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Article

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FOOD MARKET SHIFTS – CHALLENGES FOR FOOD CHAIN ACTORS

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Food markets are currently subjected to transformative pressures driven in particular by technological advances, changes in consumer preferences and sustainability concerns. Profound changes are reshaping the dynamics of the entire food chain, posing significant challenges for agricultural producers, the food industry, wholesalers, and retailers, and for consumers as well.

On the demand side there is an increase in the share of consumers who adhere to food models that are supposed to be healthier and more sustainable. It is noticeable that new options or styles of food consumption, such as vegetarianism, veganism or flexitarianism, are being experimented on a wider scale. In the choices that buyers make, there is an increase in the importance of criteria such as the guaranteed absence of allergens or harmful ingredients, the natural or ecological character and the traditional origin of the products.

On the supply side the fusion of physical, chemical, biological, and digital technologies is driving potentially disruptive innovations whose commercial success depends on the rate of acceptance and speed of consumer adoption. Notable and recent innovations in the food chain include: plant-based meat substitutes, cultured meat and other products of laboratory cellular agriculture, vertical farming, precision agriculture, the use of insects, algae and fungi as new sources of protein, new food packaging and distribution solutions, the use of blockchain technology to strengthen food traceability. The acceleration of technological progress and the increase in competition require actors in the food chain to adopt business models that allow for faster adaptation to changes and an increase of the ability to withstand unforeseen developments.

The concern for sustainability is a catalytic factor for the changes taking place in both areas of demand and supply, tending to reshape the food chain towards a circular economy with a low impact on the natural environment.

A better understanding of the mutations affecting the food market and their implications is crucial for stakeholders in the food chain to successfully cope with the changes. The current issue of *Amfiteatru Economic* offers articles illustrating multiple aspects of food market changes at national, European and global levels, as well as their consequences for different stakeholders: consumers, producers, distributors, regulators, educational institutions, and researchers.

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A first group of articles address issues such as sustainability, competitiveness, resilience and financial performance of companies in different branches of the agri-food industry and

are based on data from European countries. Thus, the article **“Cost Optimisation in Food Industry Supply Chains: Modelling the Cost Function”** explores critical factors influencing the performance of food supply chains, such as product perishability, seasonality, climate change, demand volatility and logistical risks. By combining theoretical analysis with a practical model, the article promotes sustainable practices and strategies to increase competitiveness, providing an applicable tool for optimising costs across the value chain and managing risks in the food industry. The study uses empirical data collected from a Romanian company specialised in the production and marketing of fruit, which allows realistic supply chain modelling, assessment of the effectiveness of the cost optimisation strategy and the calibration of the model to reflect the actual cost dynamics in the food industry. The results show that cost optimisation in food supply chains is part of a complex ecosystem influenced by economic, logistical and technological factors. They also confirm that waste reduction and the use of advanced technologies can help companies to become more competitive.

The topics of competitiveness and resilience of agri-food companies are also reflected in the article **“Revealing Subtle Competitiveness Nuances in the EU Wine Value Chain by Expanding the Applicability of Elasticities”**. The paper uses empirical data from the European wine industry to compute trade-adjusted elasticities that indicate the adaptability of domestic markets to cross-border disruptions. Operationalising elasticities as a research tool reveals several nuances of competitiveness compared to conventional index-based methods: strategic consistency and resilience in countries such as Italy and France, responsiveness through export growth in the case of Spain and Portugal, infrastructural deficiencies in the case of Romania. The results can be used to inform decisions tailored to the specificities and needs of the wine industry value chain, and the methodology can be extended to other agri-food value chains to answer broader questions about resilience and sustainability.

The following article, entitled **“Modelling ESG Relationships with the Employability – Operational Growth – Profitability Trilogy in the European Food System”** delves deeper into the complex and multi-directional relationship between environmental, social and governance (ESG) practices and financial performance. The paper analyses the direct and indirect causal relationships between ESG ratings and three specific financial dimensions of European food companies – employability, operational growth and profitability – using the Gaussian Graphical Model and Confirmatory Factor Analysis. Results show that the transition towards sustainable practices significantly and negatively affects operational activities through the high costs of green assets and technologies. This impact can be mitigated by increasing efficiency and productivity while maintaining companies’ financial performance. From a managerial perspective, the article demonstrates the feasibility and strategic opportunity of integrating ESG performance into financial analysis models and the rationale for sustainable growth policies.

The topic of competitiveness is presented in the context of trade relations defined by a bilateral agreement through the article **“Agri-Food Export Strategies in Free Trade Agreements – The Case Study of Serbia in the Serbia – China Agreement”**. The article diagnoses the competitiveness of agri-food exports from Serbia to China. As a result, products with good prospects on the Chinese market are identified, as well as shortcomings of the analysed exports, such as high product concentration, overall net competitive disadvantage of exports, prevalence of primary products and low intra-industry trade. The following are recommended as strategies to be pursued in Serbia-China relations:

diversifying exports, increasing efficiency and quality of production by investing in smart agriculture and in product differentiation and innovation; exporting more processed agri-food products with high value added. The results, in the form of strategic directions to be followed in external trade relations, are also useful for other agri-food economies that are or intend to become parties to free trade agreements.

The following research papers focus on the behaviour and preferences of consumers that make up the European or various national markets in the European Union. Thus, the challenges in the agri-food market are discussed in the context of economic, cultural and behavioural factors in the article **“Sport, Culture, and Purchasing Power: Influences on Food Markets and Consumption”**. Data from 31 European and associated countries covering a 10-year period were analysed using a panel econometric model with random effects. Results indicate an increase in demand for healthy and sustainable products, supported by factors such as sports participation and high purchasing power. On the other hand, food preferences are influenced by cultural values such as individualism and long-term orientation. The article identifies the major changes in the food market and the challenges faced by food chain actors in their efforts to adapt, providing a particularly useful framework for public policy and business strategies. The recommended ways forward to respond to changing consumer preferences are resilience, innovation and market adaptation.

The illustration of the consumer perspective continues with the article **“Change in Household Demand in the Context of Concerns Regarding the Transition to a Healthy Diet”**, which deals with a similar theme, on a national level. The article investigates household consumption in Romania through indicators such as the share of food groups in household food expenditure, quantities consumed and elasticities. It concludes that Romanian households’ dietary preferences for meat, vegetables and fruit are not fully aligned with the European objectives for healthy diets.

The article **“Emerging Trends in Food Consumer Behaviour”** provides a broader perspective on consumer behaviour based on an analysis of trends in the literature over the last five years. The article proposes an interdisciplinary understanding of food consumers’ behaviour and identifies major research topics and emerging trends in the field. The objective is achieved through a bibliometric content analysis of articles selected from the Web of Science database. The research directions identified are healthy food consumption behaviour; the impact of digital transformation; acceptance of food innovations; ethical and sustainable behaviour; and food purchasing attitudes, intentions and behaviours. Emerging trends that are likely to shape food markets in the future cover organic, locally-sourced products, innovations such as high-tech controlled-environment farming, active and edible packaging, digital tools, but also innovations that consumers are reluctant to embrace (drone delivery, 3D printed food, insect-based products, cultured meat and genetically modified products). The study highlights the role of social norms, health awareness and social networks in shaping consumers’ intentions to buy sustainable products.

The article **“Young Consumers’ Perception of Vegan Food: A New Ethic, a Trend or a Risk?”** narrows the scope of analysis to the Romanian academic environment, at which level it focuses on a deep understanding of consumers’ behaviours, experiences and points of view. The article performs qualitative research in the shape of a thematic analysis of data collected through focus groups, which investigates young consumers’ perceptions of vegan food as a complex and multidimensional phenomenon. The results reveal practical and social difficulties in adopting a vegan diet (costs, accessibility, risks related to nutritional

deficiencies, availability of products), but also support based on ethical considerations, with a significant influence of the social environment. The conclusion is that currently the perspective on the acceptance of veganism among students is divided between scepticism, enthusiasm, and caution.

“Factors Influencing the Choice of Honey In Slovakia and Hungary: A Comparative Study” analyses the decision-making process of honey consumers in Slovakia and Hungary. Factors influencing consumer behaviour are identified; latent factors common to consumers in the two countries are quality, marketing and visual factors. With its results, the article guides honey producers in developing effective customer-oriented marketing strategies and makes well-founded recommendations to differentiate these strategies by customer generation. The authors recommend product authenticity and quality, emphasising the origin, local character and sustainability aspects of the natural environment as key themes in honey advertising instead of manipulative and promotional approaches.

In the context of global concerns about pollution reduction and sustainable consumption, we deepen our understanding of the factors that affect consumer behaviour through the article **“The Role of Perception and Knowledge in Shaping Consumer Behaviour toward Green Agri-Food Products in Romania and its Effect on Well-Being”**. It highlights how knowledge and perception about green products positively influence consumers’ attitudes, consumption behaviour and welfare. It also empirically demonstrates that age, income, presence and involvement of children do not optimise the relationship between consumption behaviour and well-being. The study is useful for entities designing food waste avoidance policies, educational policies on sustainable food consumption, public awareness campaigns about the benefits of sustainable consumption, strategies for reuse of perishable products and social responsibility initiatives. An important recommendation is that these strategies and initiatives should appeal to universal pro-environmental and pro-social values rather than targeting specific demographic groups.

The case study entitled **“Emerging Trends in Consumer Preferences: Leveraging Products Derived from Food Industry By-Products”** provides a multidimensional perspective on the integration of an industrial by-product in the food chain. The product analysed is functional wafers with added malt spent grains, a by-product of the fermentation industry. The study assesses consumer acceptability and economic viability of the product. The methodology combines physico-chemical analysis, sensory analysis, a quantitative questionnaire-based approach and a hierarchical analytical method, providing a comprehensive assessment of the product impact. The results highlight a remarkable potential for the integration of the product into the food chain and represent a concrete example of the application of circular economy principles in the food industry.

The next group of articles use related research methodologies – bibliometric analyses – to highlight multiple facets of research in the field. The article **“Challenges in the Food Market and the Agenda of Future Research Directions in the Context of Sustainability: A Bibliometric Exploration”** demonstrates the growing interest in the field over the last ten years, identifies core and niche topics and anticipates future research directions. It concludes that the food market can be sustainable if all stakeholders take up the challenge.

The article **“The Role and Potential of Blockchain Technology for the Food Processing Industry: A Scoping Review”** discusses the applications and technical details of the use of blockchain technology in the food sector, related to processing, distribution, traceability

and pricing. The authors discuss a number of benefits of implementing blockchain technology in agriculture, such as reduced information asymmetry, reduced instances of fraud, falsification and corruption, increased reliability, resilience and improved efficiency of the agricultural and food supply chain; these benefits are manifested alongside limitations on the feasibility, sustainability and costs associated with those technical solutions.

The article **“A Bibliometric Research on Food Market Shifts. Challenges for Actors in the Food Chain”** combines bibliometric analysis with qualitative analysis in a scientific approach that links changes in the agri-food industry with the evolution of scientific research. Thus, in the context of transformations brought about by digitalisation, sustainability and consumer demands for safety and transparency, critical areas for improvement are identified: crop diversification, pesticide-free farming practices, integration of anticipatory environmental assessments, investments in infrastructure and technology, cross-sectoral collaboration.

“Eating Behaviour of Students in Relation to the Offer Available in the Vicinity of the University Campus” contributes to the understanding of the impact of socio-economic and cultural factors on food preferences. The article highlights the vulnerability of students to the supply of ultra-processed foods. Contrary to the results of previous studies, it is shown that students are influenced in their food choices more by the price and availability of ultra-processed foods than by economic constraints. Other factors favouring these food choices are aggressive marketing and strategic positioning of products on store shelves. Thus, the study contributes to the literature with results that explain the impact of the food environment represented by local suppliers and commercial strategies on eating behaviour. The research methodology is replicable in other urban or university contexts, contributing to the development of the field of behavioural nutrition and food policy.

The article **“A Segmentation Study on How Czech Consumers Make Household Food Purchases”** stays in thematic area of consumer behaviour. However, the article moves away from the traditional categorisation of food consumers based on their socio-demographic characteristics and uses a categorisation based on their preferences and attitudes, which proves more useful for food companies. Five groups of Czech consumers are identified: disinterested, thrifty, prepared, modern and busy. In contrast to previous research, this classification also takes into account characteristics such as consumer attitudes towards new technologies and the recent and significant price increases in the food market, which constitutes a significant contribution to the development of the sector. The research emphasises the importance of marketing strategies tailored to consumer segments.

“Impacts of Climate Change on the Global Wine Sector: the Case of Cool-Climate Countries” is a longitudinal study that differentiates itself from previous research by including 11 cold-climate countries in a sample of 66 countries. The results suggest that the negative effects of climate change such as global warming have been mitigated by changes in precipitation patterns. The article provides new geographical and economic insights into modelling the impacts of climate change on the wine industry, useful for long-term investment strategies. The study also highlights the as yet untapped potential of cold climate countries to become wine-growing areas.

In the agricultural sector, there is a constant search for solutions to maintain a balance between productivity objectives and those of environmental protection and the sustainable use of natural resources. Climate, biological, economic, political and social risks add to the

pressure on entities operating in this sector. The article **“Economic Resilience in European Dairy Farms: Trends, Determinants, and Challenges”** focuses on a sector characterised by exposure and vulnerability to internal and external shocks. The authors assess the level of resilience of farms in ten European countries over an 18-year period, using a multidimensional index including vulnerability, intensification, biodiversity, diversification and performance. They find that the economic resilience of the analysed entities is decreasing, a phenomenon that is manifested regardless of their economic size. Consequently, measures that can be implemented to counter this trend are to reduce the intensity of input use, minimise dependence on hired labour and diversify income sources.

The article **“Analysing Consumer Adoption Intentions of Drone-Enabled Food Delivery Services: The Moderating Role of Uncertainty Avoidance”** aims to contribute to the understanding of the impact of psychological aspects such as autonomy, competence and relatedness on consumers’ intentions to adopt services in different cultural contexts. Survey data from a sample of respondents in South Korea and China are analysed using structural equation modelling and interpreted through the lens of self-determination theory. The results indicate that autonomy is not a determinant, while the significant influence of competence on consumers’ intentions is positive for the Chinese sub-sample, and negative for the South Korean one. The results illustrate how culture influences consumer behaviour and are useful for drone-enabled food delivery service providers.

Addressing these topics illustrates how challenges become opportunities, stakeholders collaborate to achieve common sustainability goals, and technology is used to benefit consumers. Some articles design and test, while others evaluate transformative technological innovations and new business models in different sectors of the food chain. Other articles address the topic of sustainability throughout the food chain, closely linked to strategies for business resilience and adaptation to change, all in search of ways to ensure competitiveness. The specific nature of the sector means that changes are driven by consumer preferences. In this respect, a number of articles identify emerging trends in consumer behaviour and preferences that are likely to shape food markets in the future. Overall, the results of research published in this issue of the journal support all players in the sector in making the correct strategic decisions.

Finally, the cited articles outline several directions for future research: extending the geographical scope of research beyond the European borders; longitudinal studies to identify long-term trends and the evolving effect of economic and cultural factors in different contexts; the impact of the socio-cultural dimension of consumption on market responsiveness; the impact of policies, regulations or practices associated with sustainability on competitiveness; specific educational interventions targeting the behaviour of particular consumer groups.

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