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Article

Economic Assessment of Wheat Demand and the Production Capacity of Flour-Milling Enterprises in the Syrdarya Region

Turayeva Gulizahro[1]*

1. Economics according to philosophy Doctor (PhD), Gulistan state university associate professor
*Correspondence: zakhroturaeva@gmail.com, ORCID: 0000-0002-5764-315X.

Abstract: This study examines the economic relationship between wheat demand, raw-material supply, and the production capacity of flour-milling enterprises in the Syrdarya region of Uzbekistan. The assessment of regional wheat demand is based not only on household consumption but also on the industrial demand generated by grain-processing and flour-producing enterprises. Particular attention is paid to production capacity utilization, sources of wheat supply, processing intensity, flour production, and the role of local and imported wheat in the regional grain-processing value chain. The empirical analysis is based on regional statistical indicators and primary data collected from flour-milling enterprises operating in the Syrdarya region. A detailed case study of "Oq Oltin Don Mahsulotlari" JSC is conducted using its 2025 production and economic indicators. The results show that the region has considerable wheat production and processing potential; however, the availability of wheat in physical terms does not automatically ensure efficient utilization of existing milling capacities. Differences in wheat quality, technological characteristics, procurement mechanisms, supply continuity, and market orientation significantly influence the choice of raw materials and capacity utilization by processing enterprises. The case study reveals that actual milling capacity utilization at "Oq Oltin Don Mahsulotlari" JSC amounted to 40.18%, compared with a planned level of 75%, while capacity utilization under toll-processing arrangements reached 62.22%. The findings indicate that the key economic challenge is not merely to increase wheat production, but to improve the coordination between local wheat production and the quantitative and qualitative requirements of the processing industry. The study proposes strengthening farmer–processor integration, improving market-oriented wheat quality, expanding contractual supply mechanisms, and increasing the participation of locally produced wheat in the regional value-added chain.

Keywords: wheat demand, flour-milling industry, grain processing, production capacity, capacity utilization, raw-material supply, local wheat, economic efficiency, value chain, Syrdarya region.

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1. Introduction

Wheat plays a strategically important role in Uzbekistan's agricultural and food-processing system, contributing to food security, employment, agricultural income, industrial processing, and value-added creation [1], [2]. Therefore, the economic efficiency of the wheat sector should be assessed not only through production and yield indicators but also through the relationship between wheat supply, processing capacity, consumer demand, raw-material quality, and market requirements. Despite substantial domestic wheat production, Uzbekistan continues to import wheat and flour. In 2025, the country

imported 422.6 thousand tons of wheat flour worth USD 124.6 million, although imports decreased by 10.3% compared with 2024. Kazakhstan supplied approximately 94.6% of total imports [3]. This situation indicates that the availability of domestic wheat alone does not fully satisfy the requirements of the processing industry, since flour-milling enterprises also consider wheat quality, gluten content, moisture, milling characteristics, price, and continuity of supply.

This issue is particularly relevant to the Syrdarya region, where wheat production and flour processing are closely interconnected. With a population of approximately 950 thousand, the region requires an estimated 105-114 thousand tons of flour annually, corresponding to approximately 140-150 thousand tons of wheat [4]. However, regional wheat demand is considerably broader because flour-milling enterprises also generate industrial demand for raw materials. Several major grain-processing enterprises operate in the region, including 'Baqqol Don Savdo' LLC, 'DON MIX' LLC, 'Yangier Mahsulotlari' LLC, 'Oq Oltin Don Mahsulotlari' JSC, and 'Xovos Don Mahsulotlari' JSC. Their production models differ significantly. 'Yangier Mahsulotlari' LLC processes approximately 126 thousand tons of wheat annually, utilizes about 98.6% of its theoretical capacity, relies entirely on imported wheat, and produces flour mainly for export. In contrast, 'Oq Oltin Don Mahsulotlari' JSC recorded an actual milling capacity utilization rate of 40.18% in the fourth quarter of 2025, while utilization under toll-processing arrangements reached 62.22%, compared with a planned level of 75% [5].

These differences demonstrate that the key economic issue is not simply the physical availability of wheat, but the coordination of raw-material quantity and quality, processing capacity, procurement mechanisms, and market demand. Accordingly, the objective of this study is to assess wheat demand and flour-milling capacity utilization in the Syrdarya region, with particular emphasis on 'Oq Oltin Don Mahsulotlari' JSC, and to identify opportunities for strengthening the integration of locally produced wheat into the regional processing value chain.

The analytical framework treats wheat production and flour processing as interconnected stages of value creation. Porter's value-chain approach explains how production, procurement, processing, logistics, and marketing jointly determine competitive performance [6]. Research on global commodity and value chains likewise shows that producers and processors can increase value added when primary production is effectively connected with storage, processing, distribution, and final markets [7]. Applied to the wheat sector, these perspectives imply that production volumes alone cannot determine sector efficiency; the organization and coordination of downstream activities are equally important.

The transformation of modern food systems has increased the importance of agro-processing, logistics, quality standards, and reliable raw-material supply. Market participation also depends on transaction costs, access to buyers, and stable contractual relationships [8]. Transaction-cost economics further suggests that recurring coordination problems can be reduced through appropriate procurement arrangements and longer-term relationships between producers and processors [9]. These insights support an integrated assessment of regional wheat supply, processor requirements, capacity utilization, and market orientation.

2. Materials and Methods

The study is based on regional statistics and the FAOSTAT database [10], together with primary information collected from grain-processing and flour-milling enterprises operating in the Syrdarya region. The research covers 'Yangier Mahsulotlari' LLC, 'Oq Oltin Don Mahsulotlari' JSC 'Xovos Don Mahsulotlari' JSC, 'DON MIX' LLC, and 'Baqqol Don Savdo' LLC [11]. Particular attention is given to the production and economic activities of 'Oq Oltin Don Mahsulotlari' JSC based on its 2025 operational data.

The study applies comparative, statistical, structural, and economic analysis methods. Regional wheat demand is assessed by considering population consumption, the raw-material requirements of flour-milling enterprises, production capacity utilization, sources of wheat supply, and export-oriented processing. The analysis compares enterprises according to processing capacity, actual capacity utilization, local and imported raw-material use, and market orientation. A case-study approach is applied to 'Oq Oltin Don Mahsulotlari' JSC to evaluate its capacity utilization, wheat procurement mechanisms, processing services, revenue structure, and cost-saving indicators [12].

This methodological approach makes it possible to identify the relationship between wheat supply, industrial demand, processing capacity, and economic efficiency and to determine the main opportunities for improving the regional wheat-processing value chain.

3. Results and Discussion

The analysis of wheat demand in the Syrdarya region shows that the regional market has a specific structure in which household consumption and industrial processing demand are formed simultaneously. With the regional population approaching 950 thousand people and annual flour consumption estimated at 110-120 kg per capita, annual flour demand is approximately 105-114 thousand tons. In wheat equivalent, this corresponds to approximately 140-150 thousand tons required annually to satisfy the population's flour consumption [13]. However, this amount does not represent the total wheat demand generated within the regional economy. The presence of large flour-milling enterprises creates substantial additional demand for wheat as an industrial raw material. The activities of the five enterprises covered by the study demonstrate the importance of industrial processing in the formation of regional wheat demand [14].

Table 1. Key Indicators Characterizing Wheat Demand and Processing in the Syrdarya Region[1]

Indicators	Value
Population of the Syrdarya region	about 950 thousand people
Annual flour consumption per capita	110–120 kg
Estimated annual flour demand	105–114 thousand tons
Wheat required for household flour consumption	140–150 thousand tons
Number of major processing enterprises covered by the study	5
“Yangier Mahsulotlari” LLC daily processing capacity	350 tons
Theoretical annual processing capacity	127.8 thousand tons
Actual annual wheat processing	126.0 thousand tons
Capacity utilization	98.6%
Share of imported wheat in raw materials	100%
Main market for flour produced by “Yangier Mahsulotlari” LLC	Export

Table 1 demonstrates that wheat demand generated by the regional economy is considerably broader than household consumption alone. In particular, the estimated annual wheat requirement of the population is 140–150 thousand tons, while “Yangier Mahsulotlari” LLC alone processes approximately 126 thousand tons of wheat per year. The latter represents approximately 84.0–90.0% of the wheat volume required to satisfy the annual flour consumption of the entire regional population. This comparison does not

[1] compiled by the authors based on primary data collected from enterprises in the Syrdarya region.

mean that the two volumes constitute the same type of demand. On the contrary, it reveals an important structural feature of the regional wheat market. Household demand is formed by final food consumption, whereas the demand of "Yangier Mahsulotlari" LLC represents industrial and export-oriented demand. The enterprise obtains 100% of its wheat from imported sources and directs the produced flour to foreign markets. Therefore, the processing of imported wheat in the Syrdarya region should not be interpreted only as dependence on foreign raw materials. When imported wheat is processed locally and the resulting flour is exported, part of the value added is created within the region through processing activities, employment, wages, logistics, and other related services. At the same time, the use of imported wheat by an enterprise located in a wheat-producing region raises an important economic question concerning the competitiveness of locally produced wheat in terms of quality, price, technological characteristics, lot size, and continuity of supply. The production indicators of "Yangier Mahsulotlari" LLC also demonstrate the scale of industrial demand. With a daily processing capacity of 350 tons, its theoretical annual capacity is approximately 127.8 thousand tons, while actual processing reaches 126 thousand tons. Thus, capacity utilization is approximately 98.6%, indicating an intensive use of installed production facilities.[15]

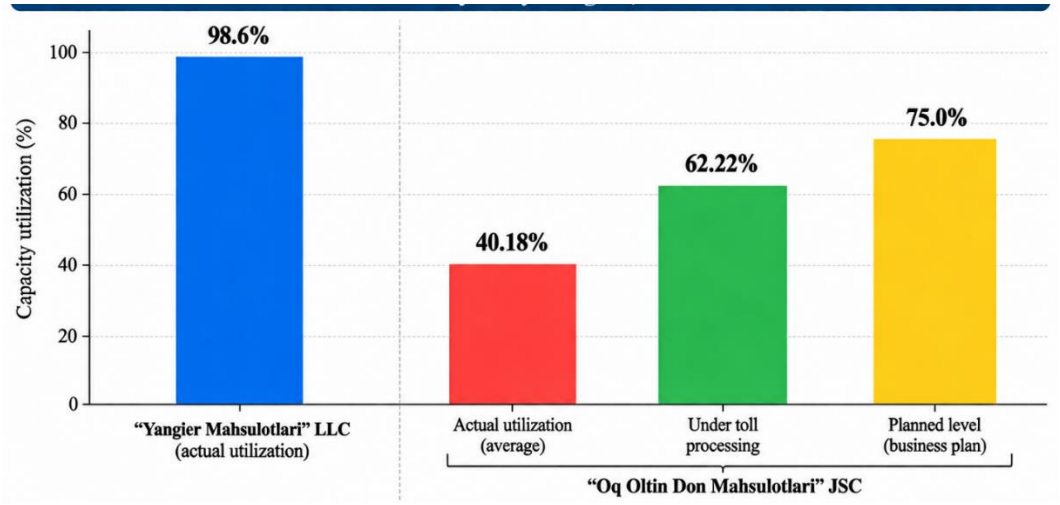


Figure 1. Comparative Analysis of Flour-Milling Capacity Utilization in Selected Enterprises of the Syrdarya Region, 2025

As shown in Figure 1, there are substantial differences in the utilization of flour-milling capacities among the selected enterprises in the Syrdarya region. "Yangier Mahsulotlari" LLC recorded a capacity utilization rate of 98.6%, indicating that its existing processing facilities are operating close to their theoretical capacity. The enterprise processes approximately 126 thousand tons of wheat annually and relies mainly on imported raw materials, demonstrating the importance of stable wheat supply for maintaining high production intensity. In contrast, the actual average capacity utilization rate at "Oq Oltin Don Mahsulotlari" JSC was 40.18%, which is 34.82 percentage points below the planned level of 75%. At the same time, capacity utilization under toll-processing arrangements reached 62.22%, or 22.04 percentage points higher than the actual average utilization rate. This indicates that toll processing contributes significantly to activating the enterprise's unused production capacity, although the achieved level still remains 12.78 percentage points below the planned target. The calculations are based on the enterprises' 2025 operational data.

The comparison reveals that the availability of processing facilities alone does not ensure their efficient utilization. The considerable gap between the two enterprises suggests that stable raw-material supply, procurement mechanisms, wheat quality, and market orientation are important determinants of capacity utilization. In particular, the high utilization rate of "Yangier Mahsulotlari" LLC alongside its reliance on imported wheat demonstrates the economic importance of uninterrupted raw-material supply.

Thus, the results indicate that one of the major reserves for improving the economic efficiency of "Oq Oltin Don Mahsulotlari" JSC is to increase the utilization of its existing milling capacity. Strengthening contractual relations with wheat producers, ensuring stable supplies of wheat that meet processing requirements, and expanding toll-processing operations could reduce idle capacity and increase production volumes without requiring substantial additional investment in new processing facilities. Figure 2 illustrates considerable differences in production capacity utilization among the major grain-processing and flour-milling enterprises operating in the Syrdarya region. The highest level is observed at "Yangier Mahsulotlari" LLC – 98.6%, indicating almost full utilization of its existing processing capacity. The enterprise has a daily processing capacity of 350 tons and processes approximately 126 thousand tons of wheat annually. An important feature is that 100% of its raw material is imported wheat, which suggests that stable access to wheat meeting the required quality parameters plays an important role in maintaining high production intensity. In comparison, "Oq Oltin Don Mahsulotlari" JSC recorded an actual capacity utilization rate of 40.18%, while the business-plan target was 75%. At the same time, capacity utilization under toll-processing arrangements reached 62.22%. This indicates that the enterprise possesses substantial processing infrastructure, but a considerable part of its production potential remains underutilized. Expanding stable raw-material procurement and contractual processing could therefore become an important source of additional production without requiring major investment in new milling capacity. This interpretation is consistent with the importance of supply coordination, contractual relations, and transaction costs identified in the food-system and market-integration literature.

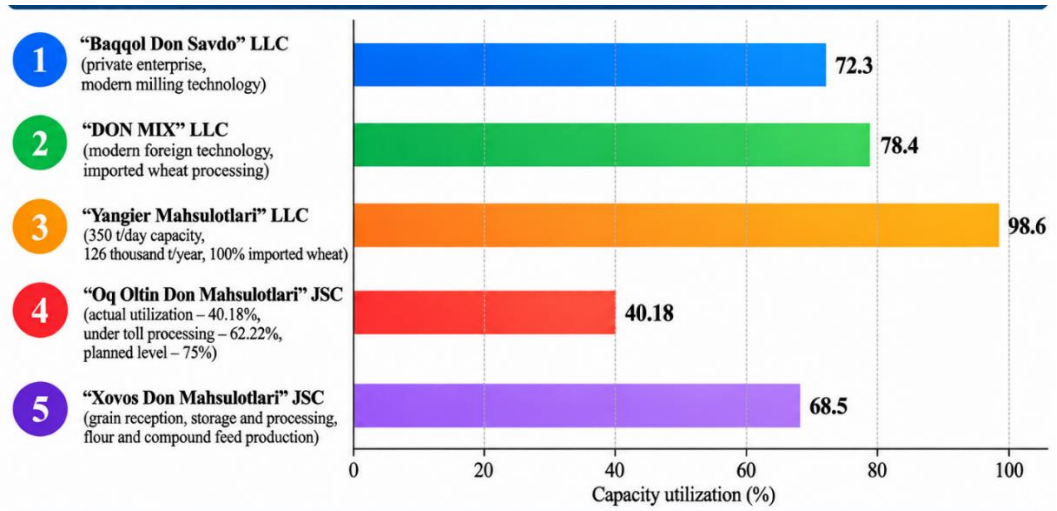


Figure 2. Comparative analysis of production capacity utilization in major grain-processing and flour-milling enterprises of the Syrdarya region, 2025.

The comparison of the enterprises generally demonstrates that the efficiency of flour-milling operations depends not only on installed technological capacity but also on raw-material availability and quality, continuity of supply, procurement mechanisms, technological equipment, and market orientation. In particular, the experience of "Yangier Mahsulotlari" LLC indicates that stable raw-material supply can support intensive utilization of processing facilities, whereas the case of "Oq Oltin Don Mahsulotlari" JSC reveals the existence of significant reserves for increasing the use of existing production capacity. These comparisons draw on the enterprise-level sources listed in.

The results of the study show that the Syrdarya region has a substantial grain-processing infrastructure and significant industrial demand for wheat. However, the coexistence of locally produced wheat, imported raw materials, and underutilized processing capacities indicates a structural mismatch between regional wheat production and the requirements of flour-milling enterprises. The main economic problem is therefore not simply a shortage of wheat or processing capacity, but insufficient coordination

between the quantity and quality of wheat supplied, procurement conditions, processing requirements, and market demand. This is particularly evident from the fact that an enterprise relying on imported wheat can operate close to full capacity, while another enterprise with established production infrastructure utilizes a substantially smaller share of its milling potential. Consequently, an important reserve for increasing the economic efficiency of the regional wheat sector lies in strengthening the "wheat producer – procurement system – processing enterprise – final market" relationship. Improving the quality characteristics of locally produced wheat, developing long-term contractual supply mechanisms, increasing the predictability of raw-material deliveries, and expanding the use of existing milling capacities would allow a larger share of locally produced wheat to enter industrial processing.

4. Conclusion

The study confirms that the wheat market of the Syrdarya region is characterized by the simultaneous formation of consumer and industrial demand. The estimated wheat requirement for meeting the population's flour consumption is approximately 140–150 thousand tons per year. However, this amount does not fully represent regional wheat demand, since flour-milling enterprises create substantial additional demand for wheat as an industrial raw material. The analysis of grain-processing enterprises revealed significant differences in their production models, sources of raw materials, and capacity utilization. In particular, "Yangier Mahsulotlari" LLC processes approximately 126 thousand tons of wheat annually and utilizes about 98.6% of its theoretical processing capacity, while its raw-material requirements are fully met through imported wheat. This demonstrates that stable access to wheat of the required quality and technological characteristics is an important factor in ensuring intensive utilization of milling capacity.

The case study of "Oq Oltin Don Mahsulotlari" JSC revealed considerable reserves for improving production efficiency. In the fourth quarter of 2025, actual milling capacity utilization amounted to 40.18%, compared with the planned level of 75%. At the same time, capacity utilization under toll-processing arrangements reached 62.22%. Thus, the enterprise has sufficient processing infrastructure, but a significant part of its existing production potential remains underutilized. Expanding processing volumes through stable raw-material supply and contractual mechanisms can therefore increase output without requiring substantial investment in additional milling capacity. The findings indicate that the main economic issue in the regional wheat-processing system is not simply the physical shortage of wheat. The more significant problem is the insufficient coordination between locally produced wheat and the requirements of processing enterprises in terms of quality, quantity, price, technological characteristics, and continuity of supply. The use of imported wheat by individual enterprises despite the existence of local wheat production provides further evidence of this structural mismatch.

Based on the results of the study, the following recommendations are proposed:

1. Strengthen direct contractual relations between wheat producers and flour-milling enterprises. Contracts should specify not only the volume and price of wheat but also quality parameters required by processors, including wheat class, gluten content, moisture level, and delivery schedule.
2. Increase the industrial suitability of locally produced wheat. Production should increasingly be oriented toward the technological requirements of flour-milling enterprises. This would allow a greater proportion of regional wheat production to enter the processing value chain and reduce the mismatch between agricultural supply and industrial demand.
3. Improve utilization of existing milling capacities before expanding new processing facilities. The low actual utilization rate observed at "Oq Oltin Don Mahsulotlari" JSC indicates that increasing the workload of existing fixed assets may generate greater short-term economic benefits than creating additional production capacity.

4. Expand toll-processing mechanisms. At "Oq Oltin Don Mahsulotlari" JSC, capacity utilization under toll processing reached 62.22%, considerably exceeding the overall actual rate of 40.18%. This mechanism can therefore be used more actively to reduce idle capacity and increase processing-service revenues.
5. Develop an integrated regional wheat supply system. Information on wheat production volumes, quality parameters, processor demand, available milling capacity, procurement prices, and delivery schedules should be coordinated between farmers, processing enterprises, and relevant regional institutions.
6. Increase the participation of local wheat in value-added creation. Rather than focusing only on the sale of wheat as a primary agricultural commodity, regional policy should encourage its movement through the chain of production – storage – processing – flour production – secondary products – domestic sales/export.

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