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INTERNATIONAL EXPERTISE IN ANALYZING LABOR UTILIZATION PROCESSES THROUGH STATISTICAL METHODS

Yusupov Farxod Adamboyevich[1]
[1]*Researcher of Institute for Staff Advanced Training and Statistical Research, Tashkent, Uzbekistan*

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This article explores the use of statistical methods for effective labor force utilization and labor market management in Uzbekistan, based on the experience of foreign countries. The article analyzes the key methods employed in the USA, Canada, European Union countries, and South American nations, such as regression analysis, panel data analysis, correlation analysis, and SWOT analysis. It examines their effectiveness and impact on labor market management. These foreign practices can be useful for analyzing Uzbekistan's labor market, improving employment policies, and making better use of labor resources.

KEYWORDS: ***Labor Force, Labor Market Management, Regression Analysis, Panel Data Analysis, Correlation Analysis, SWOT Analysis, Employment Policies, Labor Resources, Economic Activity, Statistical Methods.***

Statistical analysis methods used abroad, especially regression analysis, correlation analysis, panel data analysis and SWOT analysis, provide opportunities for accurate and scientifically based assessment of the state of the labor market. For example, in the European Union countries and the United States, structural changes in the labor force, a decrease in the unemployment rate and the quality of jobs are analyzed. Through these analyses, governments make decisions aimed at optimizing their policies and eliminating problems in the labor market.

Statistical analysis of the use of labor resources is also important for the Republic of Uzbekistan, and it is of great importance to study foreign experiences and adapt them to the country's economy and labor market. Approaches, methodologies and analytical methods derived from foreign experience serve as an important tool in improving Uzbekistan's labor policy .

Foreign experience shows that the effective use of statistical analysis in changing socio-economic conditions allows governments to effectively allocate labor resources and maximize the potential of the workforce. For example, in Scandinavian countries such as Sweden and Norway, extensive education and retraining programs have been established to attract young and skilled workers to the workforce. In the United States and Canada, employment policies have been developed based on the analysis of labor migration and the movement of labor resources domestically and internationally.

In Uzbekistan, statistical analyses of labor market developments and the application of new approaches based on foreign experience can be an effective tool, especially in increasing youth employment, creating a skilled workforce, and reducing unemployment. Foreign experience is expected to help Uzbekistan implement scientifically based approaches to further improve labor policy, create new jobs, and strengthen its approach to employment.

LITERATURE ANALYSIS

In recent years, a number of large-scale studies and scientific works have been carried out abroad to analyze the processes of labor utilization. Research in this area, especially in the case of the European Union, the United States, Canada, and Scandinavian countries, shows the importance of using statistical and analytical methods for effective labor market management.

Research by Heckman, JJ (2000) has successfully applied panel data analysis to assess the allocation of labor resources. In his work “The Economics of Human Capital and Labor Markets,” Heckman explains how to use statistical models to study the composition of the labor force and its skill levels. He demonstrates the relationship between the educational level of the labor force and the availability of jobs using panel data analysis. His work has been the basis for labor market management strategies not only in the United States but also in other developed countries [1] .

Blanchard, O. and Katz, LF (1999) in their work “What We Know About Labor Markets” analyzed labor force mobility in

the United States and European countries. They showed, using regression analysis, how labor force migration and labor market movements, as well as changes in employment and unemployment rates, are related to economic growth. Blanchard and Katz's work is particularly widely used in analyzing the relationship between economic growth and labor force potential [2] .

Nickell, S. (2003) has examined the characteristics of the British labour market and ways to improve the efficiency of its use . In his book The Economics of Labour Markets, he analyses the efficient allocation of labour and employment policy. Nickell draws on the methods used to shape the British labour market and shows what statistical methods the government should use to analyse the labour force. He also uses correlation analysis to establish the relationship between labour migration and the labour market [3] The OECD (2018) Employment Outlook provides an overview of the labour force and employment rates in the European Union. It proposes a number of statistical methods to improve the efficiency of labour use and social protection systems. The OECD report focuses on the relationship between annual changes in labour force participation and economic activity using regression analysis. The analysis of the labour market in European countries provides key approaches to the efficient use of labour resources [4] .

Card, D., Kluve, J., and Weber, A. (2010) used regression analysis to analyze the effectiveness of labor market management programs. In their paper “What Works? A Meta-Analysis of Recent Active Labor Market Program Evaluations,” they examined the effectiveness of active labor market programs using statistical analysis. The study also analyzed the relationship between labor force skills and factors affecting labor market entry using correlation analysis. This work is particularly widely used in evaluating the effectiveness of employment programs [5] .

Schmillen, A. (2014) in his work “Labor Market Trends in the European Union” analyzes labor force changes and labor market development trends in the European Union countries. Using statistical methods, Schmillen identifies the factors affecting the efficient allocation of labor resources and changes in the employment rate. His work provides a basis for making recommendations, in particular, on improving labor resource management and employment policies [6] .

Local from scientists N.Ibragimova at work , especially women employment issue statistic analysis It is done . It is done . in the study correlational analysis support , women employment with economic growth between dependency to study attention As a result , in Uzbekistan women between to work location level around 55% that and this indicator economic to grow obstacle what is doing Also , women for labor market conditions improve the necessity noted [7] .

Another one scientist , R.Sadikov in search of youth employment and qualification increase of programs efficiency analysis In the study youth for work places of creation statistic analysis and qualification increase of programs impact studied . Regression analysis using worker of strength youth by the most much needed industries determined . Results according to , qualified the youth to work placement programs high efficiency indicated , but territorial imbalance and labor in the market additional work places create necessity confession [8]

METHODOLOGY

Statistical methods are important in analyzing the processes of effective use of labor. In particular, the use of various analytical methods in the study of labor resources and employment levels allows for accurate and precise analysis of data. Methods used in the study, including regression analysis, correlation analysis, panel data analysis, and SWOT analysis, are effective tools for assessing labor efficiency.

Statistical analysis techniques, especially descriptive statistics and analytical statistics, help in assessing and analyzing the overall state of the data. Through these methods, data on the labor force and employment levels are collected, analyzed, and current trends and changes are identified. The analysis process also provides an overall picture of the dynamics of change and the formation of the data.

Regression analysis is one of the main methods used to study the relationships in labor utilization processes. This method is used to forecast changes in labor resources and economic activity. Regression analysis is used, for example, to identify factors that affect changes in the employment rate (labor migration, educational level, industrial development). Multivariate regression analysis allows you to assess complex relationships between various factors and their impact on labor force potential.

Correlation analysis is used to determine the degree of relationship between different statistical variables. For example, correlation analysis is used to study the relationship between labor resources and economic activity, employment and educational level among young people. The correlation coefficient can be used to assess the relationship between the skill level of the labor force and the employment rate, as well as the relationship between the labor force and economic growth.

Panel data analysis is a method used to study the labor market of a region or country over time. This analysis allows you to analyze changes in the labor force and employment levels in several regions or countries at the same time. Panel data analysis helps to show how labor resources change and economic activity develops over time. This method is especially useful for analyzing long-term changes and trends.

SWOT analysis is a strategic analysis method that analyzes the strengths and weaknesses, opportunities and threats of a system. SWOT analysis identifies internal and external problems of the existing system in order to manage the labor market and effectively use the workforce.

These methods allow analyzing the state of the labor market, assessing the effectiveness of employment policies, and identifying problems in the processes of labor utilization. Regression and correlation analyses identify the relationships between changes and factors in the labor market, which helps in making strategic decisions. Panel data analysis provides long-term analysis and shows trends in the development of

labor resources and employment levels. SWOT analysis identifies weaknesses and strengths in the labor market, allowing for further improvement of policies.

At the same time, all of these methods together contribute to the improvement of the labor market and the successful management of the processes of effective use of labor.

DISCUSSION AND RESULTS

In recent years, significant research and practical work has been carried out in the Republic of Uzbekistan and other foreign countries on the effective use of labor. In particular, information from foreign experience has been used to analyze the labor market and create effective approaches to maximize the use of labor potential.

In Uzbekistan, a number of important works have been carried out in recent years on labor market management and effective use of labor. During 2024, statistical analysis methods were actively used in analyzing the employment and labor market of Uzbekistan. In this regard, the impact of employment rates, changes in labor force potential, and the level of professional qualifications and education on the labor market was widely studied. In the report published by the Ministry of Poverty Reduction and Employment of the Republic of Uzbekistan in 2024, the country's employment rate and the effectiveness of job creation were studied. Also, based on statistical data provided by the National Statistics Committee of the Republic of Uzbekistan in 2024, regression analysis and panel data analysis were used to identify the relationships between changes in labor resources and the level of economic activity.

The use of foreign experience shows that, in particular, in developed countries such as Sweden, Norway and the USA, labor market management is effectively managed. For example, in Sweden, extensive statistical analysis methods are used to manage the labor market. Studies conducted by the OECD and the Organization for Economic Cooperation and Development show the effective use of correlation analysis methods for labor market analysis and forecasting the use of labor resources. In developed European countries, large-scale studies have also been conducted using regression analysis and panel data analysis to determine the relationship between employment rates and labor migration.

Foreign experience is of great importance for Uzbekistan and can be used in the implementation of effective methods of labor market management. In particular, it is necessary to develop programs aimed at increasing youth employment and women's participation and analyze them on a scientific basis. The work carried out by the Ministry of Labor and Social Protection in 2024, the development of digital systems for youth and women's employment, will play an important role in increasing employment and improving the distribution of labor resources.

In the European Union, extensive panel data analysis is used for labor market analysis. Studies conducted by Eurostat (the statistical office of the European Union) successfully use regression and panel data analysis to analyze the state and trends of the labor market. In countries such as Sweden, Norway, and Finland, longitudinal data (long-term) are used to analyze the skills of the labor force, the quality of jobs, and the movement of the labor force for scientific analysis of the labor market.

For example, in the analysis of the labor market in Sweden, the relationship between economic growth and employment was determined through panel data analysis. In Sweden, regression analysis is used to determine the relationship between the skills of the workforce and its economic efficiency. As a result, it was found that a skilled workforce has a positive effect on increasing the level of economic activity.

Statistical methods of labor force utilization analysis in European countries are one of the main tools for managing the labor market of each country and maximizing the mobilization of labor force potential. Statistical methods are widely used in the European Union countries to study the relationship between labor resources and employment levels, to assess the number of working-age population and the level of economic activity. The countries listed in the table show how various statistical methods of analysis have been used for effective labor market management and how their effectiveness has affected the improvement of the labor market situation in each country.

Table 1
Statistical analysis methods and their effectiveness in labor utilization in European countries [9]

Europe State	Used statistic analysis methods	Efficiency (%)	Note
Sweden	Panel data analysis , regression analysis	85%	Labor in the market actions and qualification level between dependency analysis was done
Norway	Correlational analysis , regression analysis	80%	Employment level and economic growth between correlation observed .
Finland	Panel data analysis , correlation analysis	78%	Labor resources and employment between mutual connections was evaluated .
Great Britain	Correlational analysis , regression analysis , SWOT analysis	82%	SWOT analysis using labor market strong and weak sides determined .
France	Panel data analysis , correlation analysis	75%	Employment increase for new labor places create predicted .
Spain	Regression analysis , SWOT analysis	70%	Labor in the market changes and qualified worker of strength impact analysis was done .
Germany	Regression analysis , panel data analysis , correlation	88%	Worker of strength qualified to be and economic efficiency between dependency studied .

Europe countries worker from the strength use processes analysis in doing statistic from methods successful using see possible . Sweden , Norway , Germany such as countries labor resources in management high efficiency Panel data analysis , regression analysis , correlation analysis and SWOT analysis such as methods worker of strength effective distribution ,

qualification increase and work their places in creation important role plays .

With this together, Spain , France and Italy such as in countries some in the regions used of methods efficiency relatively low , this analysis methods complete and effective done increase for additional research and political requires reforms . This is also the case in Uzbekistan. methods use , labor market management and worker from the strength use efficiency increase for important factor will be .

In the United States, the impact of labor migration has also been determined using statistical analysis. How migration affects the labor market and the skills of the workforce has been studied using correlation analysis. This, in turn, plays an important role in improving labor policies, creating jobs, and developing skills development programs.

Panel data analysis and SWOT analysis are widely used to analyze the labor market in Canada. The Canadian government analyzed the effective allocation of labor and the availability of jobs within the framework of the Employment Insurance Program in 2024. Using SWOT analysis, the strengths and weaknesses, opportunities and threats of the system were identified. As a result, the issue of the suitability of the labor force for the skills and professions was noted as the main weakness. Regression analysis was used to measure the effectiveness of placing qualified workers in jobs.

In Canada, correlational analysis has been used to examine changes in the labor force participation of youth and women.

The results suggest that strategies to increase youth and women's employment, particularly skills development and vocational training, are needed.

Research on labour force utilization in Australia has been largely based on longitudinal data and statistical forecasting techniques. Reports issued by the Australian Bureau of Statistics provide statistical information on the composition of the labour force, the distribution of labour resources and job creation. In the analysis of the Australian labour market, the relationship between economic growth and the labour force has been studied through panel data analysis.

In Australia, regression analysis was also used to examine how the labor market is related to demographic changes. It was found that changes in labor resources are influenced by economic activity, educational level, industry sectors, and job quality.

The experience of foreign countries, especially in countries such as Europe, the USA, Canada and Australia, shows the importance of analyzing the processes of effective use of labor force using statistical methods. Methods such as regression analysis, correlation analysis, panel data analysis and SWOT analysis are used as effective tools in analyzing changes in the labor market, identifying the relationship between employment and economic activity. For Uzbekistan, the application of foreign experience and methods allows developing scientifically based strategies to increase the effective use of labor resources, improve employment and improve the skills of the workforce.

Table 2

Statistical analysis methods and their effectiveness in labor utilization in the USA, Canada, and South American countries [10]

Country	Used statistic analysis methods	Efficiency (%)	Notes
USA	Panel data analysis , regression analysis , correlation analysis	85%	Labor resources qualification and economic growth between dependency determined
Canada	Regression analysis , SWOT analysis , panel data analysis	81%	Worker of strength movement and qualified work places in creation opportunities was evaluated
Brazil	Correlational analysis , regression analysis	78%	Employment and economic growth between mutual connections determined
Argentina	Regression analysis , SWOT analysis	74%	Labor in the market changes and worker of strength efficiency analysis was done
Chile	Correlational analysis , panel data analysis	80%	Worker of strength qualified and unqualified to be between dependency studied
Colombia	Regression analysis , SWOT analysis , panel data analysis	77%	Labor resources distribution and employment policy studied
Peru	Panel data analysis , regression analysis , correlation analysis	76%	Labor in the market qualification level and employment level between dependency determined

As can be seen from the table, various statistical methods were used to analyze labor utilization processes in the United States, Canada, and South American countries. The United States and Canada showed high efficiency, while panel data analysis and regression analysis methods were effective in accurately analyzing the state of the labor market in these countries. The efficiency indicators were 85% in the United States and 81% in Canada, which indicates good management of the labor market in these countries.

In South American countries, such as Brazil, Argentina, Chile, Colombia and Peru, the effectiveness of the methods is relatively lower. The effectiveness rate is between 74% and 80%, which indicates some limitations in the analysis of the

labor market in these regions. Although the relationship between changes in employment rates and economic growth is well analyzed in these countries, in some regions, poor job quality, skills mismatches and high informal employment reduce effectiveness.
At the same time, methods used in European and American countries, especially regression analysis and correlation analysis, can also be effective for Uzbekistan. These methods are of great importance in analyzing the labor market and further expanding the possibilities of effective use of labor.

For Uzbekistan, the use of foreign experience and statistical analysis methods is of great importance in labor market management and effective use of labor. Research and statistical methods carried out in Europe, the USA, Canada and South America can also be effectively used in Uzbekistan. With the help of these methods, scientifically based ways can be identified for analyzing the state of the labor market, optimizing employment policy and effectively distributing labor resources.

Using the regression analysis method, the relationship between labor resources and economic activity in Uzbekistan can be determined. In countries such as the USA and Canada, the relationship between the employment rate and economic growth has been studied using regression analysis. In Uzbekistan, this method will also be used to forecast the effective management of labor force potential. As a result, the relationship between the skills of the labor force and the level of economic activity will be determined and specific recommendations will be developed to improve the effectiveness of employment policy.

Panel data analysis can be used to analyze changes in the distribution of labor force and employment levels across regions in Uzbekistan. Panel data analysis has been used to forecast labor market changes in the European Union. The uneven distribution of labor resources and differences in employment levels between regions of Uzbekistan are identified, which helps to develop effective policies to ensure territorial balance.

Correlation analysis identifies the relationship between the skills of the workforce and the employment rate. As the experience of countries such as Sweden and Germany shows, the correlation between the skilled workforce and the employment rate should be high. In Uzbekistan, too, it is possible to increase the employment rate by using correlation analysis to train a skilled workforce and create jobs.

SWOT analysis can be used to identify the strengths and weaknesses of the labor market. In the experience of Canada and Britain, SWOT analysis has shown the strengths and weaknesses of labor resources and employment policy. In Uzbekistan, this method can be used to identify the weaknesses of the labor market and develop strategies aimed at developing strengths. SWOT analysis also shows ways to create new jobs and reduce the growth of the unskilled labor force.

Based on foreign experience, modern methods of effective use of labor force and labor market management can be developed for Uzbekistan. Using methods such as regression analysis, panel data analysis, correlation analysis, SWOT analysis, and longitudinal data analysis, it is possible to accurately analyze changes in the labor market and the effectiveness of employment policy. These methods can serve as an effective tool for effective use of labor force in Uzbekistan, increasing employment rates, and eliminating labor market problems.

CONCLUSION AND SUGGESTIONS

Research and practical work carried out in recent years on labor market management and effective use of labor force, especially in Europe, the USA, Canada and South America, show the great importance of statistical methods in analyzing these processes. Based on foreign experience, statistical analysis methods can also be used in Uzbekistan in analyzing the labor market and effective use of labor force.

To effectively use labor resources, increase employment levels, and improve economic activity, methods such as regression analysis, panel data analysis, correlation analysis, SWOT analysis, and longitudinal data analysis can be effective. In particular, panel data analysis can study how labor resources and employment levels change across regions in Uzbekistan, which provides the necessary information to ensure regional balance. SWOT analysis helps identify the strengths and weaknesses of the labor market, which helps to develop specific directions for developing labor policy strengths and eliminating weaknesses.

In general, in order to effectively manage the labor market in Uzbekistan and maximize the use of labor, it is necessary to study foreign experiences and effectively use them. Using statistical methods, it is possible not only to analyze the state of the labor market, but also to develop strategies for creating jobs, improving the skills of the workforce, and ensuring social security. Scientific and practical approaches are needed to monitor labor market changes, create new jobs, and increase the effectiveness of employment policy.

In our opinion, it is appropriate to implement the following proposals and recommendations when analyzing the processes of labor utilization in our country using statistical methods based on the experience of foreign countries:

1. Expanding the use of statistical methods in labor market analysis . By expanding the use of methods such as regression analysis, panel data analysis, and SWOT analysis in Uzbekistan, it is possible to scientifically analyze changes in employment levels, effectively allocate labor resources, and create new jobs.
2. Improvement of regional employment policy. It is necessary to study how labor resources are distributed across regions using panel data analysis and to adapt employment policy to regional conditions.
3. Creating a skilled workforce and updating the education system . Taking into account the labor market's need for a skilled workforce, it is necessary to develop scientifically based strategies for workforce education and training based on longitudinal data analysis.
4. Develop strategies to increase youth and women's employment . Using a SWOT analysis, it is necessary to identify the strengths and weaknesses of increasing youth and women's employment in Uzbekistan and develop practical recommendations to overcome them.

5. Studying the impact of labor migration . It may be effective to use the correlation analysis method to study how labor migration affects the level of economic activity and employment in Uzbekistan.

6. Introducing new technologies in the labor market . The introduction of digital technologies, such as online job search platforms, can improve labor market efficiency and accelerate labor mobility.

Conclusions and recommendations show the possibilities of effective use of foreign experience and statistical methods in managing the labor market of Uzbekistan. The use of advanced methods for scientifically based analysis of labor resources and employment levels, forecasting changes in the labor market and developing practical recommendations will contribute to the effective development of the labor market in Uzbekistan.

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