

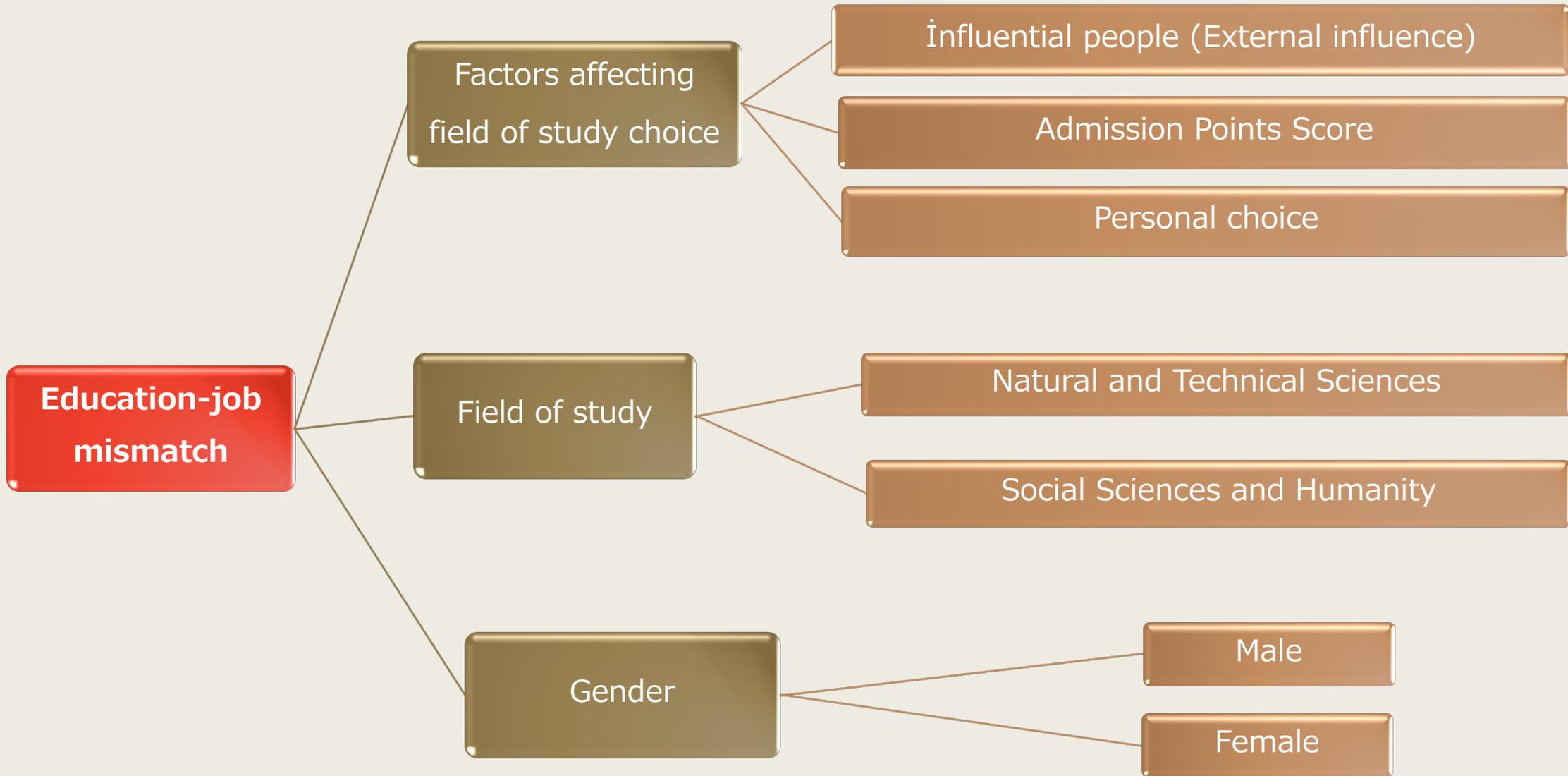
# Education-job mismatch in Azerbaijan

(Problem-related factors)

Gunay Aghamaliyeva



# Purpose



# Definition of key terms

- **Education-job mismatch (EJM)** – the lack of coherence between the required and offered educational level\field for a given job.
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- **Admission Points Score (APS)** – points scored on the basis of the rules and procedures determined by the State Exam Center (TQDK grades until 2016).
  - **Influential People (IP)** - includes all who influenced student`s career decisions.
  - **Personal Choice** – includes students who are admitted to the desired specialty.
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- **Natural and Technical Sciences (NTS)** comprises following: Agriculture, Architecture, Biology, Chemistry, Ecology, Geography, Information Technology, Medicine, Veterinary.
  - **Social Sciences and Humanity (SSH)** contains : Arts, Economics and Business, Educational science, History and Archaeology, Languages and Literature, Law, Media and Communications, Philosophy, Ethics and Religion, Political science, Psychology, Sociology.

# Research Questions

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To what extent are graduates who chose a specific specialty under the external pressure are likely to experience job mismatch?

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How likely are graduates of Social Sciences and Humanities to be mismatched with their job occupation?

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To what extent does gender influence the occurrence of education-job mismatch?

# Hypotheses

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H1. External influence on student`s field of study choice contributes significantly towards the EJM issue.

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H2. Social science and humanities graduates are more likely to be mismatched with their jobs than graduates of natural and technical sciences.

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H3. Men tend to experience greater education-job mismatch than women.

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- The research was guided by the constructivist perspective, which served as the theoretical foundation for our study.

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- The non-probability snowball sampling was applied and online survey was used due to COVID-19 pandemic. Questionnaire includes demographic and main questions.

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- Overall, 204 respondents eligible for this research participated in the survey.

Eligibility criteria:

to obtain secondary education in Azerbaijan;

to have a higher education;

to be employed.

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- The survey was conducted in May-July 2020.

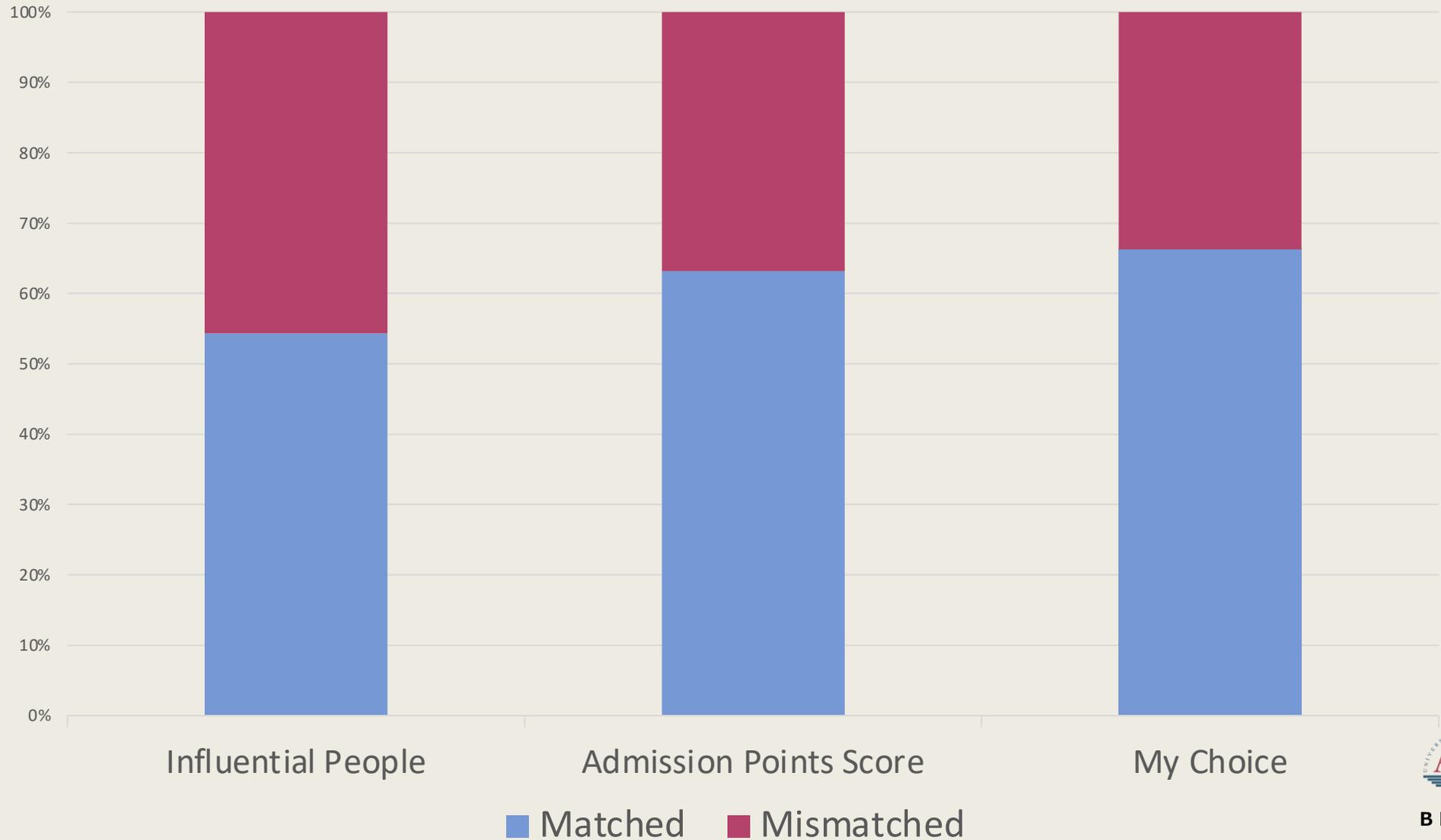
# Data Analysis

## EJM & Factors influencing field of study choice

			APS	IP	Personal choice	Total
EJM	Match	Count	43	19	67	129
		Expected Count	43.0	22.1	63.9	129.0
		% within EJM	33.3%	14.7%	51.9%	100.0%
		% within Factors influencing field of study choice	63.2%	54.3%	66.3%	63.2%
		% of Total	21.1%	9.3%	32.8%	63.2%
	Mismatch	Count	25	16	34	75
		Expected Count	25.0	12.9	37.1	75.0
		% within EJM	33.3%	21.3%	45.3%	100.0%
		% within Factors influencing field of study choice	36.8%	45.7%	33.7%	36.8%
		% of Total	12.3%	7.8%	16.7%	36.8%
Total	Count	68	35	101	204	
	Expected Count	68.0	35.0	101.0	204.0	
	% within EJM	33.3%	17.2%	49.5%	100.0%	
	% within Factors influencing field of study choice	100.0%	100.0%	100.0%	100.0%	
	% of Total	33.3%	17.2%	49.5%	100.0%	
	Asymp. Sig. (2-sided)		.444			

# Data Analysis

## EJM & Factors influencing field of study choice



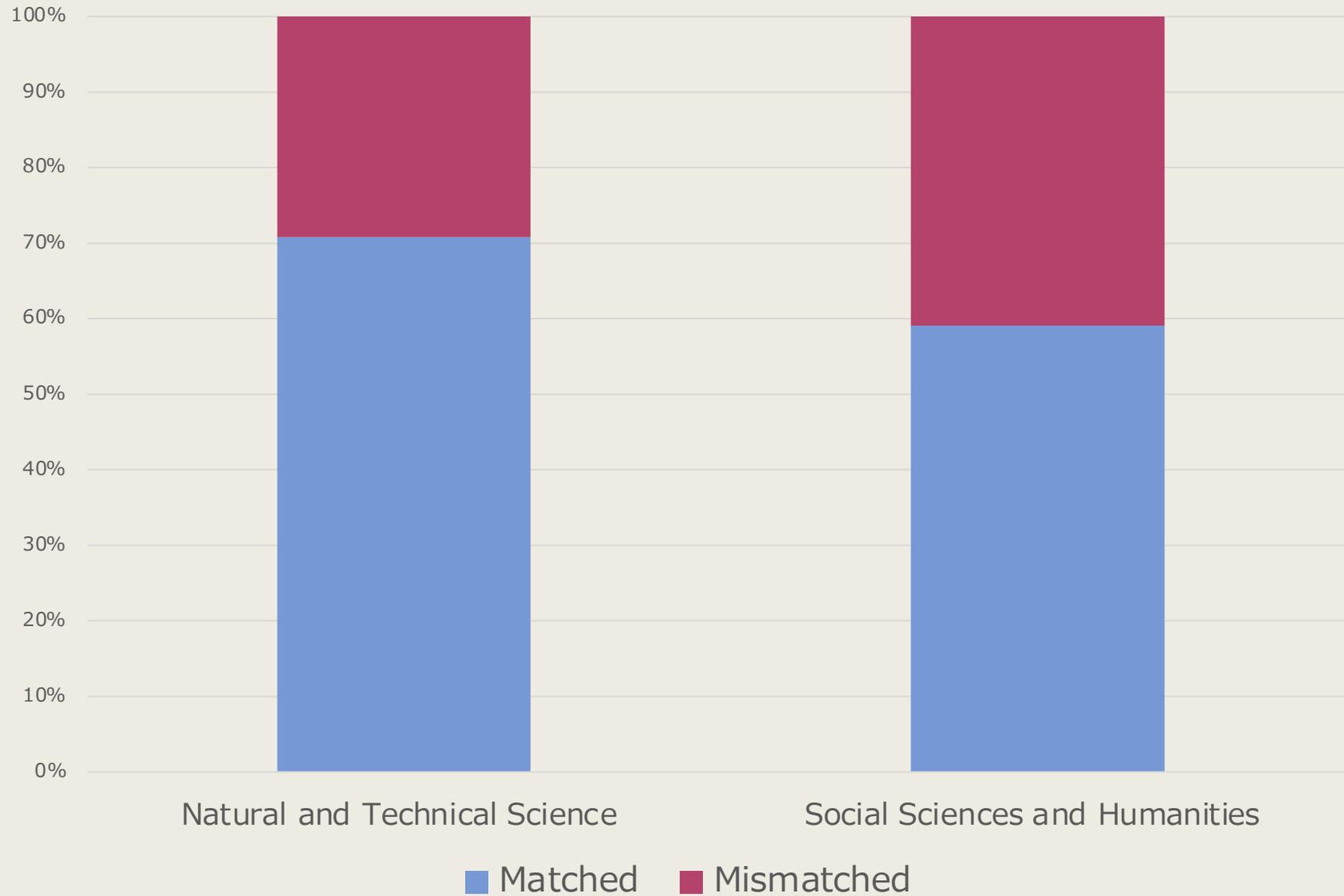
# Data Analysis

## EJM & Field of Study

			NTS	SSH	Total
EJM	Match	Count	51	78	129
		Expected Count	45.5	83.5	129.0
		% within EJM	39.5%	60.5%	100.0%
		% within Field of study	70.8%	59.1%	63.2%
		% of Total	25.0%	38.2%	63.2%
	Mismatch	Count	21	54	75
		Expected Count	26.5	48.5	75.0
		% within EJM	28.0%	72.0%	100.0%
		% within Field of study	29.2%	40.9%	36.8%
		% of Total	10.3%	26.5%	36.8%
Total	Count	72	132	204	
	Expected Count	72.0	132.0	204.0	
	% within EJM	35.3%	64.7%	100.0%	
	% within Field of study	100.0%	100.0%	100.0%	
	% of Total	35.3%	64.7%	100.0%	
		Asymp. Sig. (2-sided)	.096		

# Data Analysis

## EJM & Field of Study



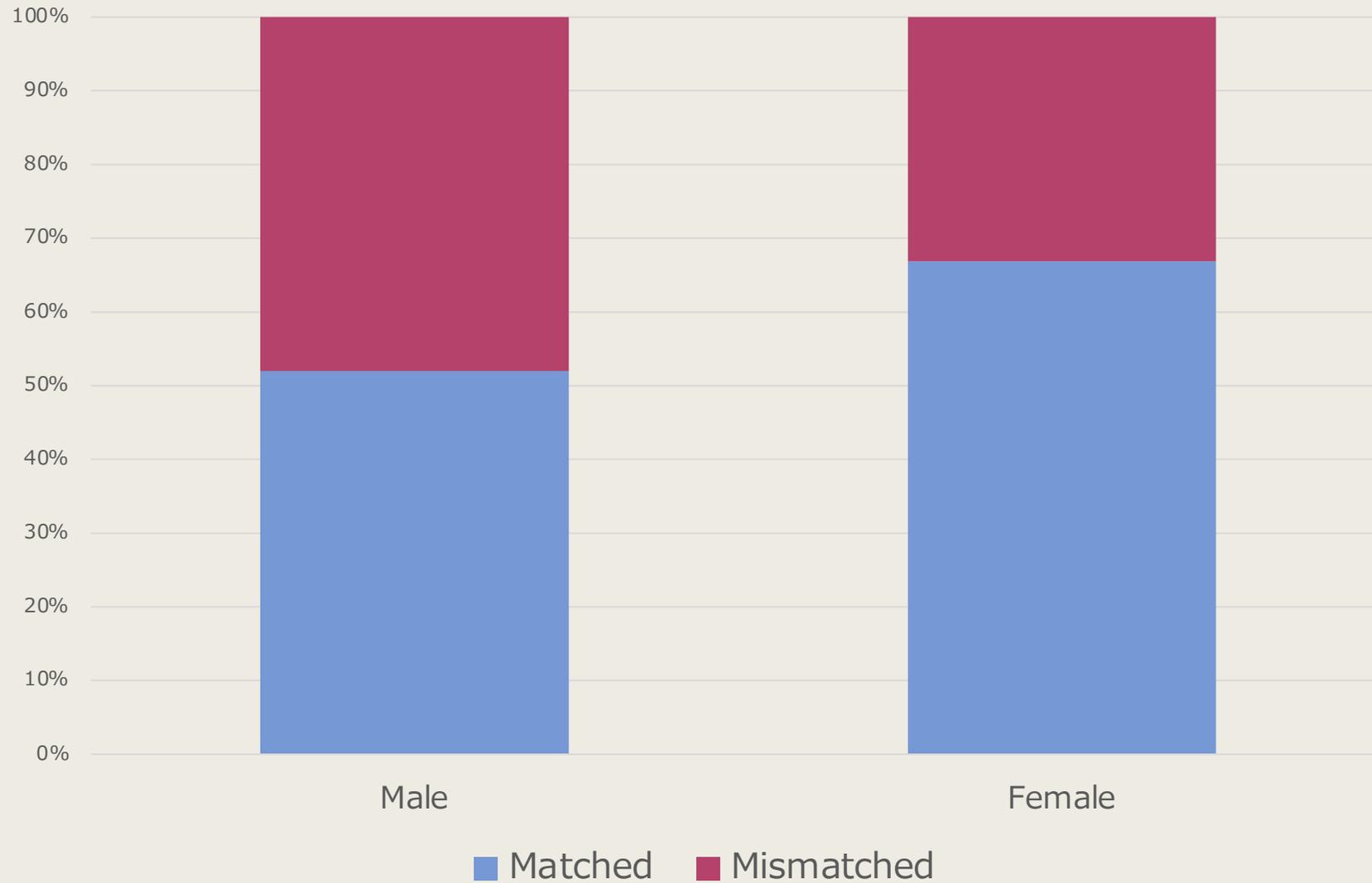
# Data Analysis

## EJM & Gender

			Male	Female	Total
EJM	Match	Count	26	103	129
		Expected Count	31.6	97.4	129.0
		% within EJM	20.2%	79.8%	100.0%
		% within Gender	52.0%	66.9%	63.2%
		% of Total	12.7%	50.5%	63.2%
	Mismatch	Count	24	51	75
		Expected Count	18.4	56.6	75.0
		% within EJM	32.0%	68.0%	100.0%
		% within Gender	48.0%	33.1%	36.8%
		% of Total	11.8%	25.0%	36.8%
Total	Count	50	154	204	
	Expected Count	50.0	154.0	204.0	
	% within EJM	24.5%	75.5%	100.0%	
	% within Gender	100.0%	100.0%	100.0%	
	% of Total	24.5%	75.5%	100.0%	
	Asymp. Sig.(2-sided)	.058			

# Data Analysis

## EJM & Gender



# Key Findings

**H1.** The odds of experiencing job mismatch are 1.5 times higher for individuals who selected a certain specialty due to low admission point scores (APS) compared to those who chose the specialty influenced by someone else.(IP).

**H2.** Graduates of social science and humanities are 2.5 times more likely to experience job mismatches compared to those with a natural or technical education.

**H3.** The third hypothesis of the study was confirmed. Gender balance among individuals who are educationally mismatched with their job was found to be a statistically significant predictor ( $p = 0.05$ ), with male graduates being 3.9 times more likely to be mismatched with their job occupation.

# Recommendations

To coordinate the university specialty **offerings with** labor market **demand** for optimal alignment



# Recommendations

To organize **seminars for parents** of schoolchildren to eliminate external influences on specialty selection.



# Recommendations

Establishing a **school-based career advice center** to support informed career decision-making for students



# Recommendations



Enable students to **explore different fields of study and switch** majors based on genuine interests and aspirations.

# Limitations

- The study has been conducted during the quarantine time, which limited applying face-to-face interview method.
- Selective sample method and small sample size might not be a good representative of the whole country.



Education-Job Mismatch in Azerbaijan:

Exploring the Role of Social, Academic, and Individual Factors

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## Abstract

This study examines the relationship between education-job mismatch and its potential causes in Azerbaijan, aiming to identify possible solutions to address the issue. Adopting a quantitative research approach, the study employed a non-probability sampling method to recruit participants meeting specific criteria, including employees with higher education residing in Azerbaijan at the time of the research. Due to the COVID-19 pandemic, a snowball sampling method was utilized, and an online questionnaire was administered. A total of 204 eligible respondents completed the survey, with 50 males and 154 females. The data analysis reveals a significant association between gender and education-job mismatch, as well as a marginal correlation between graduates' field of education and the likelihood of being mismatched with their job occupation. These findings underscore the need for a re-evaluation of the higher education system in Azerbaijan, with a focus on aligning education and training programs with the demands of the labor market. The implications of this study extend to university students, graduates, job seekers, and employers, offering insights into early career decision-making processes in Azerbaijan.

Keywords: education-job mismatch, higher education system, labor market demands, career choice.

## **Acknowledgements**

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## Introduction

The world's most powerful countries, characterized by stable economic, political, and military power (US News Staff, 2021), have prioritized the development of their economies to a significant extent. In this context, human capital emerges as a crucial factor for sustainable economic growth, surpassing the importance of natural resources and accumulated wealth (Jeffrey D. Sachs, 2014). Many economists argue that the education sector plays a decisive role in shaping human capital (Draganchuk, 2011, pp. 50-54). Enhancing the quality of education within a country is essential for achieving a well-developed economic state.

Interestingly, when examining the Education Rankings by Country 2021 and the THE World University Rankings 2021, it becomes evident that the sequence of countries closely mirrors that of the 2021 Best Countries rankings.

Higher education (HE) plays a vital role in equipping individuals with the necessary skills and knowledge for specific occupations and future employment. However, it is worth highlighting that the level of education alone is not the primary driver of unemployment in Azerbaijan. Surprisingly, a significant majority of the unemployed individuals in 2005, 2010, and 2017 held higher education degrees (57 percent in 2017), while secondary special education accounted for 32 percent, vocational education for 8.3 percent, and secondary education for 2.6 percent (Appendix 1). Additionally, between 2008 and 2018, a considerable number of individuals with higher education (273,000), secondary education (269,000), and vocational education (97,000) were economically inactive (Appendix 2). This high number of economically inactive individuals with higher education can be attributed to the emphasis placed on developing technical infrastructure in the field of education, rather than human development through healthcare, education, and science investments (Valiyev, 2020, p.9).

Furthermore, it is worth noting that the proportion of women in low-paid jobs has increased over the past 12 years, with the education sector witnessing a rise from 69.7 to 73.8 percent and the healthcare sector from 77.4 to 76.5 percent (Appendix 3). These sectors often attract individuals with lower motivation, limited qualifications, or those who are not the primary earners in their families (Valiyev, 2020, p.23).

The U.S. Bureau of Labor Statistics highlights the value of education by stating that "the more you learn, the more you earn" (Torpey, 2018). Higher education contributes to higher productivity, but the competitiveness and job adequacy of graduates are equally crucial. Unfortunately, many higher education graduates lack the necessary skills to be competitive in the job market.

The disparity between the offered and required level or/and type of worker's education for a given job is called education-job mismatch (Stephanie & Peter, 2012, p.106). This problem is one of the major debate themes for researchers studying the relation between education and labor market outcomes and is also relevant in Azerbaijan. 'In 2009, only 23 percent of new high school graduates enrolled in tertiary education, while the remaining 77 percent entered the job market equipped only with purely academic and general knowledge' (Onder, 2013, p.35). There is a mismatch between the skills held by graduates coming out of the professional education establishments and the needs of the economy in Azerbaijan (Appendix 4). There are enough cases when the linkages between education and job are not observed. Based on the results of the STEP Employer Skill Survey conducted in Azerbaijan in 2013, a serious skill shortage was detected, especially concerning technical, cognitive, and socio-behavioral skills, coupled with high employer expectations (Rutkowski, 2015). Mismatch between education or training and the

demand of the market is considered to be one of the biggest challenges to achieving higher employment among young people. Thus, deputy Minister of Education Idris Isayev declared that this mismatch is the major threat to Azerbaijan's future. (Valiyev, 2020, p.20). Analyzing the challenges of economic transformation and job creation in Azerbaijan, as one of the causes of the mismatch between education and job occupation Valiyev pointed to such narrow specialization that does not allow students to change their profile or place of work and hence decreases workforce mobility. To increase their chances of employment, these graduates need to have certain soft skills, along with the core skills that are currently most hunted by employers. (p.21, 2020).

Overall, despite the availability of some data and reports, there is a significant gap in comprehensive research examining the quality of higher education in Azerbaijan in terms of producing readily employable graduates, placement rates, and graduate income trends. Limited research has been conducted in this area, but preliminary information suggests that higher education in Azerbaijan currently falls short of meeting the skill requirements of the labor market (Valiyev, 2020, p.21).

It is evident that the interactions between education and the labor market involve multiple processes and effects that require thorough assessment to ensure education's high responsiveness to job market needs. However, it is important to acknowledge that employment conditions are influenced by various factors, and education should be recognized as a necessary means for acquiring the knowledge and competencies that are potentially relevant to employment and work (Furia, Castagna, Mattoscio, & Scamuffa, 2010, p.1140). Therefore, this study aims to determine the extent to which social, academic, and individual factors impact education-job mismatch in Azerbaijan.

## **Research Questions**

To what extent are graduates who chose a specific specialty under the external pressure are likely to experience job mismatch? How likely are graduates of Social Sciences and Humanities to be mismatched with their job occupation? To what extent does gender influence the occurrence of education-job mismatch?

### Definitions of the Key Terms

Education-job mismatch (EJM) refers to the lack of alignment between the required educational level or field for a given job, with two distinct forms: vertical and horizontal mismatches. Vertical mismatch occurs when the level of education or skills is either below or above the required level, while horizontal mismatch arises when the level of education or skills matches job requirements, but the type of education or skills is not suitable for the specific job.

In this research paper, the focus will be on addressing the issue of horizontal mismatch. The Admission Points Score (APS) refers to the points obtained based on the test rules and procedures determined by the State Exam Center (previously known as TQDK grades until 2016). TQDK grades represent the scores achieved by applicants on the university admission exam conducted by the State Commission for University Admission in Azerbaijan.

The term "Influential People" (IP) encompasses individuals who have played a significant role in shaping a student's choice of major. These influential figures can include family members, friends, teachers, or any role models who have had an impact on the student's decision-making process.

The category of Natural and Technical Sciences (NTS) includes disciplines such as Agriculture, Architecture, Biology, Chemistry, Ecology, Geography, Information Technology, Medicine, and Veterinary. On the other hand, Social Sciences and Humanities (SSH) encompass

fields such as Arts, Economics and Business, Educational Science, History and Archaeology, Languages and Literature, Law, Media and Communications, Philosophy, Ethics and Religion, Political Science, Psychology, and Sociology.

### **Significance of the Study**

The resolution of education-job mismatch (EJM) is crucial for both employers and job seekers in Azerbaijan. Employers require workers with relevant professional knowledge and competencies who can perform their work to high-quality standards. It is evident that employees working outside their field of study lead to decreased productivity, resulting in lower salaries and potentially impacting their mental and psychological well-being.

The long-term lack of alignment between education and job outcomes not only affects the economy of the country by diminishing the quality of services and customer satisfaction but also has implications for the psychological state of the workforce. Moreover, research by Stephanie Premji and Peter Smith suggests that education-job mismatch can influence employees' emotional well-being and increase the risk of work-related injuries (Stephanie et al., 2012). Therefore, this issue holds relevance in both economic and psychological spheres.

In light of addressing this problem, it is worth mentioning the establishment of an organization that plays a vital role in conducting analyses and forecasts to guide decision-making and adapt education and training programs to align with the needs of businesses. The legislative process led to the signing of a decree in July 2019 by the President of the Republic of Azerbaijan, Ilham Aliyev, which created a National Observatory on Labour Market and Social Protection. This observatory, as highlighted by the European Training Foundation on July 17, 2019, contributes significantly to improving the connection between education and the labor market.

## **Review of Literature**

The question of education (mis)match has been a topic of academic debate since the late 1970s and continues to be relevant today, as evidenced by various scholarly works (Allen and Velden, 2001; Dozelan, Hafner, & Melink, 2014; Furia et al., 2010; Jovanovic, 1979; Sam, 2018; Sorensen and Kalleberg, 1981). This field, primarily dominated by economists and sociologists, encompasses several theoretical perspectives, with human capital theory, credentialism, and assignment approaches being prominent among them.

Human capital theory emphasizes the various attributes that individuals possess (such as experience and training) and highlights education as the primary means through which individuals acquire mental skills and capacities. According to this theory, higher education plays a vital role in equipping individuals with the necessary skills to perform complex jobs and increasing their productivity, thereby contributing to sustained economic growth (Walters, 2004).

On the other hand, the credentialism perspective challenges the notion that formal educational credentials have a strong connection to the actual job skills required. Instead, it argues that education serves a socializing function, shaping individuals to fit into appropriate cultural norms and values, rather than solely focusing on teaching job-specific skills (Collins, 1979).

These contrasting perspectives offer different insights into the relationship between education and job outcomes, and they contribute to the ongoing discourse surrounding education-job mismatch. By exploring these theoretical interpretations, researchers aim to gain a deeper understanding of the complex dynamics at play in the labor market and the role of education in shaping individuals' career paths.

Third approach, the assignment theory, builds on the idea that the labor market is composed of jobs and workers with many different skills and experience levels (Sattinger, 1993). This theory

postulates that workers are allocated according to their skills (i.e., education), whereby educational mismatches appear in differences between shares of complex jobs and skilled workers (Allen and van der Velden, 2001), which prefer matching due the elevated perceptions of usefulness, control over their jobs, and better wages (Allen and van der Velden, 2001, Sorensen and Kalleberg, 1981).

### **EJM & Factors influencing field of study choice**

Nadezda Rika, Jana Roze, and Irina Sennikova (2016) conducted a study on the factors influencing prospective students' choice of higher education institutions in Latvia. The research examined various factors, including cultural, social, psychological, and organizational aspects. The findings revealed that a significant portion of the participants did not consider the recommendations of their friends (58%) or the advice of their teachers (73%). However, they did value the advice of their parents (41%), especially if their parents had higher education degrees (48% of the respondents). Parents were seen as a valuable source of experience and acted as role models for the students (Rika et al., 2016, p.426). Another study by Fizer (2013) also highlighted the influence of the family, with 27% of students indicating that family had the most significant impact on their choice of major (p.28).

It is important to note that each year a significant number of applicants are unable to pursue their desired specialty due to insufficient TQDK grades. In light of this observation, it is reasonable to hypothesize that external influences on students' choice of field of study significantly contribute to the issue of education-job mismatch (EJM). Therefore, the following hypothesis is proposed:

H1: External influences on students' field of study choice contribute significantly to the issue of education-job mismatch.

This hypothesis suggests that factors external to the individual, such as the influence of family, friends, teachers, and other societal factors, play a substantial role in shaping students' decisions about their field of study. These external influences may not align with the skill requirements and demands of the labor market, leading to a mismatch between the education received and the job opportunities available.

### **EJM & Field of study**

The degree to which education-job mismatch (EJM) is exhibited varies depending on the graduate's field of education. Numerous studies have indicated that a graduate's field of study is a strong predictor of the likelihood of being overeducated or experiencing horizontal mismatch (Dolton and Silles, 2003; Frenette, 2004; Ghignoni and Verashchagina, 2013). These mismatches are relatively uncommon among individuals in technical fields of study but more prevalent among those with humanities degrees. One possible explanation for this is the lower proportion of graduates opting for technical fields of study compared to humanities in most countries (Oosterbeek and Webbink, 1997).

Examining disciplinary differences across five countries (Italy, Austria, Germany, Slovenia, and Poland), Dozelan et al. found that graduates of sociology and political science exhibited fewer matches compared to graduates from science, mathematics, computing, health, and welfare programs (2014, p.561)

In Azerbaijan, the transition process from educational studies to employment has also become an essential area of investigation concerning the relationship between the higher education (HE) system and the business world. According to Onder, the tertiary education system in Azerbaijan currently produces an excess of specialists in areas such as education, health, and manufacturing, while there are relatively few graduates specializing in the services sector or agriculture (2013, p.35). This situation contributes to education-job mismatch in Azerbaijan. Therefore, the following hypothesis is proposed:

H2: Graduates of Social Sciences and Humanities are more likely to experience job mismatch than graduates of Natural and Technical Sciences.

This hypothesis suggests that graduates from social sciences and humanities disciplines are more prone to experiencing a mismatch between their education and job requirements compared to graduates from natural and technical sciences. This discrepancy may be influenced by factors such as the demand for specific skill sets in the labor market and the distribution of graduates across different fields of study.

### **EJM & Gender**

In the second chapter of his Ph.D. thesis, Dong Hoon Shin investigated the impact of contextual factors, including gender difference, immigrant status, and age, on the likelihood of education-job mismatch. In the context of your study, you would like to focus on the "gender difference" aspect of his thesis. Shin's research findings indicated that women tended to find jobs that required higher levels of literacy skills than they possessed (Shin, 2018, p.45), suggesting a potential gender-related education-job mismatch.

However, another study conducted by Taghizadeh R. examined the relationship between gender and the possibility of education-job mismatches using a Logit model and maximum likelihood estimation. The researcher found no significant relationship between job seekers' gender and the likelihood of education-job mismatches (2018, p.71). This finding suggests that gender may not be a determining factor in education-job mismatch.

Additionally, Dozelan et al. (2014, p.567) discussed the importance of gender balance in organizations as a statistically significant predictor. They found that for each 10 percent increase in the proportion of women in an organization, a graduate is 1.020 times more likely to be overall educationally matched.

Based on the previous research by Dozelan et al. (2014), you expect the following hypothesis:

H3: Men are more likely to experience greater education-job mismatch than women.

This hypothesis suggests that there may be a gender disparity in the degree of education-job mismatch, with men being more prone to experiencing mismatched employment compared to women. However, it is important to note that the findings from different studies may vary, and further investigation is necessary to provide a comprehensive understanding of the relationship between gender and education-job mismatch in Azerbaijan.

## **Methodology**

With the increasing number of graduates and resources devoted to HE on the one hand and persistent graduate unemployment and subsequent mismatch on the other hand, there is a need for studies which examine the graduate labor market in Azerbaijan. This descriptive study is aimed to

define the extent of factors influencing field of study choice and EJM as well as the linkage between this mismatch and graduate`s field of study and gender in Azerbaijan.

The research was guided by the constructivist perspective, which served as the theoretical foundation for our study. The constructivist perspective, as the theoretical foundation of our study, recognizes that individuals actively construct their understanding of the world through their experiences and interactions. In the context of education and employment, this perspective emphasizes the role of personal interpretations, social influences in shaping career choices and outcomes. By adopting the constructivist lens, we aimed to gain insights into how individuals navigate the education-job landscape based on their subjective understandings and societal factors.

The quantitative study adopted a nomothetic approach. This cross-sectional study design allows looking at the different variables (factors affecting field of study choice, employees` field of study, gender) at the same time in relation to EJM.

In the current study the non-probability sampling was applied to recruit participants according to preselected criteria, such as employees with HE and job, who lived in Azerbaijan at the time of the research. For the purpose of this research the data was collected from the both: matched and mismatched workers. Due to COVID-19 pandemic snowball sampling method was applied and online questionnaire was used. Overall, 204 respondents eligible for this research participated in the survey.

### **Instrumentation**

The survey questionnaire used in this study collects information about the participants' higher education specialization and current occupation, enabling an objective assessment of the relationship between their field of study and their job.

The questionnaire is designed to gather data on the factors that influence individuals' choice of field of study. Specifically, the study focuses on influential people and admission points as potential factors affecting the decision-making process.

Additionally, the questionnaire gathers data on respondents' field of education, allowing for the categorization of participants into two groups: graduates with natural and technical fields of study, and those with social science and humanities degrees.

Furthermore, the questionnaire includes personal information about respondents, such as gender and age, which may provide valuable insights for the analysis.

The questionnaire design has been carefully developed to address specific and relevant aspects of the education-job mismatch issue in Azerbaijan, ensuring the validity and reliability of the collected data.

Data collection for this study involved an online self-reported survey administered to the workforce with higher education in Azerbaijan. The survey was conducted between May and July 2020, and respondents provided their responses during that period.

### **Data Analysis and Findings**

The data presented in this paper are the result of the survey which was completed during the Covid-19 pandemic in 2020 by the workers with higher education. The respondents are grouped into two categories: matched and mismatched using our assessment regarding the correspondence of the respondents' fields of education to their current job occupations (see Table 1).

**Table 1.** Descriptive statistics of key study variables.

VARIABLES			(VP)	(CP)	M	(SD)
EJM	Valid	Match	63.2	63.2	1.37	.483
		Mismatch	36.8	100.0		
Factors influencing field of study choice	Valid	APS	33.3	33.3	2.16	.898
		IP	17.2	50.5		
		My choice	49.5	100.0		
Field of study	Valid	NTS	35.3	35.3	1.65	.479
		SSH	64.7	100.0		
Gender	Valid	Male	24.5	24.5	1.75	.431
		Female	75.5	100.0		

*Note:* n=204

In this study, we defined matched graduates as those who have a higher education specialization that aligns with their job occupation, while the mismatched group includes those who have a specialization that does not correspond to their job.

To examine the relationship between variables and work with categorical data, we conducted cross-tabulation analysis and utilized the Chi-Square Test. These statistical analyses were performed using IBM SPSS Statistics software, which is a commonly used tool for data analysis in research.

By employing cross-tabulation and the Chi-Square Test, we aimed to determine the association between the graduates' field of study and their job occupation, providing insights into the extent of education-job mismatch in Azerbaijan. These analyses allow us to identify any significant relationships or differences between the variables of interest and draw meaningful conclusions from the data.

In this study we intend to consider the ratio of certain indicators among matched and mismatched groups, which assumed almost the same number of representatives of these groups. However, it should be noted that more than half of the sample, precisely 63.2 percent, are people whose jobs correspond to their specialties. The situation is almost the same with the gender composition of

the sample; the number of women exceeds that of men three times. The main hypotheses of the study and a brief overview of the data obtained from the research are presented below.

*Hypothesis 1.* External influences on students' field of study choice contribute significantly to the issue of education-job mismatch.

Table 2 presents the distribution of matched and mismatched groups among the total employed respondents for each of the studied factors that influenced the graduates' choices of study field. Below are the percentages for the key variables related to H1:

To assess the significance of the relationship between the factors influencing the choice of a specialty and the problem of inappropriateness of the chosen specialty to the job, we conducted the Chi-Square Test. The results indicate that the relationship between these factors is statistically insignificant ( $p > 0.05$ ). This finding contradicts the hypothesis stated above, suggesting that the factors studied do not significantly contribute to the issue of education-job mismatch.

It is important to note that the insignificance of the relationship does not necessarily imply that the factors have no influence on the problem. Other variables or factors not included in this study might play a significant role, and further research is needed to explore additional factors that could contribute to education-job mismatch in Azerbaijan.

**Table 2.** Education-Job Mismatch & Factors Influencing Field of Study Choice

			APS	IP	My choice	Total
EJM	Match	Count	43	19	67	129
		Expected Count	43.0	22.1	63.9	129.0
		% within EJM	33.3%	14.7%	51.9%	100.0%
		% within Factors influencing field of study choice	63.2%	54.3%	66.3%	63.2%
		% of Total	21.1%	9.3%	32.8%	63.2%
	Mismatch	Count	25	16	34	75
		Expected Count	25.0	12.9	37.1	75.0
		% within EJM	33.3%	21.3%	45.3%	100.0%
		% within Factors influencing field of study choice	36.8%	45.7%	33.7%	36.8%
		% of Total	12.3%	7.8%	16.7%	36.8%
Total	Count	68	35	101	204	
	Expected Count	68.0	35.0	101.0	204.0	
	% within EJM	33.3%	17.2%	49.5%	100.0%	
	% within Factors influencing field of study choice	100.0%	100.0%	100.0%	100.0%	
	% of Total	33.3%	17.2%	49.5%	100.0%	
Asymp. Sig. (2-sided)					.444	

Based on the Table 2, we observe that the odds of being mismatched are 1.5 times greater for those who studied in a certain specialty due to lack of admission point scores (APS) in comparison with those who chose the specialty under another person`s influence (IP). In addition, it should be noted that the main components of both matched and mismatched groups are those who chose and entered a particular specialty at their own will (My choice).

*Hypothesis 2.* Graduates of Social Sciences and Humanities are more likely to experience job mismatch than graduates of Natural and Technical Sciences.

Table 3 indicates the data on the ratio of mismatch among Natural and Technical Science (NTS) and Social Sciences and Humanities (SSH) graduates, respectively. When looking at the table below, it is observed that there is not statistically significant relation across an employee's field of study and current job occupation ( $p>0.05$ ).

**Table 3.** Education-Job Mismatch & Field of Study

			NTS	SSH	Total
EJM	Match	Count	51	78	129
		Expected Count	45.5	83.5	129.0
		% within EJM	39.5%	60.5%	100.0%
		% within Field of study	70.8%	59.1%	63.2%
		% of Total	25.0%	38.2%	63.2%
	Mismatch	Count	21	54	75
		Expected Count	26.5	48.5	75.0
		% within EJM	28.0%	72.0%	100.0%
		% within Field of study	29.2%	40.9%	36.8%
		% of Total	10.3%	26.5%	36.8%
Total	Count	72	132	204	
	Expected Count	72.0	132.0	204.0	
	% within EJM	35.3%	64.7%	100.0%	
	% within Field of study	100.0%	100.0%	100.0%	
	% of Total	35.3%	64.7%	100.0%	
			Asymp. Sig. (2-sided)		.096

The results of our study reveal that among the educationally mismatched workforce, only 28% are individuals with degrees in fields such as medicine, science, mathematics, and computing (NTS). On the other hand, graduates with social science and humanities degrees are 2.5 times more likely to experience education-job mismatch compared to those with degrees in natural or technical studies. This finding suggests that there is a higher prevalence of mismatched employment outcomes among individuals with social science and humanities backgrounds, highlighting the

need to address this issue and promote better alignment between education and job opportunities in these fields.

*Hypothesis 3.* Men are more likely to experience greater education-job mismatch than women.

The third hypothesis of the study was confirmed based on the results presented in Table 4. The analysis showed that gender balance is a statistically significant predictor ( $p = 0.05$ ) of education-job mismatch. Specifically, female graduates are 3.9 times more likely to be matched with their job occupation compared to male graduates. This finding highlights the importance of considering gender in addressing the issue of education-job mismatch and promoting gender equality in the labor market.

**Table 4.** Education-Job Mismatch & Gender

			Male	Female	Total
EJM	Match	Count	26	103	129
		Expected Count	31.6	97.4	129.0
		% within EJM	20.2%	79.8%	100.0%
		% within Gender	52.0%	66.9%	63.2%
		% of Total	12.7%	50.5%	63.2%
	Mismatch	Count	24	51	75
		Expected Count	18.4	56.6	75.0
		% within EJM	32.0%	68.0%	100.0%
		% within Gender	48.0%	33.1%	36.8%
		% of Total	11.8%	25.0%	36.8%
Total	Count	50	154	204	
	Expected Count	50.0	154.0	204.0	
	% within EJM	24.5%	75.5%	100.0%	
	% within Gender	100.0%	100.0%	100.0%	
	% of Total	24.5%	75.5%	100.0%	
	Asymp. Sig.(2-sided)		.058		

## **Discussion**

This study aims to investigate the impact of academic, individual, and social factors on the occurrence of education-job mismatch in Azerbaijan. Throughout this research paper, the term "mismatch" specifically refers to horizontal mismatch, which occurs when the type or field of education or skills is inappropriate for the current job. All participants in the survey provided information about their fields of education and current job occupations, allowing us to determine the presence or absence of a mismatch. Based on this, participants were divided into two groups: matched and mismatched individuals.

To examine the relationship between certain factors and this problem, we compared the prevalence of these factors in both groups. It was essential to have a comparable number of matched and mismatched individuals in order to conduct the analysis effectively. However, the sample imbalance had a negative impact on the analysis results, which could potentially explain the non-confirmation of the main research hypotheses.

This article contributes to the existing literature by focusing on several aspects of the education-job mismatch phenomenon. As highlighted in the literature review, there are numerous factors associated with this issue. In this study, we specifically examined factors related to field-of-study choice, field-of-study itself, and gender as potential contributors to education-job mismatch.

In terms of factors influencing the choice of a specialty, our study specifically focused on admission points score (APS) and people's influence (IP). We categorized the respondents into different groups based on their experiences: those who were unable to enroll in their desired specialties due to admission score thresholds and had to choose alternative options based on their

earned points, those who selected their specialties under the influence of others (such as parents, friends, or teachers), and those who were fortunate enough to enter their desired specialties (referred to as "My choice" group).

Analyzing our data, we found that the majority of both the matched and mismatched groups belonged to the "My choice" category. However, when comparing the percentages of the remaining two groups, we observed that the percentage of APS indicators remained relatively constant for both the matched and mismatched groups. On the other hand, the percentage for the IP factor increased from 14.7% to 21.3% among the mismatched workers.

Although previous research by Darren Fizer suggests a relationship between factors influencing the choice of a major, particularly highlighting the significant influence of family (2013, p.28), our study did not find any statistically significant relationship between these factors and the research problem of education-job mismatch.

To contextualize the research problem within the study field, we categorized the respondents into two groups: graduates from natural and technical sciences and graduates with social science and humanities degrees. Previous research studies (Dolton and Silles, 2003; Frenette, 2004; Ghignoni and Verashchagina, 2013) have suggested that the field of study is a strong predictor of vertical or horizontal mismatch. However, contrary to our initial expectations, the statistical analysis of the collected data did not reveal any significant relationship between these groups of graduates and their match or mismatch with their occupations.

Nevertheless, our findings align with the results of the aforementioned researchers. We discovered that science, mathematics, and computing graduates, as well as health and welfare graduates, exhibited a lower level of education-job mismatch in comparison to graduates from

humanities and arts disciplines. These results emphasize the importance of considering the field of study when examining the occurrence of education-job mismatch.

It is worth noting that while our study did not find a significant relationship between specific study fields and education-job mismatch, further investigation and analysis in this area may shed more light on the complexities of this issue.

Regarding gender balance among mismatched graduates our findings coincide with the results of Dozelan, Hafner&Melink (2014). According to our inference, gender has statistically significant impact on education-job mismatch issue since for male graduates the odds of being mismatched are considerably higher than for females.

### **Conclusions, Recommendations and Limitations.**

Based on the research findings, a significant association between gender and the education-job mismatch problem has been established. Additionally, there is a moderate relationship between the graduate's field of education and the mismatch issue.

When examining the factors influencing the choice of a specialty, it becomes evident that external influences play a role in the decision-making process. This may be attributed to a lack of awareness among applicants regarding different specialties and professions. To address this, we propose conducting conversations with schoolchildren to emphasize the importance of selecting the right specialties and providing them with information about various professions. Such initiatives can assist future students in making informed decisions about their desired career paths.

Moreover, we suggest dividing X and XI grade students into specific subject-focused groups and offering specialized subjects to enhance their preparation for university admissions. This approach can contribute to improved results during the admissions process and help mitigate the issue of insufficient admission scores.

The high probability of mismatches among social science and humanities graduates can be attributed to various reasons. One significant factor is the mismatch between the chosen field of study and the demands of the labor market. To address this issue, potential measures could include implementing differentiated tuition fees for different specialties, incentivizing graduates to choose subjects that are in high demand in the labor market. Additionally, it is crucial to provide potential students with comprehensive information about job prospects and earnings associated with different degree subjects. Furthermore, a coordinated and harmonized approach should be adopted to align the education sector with the needs of the labor market.

It is important to acknowledge that the study was conducted during the Covid-19 quarantine period, which prevented the use of face-to-face interviews. This limitation affected the study's attendance and the ability to accurately assess the influence of various factors on respondents' choices of specialty and job. Additionally, the selective sample size may not be fully representative of the entire country, and the unbalanced sample composition could have had a negative impact on the study results. Furthermore, some employees may have been hesitant to provide accurate responses, introducing the possibility of leniency or bias in their answers.

These limitations should be taken into consideration when interpreting the study's findings. Future research should aim to employ diverse data collection methods and ensure a more representative sample to enhance the generalizability and validity of the results.

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## Appendix 1.

Distribution of Number of Persons Received Unemployment Status by Sex and Age Groups (%) (cited from Valiyev, 2020, p.52)

Unemployed	Total	Including by age groups				
		15-19 years	20-24 years	25-29 years	Pre-pension ages	Other persons at working age
2005	100	0.4	17.3	30.0*	3.2	49.1
2010	100	0.6	14.5	33.3	2.4	49.2
2013	100	0.7	15.1	33.0	2.0	49.2
2014	100	0.5	13.5	35.1	0.8	50.1
2015	100	0.4	12.8	34.9	0.9	51.0
2016	100	0.3	11.4	33.9	0.7	53.7
2017	100	0.3	9.3	31.6	0.7	58.1
<b>Men</b>						
2005	100	0.4	16.4	28.5*	2.9	51.8
2010	100	0.7	14.1	36.2	1.8	47.2
2013	100	0.6	13.9	35.8	1.4	48.3
2014	100	0.5	13.6	37.7	0.4	47.8
2015	100	0.4	12.9	37.4	0.5	48.8
2016	100	0.3	11.5	35.3	0.4	52.5
2017	100	0.3	8.7	32.8	0.5	57.7
<b>Women</b>						
2005	100	0.3	18.1	31.5*	3.5	46.6
2010	100	0.5	15.1	29.6	3.1	51.7
2013	100	0.7	17.0	28.9	3.0	50.4
2014	100	0.5	13.5	31.0	1.3	53.7
2015	100	0.4	12.7	30.8	1.6	54.5
2016	100	0.3	11.3	31.5	1.2	55.7
2017	100	0.3	10.4	29.5	1.1	58.7

Sources: The State Statistical Committee of Azerbaijan Republic. Labor Market. Unemployment.

<https://www.stat.gov.az/source/labour/?lang=en>

## Appendix 2

Distribution of Economically Active and Economically Non-Active Population by Residence and Gender in 2017. (cited from Valiyev, 2020, p.54)

Gender	Economically active population, thsd. person	Including		Economically non-active population, thsd. person	Employment rate, in per cent	Unemployment rate, in per cent
		Employed persons	Unemployed persons			
<b>Urban and rural areas</b>						
Total	5 073.8	4 822.1	251.7	2 147.8	62.9	5.0
Men	2 609.0	2 502.8	106.2	733.9	66.9	4.1
Women	2 464.8	2 319.3	145.5	1 413.9	59.2	5.9
<b>Urban areas</b>						
Total	2 581.8	2 429.0	152.8	1 175.3	58.8	5.9
Men	1 328.1	1 262.2	65.9	336.6	63.0	5.0
Women	1 253.7	1 166.8	86.9	838.7	54.8	6.9
<b>Rural areas</b>						
Total	2 492.0	2 393.1	98.9	972.5	67.8	4.0
Men	1 280.9	1 240.6	40.3	397.3	71.3	3.1
Women	1 211.1	1 152.5	58.6	575.2	64.3	4.8

Sources: The State Statistical Committee of Azerbaijan Republic. Labor Market. Unemployment.

<https://www.stat.gov.az/source/labour/?lang=en>

### Appendix 3.

Share of Women in General Quantity of Employees by Economic Activities (cited from Valiyev, 2020, p.47)

Economic activity	2005	2010	2013	2014	2015	2016	2017
On economy, total	45.6	43.1	42.0	41.8	41.2	41.3	41.1
Agriculture, forestry and fishing	17.9	18.9	22.6	22.3	21.0	20.7	21.5
Mining	17.5	12.4	13.0	13.5	13.2	13.3	13.8
Manufacturing	31.8	28.3	25.1	24.4	23.5	23.6	27.8
Electricity, gas and steam production, distribution and supply	17.6	14.2	14.8	15.1	14.5	11.8	11.3
Water supply; waste treatment and disposal	38.7	36.3	34.5	34.8	33.3	32.1	31.8
Construction	8.4	7.3	6.5	6.6	7.5	7.2	7.1
Trade; repair of transport means	35.8	31.3	32.7	29.0	24.9	24.6	24.6
Transportation and storage	21.9	17.9	18.4	18.8	17.8	16.9	17.4
Accommodation and food service activities	34.0	27.3	23.8	29.6	30.7	30.5	30.8
Information and communication	34.5	33.3	32.1	31.1	29.7	31.1	30.8
Financial and insurance activities	36.6	34.6	33.4	32.9	32.9	33.2	33.9
Real estate activities	44.3	51.1	45.5	45.1	44.2	42.1	40.6

Professional, scientific and technical activities	39.4	39.1	44.7	40.5	44.6	45.8	45.1
Administrative and support service activities	39.7	29.6	23.3	24.2	27.1	29.0	29.9
Public administration and defence; social security	31.0	29.1	28.7	29.3	30.5	28.7	27.6
Education	69.7	67.7	70.9	72.2	71.4	73.3	73.8
Human health and social work activities	77.4	76.5	78.3	79.4	76.6	77.0	76.5
Art, entertainment and recreation	65.7	64.1	62.8	63.2	63.6	62.5	63.1
Other service activities	35.4	33.6	28.6	29.5	30.9	32.5	34.2

**Sources: The State Statistical Committee of Azerbaijan Republic. Labor Market. Employment.**

<https://www.stat.gov.az/source/labour/?lang=en>

#### Appendix 4

Skills of Graduates versus the Structure of Employment (2009) (cited from Onder, 2013, p.35)

Economic activity	Secondary specialized education (%)	Higher education (%)	Structure of employment (%)
Total	100	100	100
Industry and construction	21.2	22.5	13.0
Transport and communication	3.4	3.8	5.1
Agriculture	8.2	1.9	38.1
Economics	7.5	15.3	0.0
Health and sports	15.8	7.6	4.7
Education	34.2	45.4	8.5
Art and cinematography	9.6	3.7	0.0
Other (services)	-	-	30.6

**Source:** SSC

*Note:* – = not available