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Higher Education and Urban Development: Market Dynamics and Gender Differences

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Abstract

The study is devoted to analyzing the impact of higher education on urban development, with an emphasis on the cities of Kazakhstan. The paper examines the role of universities in economic growth and the social and cultural life of cities, as well as the impact of the quality of educational programs on the employment of graduates in the context of meeting the requirements of the labor market. The problems of obsolescence of the theory of human capital development against the background of the development of artificial intelligence and changes in the employment structure caused by digitalization are highlighted. The authors draw attention to the contradictions between urban development and the decline of small settlements caused by heterogeneity in access to the Internet and digital technologies. The issue of gender disparity in access to education and its impact on employment is raised. The study presents the results of an initial survey of Kazakhstan students to identify their expectations of university education and its role in future employment. Hypotheses about the perception of the competitiveness of diplomas, the correlation between accessibility and quality of education, and gender differences in the assessment of these aspects are analyzed. The study's results emphasize the importance of cooperation between the state and educational institutions for the development of cities and the training of qualified specialists capable of meeting the needs of the modern labor market.

Keywords: Higher Education, Urban Development, Economic Development, Accessibility of Education, Gender, Migration

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1. INTRODUCTION

The influence of the role of higher education on urban development is a relevant topic for study. The intersection of this topic with accessibility to urban areas and better conditions for training specialists shows that an increase in the quality of labor resources leads to the development of human capital and production and increases cash flow. It is important to note that universities directly influence the sustainable growth of the economy and perform social and cultural functions. Still, training personnel without taking into account the requirements of the labor market is of little use. If universities do not study the latest changes in the labor market and do not interact with employers and business structures in their country, then educational programs become outdated, and university graduates do not have the necessary set of knowledge and the quality of the qualified workforce is reduced, which leads to an increase in unemployment.

The theory of human capital development, which has been studied for the last 50 years, is also becoming outdated due to the emergence of the era of intelligent machines. Artificial intelligence is replacing the strategic labor resource in some areas (Brown et al., 2020). Some professions are already endangered because the required knowledge relates to digital skills. In remote regions of Kazakhstan, the Internet has slow speed and limited coverage. The cost of installing a communication tower is not economically feasible, which forces specialized specialists to move to areas provided with a stable Internet connection. Such zones are cities. It turns out to be a contradiction: on the one hand, recent trends are aimed at the growth of cities. On the other hand, villages are dying out. The need to seek a balance also arises against the background of the outflow of young people from small towns to larger ones, the overpopulation of the latter, and the deterioration of the environmental situation.

Along with the problems discussed, one can notice a dichotomy and disparity in the field of higher education, manifested in access to education among boys and girls in different countries and in the ability of parents to pay for education. In some countries, higher education is still provided for a fee, and more often, the source (university) is located within the city. This creates difficulties for rural youth in accessing higher education since paying for tuition is an additional burden on parents' finances.

In any case, much analytical work is based on secondary data, but in this work, a primary study was conducted on respondents' opinions regarding the quality of education in Kazakhstan. Such a study will reveal the expectations of young people from universities, which are subsequently associated with employment. An attempt is also made to identify whether there are gender biases regarding employment opportunities in the city..

2. LITERATURE REVIEW

The rapid pace of urban development in the process of industrialization led to the emergence and development of such a science as urbanism. This direction previously studied the correct location of buildings, ease of movement along city streets, geographical location of the leading engineering systems, construction, etc. At the beginning of the current century, not only architecture and transport accessibility but also economic, social, and other factors began to be studied (Spasskaya, 2006). Moreover, to analyze the level of development of cities located in different regions or countries, scientists used comparison factors of different types. Education is one of these factors, and to compare some indicators, available statistics collected on the same indicators in different countries (number of schools and other educational institutions, number of students, etc.) were studied.

It is important to note that recently, many works have appeared that show that education is not only a source of knowledge and education for young people but has a social and urban planning

function, improves the culture of any locality, is a strategic object, and develops the economy in cities. In addition, educational institutions in small towns help maintain population size and reduce internal migration (Zborovsky & Ambarova, 2018; Addie, 2017). Below is a table that contains a logical analysis of previously conducted studies and shows the main factors for assessing urban development that were considered in previous studies (see Table 1).

TABLE 1. The main factors used to compare and assess the level of urban development

Factor	Key findings	Authors
Industrial, infrastructure, public	Increasing the size of a city does not always lead to an increase in productivity equal to the percentage increase.	Melo, P. C., Graham, D. J., & Noland, R. B. (2009)
Social, economic, environmental	The gap between urban and rural populations is growing.	Bobylev, S. N., Kudryavtseva, O. V., & Solovyova, S.V. (2014)
Economic, educational, digital	Changes in the employment structure indicate the need to revise educational programs.	Namiot, D. E., Kupriyanovsky, V. P., Samorodov, A. V., Karasev, O. I., Zamolodchikov, D. G., & Fedorova, N. O. (2017)
Social, economic	The development of higher education prevents migration from cities.	Zborovsky, G. E., & Ambarova, P. A. (2018)
Social, innovative, technological, demographic, media, scientific, healthcare, transport development	When assessing the level of development of smart cities, it is necessary to move away from technocratic and geographical approaches and use a sociological approach.	Popov, E. V., & Semyachkov, K. A. (2020).
Social, economic	Preservation of small towns helps strengthen depressed regions of the country.	Kireyeva, A. A., Nurlanova, N. K., & Kredina, A. (2022)
Note: compiled by authors		

The authors' findings show the main trends related to the need to change educational programs. As you can see, various indicators are used to assess the level of development of cities located in the territory of the former CIS. Other authors pointed out that city development must be thoughtful since the growth of urban agglomeration does not always proportionally increase the leading indicators of the city's economic growth. The state is interested in the development of urban areas, and it is essential that the population of cities does not decrease and that there are no imbalances in the population size. The outflow of population from the city can lead to mass unemployment, a shortage of specialized specialists, and problems with access to quality medicine; on the other hand, the arrival of too many people leads to overpopulation. In the future, problems may manifest in a lack of places in schools or universities, a low number of teachers, and reduced access to education.

In some regions, in order to maintain the influx of population over a long period, universities use educational tourism. Students who come to study in international programs are at least interested in the city's entertainment sector and are also interested in employment, which, in both cases, increases the city's economy (Tomasi et al., 2020). The influx of highly qualified immigrants leads to them occupying leading positions in the labor market, which is reflected in the standard of living of the local unskilled population; as the unemployment rate increases, costs rise, and quality of life decreases.

For the countries of Vietnam, India, China, Kazakhstan, and Russia, on the contrary, there is a risk of youth outflow through education abroad. This trend reduces the working-age population and increases the burden on households, particularly the elderly and women (Punch & Sugden, 2013). The authors pointed out the risks of losing knowledge about ecology since the new professions that young people are mastering are related to digital skills. The outflow of the young working population from the provinces of Northeast China continues, and authorities are concerned about the brain drain from the region (Jiang, 2017).

On the other hand, the population of Kazakhstan must have modern competencies and skills to achieve high academic performance and increase the diversity of digital skills (Kerimkulova & Kuzhabekova, 2017). University graduates with such skills are better employed and have higher life satisfaction. Of course, such a goal is challenging to achieve when the government does not interact with universities and employers and there is no understanding of the necessary competencies required in the labor market. There is also a problem with the skewed acquisition of problem-solving skills using digital resources and simultaneous loss of reasoning skills (Bietenbeck, 2014; Bennett et.al., 1999).

Schoolchildren studying in high school in Kazakhstan are interested in obtaining higher education in cities. It is noted that the expectations of schoolchildren and their parents are aimed at state support in the form of an educational grant, since most parents do not have the opportunity to pay for their children's education (Kurmangalieva & Abdrakhmanova, 2012). Also, the education received gives the opportunity to choose a place of work in the future, which expands the opportunities of young people. Interestingly, parental education predicts children's educational attainment (Kalyuzhnova & Kambhampati, 2007). This trend does not have gender stereotypes in large cities of Kazakhstan since, in most cities, both men and women are employed. However, suppose we are talking about rural settlements or small towns. In that case, it is essential to take into account gender characteristics in the labor market, where there is vertical discrimination as well as in large-scale production, where primarily men work (Atakhanova & Howie, 2022).

At the moment, few studies would allow us to identify issues of expectations from the labor market among young people who study in large cities. There is especially little research on gender. In this work, hypotheses will be formulated, and then, based on a preliminary questionnaire, the results will be checked, and the responses received will be analyzed.

3. METHODOLOGY AND DATA

Data and hypotheses

This work aims to study the expectations among young people receiving education in the cities of Kazakhstan from higher education received in a gender context. To check students' opinions about higher education in cities and career prospects, it was decided to collect primary and secondary data. Secondary data were selected from the electronic portal of the Bureau of National Statistics of Kazakhstan, and primary data were collected through questionnaires. Thus, the research hypotheses are presented in Table 2.

TABLE 2. Research hypotheses

Hypothesis	Contents
H*1*	Diplomas obtained in Kazakhstan are perceived as less competitive in the international labor market compared to diplomas from foreign universities (question 5)
H*2*	There is a positive correlation between the level of accessibility of higher education and the assessment of its quality (question 3)

H*g1*	There are gender differences in assessing the accessibility of higher education in Kazakhstan (question 4)
H*g2*	Men and women rate the importance of having a degree for a successful career differently (question 8)
H*g3*	Perceptions of the impact of a diploma on work and income in Kazakhstan differ between men and women (question 6)
Note: compiled by authors	

Primary data collection was carried out from September 17 to December 13, 2023, at the University of Almaty (University of International Business named after K.Sagadiyev). Table 1 below shows the survey questions.

TABLE 3. Questionnaire

No.	Questions
1	What is your gender?
2	Please indicate your age group.
3	Are you satisfied with the quality of education in Kazakhstan?
4	How do you assess the accessibility of higher education in Kazakhstan?
5	Do you think that a diploma obtained in Kazakhstan contributes to further development in work not only in Kazakhstan but also in other countries?
6	What do you think is the impact of a diploma on the jobs and incomes of workers in Kazakhstan?
7	How do you think raising tuition prices affects the demand for training?
8	Assess how important it is to have a diploma for a successful career in modern Kazakhstan.
9	How important do you think it is for the government of Kazakhstan to develop the higher education sector?
10	How do you assess the future of the education market in Kazakhstan, given the growth in the number of new professions?
11	Do you believe that education contributes to the development of youth and helps in future jobs?
Note: compiled by authors	

For the convenience of respondents, ready-made answer options were provided, which were subsequently convenient for interpretation. The first question is nominal. The second and third are ordinal. To vary the answers for all other questions, a Likert scale from 1 to 5 was used, where 1 meant the minimum indicator, and 5 meant the maximum indicator. The seventh question has two answer options: “Increases demand” and “Decreases demand.”

The methodology of this article is based on a survey of respondents who directly receive educational services, namely students. This study contains a preliminary analysis of data from 104 students. A total of 107 questionnaires were collected, of which three were incomplete and were not included in the analysis. Thus, the sample is (N=104).

The hypotheses posed relate to the perceptions and evaluations collected through the survey. To test the hypotheses, the following research steps will be taken: dividing data into groups by gender; checking the normality of the distribution of scores in each group for each question of interest; depending on the results of the normality test, select a statistical test (Shapiro-Wilk test, t-test or Mann-Whitn test, Wilkonson test); conducting a statistical test; verification and description of the results obtained.

(a) The Shapiro-Wilk test is used to test the hypothesis that the sample comes from a normal distribution. Formula 1 is presented below:

$$W = \frac{\left(\sum_{i=1}^{n} a_i x_{(i)}\right)^2}{\sum_{i=1}^{n}(x_i - \bar{x})^2}, \quad (1)$$

where: $x_{(i)}$ – i smallest value in the sample;
a_i – coefficients obtained from a particular table based on sample order and size;
$\bar{x}$ – sample mean;
n – sample size.

(b) The Mann-Whitney test (or Wilconson test for two independent samples) is also non-parametric; calculations are carried out according to the formula 2:

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1, \quad (2)$$

where: $n_1 n_2$ – the sizes of each of the two samples;
R_1 – sum of ranks of sample 1 in a combined ranked data set.

All observations in both groups are ranked, after which the ranks for each group are summed. The U statistic is calculated for each group separately, and the smallest U value is used to determine the p-value.

(c) Spearman's correlation coefficient is used to measure the strength of association between two variables. The formula 3 is below:

$$r_{xy} = 1 - \frac{6\Sigma d^2}{n\,(n^2-1)}, \quad (3)$$

where d2 – the sum of squared variations between ranked levels;
n – the number of function arguments in the ranking;
x – unmeasured variable;
y – measured variable.

These formulas allow you to conduct analysis and test statistical hypotheses based on the collected data.

4. ANALYSIS AND RESULTS

Table 1 contains the descriptive statistics of the variables employed by the study. The table shows that the mean gross fixed capital formation (GCF) is 13.96 while the average commercial bank deposit ratio to GDP (CBD) is 14.751. Loan to deposit ratio (LTDR), Non-interest income to interest income ratio (NIY/NY) and Interest rate spread (IRS) have 61.456, 51.83 and 40.003 as their respective averages.

According to the Bureau of National Statistics, at the beginning of the 2023–2024 academic year, there are 112 universities in Kazakhstan, including 44 state-owned, 67 privately owned and one foreign university. Below is the number of universities in the regional context (see Figure 1).

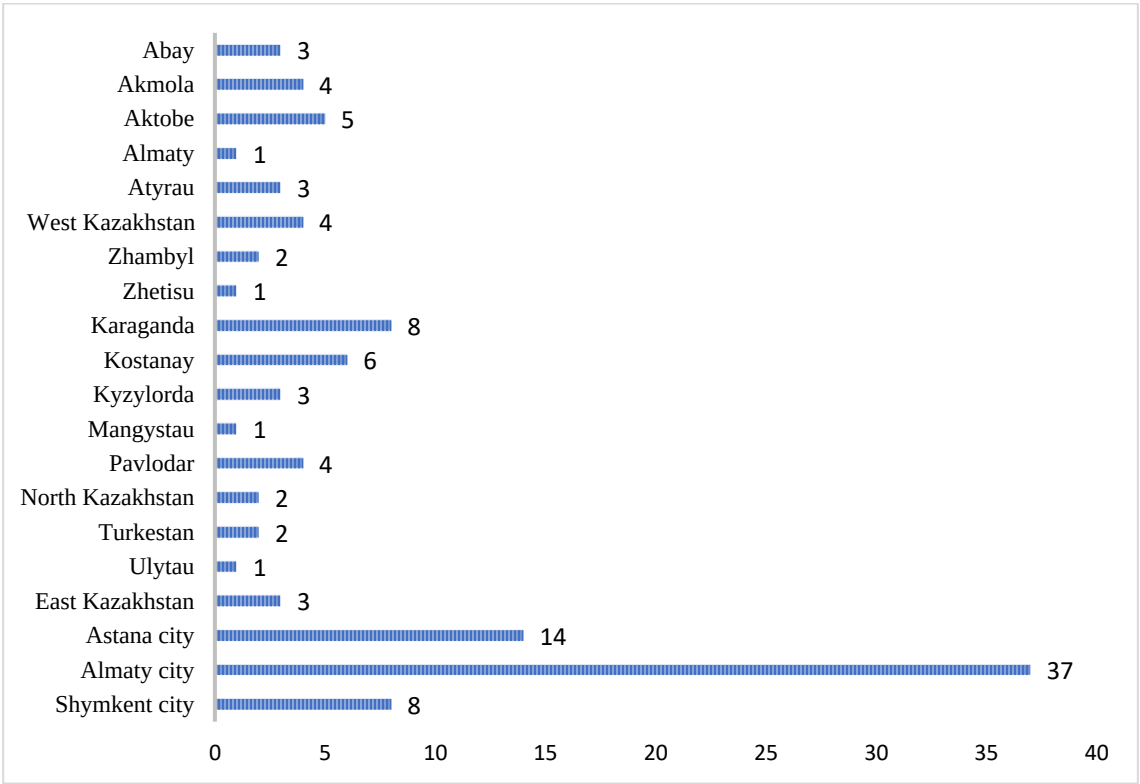


FIGURE 1. Number of independent educational institutions in Kazakhstan for 2023-2024

Note: compiled by authors

As can be seen from the table presented, 53% of educational institutions are located in the largest cities of Kazakhstan - Almaty city (37), Astana city (14) and Shymkent city (8). Of the regions, Karaganda, Kostanay, and Aktobe have 8, 6, and 5 universities, respectively. The regions of Almaty, Zhetisu, Mangystau and Ulytau each have one university. The most significant number of universities is in Almaty city, so it was decided to conduct the survey based on universities in this large city, especially since the cities of Kazakhstan currently form more than 60% of GDP.

Furthermore, description about respondents presented in Table 4.

TABLE 4. Information on respondents

Gender	Under 20 years old	20-25	Total
Female	62 (84%)	12 (16%)	74
Male	26 (87%)	4 (13%)	30
Total	88	16	104
Note: compiled by authors			

The majority of respondents were students less than 20 years old (85%). The remaining 15% of respondents are 20-25 years old. It should also be noted that 71% of the respondents were female students, and 29% were male students. This shows that girls are more likely to complete the questionnaire since the questionnaire was voluntary. Questions 7, 9, 10, and 11 were analyzed by gender (see Figure 2).

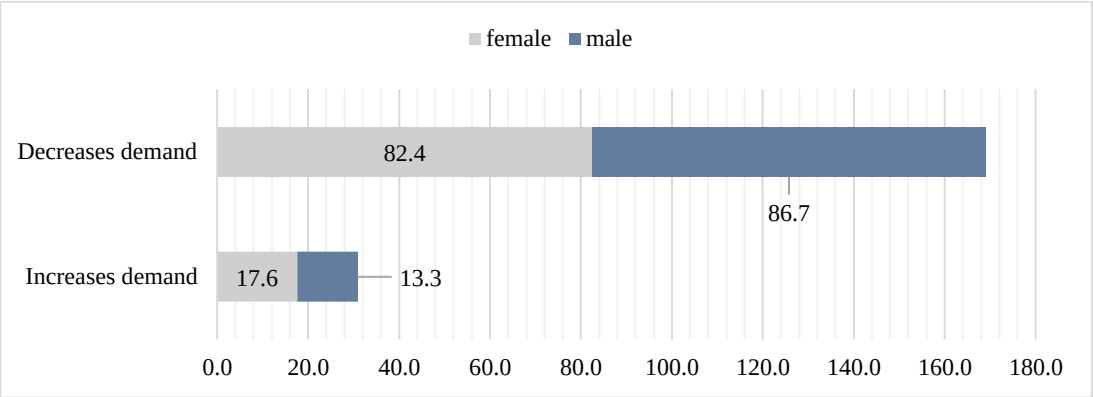
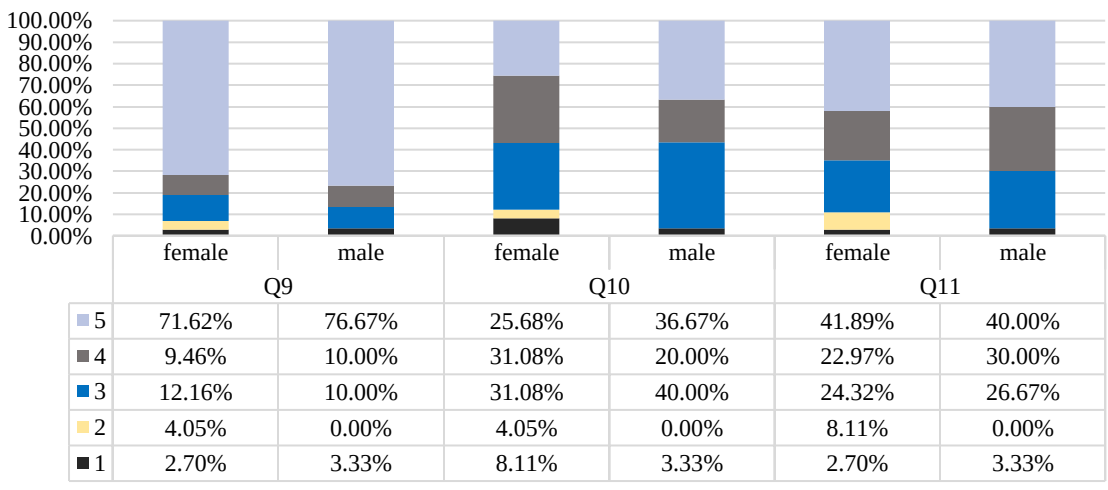


FIGURE 2. Respondents' opinion on raising tuition prices

Note: compiled by authors

The majority of respondents (71%) answered question 7, "How do you think raising tuition prices affects the demand for training?" and believe that increasing tuition prices reduces the demand for higher education. This may be related to the ability of parents to pay for university since the burden on the family budget varies from family to family. Among male students, 13.3% believe that demand will not fall; among female students, 17.6% have this opinion.

The Likert scale shows the attitude of respondents to question 9, "How important do you think it is for the government of Kazakhstan to develop the higher education sector?" question 10 "How do you assess the future of the education market in Kazakhstan, given the growth in the number of new professions?" and question 11 "Do you believe that education contributes to the development of youth and helps in future jobs?" (see Figure 3).



	female	male	female	male	female	male
	Q9		Q10		Q11	
5	71.62%	76.67%	25.68%	36.67%	41.89%	40.00%
4	9.46%	10.00%	31.08%	20.00%	22.97%	30.00%
3	12.16%	10.00%	31.08%	40.00%	24.32%	26.67%
2	4.05%	0.00%	4.05%	0.00%	8.11%	0.00%
1	2.70%	3.33%	8.11%	3.33%	2.70%	3.33%

FIGURE 3. Opinion of respondents to questions 9-11

Note: compiled by authors

The results show that the majority of respondents consider the development of education in Kazakhstan to be an important strategic issue. Of all the answer options to question 9, 71.62% of

female students chose option 5, among male students 31.08%. The answers to question 10 are interesting - female students have different opinions, including negative ones. This may be due to the opinion that new digital professions do not always make a total contribution to economic development. At the same time, almost 96.6% of male students consider the innovations positive. Opinions on the last question were almost unanimous: more than 40% chose option 5, which indicates confidence that obtaining a higher education contributes to youth development and better employment. In general, the answers of female students have a more comprehensive range compared to the answers of male students, who are more likely to answer positively.

Testing hypotheses H1, H2

Descriptive statistics will be used to test the first hypothesis. In the case of an even number of observations, the median will be the average of the two central values. The test statistic is calculated from the sample data presented in Table 5.

TABLE 5. Testing hypotheses H1

Hypothesis	Median	Test method	Result	Interpretation
H1	The value that splits the distribution in half	Descriptive Statistics	~ 3.14	Neutral Perception
Note: compiled by authors				

The average perception of the competitiveness of diplomas obtained in Kazakhstan in the international labor market is about 3.14 (on a scale of 1 to 5). This indicates that the average student opinion tends to be neutral regarding the competitiveness of Kazakhstani degrees at the international level (see Table 6).

TABLE 6. Normality of distribution of H2

Variable	Statistic value W	p-value	Normality of distribution
Competitiveness of diplomas	0.95	0.02	Not confirmed
The quality of education	0.96	0.05	On the verge
Note: compiled by authors			

The value of the W statistic shows how well the data fits into a normal distribution. A p-value less than 0.05 indicates. The test statistic is calculated from the sample data presented in Table 7.

TABLE 7. Testing hypotheses H2

Hypotheses	Correlation Coefficient	p-value
H2	0.641185	2.27e-13
Note: compiled by authors		

Testing hypotheses Hg1, Hg2, Hg3.

This test was used to assess the normality of the distribution of scores in the groups of men and women. Normality of distribution is necessary to determine whether parametric methods (e.g., t-test) can be used or whether non-parametric methods (e.g., Mann-Whitney test) should be used.

The Shapiro-Wilk test is calculated from the sample data presented in Table 8.

TABLE 8. Shapiro-Wilk test

Group	Availability Shapiro-Wilk p-value	Importance of diploma Shapiro-Wilk p-value	Diploma Influence Shapiro-Wilk p-value
Male	0.002112	0.000564	0.001573
Female	0.000040	0.000006	0.000007
Note: compiled by authors			

In the Shapiro-Wilk test table, the p-value for all groups is below 0.05, which indicates the normality of the data distribution. Because normality tests indicated that the data were not normally distributed, the nonparametric Mann-Whitney test was used to compare median values between two independent groups (men and women). This text makes no assumptions about the distribution of the data and is appropriate for comparing data ranks between groups.

Next, the Mann-Whitney test is calculated from the sample data presented in Table 9.

TABLE 9. Mann-Whitney test

Mann-Whitney test	U-statistic	p-value
Availability	1210.0	0.458391
Importance of diploma	1211.5	0.457687
Diploma Influence	1246.5	0.316911
Note: compiled by authors		

In the table of Mann-Whitney test results, the p-value for all tests is above 0.05, which means that there are no statistically significant differences between the groups of men and women in all three aspects considered. The results of the Spearman correlation analysis between assessments of the accessibility of higher education and satisfaction with the quality of education.

Further, the Spearman Correlation is calculated from the sample data presented in Table 10.

TABLE 10. Spearman Correlation

Correlation between	Spearman Correlation Coefficient	p-value
Availability and Quality of Education	0.641	2.27e-13
Note: compiled by authors		

Spearman's correlation coefficient is about 0.641, which indicates a strong positive correlation between access to higher education and satisfaction with its quality. The p-value is high and less than 0.05. We can conclude that increasing the accessibility of higher education leads to increased satisfaction with its quality.

An example of a beneficial interaction between the state and education is the opening of school complexes in Russia starting in 2020, which made secondary and vocational education more accessible and increased the number of students at universities (Gladilina et al., 2020). The number of skilled laborers increased and internal migration processes began to decline, and employment stability appeared. The presence of a large amount of high-quality human capital could contribute to Kazakhstan's entry into the top 30 most developed countries by 2050 (Kerimkulova & Kuzhabekova, 2017).

As a result, the hypothesis that higher education helps to preserve and develop cities is true.

The findings substantiate the hypothesis that higher education plays a significant role in the preservation and enhancement of cities. This result underscores the pivotal contribution of educational attainment to urban sustainability and growth, highlighting the importance of integrating educational policies within urban development strategies.

As a result, three hypotheses testing the relationship to the influence of completed education on the opportunity to start a career in a large city depending on gender are rejected.

The implication of this finding is twofold: firstly, it indicates a level playing field for both genders in terms of career opportunities in major urban centers post-education, and secondly, it calls for further research to understand the underlying factors that influence career initiation in large cities.

5. CONCLUSIONS

The aim of this work was to study the expectations among young people receiving education in the cities of Kazakhstan from higher education received in a gender context. The first conclusion is that the preservation of cities depends on close cooperation between higher education organizations and national government agencies (using the example of city akimats). The government needs to strive to develop national strategies that indirectly influence the development of urbanism. To do this, the interconnection system must be two-way and satisfy the basic expectations of young people from the educational services they receive. High-quality education leads to the appearance of qualified personnel on the labor market, which contributes to the economic development of the city, and population migration is reduced.

The next conclusion is that there is no difference in the expectation of influence on future employment between male and female students. It turns out that in large cities of Kazakhstan (using the example of Almaty) there is no segregation in the employment of young people. At least this is the opinion of students who do not expect gender bias in the labor market. It can be noted that male students more often give positive answers to questions.

It should be noted that the study is preliminary and was conducted on the basis of one city and with a larger number of respondents. This is a limitation of this work and further full research may show a different result. Also, a recommendation for future researchers is to focus on research in small cities, where there are a small number of universities and there are difficulties in finding employment for university graduates.

AUTHOR CONTRIBUTION

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Formal analysis and investigation: Anna Kredina.
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Development of research methodology: Anna Kredina.
Resources: Anna Kredina, Aisulu Dzhanegizova.
Software and supervisions: Anna Kredina, Aisulu Dzhanegizova.
Data collection, analysis and interpretation: Anna Kredina, Aisulu Dzhanegizova.
Visualization: Anna Kredina.
Writing review and editing research: Anna Kredina.

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