

**RESEARCH ARTICLE**

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# Digitalization and Labor: the Role of Online Education in Global Workforce Development

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## Abstract

This research explores the profound impact of digitalization on the labor market and evaluates the role of online education in equipping individuals with the necessary skills for the digital economy. The study focuses on how technological advancements are reshaping job roles, the increasing vulnerability of certain occupations to automation, and the effectiveness of online educational platforms in addressing these emerging skill requirements. Utilizing a qualitative research methodology, the study involved a survey with 105 participants, encompassing various demographics and educational backgrounds. The questionnaire was designed to gather insights into users' experiences, preferences, and perceptions regarding online education and assess the competitive landscape of online educational platforms. The findings reveal a significant transformation in the labor market due to digitalization, characterized by a growing demand for highly skilled workers and decreased opportunities for less educated ones. Online education emerges as a crucial tool in bridging the skill gap, with a wide array of courses catering to the needs of a technology-driven economy. The study also highlights critical factors influencing users' choice of online educational platforms, including the quality of course material, platform reputation, and course relevance. Furthermore, the research uncovers diverse user preferences for different online platforms, indicating a trend toward a flexible and multifaceted approach to online learning. This study contributes to understanding the dynamics between digitalization, the labor market, and online education.

**Keywords:** Digital Transformation, Workforce Development, Online Education, Labor Markets, Economy, Digital Economy

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## 1. INTRODUCTION

In an era where digital transformation is reshaping economies and labor markets across the globe, understanding the interplay between technological advancements and workforce development has become paramount. Progress in this area represents technological innovations and global changes in education and training approaches. Online education, as one of the most dynamically developing segments in the field of education, has a significant impact on the development of human resources worldwide. In addition, digital competencies are becoming an integral part of the modern labor market, playing a key role in the global development of the workforce. With a particular focus on the effects of digitalization on labor market dynamics and the evolving role of online education in skill development, the research aims to offer insights into these global trends while also providing a detailed analysis of specific national initiatives. This study situates itself at the confluence of these dynamic changes, exploring how nations are navigating the challenges and opportunities presented by the digital age.

Kazakhstan's strategic digital initiative, "Digital Kazakhstan" initiated in 2017, serves as a primary case study in this context. This ambitious program was designed to transform critical economic sectors, develop ICT infrastructure, and foster an environment conducive to technological entrepreneurship. By 2022, Kazakhstan had made significant strides in its digitalization efforts, achieving substantial internet penetration and narrowing the urban-rural digital divide.

On the international front, the digital economy's rapid expansion is a testament to the global nature of this transformation. Reports from the International Monetary Fund (IMF) indicate that the global digital economy is outpacing the overall global economy in terms of growth. Leading this surge are countries like the United States and China, while European initiatives like the Digital Single Market are striving to harness digital opportunities for business growth and consolidate Europe's leadership in the digital domain (Ülgen, 2022).

Mirroring the global scenario, Kazakhstan's IT sector will experience significant growth by 2022, particularly in cities like Astana and Almaty, which have become the country's critical economic and IT hubs. This growth is reflective of global IT sector trends, where worldwide IT spending is reaching new heights, as indicated in reports by Gartner.

Astana Hub technopark, established in 2018 in Kazakhstan, exemplifies the digital hubs driving growth in various regions. Like other global IT centers, such as Silicon Valley in the USA and Bangalore in India, AstanaHub has played a crucial role in stimulating IT sector development in the region (Abzhalelova et al., 2023).

A critical global challenge addressed in this study is the worldwide shortage of digital skills. According to the European Commission, a significant portion of the European population lacks fundamental digital competencies, highlighting a gap in workforce development. In this regard, Astana Hub's initiatives in Kazakhstan, which include providing educational programs to over 15,000 individuals, represent a proactive approach to bridging this skill gap (Smagulova & Goncalves, 2023).

In conclusion, the principal aim of this investigation is to critically analyze the impact of digitalization on the labor market, with a particular emphasis on the role of online education in equipping the workforce with essential skills for a digitized economy. This encompasses examining the transformation in job requirements due to technological advancements, categorizing occupations based on their vulnerability to automation, and evaluating the effectiveness of virtual educational platforms. The study weaves together Kazakhstan's progress with broader global trends and data, offering a comprehensive perspective on the implications of digital transformation on an international scale.

## 2. LITERATURE REVIEW

The digital economy is a system of economic, social, and cultural relations based on digital information and communication technologies. It affects manufacturing, healthcare, education, and other areas, promoting more efficient use of resources and requiring developing new skills and educational systems for successful adaptation (Zaborovskaia et al., 2020; Miao, 2021).

Digitalization is having a significant impact on the workforce, changing the nature of work and skill requirements. Indicators of the effects of digitalization may include the percentage of tasks being automated in a given occupation, changes in demand for certain job skills, and the level of acceptance of new technologies in the workplace. The main aspects of the impact of digitalization on the labor market include automation, changes in job tasks and the demand for certain skills (Sievering, 2018). Androniceanu et al. (2020) noted that the high digitalization of a country correlates with higher GDP per capita and that countries that intensively implement digital technologies often have higher levels of economic well-being.

The polarization of the labor market occurs due to changes in the demand for specific skills caused by changes in technology and education (Mellacher & Scheuer, 2021). Technological changes such as the introduction of computers have a more significant impact on widening the wage gap than globalization. Computer technology has an impact on the demand for various skills and the level of those skills, leading to an increase in the demand for highly skilled workers and a decrease in the demand for less educated ones. Thus, ICT and digitalization are associated with increased productivity, but there is also a decreased labor share. This suggests that technology adoption, while improving productivity, may place some pressure on the workforce (Van Reenen, 2011; Cette et al., 2021).

Consequently, the need to prepare educational systems for the changing demands of the labor market and the importance of adapting education to new skills and competencies will be in demand in the era of Industry 4.0. plays a crucial role in ensuring that future generations are prepared for new challenges associated with the changing nature of labor markets (Szabó-Szentgróti et al., 2021). Bühner et al. (2016) identified three occupational vulnerability classes. High vulnerability to automation concerns jobs where routine or algorithmic tasks can be easily automated. This includes administrative tasks, sales, finance, and some journalism. Moderate vulnerability to automation contains jobs that are partially susceptible to automation due to the development of new technologies but require higher levels of interpersonal skills or creativity. For example, part of the medical professions, education, and part of journalism, where a high level of intuition and social intelligence is required. Low vulnerability to automation in professions where complex interpersonal skills, creativity, and human factors play a key role. This includes the field of personal services such as education, healthcare, tourism, and gastronomy, where complex interpersonal communications are the basis of work and are still challenging to automate.

One of the mechanisms for adapting to modern conditions in the labor market is online education, which helps to expand the circle of workers with up-to-date digital skills. Online education is becoming an essential factor in the digital economy. Piroșcă et al. (2021) noted that online education requires workers to not only adapt to constant changes but also effectively use new technologies. Digitalization and automation of work are leading to changes in the skills necessary, creating the need to constantly update and acquire new competencies to function effectively in the modern work environment.

Digital transformation requires updating educational approaches to meet the modern economy and labor market requirements. New technologies such as artificial intelligence, autonomous technology, and big data require workers to have advanced digital skills. IT specialists are becoming in demand in the labor market, but functional digital skills are also important for the overall development of society. Hetmańczyk (2022) noted that online courses provide access to a

large amount of educational content of varying levels of complexity - from short-term training to university courses. These resources can be tailored to the learner's individual goals and preferences. Online platforms and resources also include new teaching methods and educational support, including the use of various digital tools, content standardization, and the use of social media for educational purposes.

### 3. METHODOLOGY

This study adopted a qualitative data collection method using a survey. The survey was conducted online. The sample included participants with different levels of technological literacy, which helped to assess how the usability and accessibility of online platforms affect the user experience. Of the 120 questionnaires sent, 105 were returned fully completed, which is approximately 87,5% of the response. This is considered a high response rate for online surveys and indicates a significant interest in the research topic among the target audience. In addition, the number of questionnaires submitted ensures the statistical significance and representativeness of the results. Observations related to returnability and questionnaire completion may be useful for planning future studies.

The questionnaire was divided into several blocks of questions. The blocks included questions that related to the general preferences and needs of respondents in the field of online education, as well as an analysis of the competitive position of various online platforms. This approach allowed us to gain a deep understanding of the opinions and preferences of the study participants, as well as their views on the competitive environment in the field of online education.

*Use of online education.* These questions aim to measure users' experiences with online education and the frequency of their interactions with such platforms. They help to identify the level of penetration and prevalence of online educational resources among respondents.

*Assessing the importance and choosing online courses.* These questions aim to explore the criteria that users consider important when choosing online courses and platforms. They are focused on identifying the key factors influencing the decision to choose a particular course.

*Rating of quality and convenience.* These questions are aimed at assessing user experience and satisfaction with the quality of learning on online platforms, as well as the usability of mobile learning applications. They help measure user satisfaction with the variety of content and assess the relevance of the courses provided.

*Financial aspects and vision of the future.* These questions cover the financial aspects of online education, including users' willingness to pay for tuition, their assessment of course prices, and their vision for the future of online education. They provide insight into financial motivations and user perceptions of what the future of online education will look like in terms of course diversity and affordability.

The questions included both closed questions with the possibility of choosing one or more answer options, as well as open questions allowing respondents to give their comments and opinions.

During our research, we will examine the impact of technological trends on the choices of students and consumers of online educational services. A high response rate and a large number of complete questionnaires increase the quality and reliability of the collected data. This provides a more accurate and comprehensive view of the views and preferences of the target audience. Furthermore, we plan to analyze the dynamics of demand, identify preferences in terms of formats and teaching methodologies, and determine the factors influencing the attractiveness of various educational offerings.

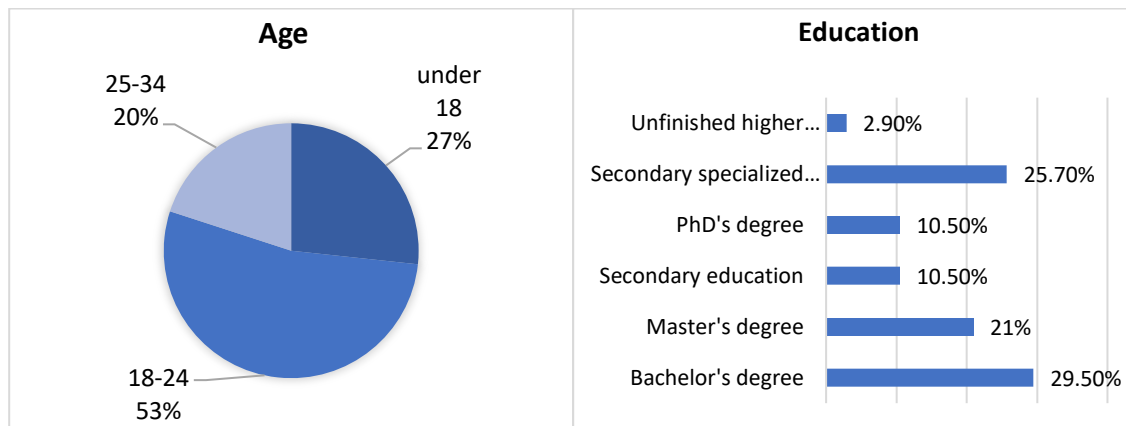
Particular attention will be given to analyzing the competitive landscape in the online education sphere. We will study service delivery strategies, innovative approaches to learning,

and factors that define the competitiveness of educational platforms. The research findings will help identify key features shaping success in this market.

#### 4. FINDINGS AND DISCUSSION

Analysis of the demographic data of the questionnaire on the topic “Assessing the demand for online educational services and analyzing competition in the field of online education” provides valuable information about the characteristics of respondents, which will help to better understand the target audience and tailor marketing strategies to their needs.

In Figure 1 there is presented data on the age of respondents and the level of their education.



**FIGURE 1.** Demographic description

*Note:* compiled by authors

The majority of respondents were between 18 and 24 years old, which indicates the popularity of online education among young people. However, it is also important to pay attention to the interest of teenagers and older age groups. Respondents with different levels of education provide an opportunity to reach a wide range of consumers. Online educational programs can be of interest to both students and those who have already completed their education. Summarizing, the obtained demographic data allows us to highlight key aspects that should be taken into account when developing marketing strategies in the field of online education. For example, personalized courses aimed at youth audiences, as well as educational programs that provide a variety of difficulty levels, can be effective methods of attracting and retaining customers.

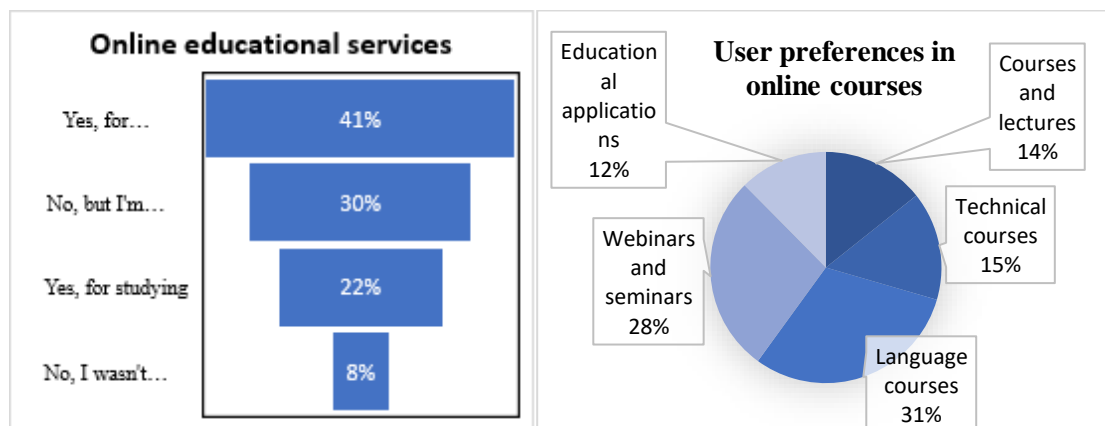
The next block of questions considers research goal analysis. The first question aims to ascertain whether individuals have any prior experience with such services, establishing a baseline for their interaction with online education. Meanwhile, the second question seeks to specify and enumerate the particular online educational services or platforms the respondents have utilized, providing a detailed understanding of their past experiences within the realm of online education.

1. “Have you already used online educational services?”

The majority of respondents (50%) had already used online educational services for professional development, which underscores their active interest in educational programs in this field. Use for educational purposes is also prominent (28%), suggesting that online education is also popular in the educational sector. It is important to note that almost half of respondents (48%) have not yet used online educational services, but are considering this possibility in the future. This indicates the potential for expanding the audience and increasing demand for such services. Therefore, developing and promoting new educational products can be a successful strategy,

given the interest and readiness to use online education in the future.

In Figure 2 there is presented data on respondents' engagement with online educational services.



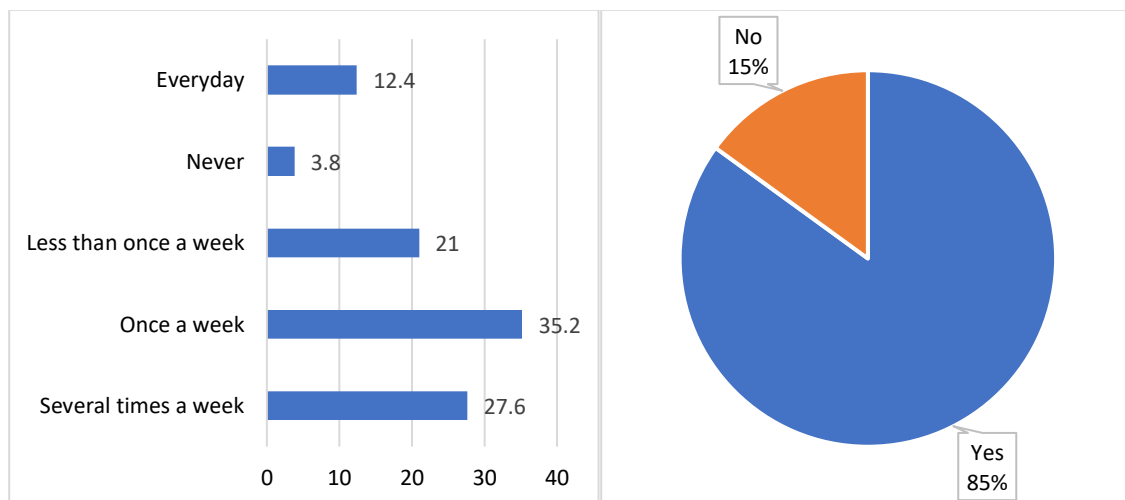
**FIGURE 2.** Respondents' engagement with online educational services

*Note:* compiled by authors

2. “Which online educational services have you already used?”

The results of this question provide valuable data for understanding user preferences in online education. Webinars and seminars turned out to be the most popular, which indicates a desire to gain knowledge in an interactive form. Language courses also have a high level of interest, indicating a need for foreign language learning. Technical courses and educational applications also occupy a significant share.

Next, in Figure 3 there is presented data on the frequency of usage and the perceived significance of online educational platforms.



**FIGURE 3.** Frequency of usage and the perceived significance of online educational platforms.

*Note:* compiled by authors

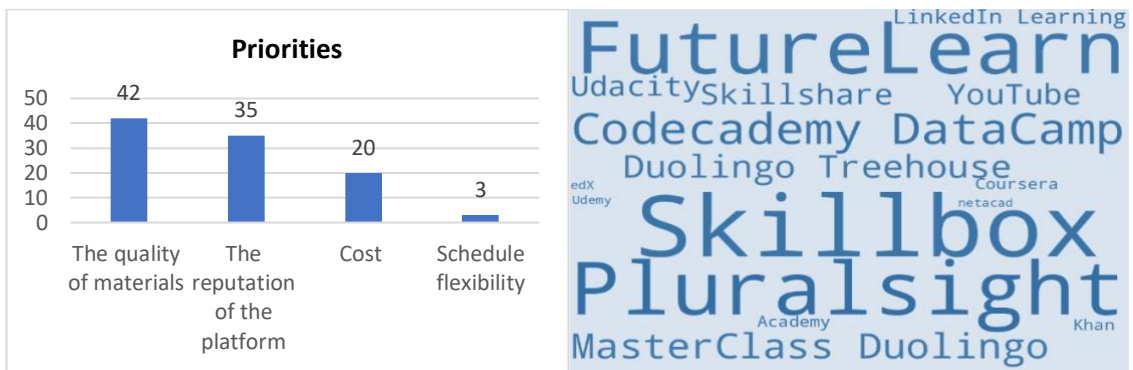
3. *“How often do you use online educational platforms?”*

The distribution of frequency of use of the platforms shows that the majority of respondents prefer regular training, with almost half of users using the platforms several times a week. However, the proportion of those who use the platforms daily is also significant. These results highlight the continued interest of users in online education, which may serve as an incentive to expand and improve educational offerings. Particular attention should be paid to improving content and optimizing platforms to meet the growing needs of regular and active users.

4. *“Do you consider online educational services important for your personal and professional development?”*

The obvious predominance of positive answers indicates a high assessment of the importance of online educational services for the personal and professional development of respondents. This fact highlights the growing role of online education in people's lives, and their willingness to use this type of service to enrich their knowledge and skills. This is an important signal for educational service providers to continue to invest in diverse and high-quality educational programs, taking into account the needs and expectations of users.

Next, the data on preferences and priorities when choosing online educational services is provided in Figure 4.



**FIGURE 4.** Preferences and priorities when choosing online educational services

*Note:* compiled by authors

5. *“What do you think is most important when choosing online education courses?”*

Quality of materials is key: The majority of respondents (42%) consider the quality of the material provided to be the most important when choosing online educational courses. This highlights the importance for educational platforms to focus on developing high-quality learning materials. 35% of respondents pay attention to the reputation of the educational platform. This indicates that the platform's image and status play a significant role in the decision to use its services. Although cost ranks third among preferences (20%), it remains a significant factor. Platforms can attract more users by offering competitive prices, especially when combined with high quality. Schedule flexibility is a lower priority: Schedule flexibility is the least important factor when choosing courses (3%). Perhaps most respondents believe that scheduling flexibility is an added bonus, but not a deciding factor.

Overall, the results indicate that users place particular importance on the quality of content and the reputation of the platform, and also consider the cost of services. Schedule flexibility is rated less highly, which may indicate that most respondents consider it an additional, but not a key, aspect of choice.

6. *“Which online educational platforms do you prefer?”*

1. Udemy: This platform is one of the leaders in the preferences of respondents. Many people choose Udemy as their preferred destination for online learning.

2. LinkedIn Learning: Also a popular platform among respondents, indicating its importance in the field of online education.

3. Skillbox: This platform also has its own audience, and some respondents choose it.

4. Khan Academy: The Khan Academy platform is also prominent in preferences, especially when combined with other platforms.

5. Coursera and edX: Both platforms offering courses from top universities also received recognition among respondents.

6. Duolingo: Popular in the language learning category.

7. YouTube: Mentioned in responses, perhaps as an additional learning resource.

Overall conclusion: There is a variety of preferences among respondents, and many of them prefer to combine several platforms to receive a well-rounded education. This also highlights the importance of having a variety of online education resources and courses.

7. *“How often do you switch between different platforms for online learning?”*

Single platform preference: Some respondents rarely or never switch between platforms and prefer to use only one (15%). Change by course: Most respondents periodically switch between platforms depending on what courses are offered (70%). This may indicate that it is important for them to select the optimal resources for specific learning. Constant search for new materials: A significant portion of respondents actively search for new materials and often switch between platforms (15%). This may reflect a desire for diversity and a wide range of training. Overall, most respondents prefer flexibility in their choice of platforms, switching based on specific needs and course offerings. However, there is also a proportion of users who prefer to stay on one platform, which may be due to a consistent and satisfactory learning experience on the chosen resource.

8. *“Which online education platforms or providers do you think compete most successfully in the market, and why?”*

There are many platforms and providers in the online education market that successfully compete with each other. Of the platforms and providers listed in the open question, the most successful and competitive are Coursera, Udemy, edX and LinkedIn Learning.

Coursera offers a wide selection of university courses, while Udemy focuses on courses created by instructors. Both providers have a good reputation and offer convenient conditions for use.

edX is successful due to its partnerships with leading universities to provide high quality education. LinkedIn Learning, on the other hand, provides corporate training and professional development, making it attractive to employees and entrepreneurs.

Also worth mentioning are skillshare, pluralsight and Khan Academy, which offer a variety of courses in creative skills, information technology and education for all ages, respectively.

Some providers, such as YouTube, Codecademy, and DataCamp, provide accessible and free training, allowing many people to gain knowledge in various fields.

Overall, choosing a platform or provider depends on your learning goals and interests. Each provider has its own strengths and specialization, and choosing a specific platform will be determined by your educational needs and desires. Features may also be a reason for enrolling in online courses.

9. *“What factors influence your decision to choose one online educational platform over another?”*, the following key factors influencing users' choice can be identified:

- User reviews and ratings are important factors when choosing an online educational platform, as they help provide information about the quality and effectiveness of the platform.

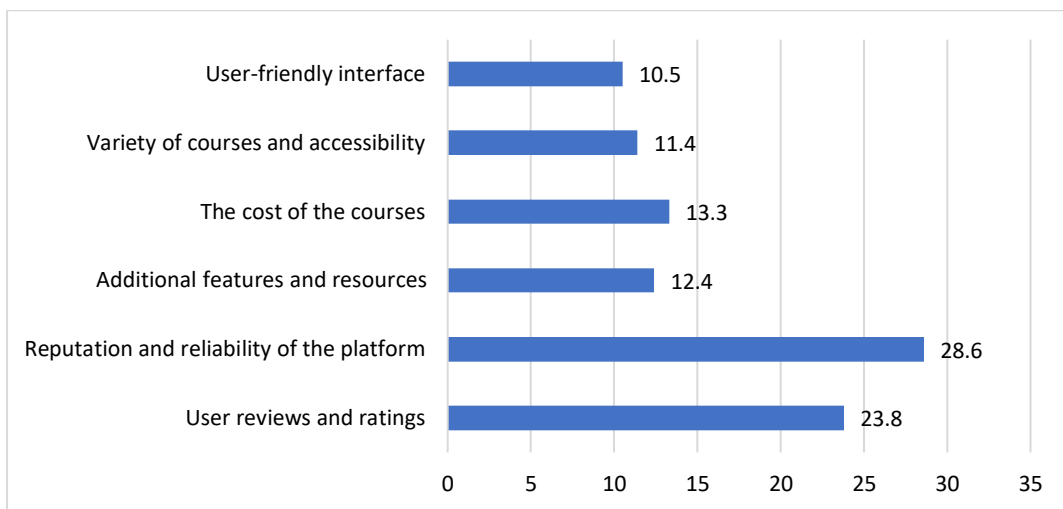
- The reputation and reliability of the platform also plays a role in the decision, as users prefer



to trust proven and reliable platforms.

- The cost of courses matters to many people as it can be a deciding factor when choosing a platform.
- Additional features and resources are attractive to users because they offer additional opportunities for learning and development.
- Course variety and accessibility are also important as users look for platforms that offer a wide variety of courses and allow them to study at a time that suits them.
- A user-friendly interface can also influence the choice of platform, as users prefer ease of use when studying or learning new materials.

Next, in Figure 5 there is provided data on key factors influencing users' choice between different online educational platforms. Based on the results of the question.



**FIGURE 5.** Key factors influencing users' choice between different online educational platforms

*Note:* compiled by authors

Reviews of the quality of learning on online platforms vary, but are generally positive. Most users rate the quality of training as 4 or 5 compared to traditional training. This may indicate that many people consider online learning to be an effective and high-quality means of acquiring knowledge.

11. *“How do you rate the quality of learning on your chosen platforms?”*

The average rating of the quality of training on the selected platforms is 3.4 out of 5. The opinions of the participants are varied, with ratings both below average (1 and 2) and above average (4 and 5). This indicates different perceptions of the effectiveness of the educational programs offered by the platforms. Some respondents highly value the materials, teaching methods and resources provided, while others may experience some difficulty or expect improvement in some areas.

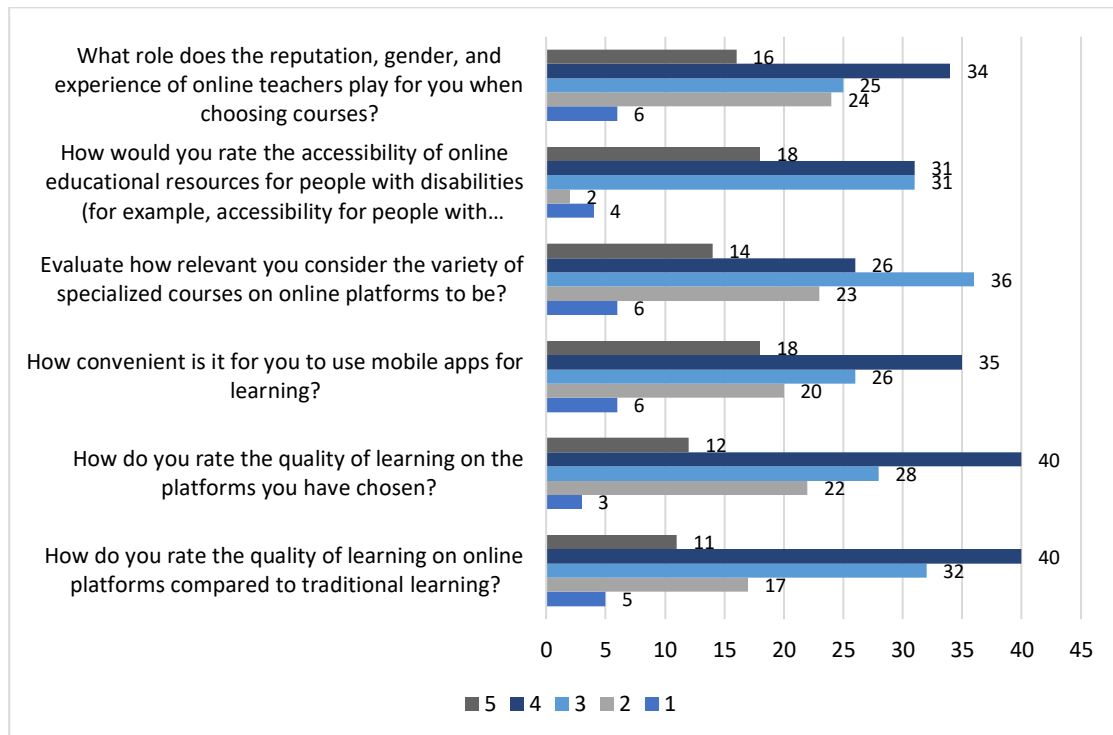
It is important to note that scores that are above average indicate a positive perception of online education among the majority of respondents. However, the low ratings highlight the importance of continuously improving platforms and adapting to learner needs to achieve even higher quality standards.

12. *“How convenient is it for you to use mobile applications for learning?”*

The average usability rating for mobile learning apps is 3.6 out of 5. The majority of participants rate the usability positively (4 and 5 points), highlighting the benefits of making learning accessible anywhere. However, there are scores below average (1 and 2 points), which

may indicate problems or an unsatisfactory interface for some users. This diverse set of ratings highlights the importance of further optimizing mobile apps to meet the expectations and needs of all users.

Thus, to attract users and remain competitive, online education platforms must pay attention to user ratings, platform reputation and reliability, course costs, course availability and variety, additional features and resources, and user-friendly interface. Next, data on evaluation of the quality of training is given in Figure 6.



**FIGURE 6.** Evaluation of the quality of training

Note: compiled by authors

10. *“Evaluation of the quality of training”.*

13. *“Assess how relevant you think the variety of specialized courses on online platforms is”*

The average rating for the relevance of the variety of specialized courses on online platforms is 3.3 out of 5. Participants highly rate the relevance of the courses offered (4 and 5 points), noting their compliance with modern requirements and interests. However, there are also below-average scores (1 and 2 points), which may indicate insufficient variety or obsolescence of some training programs. To improve the overall user experience, attention should be paid to updating and expanding the range of courses offered, taking into account relevance and demand

14. *“What role do the reputation, gender, and experience of online teachers play for you when choosing courses?”*

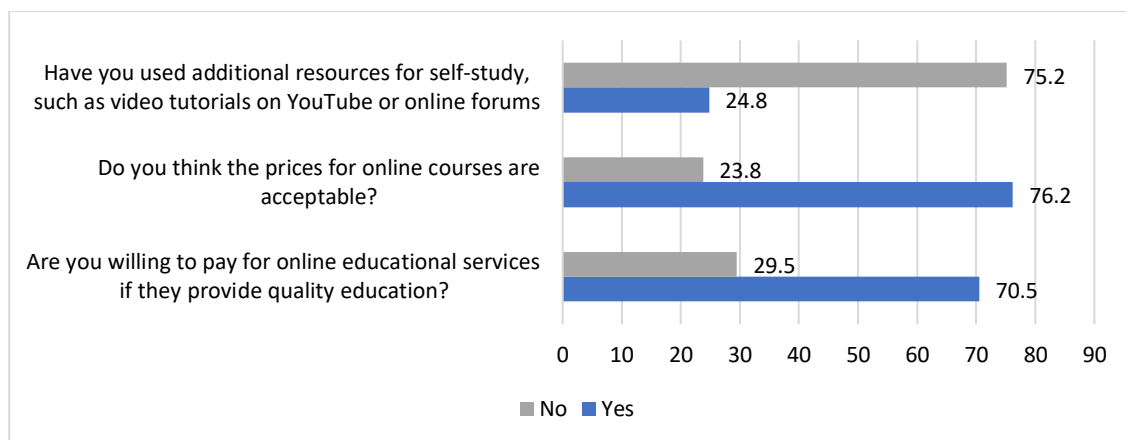
The reputation of online teachers is rated by participants at 3.3 out of 5. When choosing courses, respondents attach importance to the reputation of the teacher, highly appreciating its impact on the quality of education. Half of the participants note that the gender of the teacher is important for them when choosing a course, while the experience is rated average. This may indicate that for some users the teacher's experience is important, but is not a decisive factor. To

improve course selection and increase user trust, it is worth continuing to focus on the reputation of teachers, as well as providing detailed information about their experience and qualifications.

15. *“How would you rate the accessibility of online educational resources for people with disabilities (e.g. accessibility for persons with disabilities)?”*

Survey respondents rate the accessibility of online educational resources for people with disabilities at an average of 3.5 out of 5. This indicates that the perceived accessibility of such resources can be improved. Online platforms should address issues of barriers and improve accessibility for persons with disabilities, thereby ensuring equal educational opportunities for all users.

Next, in Figure 7, there are results of assessing the willingness of users to pay for online educational services while providing high-quality training. This allows us to assess the extent to which users are willing to invest in education if they are provided with quality training.



**FIGURE 7.** Assessment of the willingness of users to pay for online educational services

*Note:* compiled by authors

Conclusion for question 19 “Are you willing to pay for online educational services if they provide quality training?”

The majority of respondents (yes - 80%, no - 20%) are willing to pay for online educational services if they provide quality training. This indicates that people value the opportunity to receive a quality education and are willing to invest money in it. Thus, there is a market potential for online educational services provided that high quality learning is provided.

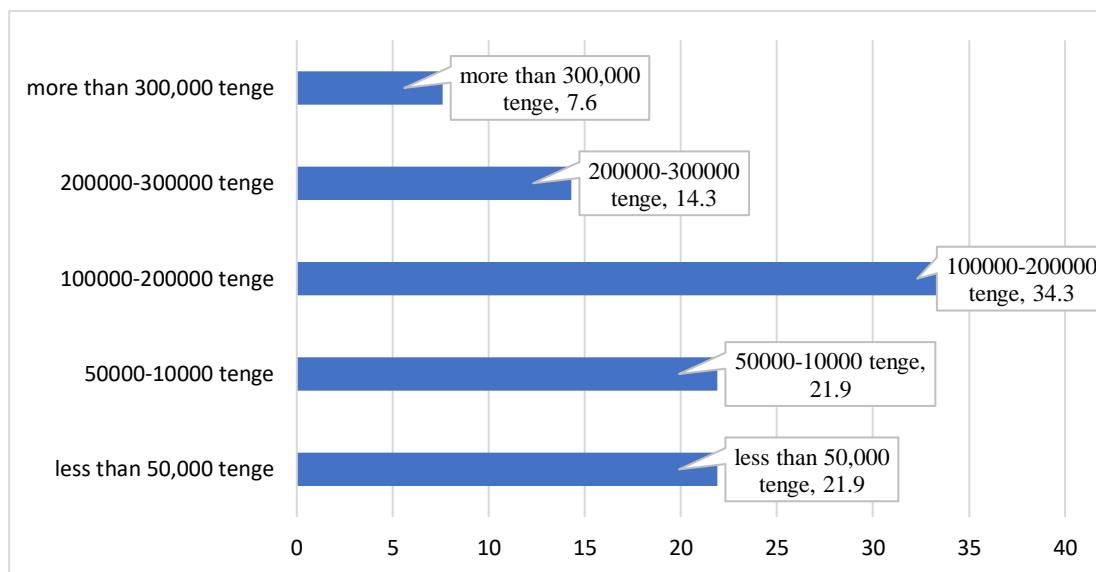
16. *“Do you think the prices for online courses are reasonable?”*

The majority of participants (80%) find prices for online courses reasonable, indicating their willingness to invest in education provided the quality of services provided is adequate. However, there are 20% of respondents who consider prices unacceptable. This may be due to different expectations regarding tuition costs and the availability of budget options.

The majority of survey participants, 87% (Figure 23), confirm that they used additional resources for self-study, such as YouTube video tutorials or online forums. This demonstrates the widespread use of a variety of online resources to enrich their education. Such additional materials can significantly expand and deepen students' knowledge, making the learning process more flexible and individualized.

The next two questions delve into financial considerations and future perspectives regarding online education. The first question aims to gauge the monetary extent to which individuals are willing to invest in online learning services on a monthly basis. It assesses their budgetary

willingness and potential financial commitment towards accessing educational resources online (Figure 8). The second question delves into participants' perceptions of the future landscape of online education. It seeks insights into their visionary perspective regarding what elements or aspects they believe will hold significance in the future of online learning. This question explores their anticipations and expectations for the evolving dynamics of online education.



**FIGURE 8.** Financial Aspect

*Note:* compiled by authors

17. *“How much are you willing to pay for online learning services per month?”*

The majority of respondents demonstrate a willingness to pay for online learning services. The distribution of answers across cost ranges shows that the majority preferred average costs, such as 50-100 thousand KZT and 100-200 thousand KZT per month. This indicates that people are willing to invest in education and prefer a reasonable balance between cost and quality of services provided.

18. *“How do you see the future of online education? What do you think will be important?”*

Survey respondents highlight several key areas for the future of online education. Increasing interactivity in training and expanding the offer of specialized courses are considered important elements. These aspects highlight the importance of actively engaging students and providing a variety of educational opportunities. It is also noted that the majority of respondents see potential in the increased use of artificial intelligence, which could contribute to more effective and personalized learning. Overall, the future of online education, according to participants, will focus on creating more interactive, accessible and technologically advanced educational platforms.

## 6. CONCLUSIONS

The empirical evidence presented in this study highlights a strong correlation between high levels of digitalization and economic prosperity, positing digital literacy as an indispensable skill in the contemporary economic landscape. This inference is bolstered by the observed market-driven response of online education platforms that are increasingly offering courses to enhance digital skills, thereby reflecting the burgeoning demand for such competencies in the workforce. The study further accentuates the dynamic nature of labor market demands, as evidenced by the

impact of digitalization, such as automation and the evolution of job tasks, which necessitates a paradigm shift in skill requirements and underscores the imperative for continuous learning and adaptation. The popularity of online courses for professional development, as discerned from the survey responses, mirrors the workforce's recognition of the need to perpetually adapt to novel technologies and evolving work environments.

Moreover, the frequent engagement with online educational platforms and the diversity of courses chosen by respondents signifies a trend towards lifelong learning. This is further corroborated by the willingness of individuals to invest in quality online education and their interest in perpetually updating skills through diverse platforms, highlighting lifelong learning as a critical component of career development in the modern era.

These findings have profound implications for educational policy. They underscore the necessity for policies that emphasize the development of digital literacy from an early age and encourage lifelong learning, ensuring that the workforce remains versatile and equipped to adapt to new technologies and shifting job requirements. Such policies might encompass support for online education platforms, incentives for continuous professional development, and the integration of digital skills training within traditional education systems. Providers of online education should focus on enhancing the quality of instructional materials, upholding platform credibility, and ensuring the relevance of courses to meet the dynamic needs of the digital economy.

Online educational offerings must address issues of accessibility and inclusivity, especially for individuals with disabilities, to guarantee equal opportunities in education. Both governmental and private sectors are advised to invest in digital literacy initiatives, thus ensuring a workforce adept at adapting to the changing digital landscape. Further investigations should delve into the long-term effects of digitalization on global job markets and the role of online education in mitigating challenges associated with automation and technological progress.

In conclusion, the study's findings advocate for a future where digital literacy and continuous learning are integral to career success. This necessitates an adaptation of educational policies to create ecosystems that foster and support these elements within the education system and the broader workforce, thereby yielding significant economic and social benefits through the creation of a more adaptable, skilled workforce, leading to enhanced economic productivity, reduced skill gaps, and elevated employability.

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