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DIGITAL INCLUSION AND MARKET ACCESS FOR SMALL-SCALE FOOD PRODUCERS: CLOSING THE GAP IN ETHICAL AND SUSTAINABLE FOOD SYSTEMS

Sh. Mustafakulov[1], B. Tolipova[2]
[1] Rector of Nordic International University, sh. mustafakulov@nordicuniversity.org,
ORCID:0000-0002-5427-1338
[2]Doctoral student of Nordic International University, b.tolipova@nordicuniversity.org,
ORCID: 0000-0003-1675-6825

Abstract - *The article reflects on the changes in the composition of food products produced taking into account the knowledge, attitudes, tastes and regions of residence of today's consumers. It discusses market factors that influence the activities of food manufacturers and highlights the significance of these factors in the present day. The increasing consumer awareness and cultural consumption practices year by year are explained as driving forces behind the demand for ethically produced food products. The article also elaborates on the goals of ethical food production. It also provides a comparative analysis of digitization rates in the food trade over the years. The study recommends strategic approaches to address these challenges, such as sustainable agriculture, the introduction of digital technologies, the diversification of logistics chains, and the strengthening of international cooperation. In conclusion, the study emphasizes the role of government support for small-scale producers (such as household farms) in ensuring the stability of the food market.*

Keywords: *food, market, digitalization, eco-friendly, ethical production.*

INTRODUCTION

The global food market is undergoing a radical transformation driven by changing consumer tastes, increased demand for healthy and environmentally sustainable products, and the digitization of trade. It can be acknowledged that, as one of the main changes, the share of organic products and fruits and vegetables has increased compared to meat, oil, and flour products. At the same time, the food market faces challenges such as increased competition, instability in supply chains, and the impact of macroeconomic factors. In order to achieve success amid such fluctuations, companies need to adapt to regional characteristics, implement innovations, and apply transparent and sustainable systems in practice.

The global food market is demonstrating steady growth rates. This growth is largely attributed to the increased interest in healthy lifestyles among consumers and the expanded use of online food services. The factors mentioned are leading to an increase in demand for organic products, fruits and vegetables, herbs, and culturally cultivated plants. The digitization of food services is also stimulating market expansion, ensuring more convenient and easy delivery of products. However, this growth is facing a number of challenges. Different market segments for dairy products and products such as eggs, meat, fish and seafood, fruits and nuts are facing challenges such as increased competition, increased consumer culture, and supply chain disruptions. These factors have a negative impact on the overall development of the food market. One of the main trends in the food products market is the growing interest in a healthy lifestyle among consumers. There is an increasing concern about the composition of the products they consume — with a preference for goods containing ingredients sourced from reliable origins, organic components, fruits and vegetables, and the presence of herbs.

LITERATURE REVIEW

The world food market has been reshaped by the interplay of values-driven consumption, rapid digitization of retail and logistics, and accelerating innovation in alternative proteins forces that collectively reinforce the need for transparency, sustainability, and resilient supply chains in line with this study's aims.

A large and growing stream of consumer-behavior research shows that ethical considerations animal welfare, environmental impact, and labor fairness are now salient determinants of food choice. Recent some journals work indicates that motivations and barriers to "ethical food consumption" are heterogeneous across age cohorts and contexts, but pro-environmental attitudes, social norms, and trust/certifications consistently predict willingness to pay for ethical attributes (e.g., Fair Trade, organic) (Oke, 2020).

Building on this, an updated another journals review synthesizes the broader ethical-consumption domain and calls for integrating moral identity and situational constraints into models of purchase behavior, which helps explain gaps between intentions and actual buying under budget/time pressure (International Journal of Consumer Studies, 2024).

Collectively, these findings reinforce our emphasis on certification and transparency as market signals that reduce information asymmetry and increase consumer confidence. Parallel to values-driven demand is a structural migration of food retail toward digital channels. Sources studies document micro-level determinants of online grocery adoption e.g., personality traits (openness, conscientiousness) significantly relate to willingness to buy groceries online supporting segmentation strategies for retailers expanding e-commerce (Piroth et al., 2020). Syntheses spanning the pre- and post-COVID period show that online grocery adoption surged during the pandemic and then partially stabilized at a higher baseline, with enduring effects on delivery, click-and-collect, and app-based purchasing journeys (Tyrväinen et al., 2022). More recent bibliometric mapping confirms persistent research clusters around customer segmentation, service quality, and last-mile logistics in online grocery (Monoarfa et al., 2024). These shifts help contextualize currently comparative analysis of online/offline revenue shares and device-based purchasing, especially the growing dominance of smartphone-mediated orders.

A 2025 scientific sources review foregrounds how digital tools (IoT, blockchain, advanced analytics) enable robustness and visibility for SMEs, reducing disruption risks and improving traceability capabilities that align with ethical production and safety compliance goals (Panigrahi et al., 2025). Complementary some research demonstrates that digitalization can raise "green productivity" and strengthen food security by improving production coordination and transaction efficiency, with especially strong effects at the consumption stage where information frictions historically persist (Yu et al., 2025; Asia-Pacific Journal of Regional Science; and related 2025 analyses). Together, these studies substantiate our recommendation to invest in data infrastructure and interoperable platforms including those that empower smallholders/household farms to access markets more directly.

Across these strands, the literature converges on three mechanisms: information - certifications and transparent data flows reduce uncertainty and support ethical choice; infrastructure - digital platforms and analytics enhance AFSC resilience and market access; and framing - evidence-based communication boosts acceptance of plant-based options. Yet an actionable gap remains at the intersection of these mechanisms for small-scale producers: few studies quantify how combined investments in traceability tech, smartphone-first retail, and targeted values-based messaging jointly affect market outcomes (revenues, waste reduction, and inclusivity) for household farms in emerging regions. Our study's focus on a unified platform and state support for small producers directly addresses this gap.

METHODOLOGY

This study employs a **mixed-methods approach** integrating *quantitative statistical analysis* and *qualitative thematic synthesis*. The quantitative strand focuses on the analysis of global and

regional agri-food market indicators, while the qualitative strand synthesizes peer-reviewed literature and industry reports to interpret structural shifts in the global food market. Mixed-methods designs are widely applied in market and consumption research to integrate numerical trends with context-specific insights (Creswell and Plano Clark 2018).

The reputable international databases were used to obtain quantitative data: Food and Agriculture Organization (FAO) – production, consumption, and trade statistics; Organisation for Economic Co-operation and Development (OECD.Stat) – economic and agri-food sector data. World Bank DataBank – macroeconomic indicators relevant to food demand. UN Comtrade – commodity-level trade flow data.

By analyzing from 2018 to 2024, the analysis captures market dynamics before and after the pandemic. Market size, retail channel shares, device-based purchases, and plant-based sales growth are some of the indicators that can be used. The information on market transparency was obtained from McKinsey & Company, Deloitte, Euromonitor, and European Commission publications. The statistical results were accompanied by industry forecasts and policy developments through the use of these sources.

The study is derived from secondary data, and differences in data collection methods between nations could impact cross-national comparability. Industry forecasts are viewed as trends that are indicative, not precise predictions. All sources were accessible and publicly accessible. Ethical approval was not necessary because there was no primary research done on either humans or animals. The author-year format is utilized for all academic literature citations.

RESULTS

In general, the interest in ethical food production processes is having a significant impact on consumer behavior. Ethical food production includes major objectives, which include: ethical treatment of the animal world; environmental sustainability; the principle of fairness to the workforce; contributing to the development of the local econoour; the establishment of a system of transparency and certification (today, the most common certifications in the international food production industry are: Fair Trade, Organic, Rainforest Alliance, Halal, Kosher). It's important to note that today's consumers are demanding more transparency in the food production system and supply chain.

In particular, there is a noticeable growth in demand within the plant-based food segment. Consumers are seeking alternative protein sources that are both health-beneficial and environmentally friendly. In response to this evolving demand, companies are incorporating ecological and ethical practices into their operations.

As a result of the popularity of ethical production, there are a number of positive trends in the food industry, including a growing interest in fruits and vegetables, sweets, and organic food. This trend is largely due to the growing awareness of the environmental costs and health concerns of traditional meat production.

Changes like these that are occurring can have an impact not only on the food industry, but also on global sustainability and food security. Environmental approaches to solving problems such as climate change and resource scarcity will play an important role in the future of the food market. Geographic and cultural diversity shapes market dynamics differently in different regions. In Asia, for example, lifestyle changes and urbanization have led to a growing demand for convenient ready meals. On the contrary, the demand for organic and environmentally friendly food is growing in Europe. As a result, e-commerce platforms specializing in these products are booming in this region. Increasing transparency and sustainability in the manufacturing process is driving a growing consumer culture and confidence in online shopping. Food and beverage manufacturers are introducing automation and advanced manufacturing technologies to simplify production, packaging, and delivery systems. International markets are also seeing a significant shift in their focus on online commerce. The data on sales channels of food products obtained from the open statistical site below is consistent with the direction of the study, so we tried to use it for comparative analysis.

Share of revenue from online and offline

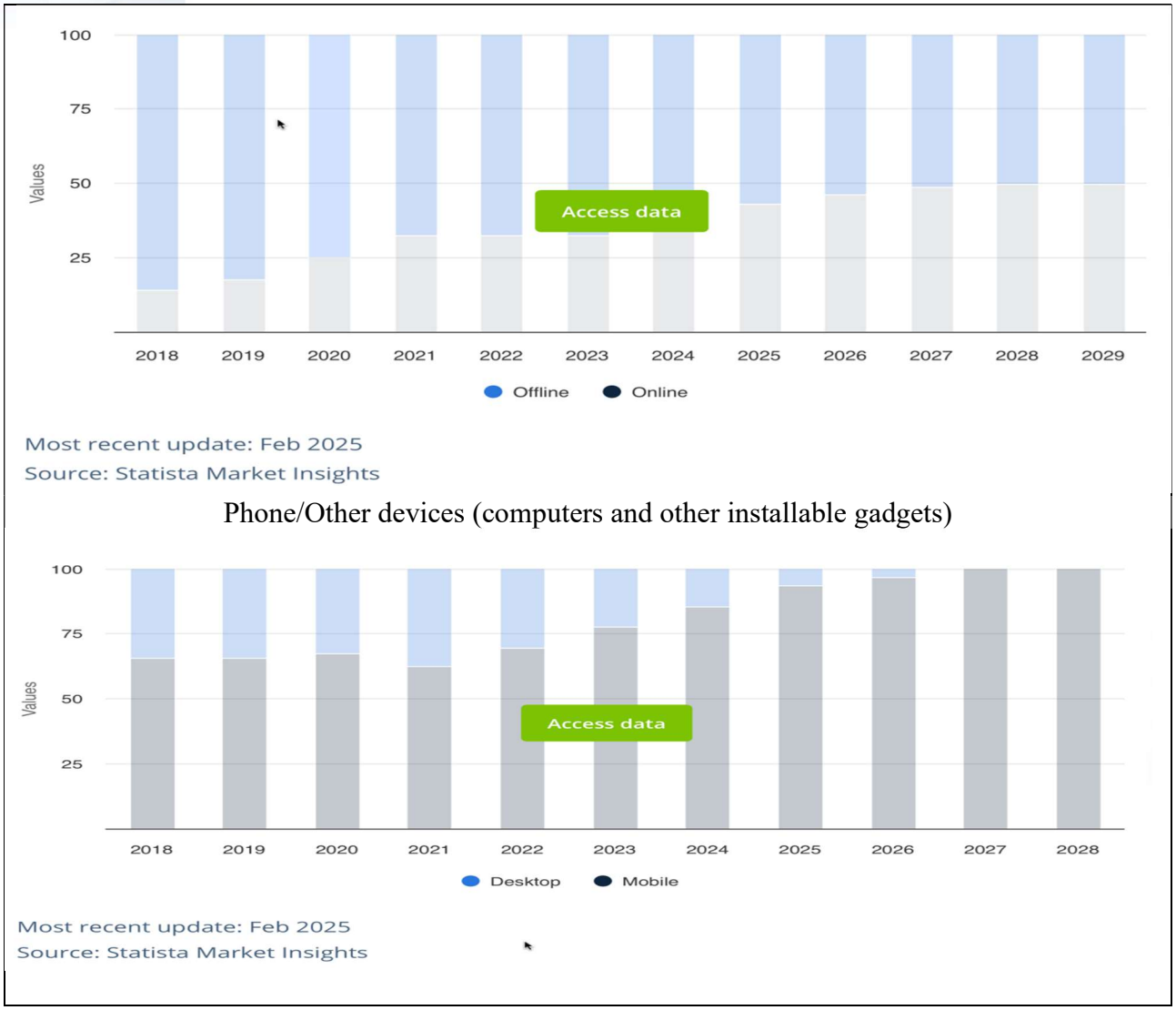

Figure 1. Sales Channels of Food Products [Data sourced from open statistics on https://www.statista.com].

The image data consists of two parts. In the first part, it is shown that the offline sales of food products accounted for almost 80% in 2018, while by 2029, this figure is projected to decrease to 50%. In the second part of the image, a visual brief analysis of the forecasted data, based on statistical information from previous years, reveals that online food sales will continue to grow and develop year by year. Specifically, sales through smartphones are expected to dominate compared to other devices. This analysis is important for food producers as they consider how to organize production in the near future.

Regulations and policies in different countries also affect consumer tastes and shopping habits. For example, strict European food safety regulations dictate how companies promote and market their products. This, in turn, creates a corresponding mood and confidence in the consumer.

Adapting to regional requirements and legislation is critical for all food businesses around the world. Global changes in food prices, consumer income levels, and government policies significantly affect food markets. Food price volatility has a negative impact on consumer purchasing power, especially in countries with economic instability. In countries where there are currently ecological economic conditions and state support, food-related industries develop more rapidly.

At the same time, year-on-year population growth and changing population ratios have increased global demand for food and the need for sustainable and innovative production methods. In some countries, subsidies that encourage organic farming or the production of fruits and vegetables

and vegetables are driving market growth. On the other hand, protectionist policies that restrict food imports or impose tariffs can hinder market expansion.

DISCUSSION

The findings of this study confirm that the global food market is undergoing rapid structural transformation, driven by shifts in consumer values, technological innovation, and systemic supply chain adjustments. The analysis of statistical indicators from 2018–2024 reveals clear evidence of a growing preference for ethical consumption, accelerated digitalization of food retail, and increasing diversification through plant-based alternatives. These trends align with prior research suggesting that consumer decision-making is now influenced as much by social and environmental considerations as by price and convenience (Oke 2020; Mirabella 2025).

The observed increase in demand for products with environmental or ethical certifications reflects the growing salience of transparency as a market signal. This is consistent with empirical studies demonstrating that certification labels reduce information asymmetry and enhance consumer trust (Panigrahi et al. 2025). However, the persistence of the value–action gap (Mouchtaropoulou et al. 2024) suggests that market growth may be constrained unless affordability and accessibility are addressed, particularly in emerging economies.

The growing market share of plant-based products in both developed and emerging markets aligns with forecasts presented in industry reports and is supported by recent scientific reviews (Jang et al. 2024; Davis et al. 2025). This trend is reinforced by consumer willingness to pay premiums for animal welfare and environmental benefits. However, the qualitative literature indicates that sensory quality and price remain critical barriers to mass adoption, highlighting the need for continued innovation in formulation and production.

This study relies exclusively on secondary data, which may not capture the full nuance of consumer motivations or firm-level strategic responses. Future research could employ primary surveys or experimental methods to assess the interaction effects of certification, digital access, and pricing strategies on consumer purchasing behavior. Moreover, longitudinal case studies of small-scale producers integrating into digital platforms could yield insights into the scalability of proposed solutions.

CONCLUSIONS

This study examined the structural transformation of the global food market between 2018 and 2024, focusing on ethical consumption, digitalization of retail channels, supply chain resilience, and the rise of plant-based products. By combining quantitative statistical analysis with a qualitative synthesis of peer-reviewed literature and industry reports, the research identified several converging trends that are reshaping the sector.

The findings demonstrate that ethical and responsible consumption is gaining momentum worldwide, with consumers increasingly valuing transparency, sustainability, and fairness in food production. However, the persistence of the value–action gap indicates that aligning consumer intentions with purchasing behavior remains a key challenge, particularly in price-sensitive markets.

In summary, the global food market is entering a new phase where values, technology, and innovation interact to define competitive advantage. Policymakers, industry leaders, and researchers should focus on integrated strategies that combine certification, digital inclusion, and sustainable innovation to create a food system that is both resilient and equitable. Future research should further explore the interplay between these drivers, using primary data to validate the trends identified in this study.

At the same time, issues such as increased competition, changing consumer tastes and habits, and supply chain disruptions could slow growth in sub-segments such as dairy, meat, and ready meals. Food businesses can remain competitive in this dynamic marketplace by focusing on logistics, new technologies, permanent staff upskilling, sustainability, transparency and innovation. To succeed, it's important to learn and adapt to regional differences, to adapt production to consumer tastes, and to

respond to the demands of global environmental challenges. In addition, the introduction of a single platform for small-scale food producers (household farms) to sell their products on the spot is one of the solutions to the problems identified in the research work. In this regard, it is desirable that the state constantly improves and develops the mechanism of support for small producers (household farms).

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