making a choice, students take into account not only the areas that are useful or in demand, but also their inner motivation and the areas that they like. In total, the average of all 16 factors considered in the study was higher than 5.7. These indicators clearly show that students do not rely on only one criterion when choosing Minor programs, but, on the contrary, adhere to a comprehensive, multifaceted approach. That is, they equally take into account several important aspects, such as academic quality, future professional opportunities, personal interest, and practical values.

These results (additional information is presented in Table 3) indicate that in the process of developing and improving Minor programs for universities, it is necessary to focus on the following important areas: taking into account the professional and practical interests of students; ensuring the qualification and quality of training of teachers; and monitoring the compliance of programs with the requirements of the labor market. Designed with these factors in mind, Minor programs can better meet students’ needs, increase their learning motivation, and strengthen their readiness for future professional life, as reflected in Table 3.

Table 3

Average scores of factors affecting the choice of a Minor program

Factors	Average score	Standard deviation
Compliance with personal interest	5.76	1.80
Logical relationship with the Bachelor’s program	5.83	1.79
Content of educational materials	5.85	1.72
Opportunity to gain practical experience	5.91	1.67
Assessment methods (exam, project, essay)	5.92	1.70
Opportunity to find a promising job	5.92	1.70

Influence on future success	5.96	1.66
General reputation of the Minor course	5.90	1.68
Department reputation	5.94	1.67
Professional level of teachers	5.97	1.68
Severity of training load	5.77	1.70
Convenience of the lesson schedule	5.90	1.76
Location of the lesson	5.91	1.74
Individual features	5.95	1.68
Desire to learn something new	5.95	1.75
Relationship with other Minor courses	5.92	1.70

Whose advice do students turn to when deciding on the choice of a Minor additional education program?

Table 4 clearly indicates who the students sought advice from when choosing Minor courses or which sources of information they trusted the most. Based on the results, the role of students with Minor experience as the greatest influencers is unique (average score = 5.98). This shows that because students have real experience, their advice is perceived as reliable and useful. The advice of such students is perceived as reliable and useful, since they provide information based on real practice, not theory. Parents and the Minor Catalog website (both 5.87) have also been praised as important sources of advice. And

the influence of friends, although also significant, is relatively slightly lower (5.64). This means that students, when making decisions, pay attention not only to informal opinions, but also to official sources and advice from people with life experience, such as parents. The opinion of friends, although also important to a certain extent, is somewhat underestimated in comparison. This indicates that students tend to rely on informed and reliable sources rather than purely emotional opinions when making decisions. They approach the choice of Minor courses in a comprehensive way, considering both personal advice and official information. The influence of different sources of advice in the selection of Minor courses is presented in Table 4.

Table 4
Influence of consultants in the selection of Minor courses

Advice source	Average score	Standard deviation
Students with real Minor experience	5.98	1.54
Parents	5.87	1.62
Minor Catalog website	5.87	1.61
Students engaged in Minor selection	5.86	1.60
Friends	5.64	1.68

What is the type of course do you choose the most?

Table 5 presents the opinions and assessments of students studying in the direction of “Biology” and “Chemistry-Biology” regarding the choice of Minor courses. This data shows which courses students are most interested in and how important they consider those courses. The results of the study showed that the course that aroused the highest interest

among students was “Teaching biological online platforms”. This course was rated with an average score of 5.90, which means that the majority of students rated it at a high level. Such a high assessment indicates that the course meets modern educational methods, as well as its relevance for students who intend to work in the field of online education in the future. The course “Neurobiology”, which was in second place, also received great interest

from students. Its average grade is 5.80. This figure indicates that today the demand for the field of Neuroscience is growing and students are striving to deepen their knowledge in this area. In addition, the courses “Parasitology”, “Biotechnology” and “Genetic engineering” are also highly appreciated.

The positive assessment of these courses by students indicates that they are closely related to their future professional areas and research interests. In particular, biotechnology and genetic engineering attract the attention of students as fields that are at the forefront of modern

biomedical research and innovation. Although the average price for the “Phytopathology” course is relatively slightly lower (5.47), this does not negate the fact that there is also interest in the course on the part of students. Such an assessment means that this course is relevant for a certain group of students, especially for those who have an interest in the study of plant diseases. In total, Table 5 shows that students in the process of choosing Minor courses are trying to combine them with future professional opportunities, research interests, and modern requirements of the industry.

Table 5

Selected Minor courses in the areas of “Biology” and “Chemistry-Biology”

Minor course	Average score	Standard deviation
Training biological online platforms	5.90	1.65
Neurobiology	5.80	1.70
Parasitology	5.73	1.72
Biotechnology	5.72	1.79
Ecology of plants	5.71	1.78
Genetic engineering	5.70	1.76
Plant selection	5.70	1.82
Phytopathology	5.47	1.86

Table 6 shows the grades of students for the offered Minor courses based on generalized subjects. These grades determine which areas students are most interested in and which areas they consider most important. According to these data, the financial literacy course received the highest score (average score – 6.00). This indicates the desire of students to acquire specific

life skills that can be used directly in practical life, that is, to manage personal finances, accumulate, and invest. In addition, SMM and marketing, artificial intelligence, cyber security, and foreign language courses are also highly valued. Interest in these courses indicates a high demand for students to master modern digital skills and learn foreign languages.

Table 6

Students ‘ assessment for Minor courses in general subjects

Minor course	Average score	Standard deviation
Financial literacy	6.00	1.61
SMM, targeting, marketing	5.96	1.60
Artificial intelligence	5.90	1.65
Foreign language (except English)	5.83	1.69
Cyber security	5.82	1.63
Beautician	5.80	1.71
Artist (singer, dancer, artist, etc.)	5.62	1.78
Programmer	5.59	1.75

These areas coincide with the current requirements in the labor market and open the door to future professional opportunities. Courses and programming courses related to the field of art also did not go unnoticed by students. However, these areas are rated relatively lower compared to the courses mentioned above. This means that although they are areas of interest, the priority is slightly lower. In general, it can be seen that the priority directions of students in choosing Minor courses are based not only on professional knowledge and skills, but also on personal development, practical benefits, and personal interests.

Discussion. The results of the study confirm that Minor additional educational programs are an important component of modern higher education, as they provide students with opportunities to expand their academic trajectory, acquire interdisciplinary knowledge, and develop additional professional and personal competencies. Minor programs allow students to supplement their main educational program with knowledge and skills that correspond to their individual interests, future career plans, and the changing requirements of the labor market. This supports the view that Minor programs serve not only professional, but also broader educational purposes, contributing to students' personal development and academic flexibility (Tomlinson, 2018).

The findings of the present study show that students' choice of Minor programs is influenced by a combination of several factors rather than by one dominant criterion. The high average scores for all factors indicate that students approach the selection of Minor courses in a comprehensive way. They consider the professional level of teachers, future career opportunities, practical usefulness, personal capabilities, interest in acquiring new knowledge, and the general quality of the program. This suggests that students perceive Minor programs as an important tool for strengthening their professional competitiveness and preparing for future employment.

One of the most significant findings is that the professional level of teachers was rated as the most important factor in choosing a Minor program. This indicates that students attach

great importance to the quality of teaching and the expertise of instructors. For them, the effectiveness of a Minor course depends not only on its title or content, but also on the competence, experience, and professional qualities of the teachers who deliver it. Therefore, universities should pay special attention to the selection of qualified teaching staff when designing and implementing Minor programs. The results also show that students highly value the influence of Minor programs on future success and employment opportunities. This demonstrates that students are career-oriented and expect Minor courses to provide knowledge and skills that can be useful in their future professional activities. In this regard, Minor programs can be considered as a strategic mechanism for connecting higher education with labor market needs. Similar conclusions were presented by Davis et al. (2017), who emphasized that Minor programs could help students build their own educational trajectory and receive broader and deeper training.

Another important aspect is the high evaluation of practical experience and assessment methods. Students' interest in gaining practical experience shows that they prefer courses that are not limited to theoretical knowledge, but also include practice-oriented tasks, projects, case studies, laboratory work, and other forms of active learning. This is especially important for students of Biology and Chemistry-Biology, because their future professional activity requires not only theoretical understanding, but also practical and research skills. At the same time, clear and fair assessment methods are also important, as they influence students' motivation and confidence in the educational process. The study also revealed that students rely most strongly on the advice of students with real Minor experience. This result shows that practical experience is perceived as one of the most reliable sources of information. Students who have already taken Minor courses can provide realistic feedback about course content, workload, teaching quality, assessment methods, and practical usefulness. Therefore, universities should consider developing peer-consulting mechanisms, student feedback sys-

tems, or Minor ambassador programs, where experienced students can help others make informed decisions.

Parents and the official Minor Catalog website were also identified as important sources of advice. This indicates that students use both personal and institutional sources of information when making educational decisions. The high role of the Minor Catalog website shows the importance of providing clear, complete, and accessible information about Minor programs. Such information should include course objectives, expected learning outcomes, teacher qualifications, workload, assessment methods, practical relevance, and possible career benefits. If the information is incomplete or unclear, students may experience difficulties in making a well-grounded choice.

The preferences of Biology and Chemistry-Biology students also deserve attention. The highest interest was shown in the course related to training on biological online platforms. This result reflects the growing importance of digital technologies in biological education. Future specialists and teachers in the field of biology need to master digital tools, online platforms, virtual laboratories, and modern educational technologies. Interest in neurobiology, biotechnology, genetic engineering, parasitology, and plant ecology also shows that students are attracted to modern, research-oriented, and practically significant areas of biological science. The results for general Minor courses show that students are also interested in universal and practical skills that go beyond their main educational program. Financial literacy received the highest score, which indicates students' desire to acquire knowledge that can be used in everyday life and future professional activities. High interest in SMM, marketing, artificial intelligence, cybersecurity, and foreign languages demonstrates that students understand the importance of digital, communicative, and entrepreneurial competencies. These findings suggest that Minor programs should include both profession-related and interdisciplinary courses that develop broader competencies.

The obtained results are consistent with the idea that students' educational choices are

shaped by personal interests, values, future expectations, and available information. Personal values and interests play an important role in decision-making; however, limited experience may complicate students' choices. The present study confirms this position, as students rely not only on their own interests but also on advice from experienced students, parents, and official sources. Overall, the results indicated that the development of Minor programs should be based on students' needs, professional expectations, and labor market demands. Universities should pay attention to the quality of teaching, practical orientation of courses, clarity of assessment, accessibility of information, and the creation of effective guidance mechanisms. Minor programs designed with these factors in mind can increase students' motivation, support their professional development, and help them acquire additional competencies necessary for future career success. Thus, Minor additional educational programs can be considered an important educational tool that supports academic flexibility, interdisciplinary learning, and students' readiness for professional life. The findings of this study may be useful for improving the design, promotion, and implementation of Minor programs in higher education institutions.

Conclusion. This study was conducted to identify the main factors influencing students' choice of Minor additional educational programs. The results showed that the most significant factors affecting students' choices include the professional level of teachers, the influence of the program on future success, individual capabilities, and the desire to acquire new knowledge. The findings also revealed that, when making decisions, students often rely on the advice of students with real Minor experience, parents, and official information sources. Among the profession-related Minor courses, Training on Biological Online Platforms and Neurobiology attracted the highest level of student interest. In the category of general Minor courses, Financial Literacy received the highest evaluation. The analysis of the selected courses indicates their practical orientation, connection with labor market demands, and relevance to students' professional and personal

development. These results demonstrate that the effective planning and implementation of Minor programs in higher education institutions should take into account students' needs, interests, and future career expectations, as well as the requirements of the labor market. The findings of this study may serve as a practical basis for improving university educational policy and developing high-quality individual educational trajectories for students.

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