



STATISTICAL ASSESSMENT OF THE AVERAGE MONTHLY MONETARY INCOME OF EMPLOYEES WORKING IN INDUSTRIAL ENTERPRISES OF THE REPUBLIC OF UZBEKISTAN.

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“Iqtisodiy statistika” kafedrasi katta o’qituvchisi,

Annotation. The article discusses the statistical assessment of the confidence interval of the average profit of industrial enterprises over a month, based on data collected from questionnaires. It covers the issues of data collection and processing.

Keywords: Industrial enterprises, confidence interval, questionnaire, respondents, export, import, statistical assessment.

Introduction

The appropriate development of our country's economy, achieving an effective structural composition, and thereby ensuring sustainable economic growth rates are considered vital conditions for the progress of our nation and the well-being of its people. To achieve this goal, it is essential to actively promote the real sector of the economy. Therefore, in the context of the global financial and economic crisis, supporting the real sector of the economy, particularly industrial enterprises, has become critically important, and this process is being implemented in our republic along several key directions.

Methodology

Statistical observation, group methods, absolute, relative, and average values, as well as graphical methods, have been employed.

Results

The strengthening of competition in global markets, the development of technologies, and the reduction of production costs by foreign manufacturers necessitate the formulation of additional measures to develop these sectors. The increase in efficiency in industrial production has always been a key indicator of the long-term prosperity and development opportunities of societies. For instance, in 2024, “the share of industrial products in the gross domestic product (GDP) will be 26.7% in Germany, 29.8% in Poland, 24.2% in Switzerland, 20.4% in Italy, 34.5% in Kazakhstan, and 39.5% in China,” while the share of employment in industry will be 32% in China, 27% in Germany and Italy, and 24% in Japan, and 22% in Kazakhstan.

In supporting industrial enterprises, issues such as modernizing production, expanding cooperative relations, establishing strong partnerships, and stimulating domestic demand for products manufactured in our country have been particularly emphasized.

1-jadval

Information is provided on the financial status of the industrial sector of the Republic of Uzbekistan (at 2023 comparative prices).

Indicators	2023 year	2024 year	
		At current prices	At constant prices
1. Total volume of industrial production, billion soums	658991,7 ($p_0 q_0$)	885800,0 ($p_1 q_1$)	703 803,1 ($p_0 q_1$)
2. Intermediate consumption, billion soums	403 476,3 ($z_0 q_0$)	519905,4 ($z_1 q_1$)	394 617,4 ($z_0 q_1$)
3. Value added, billion soums	255515,4 (F_0)	365894,6 (F_1)	309185,7 (F^*)

As can be seen from the table, the value added in the industrial sector increased by 110,379.2 billion soums in 2024 compared to 2023, that is.

$$\Delta F = F_1 - F_0 = 365894,6 - 255515,4 = 110379,2 \text{ billion soum}$$

In particular

a) The change in profit due to price variation is equal to:

$$\Delta F_p = \sum p_1 q_1 - \sum p_0 q_1 = 885800 - 703803,1 = 181 996,9 \text{ billion soum}$$

b) The change in profit due to price variation is equal to:

$$\Delta F_z = \sum z_1 q_1 - \sum z_0 q_1 = 519905,4 - 394617,4 = 125 288 \text{ billion soum}$$

d) Change in profit due to the change in output volume:

$$\Delta F_q = F_1 (I_q - 1) = 255515,4 \cdot (1,068 - 1) = 17 375,04 \text{ billion soum,}$$

$$\text{In this case, } I_q = \frac{703803,1}{658991,7} = 1,068$$

g) Change in profit due to the effect of structural shifts

$$\begin{aligned} \Delta F_q = \Delta F - (\Delta F_p + \Delta F_z + \Delta F_q) &= 110379,2 - (181996,9 - 125288 + 17375,04) \\ &= 36 295,26 \text{ billion soum} \end{aligned}$$

$$\Delta F = 181996,9 - 125288 + 17375,04 + 36 295,26 = 110379,2 \text{ billion soum.}$$

In the Republic of Uzbekistan, the value added of the industrial sector amounted to 255,515.4 billion soums in 2023 and 365,894.6 billion soums in 2024. However, compared to 2023, it decreased by 110,379.2 billion soums in 2024. The change in profit can be attributed to the following factors:

- An increase of 181,996.9 billion soums due to price changes;
- An increase of 17,375.04 billion soums due to the change in production volume;
- An increase of 36,295.26 billion soums due to structural shifts;
- A decrease of 125,288 billion soums due to changes in production costs.

(Table 2.1)

In conclusion, the primary goal of implementing economic reforms across various sectors is to create favorable conditions for the population and ensure economic stability.

The real sector of the economy refers to the segment directly involved in the production of material goods and the provision of services. It includes industries such as manufacturing, agriculture, construction, transport, communications, and other service sectors.

(as of 1 May 2025)

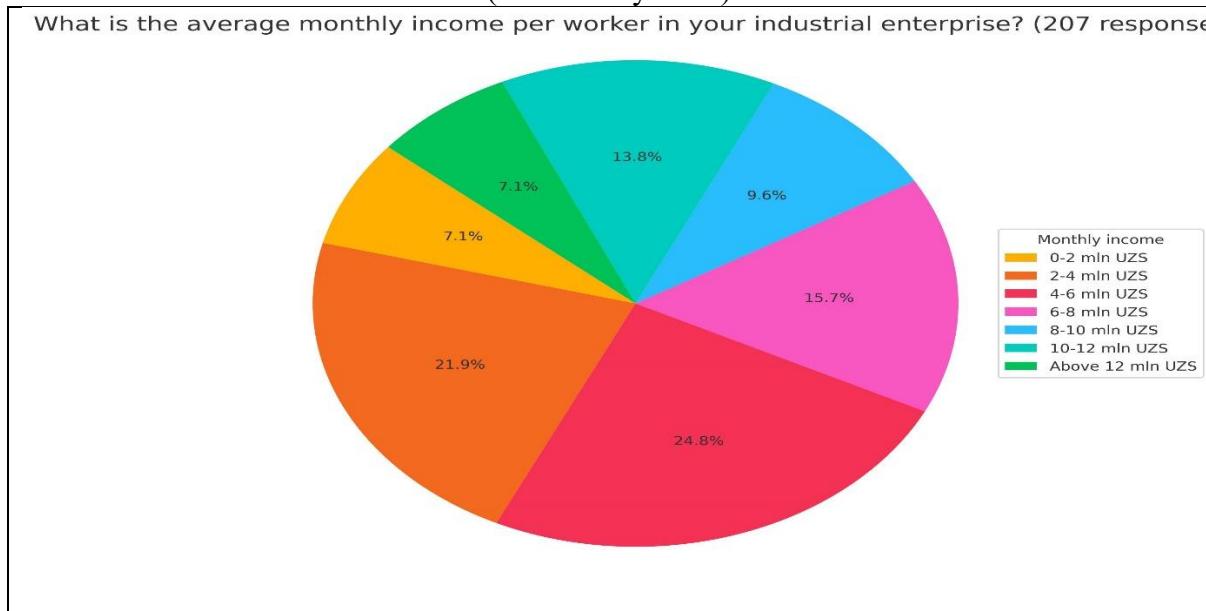


Figure 2.4. Share of average monthly monetary income of employees working in industrial enterprises of the Republic of Uzbekistan (in percent)

According to the results of the conducted questionnaire survey, as of September 1, 2024, among 207 respondents from industrial enterprises in the Republic of Uzbekistan, the following distribution of average monthly monetary income was observed:

29 respondents (14%) reported earning up to 2 million soums;

46 respondents (22.2%) – up to 4 million soums;

52 respondents (25.1%) – up to 6 million soums;

33 respondents (15.9%) – up to 8 million soums;

20 respondents (9.7%) – up to 10 million soums.

Unfortunately, it should be specifically noted that only 12 respondents (5.9%) reported an average monthly income of up to 12 million soums, and 15 respondents (7.2%) reported earning more than 12 million soums while working in industrial enterprises

(See Figure 2.6)

2.4-table

Information on the average monthly monetary income of employees working in industrial enterprises of the Republic of Uzbekistan¹

Average monthly monetary income per employee, million soums	Proportion of industrial enterprises, % (A _i)	Midpoint of interval, (SMD _i ¹)	SMD _i ¹ · A _i	Cumulative percentage%

¹ Calculations based on the author's scientific research results

0-2	14,0	1	14,0	14,0
2-4	22,2	3	66,6	36,2
4-6	25,1	5	125,5	61,3
6-8	15,9	7	111,3	77,2
8-10	9,7	9	87,3	86,9
10-12	5,9	11	64,9	92,8
More than 12	7,2	13	93,6	100,0
Total	100,0	-	563,2	

1. Average monthly monetary income per employee:

$$\overline{SMD} = \frac{\sum SMD_i \cdot A_i}{\sum A_i} = \frac{563,2}{100} = 5,632 \text{ million soum.}$$

2. Modal income

$$Mo = 12 + 2 \frac{(7,2 - 5,9)}{(7,2 - 5,9) + (7,2 - 0)} = 2,14 \text{ million soum}$$

3. Median income:

$$Me = 8 + 2 \frac{50,0 - 77,2}{9,7} = 2,4 \text{ million soum}$$

In industrial enterprises, the most frequently observed average income per capita in the current year amounted to 5.632 million soums. The average per capita income of one part of the population is below 2.14 million soums, while the other part earns above that level

4. Lower decile

$$DI_1 = x_{di_1} + i_{di_1} \frac{\frac{1}{10} \cdot \sum f - S_{di_1-1}}{f_{di_1}} = 4 + 2 \frac{10,0 - 36,2}{25,1} = 1,912 \text{ million soum}$$

5. Upper decile:

$$DI_9 = x_{di_9} + i_{di_9} \frac{\frac{9}{10} \cdot \sum f - S_{di_9-1}}{f_{di_9}} = 12 + 2 \frac{90,0 - 92,8}{7,2} = 11,222 \text{ million soum}$$

Accordingly, the maximum income for the lowest 10% of low-income employees in industrial enterprises amounts to 1.912 million soums, while the minimum income for the highest 10% of high-income employees is 11.222 million soums.

6. The decile coefficient of income stratification in industrial enterprises' monthly monetary incomes: $K_{di} = \frac{DI_9}{DI_1} = \frac{11,222}{1,912} = 5,87 \text{ times}$

— This coefficient indicates that the minimum income of the top 10% of high-income individuals is 5.87 times greater than the maximum income of the bottom 10% of low-income individuals (Table 2.4).



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- **Modernization of industrial production** is a process that involves equipping production with modern technologies, renewing it morally and technically, and implementing structural, technical, and technological reforms.

The main directions and tools of industrial modernization include:

- decommissioning obsolete equipment from enterprises;
- equipping production with modern machinery and technologies;
- introducing innovative technologies based on local resources;
- expanding the range of manufactured products;
- reducing production costs and saving resources;
- implementing quality management and certification systems;
- applying waste-free and environmentally friendly technologies, and more.

— Today, industrial enterprises are widely represented as a form of economic unit.

In the sectors of agriculture, forestry, and fisheries, this form of business plays a vital role in meeting the population's demand for goods and services under market conditions. The ongoing reforms in our republic are creating opportunities to increase productivity by enhancing the material interest of farmers. At the same time, problems that negatively affect the efficiency of current industrial enterprises were identified based on the results of questionnaire surveys.

The following issues were identified through the questionnaire surveys:

- **1. Could you provide information on the complexity of procedures related to the electricity network in your industrial activity?**

— At present, electricity meters are being sold to industrial enterprises; however, due to their high cost, not every farming enterprise can afford them.

— Connection to the electricity network is relatively easy, but due to the significant associated costs, the use of electricity results in substantial expenses for industrial enterprises, which in turn increases production costs and negatively affects the total production volume.

— The untimely payment of subsidies to industrial enterprises has a negative impact on increasing production volumes.

— The absence of any privileges for drip irrigation systems in industrial enterprises is causing a significant rise in expenses.

— Due to the high interest rates for delays in fulfilling planned targets, enterprises are experiencing serious difficulties in meeting their production obligations.

— The resolution of services provided to industrial enterprises within 15 to 30 days is considered appropriate, whereas in reality, such processes often take 1 to 2 years.

- **1. If there are any problems related to land plots in the activities of your industrial enterprise, please provide information about the complex aspects of this process.**

— We are currently using land plots allocated during the Soviet era; obtaining new land plots is nearly impossible.

— There are difficulties in the process of selling the products produced by industrial enterprises. Due to the complexity of the procedure, it requires a significant amount of time.

— If industrial enterprises possess reserve land plots, it would be beneficial if they could participate in auctions.

— Permission was not granted to operate as a Limited Liability Company (LLC).

— During the sowing season, land plots are not allocated on time, which prevents agricultural crops from being planted within the appropriate period.

— **1. In your opinion, what shortcomings exist regarding the future development of industrial enterprises in the Republic of Uzbekistan? Please share your thoughts.**

— Eliminating unlawful interference in the operations of industrial enterprises would be appropriate and beneficial.

— The imposed limits on gas, electricity, and water supply slow down the production processes at industrial enterprises.

— One of the main problems is that industrial enterprises within clusters have not yet received payment for last year's cotton, causing difficulties in providing salaries to employees.

— If loans allocated to industrial enterprises and payments for wheat and cotton were made on time, it would greatly support their functioning.

— The current water shortages prevent timely irrigation of agricultural crops, which negatively affects both productivity and output.

— There is a need to increase the number of specialists within industrial enterprises who have strong expertise in agriculture.

— The opportunities and support currently provided to industrial enterprises are insufficient to meet their actual needs.

— A shortage of necessary machinery and equipment exists. If enterprises wish to acquire equipment through leasing, the interest rates are excessively high.

— Finding skilled labor for industrial enterprises has become increasingly difficult.

— Legal violations related to payments for manufactured products have been reported. These include increased tax debts, unjustified penalties, and additional payments, leaving enterprises without adequate legal protection.

— It is essential to eliminate external (non-legal) interference in the activities of industrial enterprises to ensure transparency and efficiency.

— **What recommendations would be appropriate to address the shortcomings in supporting industrial enterprises operating in the Republic of Uzbekistan? What is your opinion?**

— It is necessary to revoke the authority to impose fines from all government agencies and grant this right solely to the tax authority, as well as to reduce tax rates.



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- The insufficient allocation limits and high prices of gas, water, and electricity must be resolved.
- It would be appropriate if the payments for agricultural products produced by industrial enterprises were made on time.
- In order to ensure food security, it is necessary to further expand agricultural activities.
- The authority of district councils should be increased, and salaries of council employees should be paid from the local budget instead of being funded by industrial enterprises.
- Granting more freedom to industrial enterprises will foster healthy competition, and development follows where there is healthy competition.
- Laws of the President of the Republic of Uzbekistan and resolutions of the Cabinet of Ministers related to agriculture should be publicized daily not only on the internet, but also through television and print media.

Conclusion and Recommendations

Based on the opinions and feedback of 207 respondents who participated in the survey, we can conclude that industrial enterprises in Uzbekistan cannot be regarded as low-income or non-promising sectors in the long run. If industrial enterprises operate on the basis of knowledge, intellect, and talent, they can become an unlimited source of income.

Therefore, identifying and eliminating the shortcomings in encouraging and supporting farm enterprises is considered one of the pressing tasks.

1. One of the key shortcomings of currently operating industrial enterprises is the lack of a modern economic approach within the framework of market relations. Although some managers of industrial enterprises are well-versed in the basics of agriculture, they lack sufficient knowledge and skills in organizing and managing economic processes. In order to manage operations effectively, an industrial enterprise leader must be able to conduct marketing research, develop a business plan, and organize production efficiently.

Recommendation: To promote the development of industrial enterprises, it is necessary to establish consulting and professional development courses.

2. Deficiencies are also observed in the process of establishing industrial enterprises. Enterprises often acquire land but do not strive to use it efficiently. Newly established industrial firms face a lack of equipment, financial resources, and experience, leading to unprofitable operations and decreased productivity.
3. Unlawful interference from higher-level institutions and the negligence of service providers toward industrial enterprises hinder their effective operation.

Recommendation: Each local administration should assign a specific department to work with every registered industrial enterprise.

The activities of local government bodies should focus on ensuring the implementation of decisions aimed at developing industrial enterprises and eliminating bureaucratic barriers and unnecessary paperwork that hinder their growth.



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Statistical evaluations based on the survey results indicate the necessity of enhancing the future effectiveness of industrial enterprises operating in the Republic of Uzbekistan.

In conclusion, the essence of the conducted survey lies in deriving conclusions aimed at improving the efficiency of industrial enterprises. However, current practices in developing such surveys do not meet the necessary standards. The low level of responsibility shown by respondents, their limited awareness of the reforms underway in the sector, and their unfamiliarity with relevant regulatory documents are among the primary issues.

Therefore, in industrial enterprises, the structure and methodology of sampling should be aimed at ensuring the reliability of the collected data and the representativeness of the employed population. The lack of preparation in forming a sampling framework and design within the national statistical system, as well as in the process of statistical assessment and improvement of sample quality, creates significant difficulties.

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