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Article

Improving Food-Producing Entrepreneurial Entities Through Strategic Competitiveness Based on Marketing 4.0 and Digital Technologies

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Abstract: In the era of digital transformation, enhancing the strategic competitiveness of food-producing enterprises is essential for ensuring food security, economic resilience, and sustainable growth. Despite notable progress in digitalization globally, food-producing entrepreneurial entities in Uzbekistan remain in the early stages of adopting Marketing 4.0 and digital technologies, limiting their market reach and operational efficiency. Current literature lacks an integrated framework that addresses how Marketing 4.0 principles and digital tools can be strategically implemented in the Uzbek food sector to drive competitiveness. This study aims to assess the level of digital adoption in Uzbekistan's food industry and propose strategic solutions grounded in SWOT analysis and international best practices to improve competitiveness through Marketing 4.0. Based on comparative, statistical, and expert analysis, the study found that CRM adoption grew from 12% to 33% and digital advertising investments tripled between 2021 and 2024. However, Uzbekistan still lags behind countries like China and the USA in digital responsiveness and sales personalization. Key barriers include limited financial resources, a shortage of IT specialists, and inadequate infrastructure. The study introduces an STR-model (Strength–Threat–Response) and a Balanced Scorecard-based strategic map customized for food-producing enterprises in Uzbekistan, offering actionable pathways for phased digital integration. The findings provide a roadmap for policymakers and entrepreneurs to foster digital transformation through targeted investments, training, and cross-sector collaboration, thus unlocking export potential, improving customer engagement, and enhancing overall market competitiveness.

Keywords: marketing 4.0, digital technologies, food industry, entrepreneurial entities, strategic competitiveness, SWOT analysis, transformation

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1. Introduction

Ensuring food security in the Republic of Uzbekistan and increasing the competitiveness of entrepreneurial entities specializing in this sector are among the priority directions of the state's economic policy. Global experience shows that companies that implement the Marketing 4.0 concept manage to maintain continuous and interactive communication with customers and successfully strengthen their market position. Digital technologies play a crucial role in logistics, marketing, customer service, and product quality monitoring, especially in the food sector[1].

In the era of rapid digital transformation, enhancing the competitiveness of food-producing enterprises has become a strategic imperative, particularly for developing economies such as Uzbekistan. As food security and agricultural modernization remain

key components of national policy, integrating advanced marketing frameworks like Marketing 4.0 and adopting digital technologies are no longer optional—they are essential. Marketing 4.0, which emphasizes personalized, data-driven engagement and omnichannel communication, provides a framework through which food enterprises can shift from traditional production to customer-centric models. Despite the growing global adoption of digital tools in the food industry, many local enterprises in Uzbekistan continue to face barriers such as limited financial resources, insufficient digital skills, and weak IT infrastructure. These constraints hinder their ability to compete effectively in both domestic and export markets. Therefore, investigating how Marketing 4.0 and digital strategies can improve the strategic competitiveness of food-producing entrepreneurial entities is timely and relevant for driving inclusive economic growth and technological advancement in the sector[2].

Literature Review

Philip Kotler's concept of "Marketing 4.0" justifies the transition from traditional marketing to digital and social marketing. UNIDO and FAO reports emphasize the trends of digitalization in the food industry and the importance of artificial intelligence and Internet of Things (IoT) technologies. In the context of Uzbekistan, the development of agro-industrial clusters and their digital infrastructure based on presidential decrees has been identified as a key direction of state policy[3].

2. Materials and Methods

The following scientific methods were used in the research:

- SWOT analysis – assessed internal and external factors of entrepreneurial entities operating in the food industry.
- Comparative analysis – compared the level of Marketing 4.0 in Uzbekistan and other countries.
- Statistical analysis – analyzed changes between 2021–2024 based on official reports.
- Expert evaluation – identified key issues based on the opinions of 50 entrepreneurs and industry specialists[4].

This study employed a mixed-methods approach combining SWOT analysis, statistical trend evaluation from 2021 to 2024, expert interviews with 50 entrepreneurs, and comparative analysis of Uzbekistan's food sector with global leaders in digital transformation. Quantitative data were collected from national reports and used to assess CRM usage, online sales, and digital advertising growth. Qualitative insights were derived from expert opinions on the main barriers to digitalization. The analysis enabled the formulation of strategic recommendations based on Marketing 4.0 principles and helped design a Balanced Scorecard-based strategic map tailored for Uzbekistan's food-producing enterprises[5].

3. Results

Table 1 Summary:

From the **table 1**, it is evident that the use of digital technologies has significantly increased between 2021 and 2024. In particular:

- The percentage of companies using CRM systems increased from 12% to 33%, indicating a growing trend of structured customer relationship management.
- The share of online sales rose from 7% to 21%, showing the widespread adoption of digital sales channels in the post-pandemic period.
- The digital advertising budget tripled over three years, reflecting entrepreneurs' increasing interest in the effectiveness of digital marketing[6].

However, many companies are still not using digital technologies to their full potential, mainly due to a lack of skilled personnel and limited technical resources.

Table 1. The level of digital technology use in Uzbekistan's food industry (2021–2024)

Year	Companies with CRM systems (%)	Share of online sales (%)	Digital advertising budget (million UZS)
2021	12	7	450
2022	19	11	780
2023	26	16	1,020
2024	33	21	1,450

Commentary:

Despite the growing rate of digital technology implementation from 2021 to 2024, Uzbekistan still lags behind foreign countries. This growth is mainly characteristic of large producers, while small and medium enterprises are still behind in this regard[7].

Table 2 Summary:

The **table 2** compares Uzbekistan with digitally advanced countries like the USA, Germany, and China. Results show:

- Digital sales share: 72% in China, 67% in the US, while Uzbekistan lags with only 21%, mainly due to underdeveloped infrastructure and internet services.
- Personalization: Uzbekistan lacks personalized customer approaches, while foreign companies use algorithms and AI.
- Response time: It takes 48–72 hours in Uzbekistan to respond to customers, compared to 12 hours in China, which affects customer loyalty negatively.

Uzbekistan is still at the initial stage of Marketing 4.0 and needs to develop instant communication, personalization, and digital sales technologies.

Table 2. Comparison of Marketing 4.0 indicators between foreign countries and Uzbekistan (2024)

Country	Share of digital sales (%)	Level of personalization	Online customer response time (hours)
USA	67	High	24
Germany	59	Medium-high	36
China	72	High	12
Uzbekistan	21	Low-medium	48–72

Commentary:

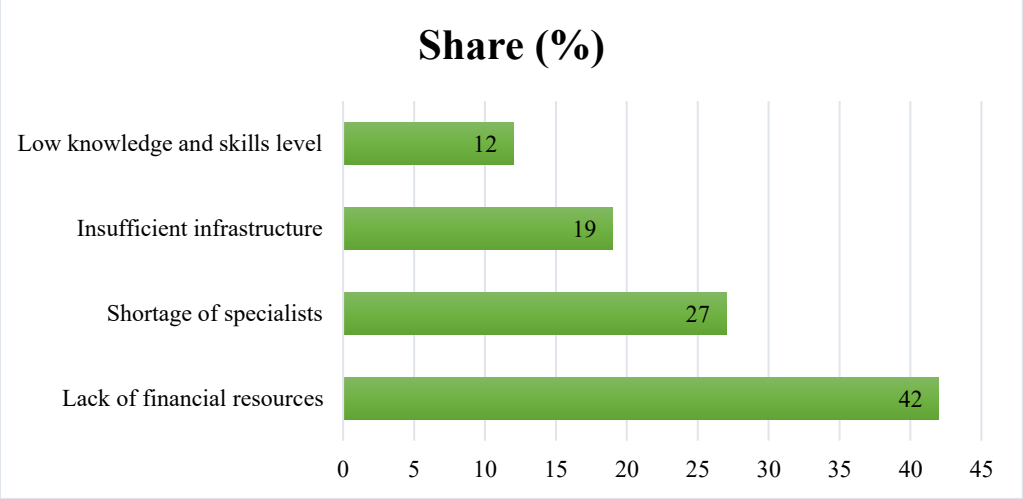
The table shows that Uzbekistan is not yet advanced in terms of digital marketing. The main reasons include weak IT infrastructure, lack of knowledge, and financial constraints in implementing technologies[8].

Figure 1 Summary:

The study found the following key barriers to widespread implementation of digital technologies:

- Lack of financial resources (42%) – Most small and medium businesses cannot afford to purchase or implement digital tools.
- Shortage of specialists (27%) – There is a lack of qualified personnel in digital marketing, IT, and data analysis.
- Inadequate infrastructure (19%) – Especially in rural areas, internet speed and technology infrastructure are very limited.
- Low knowledge and skills (12%) – Some entrepreneurs do not fully understand the benefits of digital technology, slowing down innovation[9].

Figure 1. Main barriers to implementing digital technologies according to entrepreneurs



Commentary:

The main barrier to digital transformation is the lack of financial resources, especially for small and medium enterprises. The shortage of skilled IT professionals also hinders the transition to digital marketing.

Addressing these issues requires collaboration between the public and private sectors through grants, training programs, and infrastructure development projects. This SWOT analysis helps deeply assess the internal capabilities and external environment affecting the strategic competitiveness of food-producing entrepreneurs.

Table 3 serves as a practical diagnostic tool for food entrepreneurs and policymakers, offering a clear snapshot of the sector's readiness for strategic advancement and digital transformation. It emphasizes the importance of leveraging strengths and opportunities while addressing key vulnerabilities and external risks.

Table 3. SWOT Analysis of Strategic Competitiveness of Food-Producing Entrepreneurs

Direction	**Analysis**
S – Strengths	Availability of local raw materials, high domestic demand, state support.
W – Weaknesses	Lack of marketing knowledge, challenges in digital technology implementation.
O – Opportunities	Government programs for digitalization, expansion of export potential.
T – Threats	Competition with imported goods, difficulties in adapting to international standards.

Strengths:

- The availability of local raw materials is a key advantage for continuous operation in the food sector. Agricultural products grown in many regions ensure domestic supply[10].
- High domestic demand – The growing population and increasing purchasing power in urban areas ensure stable demand for food products.
- State support – Subsidies, preferential loans, and support for exporters create more opportunities for sector development.

Weaknesses:

- Due to insufficient marketing and digital skills, many entrepreneurial entities cannot fully compete in the market.

- Challenges in implementing digital technologies – financial constraints, lack of specialists, and infrastructure problems are the main weaknesses[11].

Opportunities:

- Government programs for digitalization offer technical and financial support to entrepreneurs.
- Growing export potential – Especially in Central Asia and the Middle East, demand for eco-friendly food products is high, opening new market opportunities.

Threats:

- Competition from imported products – Low-priced imports from Russia, Turkey, and China increase pressure on local producers.
- Difficulties in adapting to international standards – Obtaining certifications such as ISO and HACCP involves technical and bureaucratic challenges, limiting export opportunities.

According to the SWOT analysis results, entrepreneurial entities in the food sector have strategic potential. However, to fully utilize the available opportunities, efforts must focus on digital transformation, personnel training, financial support, and strengthening export strategies. By synergizing strengths and opportunities, weaknesses can be overcome and threats minimized[12].

Table 4 presents targeted strategic recommendations derived from the SWOT analysis conducted on food-producing entrepreneurs. Each SWOT element—Strengths, Weaknesses, Opportunities, and Threats—is paired with actionable guidance aimed at enhancing competitiveness through digital and operational transformation.

Table 4. Strategic Recommendations Based on SWOT Analysis

SWOT Element	Strategic Recommendation
S (Strengths)	1. Use local raw materials effectively to diversify products and reduce logistics costs.

2. Invest in digital technologies using state support. |

| W (Weaknesses) | 1. Introduce corporate training programs to improve skills in digital marketing, CRM, and big data.

3. Involve IT specialists in marketing departments of entrepreneurial entities. |

| O (Opportunities) | 1. Utilize grants and preferential loans under the "Digital Uzbekistan – 2030" program to implement ERP/CRM systems.

4. Explore new markets via online export platforms (Amazon, Alibaba, Ozon). |

| T (Threats) | 1. Develop marketing strategies based on local branding and identity to counter imports.

5. Attract consulting services to accelerate the acquisition of international quality and ecological certifications. |

Management Model Based on SWOT: STR-MODEL (Strength-Threat-Response Model)

This model is based on the SWOT analysis and links internal strengths with external threats to define a chain of strategic actions.

Table 5 serves as the analytical core of the STR-model, helping businesses align internal capacities with external pressures and design tailored strategies. By identifying how strengths can be used to counter threats, and how weaknesses can be turned into opportunities, the model supports forward-looking, resilience-based planning in the agri-food sector.

Table 5. Key Components of the STR-Model (Strength-Threat-Response Model)

Component	Definition
Strengths (S)	Local resources, state support, stable domestic demand.
Weaknesses (W)	Lack of digital skills and infrastructure.
Opportunities (O)	Digitalization programs, export opportunities.
Threats (T)	Competition from imports, difficulty in adapting to international standards.

Strategic Directions Based on STR-Model:

I. Responding to threats using internal strengths (S → T)
Example: Producing export-oriented, eco-friendly products using state subsidies and local raw materials → Creating brands that compete with imports.

II. Turning weaknesses into opportunities (W → O)
Example: Collaborating with consulting firms for digital transformation using government grants despite weak IT skills.

III. Overcoming threats through strengths (T → S)
Example: Implementing a fast delivery system using local logistics networks → Gaining an advantage over imported goods.

IV. Comprehensive strategy combining all factors (S + O – W – T)
In a holistic approach, state support, local raw materials, digital platforms, and export opportunities are integrated to create a dual market strategy targeting both domestic and foreign markets simultaneously[13].

Table 6 illustrates a progressive transformation model, guiding food producers from basic digital adoption to sophisticated, globally competitive operations. This phased approach ensures manageable implementation while addressing both internal capability development and external market demands.

Table 6. Practical Application: Sample Strategic Plan (3 Phases)

Phase	Strategic Direction	Implementation Tools
Phase 1 (2025)	Initiating digital transformation	CRM implementation, IT training, marketing audit
Phase 2 (2026)	Strengthening competitiveness	Branding, obtaining eco-certifications, logistics optimization
Phase 3 (2027)	Full integration of Export and Marketing 4.0	Integration with online platforms, developing mobile apps, AI-based customer analysis

Strategic Map for Food Production Enterprises

Below is a strategic map aimed at enhancing the strategic competitiveness of food production enterprises using Marketing 4.0 and digital technologies. This map is based on the Balanced Scorecard methodology and is structured around the following four key perspectives:

Mission:

"To transform local food producers into competitive, innovative, and export-oriented enterprises through digital technologies and Marketing 4.0."

1. Financial Perspective

Objective: Increase profitability and generate new revenue sources[14].

Table 7 outlines the financial objectives for transforming local food producers into competitive and digitally integrated enterprises, in alignment with the Balanced Scorecard

framework. The overarching goal is to enhance profitability and diversify revenue streams through digital tools and marketing innovations.

Table 7. Financial Perspective: Strategic Goals and Indicators for Food-Producing Enterprises

Strategic Goal	**Indicators**
Cost optimization	Expense monitoring via ERP system
Identifying new revenue sources	Turnover on online sales platforms
Expanding export potential	Annual growth in export volume (USD)

2. Customer Perspective

Objective: Offer innovative products and services tailored to customer needs.

Table 8 defines customer-focused strategic priorities for food-producing enterprises based on the Balanced Scorecard approach. The objective under this perspective is to provide innovative products and services that meet customer expectations while strengthening loyalty and brand perception.

Table 8. Customer Perspective: Strategic Goals and Indicators

Strategic Goal	**Indicators**
Increase customer loyalty	Number of repeat purchases via CRM database
Strengthen brand trust	Number of positive product reviews (online)
Enhance local identity	Share of products based on national values

3. Internal Process Perspective

Objective: Strengthen operational efficiency and digital integration.

Table 9 presents the internal process objectives of food-producing enterprises using the Balanced Scorecard framework. The main aim is to enhance operational efficiency and accelerate digital integration in production and logistics systems.

Table 9. Internal Process Perspective: Strategic Goals and Indicators

Strategic Goal	**Indicators**
Digitalization of production processes	Use of IoT, automated manufacturing
Improve quality control systems	Number of lines with ISO/HACCP certifications
Optimize supply chain	Reduction in delivery time (in days)

4. Learning & Growth Perspective

Objective: Enhance human capital and foster an innovation-friendly environment.

Table 10 defines the learning and development priorities for food-producing enterprises, focusing on human capital enhancement and fostering an innovation-driven environment. It follows the Balanced Scorecard framework, aligning organizational growth with measurable developmental outcomes.

Table 10. Learning & Growth Perspective: Strategic Goals and Indicators

Strategic Goal	**Indicators**
Develop digital skills	Number of digital training sessions conducted
Encourage innovative ideas	Number of newly implemented technologies
Integration of IT and marketing	Joint projects between IT and marketing departments

Strategic Logic:

1. Employees enhance internal processes through digital knowledge
2. This improves product quality and service level → increases customer trust
3. Growth in customer base and export activity leads to financial stability

KPIs for Strategic Map (Key Performance Indicators)

1. Financial Perspective

Table 11 outlines measurable financial performance objectives for food-producing enterprises using the Balanced Scorecard framework. It links each strategic goal with specific Key Performance Indicators (KPIs), measurement units, and example target values to track progress toward financial sustainability and growth.

Table 11. Financial Perspective: Strategic Goals, KPIs, and Target Values

Strategic Goal	**KPI**	**Unit**	**Target Value (Example)**
Cost optimization	Reduction in production costs	%	-10% (annually)
Identify new revenue sources	Income via digital sales	USD	$200,000 (annually)
Expand export potential	Export volume	USD	$500,000 (by 2026)

2. Customer Perspective

This table outlines customer-centered performance goals within the Balanced Scorecard framework, aimed at enhancing consumer satisfaction and loyalty in food-producing enterprises. It presents key strategic objectives, corresponding performance indicators (KPIs), measurement units, and sample target values.

Table 12. Customer Perspective: Strategic Goals, KPIs, and Target Values

Strategic Goal	**KPI**	**Unit**	**Target Value (Example)**
Increase customer loyalty	Share of repeat customers	%	≥ 60%
Strengthen brand trust	Online product ratings	Stars (★)	≥ 4.5/5
Share of local-identity products	Products with national design	%	≥ 30%

3. Internal Process Perspective

Table 13 provides a structured framework for improving the internal operations of food-producing enterprises. It outlines specific strategic goals related to digital transformation, quality assurance, and supply chain efficiency, with corresponding KPIs, measurement units, and target benchmarks.

Table 13. Internal Process Perspective: Strategic Goals, KPIs, and Target Values

Strategic Goal	**KPI**	**Unit**	**Target Value (Example)**
Implement digital production processes	Number of digitalized lines	Units	3 (by 2026)
Improve quality control system	Share of products with ISO/HACCP	%	≥ 70%

Optimize logistics chain	Delivery time	Days	≤ 3 days

4. Learning & Growth Perspective

Table 14 identifies key human capital development objectives for food-producing enterprises, aligning with the Balanced Scorecard's Learning & Growth Perspective. It provides a roadmap for fostering innovation, digital readiness, and cross-functional collaboration within organizations.

Table 14. Learning & Growth Perspective: Strategic Goals, KPIs, and Target Values

Strategic Goal	**KPI**	**Unit**	**Target Value (Example)**
Develop digital skills	Number of trainings held	Units	≥ 5/year
Introduce innovative ideas	Number of new technologies/methods	Units	≥ 2/year
IT and marketing integration	Number of joint IT+Marketing projects	Units	≥ 3/year

Monitoring Recommendation:

It is recommended to establish a quarterly monitoring system based on these KPIs using digital analytical tools such as Power BI, Google Data Studio, or Excel Dashboards. This allows for a data-driven evaluation of strategic success[15].

4. Discussion

The findings of this study underscore the urgent need for food-producing enterprises in Uzbekistan to accelerate their adoption of Marketing 4.0 and digital technologies in order to enhance their strategic competitiveness. The observed increase in CRM usage and digital advertising investment between 2021 and 2024 reflects growing awareness among entrepreneurs regarding the value of digital transformation. However, the limited rate of adoption among small and medium-sized enterprises (SMEs) indicates significant disparities in digital readiness within the sector. This gap is largely driven by financial constraints, a shortage of qualified IT personnel, and weak digital infrastructure—challenges that are especially acute in rural areas.

When benchmarked against advanced economies such as China, the United States, and Germany, Uzbekistan's food sector lags considerably in terms of digital sales penetration, personalization capabilities, and response times. These performance gaps highlight the early-stage nature of Marketing 4.0 implementation in the country and emphasize the need for targeted interventions. The SWOT and STR models developed in the study provide a robust strategic framework for navigating these challenges. By leveraging internal strengths—such as abundant local raw materials and strong state support—entrepreneurs can counter external threats like import competition and regulatory barriers.

Moreover, the study's proposed Balanced Scorecard-based strategic map offers a practical tool for aligning organizational activities with broader digital transformation goals. It promotes a multi-dimensional approach that integrates financial performance, customer engagement, operational efficiency, and capacity building. This holistic view is essential for managing change in a complex, evolving environment. The strategic roadmap articulated in three phases—initial digitalization, competitiveness strengthening, and full integration of export and Marketing 4.0—ensures that implementation remains structured and achievable.

Overall, the discussion affirms that fostering strategic competitiveness in Uzbekistan's food sector hinges on collaborative efforts across public and private sectors. Grants, training initiatives, infrastructure development, and access to consulting services are vital to support SMEs in bridging the digital divide. With a well-defined vision and

structured execution, food-producing entrepreneurial entities in Uzbekistan can position themselves for sustained growth in both domestic and global markets.

5. Conclusion

Enhancing the strategic competitiveness of food production enterprises is becoming a key factor in today's global digital economy. Through active implementation of Marketing 4.0 concepts and digital technologies:

- Internal production and procurement processes are optimized;
- Interactive and loyal customer relationships are built;
- Digital sales channels are opened for export growth and market expansion;
- Adaptation to international quality and environmental certification systems is accelerated.

Based on the conducted SWOT analysis, identified strengths, opportunities, weaknesses, and threats provide a foundation for enterprises to plan their digital transformation strategies effectively. Additionally, the strategic map developed using the Balanced Scorecard, and its corresponding KPIs ensure that management remains measurable and efficient.

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