European Journal of Sustainable Development (2026), **15**, 2, 658-682 ISSN: 2239-5938
Doi: 10.14207/ejsd.2026.v15n2p658

The Impact of Digital Transformation in Marketing and Branding of Value-Added Products on Economic Recovery in Ukraine

By Olena Bondarenko[1], Alona Tanasiichuk[2], Anastasiia Savchuk[3], Viktoriia Milcheva[4], Inna Deineha[5], Ruslan Boiko[6], Yuliia Yarova[7]

ABSTRACT:
The article examines the role of digital transformation in marketing and branding value-added products as a factor in structural export modernization and sustainable economic recovery in Ukraine under wartime conditions. It is substantiated that the transition from a raw material export model to a model oriented toward value creation requires the integration of digital marketing instruments, data analytics, e-commerce development, and digital branding.
A conceptual model of the relationship between the digital transformation of marketing, the reduction of transaction costs, the formation of a brand premium, and the increase in export resilience is proposed. An integral index of digital marketing transformation (DMTI) is developed, which aggregates analytical capability, digital sales channels, digital branding, and organizational integration.
The empirical testing is conducted using the example of the Ukrainian agri-food sector at the level of HS 4 commodity subgroups for the period 2022–2024. Based on international foreign trade statistics (Trade Map, UN Comtrade), indicators of the share of value-added products (VAS), average export price (unit value), market concentration (HHI), and export resilience are calculated. The results of aggregated and regression analysis confirm the presence of a price premium in the processed segment and a positive relationship between the structural modernization of exports and competitiveness indicators.
It is demonstrated that the digital transformation of marketing and branding functions not only as an instrument for improving the efficiency of communications but also as a systemic mechanism for reducing transaction costs, diversifying export markets, and strengthening export resilience. The obtained results have theoretical significance for the development of an interdisciplinary approach to marketing digitalization and practical value for enterprises and economic policy institutions in the context of Ukraine's post-war recovery.
The study contributes to the literature by bridging the gap between firm-level digital marketing transformation and macro-level export structural change.

Keywords: brand management; digital transformation of marketing; digital communications; international marketing; export marketing; branding of value-added products; e-commerce; data-driven marketing; Big Data; artificial intelligence in marketing; sustainable marketing; export competitiveness; export resilience; transaction costs; structural modernization of exports; post-war economic recovery of Ukraine.

[1]Doctor of Sciences (Economics), Professor, Head of the Department of the Marketing State University of Trade and Economics, Ukraine.
[2]Professor of the Department of Marketing and Advertising, Vinnytsia Institute of Trade and Economics of State University of Trade and Economics, Ukraine.
[3]Assistant professor of Department of Journalism and Advertising State University of Trade and Economics, Ukraine.
[4]Associate Professor, Doctoral Candidate of the Department of Marketing, Entrepreneurship and Trade, Odesa National Technological University, Ukraine.
[5]Professor of the Department of Marketing and Logistics Lviv Polytechnic National University, Ukraine.
[6]Associate Professor Faculty of Economics & Mgmt Khmelnytskyi National University, Ukraine
[7]Associate Professor of the Department of Marketing and Advertising, Vinnytsia Institute of Trade and Economics of State University of Trade and Economics, Ukraine.

1. Introduction

The full-scale war against Ukraine has significantly transformed the country's economic structure, increasing the vulnerability of export-oriented industries while simultaneously intensifying the need to develop a new model of economic development. Under conditions of limited resources, logistical risks, declining investment activity, and instability of external markets, the issue of economic recovery acquires strategic importance and extends beyond short-term anti-crisis solutions. The key task is not only the preservation of export volumes but also the structural modernization of exports and the increase in the share of products with high value-added.

The traditional raw material orientation of Ukrainian exports generates foreign currency revenues but limits the potential for growth in gross value-added, innovation development, and integration into global value chains. In the context of a wartime economy and the future post-war recovery, the strategic priority becomes the transition to an export model based on the production and promotion of value-added products that ensure higher margins, support employment, expand the tax base, and contribute to long-term GDP growth.

In this context, the digital transformation of marketing and branding becomes particularly important. Within the digital economy, marketing ceases to function as an auxiliary sales activity and transforms into a strategic instrument of export structural modernization. The use of digital communication channels, e-commerce platforms, data-driven approaches, Big Data technologies, and artificial intelligence tools enables enterprises to reduce transaction costs of entering international markets, accelerate the testing of new products, implement precise segmentation and personalization of offers, generate a brand premium, and increase trust in Ukrainian products in foreign markets.

Thus, the digital transformation of marketing and branding acts as a systemic mechanism for the transition from a raw material export model to a model oriented toward value creation. Through digital instruments, the scaling of brands, diversification of export markets, integration of firms into international production networks, and the formation of export resilience under wartime risks are ensured.

Despite the substantial body of research in the fields of digital marketing, international marketing, and economic resilience, the relationship between the digital transformation of marketing, the growth in the share of value-added products, and sustainable economic recovery in a wartime economy remains insufficiently conceptualized. Most scholarly studies analyze digitalization either as a technological trend or as a tool for improving the competitiveness of individual enterprises. However, it is rarely examined as a structural factor of macroeconomic export transformation and GDP growth.

In this context, the study assumes that the digital transformation of marketing at the firm level contributes to macroeconomic outcomes through several transmission mechanisms. First, the adoption of digital marketing tools enhances the ability of enterprises to access international markets, expand their customer base, and improve product differentiation. Second, the strengthening of branding and digital communication increases the perceived value of products, facilitating the shift from raw material exports to higher value-added goods. Third, the aggregation of these firm-level changes leads to

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

structural transformation of export composition, which, in turn, supports export resilience and contributes to GDP growth, particularly in crisis and wartime economic conditions.

The purpose of this article is to develop a conceptual and analytical model of the relationship between the digital transformation of marketing and the branding of value-added products, and the processes of structural export modernization and sustainable economic recovery in Ukraine under wartime conditions. To achieve this objective, the study aims to substantiate the theoretical foundations of the digital transformation of marketing in the context of international competition; identify the mechanisms through which digital instruments influence the growth of export value-added; determine the barriers and risks of digitalization of marketing activities under conditions of a wartime economy; propose a model for assessing the level of digital transformation of enterprise marketing; and formulate practical recommendations for the development of value-added products and their digital promotion in international markets.

2. Literature Review

Contemporary marketing literature clearly documents a shift toward data-driven marketing as a foundation of competitive advantage. Wedel and Kannan (2022) demonstrate that analytics transforms marketing decisions from retrospective to predictive and prescriptive, which makes it possible to manage demand through modeling, experimentation, and automated decision-making algorithms. Germann, Lilien, and Rangaswamy (2023) empirically link the implementation of marketing analytics with improved financial performance of companies. At the same time, a tendency emerges toward a concentration on measurable digital metrics such as ROI and cost efficiency without sufficient integration of issues related to the structural transformation of the product portfolio and the increase in the share of value-added products in exports.

Akter et al. (2024) consider Big Data Analytics Capability as an integrated capability that combines technological resources, managerial competencies, and marketing flexibility. However, in most similar studies, this capability is evaluated as an internal organizational asset, while outcomes are measured through generalized indicators of efficiency. Within such approaches, the question remains insufficiently explored whether data-driven marketing actually translates into a real increase in the value-added of export products and into a change in the position of enterprises within global value chains.

A methodological contribution to measuring the effectiveness of digital communications is presented in Tanasiichuk et al. (2022), where a toolkit for evaluating the effectiveness of internet communications is proposed. The strength of this approach lies in the operationalization of indicators and the possibility of quantitative analysis. However, communication metrics alone do not guarantee the structural modernization of exports. Consequently, there is a need to link digital communications and data analytics with mechanisms for reducing transaction costs and generating a brand premium for value-added products.

The development of artificial intelligence has significantly transformed the marketing function. Davenport et al. (2020) emphasize that AI changes the role of marketing from communication support for sales to an analytical center of decision making. De Bruyn et al. (2020) highlight the risks of algorithmic bias, lack of transparency,

and ethical barriers, which are particularly relevant under conditions of instability and increased sensitivity to reputational risks in international markets. Dwivedi et al. (2024) and Kshetri et al. (2024) underline the potential of generative AI to reduce the cost of content creation and to scale personalized communications. At the same time, a risk emerges of message standardization and the devaluation of brand uniqueness in the absence of quality management systems and brand control.

Verhoef et al. (2021) consider digital transformation as a multidimensional process that encompasses the business model, organizational structure, and interaction with consumers, thereby emphasizing that technological tools without structural changes do not ensure long-term effects. Tanasiichuk et al. (2025) examine digital instruments as a means of supporting enterprise resilience under conditions of constraints and disrupted infrastructure. However, further clarification is required regarding the conditions under which the digitalization of marketing transforms into growth in value-added products and export resilience rather than merely enabling tactical adaptation. Thus, the literature demonstrates substantial potential of artificial intelligence and digital technologies but insufficiently links them with institutional conditions, trust, quality verification, and the mechanisms of export transformation.

In the field of export marketing, Leonidou, Katsikeas, and Samiee (2022) emphasize the importance of strategic flexibility under conditions of turbulence. Sousa, Martínez López, and Coelho (2023) demonstrate that digital marketing capabilities directly influence export performance, while Jean, Kim, and Sinkovics (2024) introduce platform capability as a resource for international expansion. Hult, Gonzalez Perez, and Lagerström (2023) emphasize the microfoundations of strategic capabilities in the digital era, thereby forming a conceptual bridge between digital resources and internationalization.

At the same time, in most studies, export performance is measured through volumes, growth dynamics, or market share, whereas the qualitative dimension of exports, including the proportion of higher value goods and the level of brand premium, the presence of certifications, and long-term contracts, remains insufficiently operationalized. To address this limitation, this study adopts a multidimensional operationalization of export quality that goes beyond product classification. In addition to distinguishing higher value goods using HS codes, qualitative export performance is assessed through indicators such as brand premium, certification compliance, export price differentiation, and the stability of long-term contractual relationships. This approach enables a more precise evaluation of how marketing and branding contribute to export competitiveness and structural transformation. In addition, transaction cost theory is rarely integrated, although digital channels potentially reduce the costs of information search, partner verification, and contract formation.

Tanasiichuk et al. (2026) emphasize export-focused promotion of advanced products as a driver of economic recovery. However, a necessary condition is the integration of marketing strategies with product modernization, standardization, and institutional support. Consequently, existing studies convincingly demonstrate the influence of digital capabilities on export performance but reveal to a lesser extent their role in the structural transition toward value-added products and in the formation of export resilience.

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

The concept of sustainable marketing in the works of Luchs and Kumar (2022) and Sharma, Rangarajan, and Paesbrugghe (2023) is considered a source of long-term value and intangible brand assets. At the same time, under crisis conditions a contradiction emerges between the need to invest in standards, audits, and certification and the limited resources available to enterprises. In the absence of an evidence-based infrastructure, sustainable marketing risks remain declarative.

Tanasiichuk et al. (2024a; 2024b) link digitalization with sustainable development strategies in international markets, emphasizing both the opportunities and the limitations of digital instruments. Tanasiichuk et al. (2023) highlight the importance of resilient approaches to international segmentation, which opens the prospect of a transition toward value-oriented segmentation where target markets are selected with consideration of brand premium potential. Tanasiichuk et al. (2025) examine the adaptive mechanisms of enterprises under wartime conditions. However, adaptation without product modernization and brand development may preserve the raw material export model. Consequently, sustainable marketing requires integration with digital mechanisms that provide evidence of quality and reduce transaction costs in order to ensure real growth in the value-added of exports.

The synthesis of the analysis indicates that contemporary literature examines individual aspects of the digital transformation of marketing, artificial intelligence, export strategies, and sustainable development in considerable depth, yet a conceptual gap remains between these areas. Data-driven marketing and artificial intelligence demonstrate effectiveness in managing demand but are rarely linked with the structural transformation of exports. Studies of digital internationalization demonstrate the influence of digital capabilities on export outcomes but insufficiently account for transaction costs and brand premium. Approaches to sustainable marketing establish a value-oriented framework but require integration with digital instruments and institutional mechanisms for export support. Therefore, there is a growing need to develop an integrated model that connects the digital transformation of marketing and branding with the processes of increasing value-added, reducing transaction costs, and forming export resilience under the conditions of a wartime economy.

3. Results of the Study

3.1 Theoretical Foundations of Integrating the Digital Transformation of Marketing with the Structural Modernization of Exports

An in-depth analysis of scholarly approaches to the digital transformation of marketing demonstrates that its influence on the economic system is not limited to improving communication efficiency or optimizing marketing expenditures. In the contemporary economy, marketing increasingly functions as a strategic activity that shapes the position of enterprises within global value chains. For this reason, examining the digital transformation of marketing in the context of sustainable economic recovery requires the integration of microeconomic and macroeconomic levels of analysis.

From the perspective of dynamic capabilities theory, the digital transformation of marketing may be interpreted as the ability of an enterprise to adapt its communication,

analytical, and branding processes to changes in the international competitive environment. At the same time, the mere availability of digital instruments does not guarantee the structural modernization of exports. The key issue is how these instruments are integrated into the business model and how they influence the enterprise's product strategy. When digital technologies are used only to promote an existing raw material portfolio, they may increase sales volumes but do not change the nature of the value created. By contrast, when digital analytics, personalization, and branding are directed toward promoting products with a higher level of processing and a stronger intangible component, marketing becomes a mechanism for the transition to a new export model.

From a theoretical perspective, the integration of dynamic capabilities theory with transaction cost economics allows for the identification of a causal mechanism linking firm-level marketing transformation with export resilience. Specifically, dynamic marketing capabilities enable firms to reconfigure their product positioning and branding strategies in response to international market changes, while the reduction of transaction costs through digital tools facilitates more efficient market entry and partner interaction.

As a result, the combined effect of enhanced adaptive capabilities and lower transaction costs leads to increased export diversification, improved positioning in higher value segments, and greater stability of export flows. This, in turn, strengthens export resilience at the macroeconomic level, particularly under conditions of economic uncertainty and wartime disruption.

This transition can be further explained through the lens of transaction cost theory. In international trade, the costs of partner search, quality verification, contract formation, and monitoring of contract execution significantly influence enterprise decisions regarding entry into new markets. Digital platforms, electronic commerce, automated data management systems, and digital verification of quality can reduce information asymmetry and decrease the time and financial costs associated with establishing business relationships. As a result, barriers to entry into international markets decline, creating conditions for export diversification and for expanding the presence of value-added products. Consequently, this process may be considered an instrument for reducing transaction costs that indirectly influences the structural restructuring of the export portfolio.

At the same time, the reduction of transaction costs alone does not create a competitive advantage if it is not accompanied by brand development. In global competition, price differentiation is gradually replaced by value-based differentiation, where trust, reputation, compliance with standards, and the emotional identification of consumers with a brand become decisive factors. Digital instruments for personalization, online reputation management, and communication of sustainability and production transparency enable enterprises to generate a brand premium and shift from a model of price competition to a model based on quality and value-added. In this way, digital branding becomes a logical continuation of the analytical digitalization of marketing, transforming its outcomes into intangible assets.

The next level of analysis concerns the macroeconomic dimension. An increase in the share of value-added products in exports implies growth in gross value-added, expansion of the tax base, and strengthening of the financial resilience of enterprises. Under crisis conditions, this becomes particularly important, since export resilience is

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

determined not only by the volume of deliveries but also by their structure, margin level, and market diversification. The digital transformation of marketing, when integrated with brand development and the reduction of transaction costs, creates conditions for the formation of long-term contracts and stable external relationships, which decreases sensitivity to external shocks. Consequently, the relationship between digital marketing and economic recovery has an indirect but systemic character.

From a methodological perspective, this logic requires the analysis of the digital transformation of marketing as a complex variable that includes analytical capability, the level of digitalization of sales channels, the integration of information systems, and the development of digital branding. Its influence should be examined through intermediate variables such as transaction costs, brand premium, and market diversification, which together determine the level of export stability and the presence of high-value output. This framework makes it possible to move from a descriptive analysis of digital instruments toward the construction of a causal model of the structural modernization of exports.

In summary, the theoretical and methodological framework demonstrates that the digital transformation of marketing can be interpreted as a strategic mechanism for the transition from a raw material export model to a value creation model and, through this transition, as one of the factors shaping export resilience and long-term economic recovery. Such an integrated logic forms the basis for the further formulation of an analytical model and the empirical verification of the proposed relationships.

3.2 Construction of an Integral Index of the Digital Transformation of Marketing and the Logic of Its Application

The previous theoretical analysis has demonstrated that the digital transformation of marketing cannot be considered merely as a set of technological instruments, since its influence on export resilience is mediated by a number of interrelated factors such as analytical capability, digital sales channels, branding, and the reduction of transaction costs. In order to move from the conceptual framework to empirical measurement, it is appropriate to construct an integral index of the digital transformation of enterprise marketing.

The need for an integral indicator arises from the fact that individual digital instruments by themselves do not reflect the level of strategic digital maturity. An enterprise may use social media or online sales while lacking analytical integration or a personalized model of interaction with customers. At the same time, digital transformation as a strategic process presupposes the coherence of technological, organizational, and marketing components. For this reason, the index should aggregate several dimensions of digital capability into a single generalized characteristic.

The logic of constructing the index is based on a step-by-step measurement of the key components of the digital transformation of marketing. The first stage involves the assessment of analytical capability, which includes the use of Big Data, CRM, and ERP systems, artificial intelligence algorithms, and predictive analytics. This component reflects the enterprise's ability to make decisions based on data rather than intuition. However, the mere presence of analytics does not create value-added if it is not integrated into channels

of interaction with the market. Therefore, the next stage is the evaluation of the level of digitalization of sales and communication channels.

The second dimension of the index is associated with the share of digital channels in the structure of sales, the presence of electronic commerce, integration with international platforms, and an omnichannel strategy. It is through these channels that analytical decisions are materialized, and it is here that the potential for reducing transaction costs becomes visible. If analytics enables the identification of demand, digital channels allow enterprises to respond to it promptly, thereby reducing the costs of market entry.

The third dimension of the index reflects the level of digital branding, which includes online reputation management, personalization of communications, verification of product quality, and communication of product value attributes. This component is directly related to the formation of a brand premium and the transition from price-based competition to value-based competition. In this way, analytical capability and digital channels create the infrastructure, while digital branding transforms this infrastructure into intangible assets.

After the evaluation of each component, the indicators are normalized and combined into an integral index through weighted aggregation. The weighting coefficients may be determined through expert evaluation or statistical analysis, depending on the empirical basis of the study. It is important to note that the index is not an end in itself but serves as an analytical instrument for further examination of the relationship between the digital transformation of marketing and the structure of exports.

The next step after constructing the index is to examine its influence on intermediate and final outcomes of enterprise activity. First, the correlation between the level of digital transformation of marketing and indicators of transaction cost reduction is analyzed. These indicators may be measured through a decrease in the time required to enter new markets or through lower costs associated with searching for partners. Subsequently, the relationship between the index and the composition of exports by value level is evaluated. If a statistically significant positive relationship is confirmed, this indicates the structural character of digital transformation rather than merely its tactical effectiveness.

The final stage of the analytical model consists of determining the influence of the index on export resilience, which may be measured through market diversification, the stability of export revenues, and the preservation of contracts under crisis conditions. It is at this level that the digital transformation of marketing extends beyond corporate efficiency and acquires macroeconomic significance, since export resilience directly influences the formation of gross value-added and the pace of economic recovery.

Thus, the integral index of the digital transformation of marketing makes it possible to move from a conceptual understanding of the role of digitalization to its quantitative measurement and to the analysis of causal relationships between the digital capabilities of enterprises, the structure of exports, and economic resilience. Such an approach provides a logical foundation for further empirical research and for the development of practical recommendations concerning the strategic priority of developing value-added products through digital marketing instruments.

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

3.3 Formalized Model of the Integral Index of the Digital Transformation of Marketing

In order to enable empirical analysis, the digital transformation of marketing must be operationalized as a generalized measurable indicator that aggregates interrelated components of an enterprise's digital capability. Within this study, it is interpreted as an integrated capability of an enterprise to use data analytics, digital interaction channels, branding instruments, and organizational integration in order to generate value-added and enhance export resilience.

Formally, the integral index of the digital transformation of marketing for enterprise i in period t is defined as the weighted sum of normalized subindices:

$$DMTI_{it} = \sum_{k=1}^{K} w_k \cdot S_{kit}, \quad \text{де } \sum_{k=1}^{K} w_k = 1,\ w_k \geq 0 \tag{1}$$

where $DMTI_{it}$ denotes the Digital Marketing Transformation Index; S_{kit} represents the value of the *k*-th subindex; and w_k denotes the weight of the subindex.

To ensure interpretability and comparability across enterprises, each subindex S_{kit} is constructed as an aggregated assessment of a set of primary indicators. It is appropriate to apply linear aggregation of normalized indicators:

$$S_{kit} = \sum_{j=1}^{J_k} a_{kj} \cdot Z_{kjit}, \quad \text{де } \sum_{j=1}^{J_k} a_{kj} = 1,\ a_{kj} \geq 0 \tag{2},$$

where Z_{kjit} is the normalized value of the *j*-th indicator within the *k*-th subindex, and a_{kj} represents the weight of the indicator within the subindex.

Normalization of the indicators is performed using the min–max method so that all indicators fall within the range [0;1] and do not distort the integral index due to differences in measurement units:

$$Z_{kjit} = \frac{X_{kjit} - \min(X_{kj})}{\max(X_{kj}) - \min(X_{kj})} \tag{3},$$

where Xkjit denotes the actual value of the indicator, and $\min(X_{kj})$ and $\max(X_{kj})$ represent the minimum and maximum values within the sample.

If an indicator has a negative orientation, for example, the share of manual operations in marketing or the frequency of critical system failures, an inversion procedure is applied:

$$Z_{kjit} = 1 - \frac{X_{kjit} - \min(X_{kj})}{\max(X_{kj}) - \min(X_{kj})} \tag{4},$$

After formalization, the issue of weighting arises. Two approaches are acceptable for this study. The first is an expert analytical approach, which assigns weights according to the theoretical importance of the components. The second is a statistical approach, for example, principal component analysis or factor analysis. Within the framework of this research, in order to preserve transparency and reproducibility, it is appropriate to begin

with equal weights of the subindices ($w_k=1/K$ and equal weights of indicators within each subindex ($a_{kj}=1/J_k$), followed by a sensitivity analysis to changes in weights through a robustness check. This logic minimizes subjectivity while maintaining consistency with the conceptual framework.

Since the topic of the study combines the digital transformation of marketing and branding of value-added products with economic recovery, the index should reflect not merely the presence of digital instruments but their capacity to generate economic effects through three channels: reduction of transaction costs, formation of brand premium, and enhancement of export resilience. For this reason, it is appropriate to structure the integral index of the digital transformation of enterprise marketing DMTI as four complementary subindices, which can subsequently be represented in the form of a table of indicators.

$$DMTI_{it} = w_1 \cdot S_{it}^{DATA} + w_2 \cdot S_{it}^{CHANNEL} + w_3 \cdot S_{it}^{BRAND} + w_4 \cdot S_{it}^{ORG} \quad (5)$$

where S^{DATA} denotes data-driven capability; $S^{CHANNEL}$ digital channels and platforms; S^{BRAND} digital branding and trust; and S^{ORG} organizational integration and governance.

The transition from S^{DATA} to $S^{CHANNEL}$ is logical because analytics without channels does not generate commercial results, while channels without analytics often lead to inefficient expenditures. The component S^{BRAND} is introduced next, since branding transforms digital presence into the ability to obtain a price premium and secure stable contracts. The structure is completed by S^{ORG}, because without process integration, such as CRM systems, data quality management, cybersecurity, and internal regulations, digital solutions remain situational and do not support long-term resilience.

The logic of constructing the integral index of the digital transformation of marketing requires a clear structuring of its components in order to ensure transparency of measurement and enable further empirical analysis. Since digital transformation within this study is interpreted as a strategic capability of enterprises to influence the reduction of transaction costs, the formation of brand premium, and the growth in high-value export segments, it is appropriate to operationalize the index through a system of interrelated subindices and specific measurable indicators. Such an approach makes it possible to avoid the abstract nature of the concept of digital transformation and ensures the possibility of its quantitative assessment.

The generalized structure of the integral index of the digital transformation of marketing is presented in Table 1.

Table 1. Structure of the Integral Index of the Digital Transformation of Marketing (DMTI)

Subindex	Substantive Characteristic	Main Indicators (example)	Expected Economic Effect
S^1 DATA Analytical capability	Level of use of data and artificial intelligence in	Share of decisions based on analytics; presence of CRM and BI systems; use of demand forecasting; application of	Reduction of information asymmetry; improvement in positioning accuracy;

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

Subindex	Substantive Characteristic	Main Indicators (example)	Expected Economic Effect
	marketing decision making	artificial intelligence for segmentation	reduction of marketing expenditures
S^{2} CHANNEL Digital channels and platforms	Degree of digitalization of sales and international communication	Share of digital sales; presence of e-commerce; integration with international platforms; speed of entry into new markets	Reduction of transaction costs; acceleration of internationalization; diversification of markets
S^{3} BRAND Digital branding and trust	Level of formation of intangible value through digital instruments	Online reputation (ratings, reviews); verification of quality (certifications, transparency); personalization of communications; share of repeat purchases	Formation of brand premium; growth of value-added; increase in customer loyalty
S^{4} ORG Organizational integration	Alignment of digital marketing processes with internal management systems	Integration of CRM and ERP systems; digital governance regulations; cybersecurity; stability of IT infrastructure	Improvement of process resilience; minimization of operational risks; long-term competitiveness

The presented structure demonstrates that the digital transformation of marketing encompasses not only the communication dimension but also analytical, organizational, and reputational components. The complexity of these elements ensures a systemic influence on the economic outcomes of enterprises. Analytical capability improves the quality of managerial decision-making. Digital channels reduce the costs of entry into international markets. Digital branding transforms these advantages into value-added through the formation of trust and the ability to obtain a premium price. Organizational integration ensures the resilience of processes and prevents their fragmentation.

Thus, the integral index DMTI serves as an instrument for the quantitative measurement of the digital maturity of enterprises and as an analytical basis for examining its influence on the structure of exports, the growth an increase in processed goods within the export structure, and the formation of export resilience. Within this study, the digital transformation of marketing is interpreted as a strategic capability to integrate analytical, communication, branding, and organizational processes in order to generate value-added and reduce transaction costs.

The proposed formalized model makes it possible to move from conceptual justification to empirical verification of the relationship between the level of digital transformation of marketing, the structure of exports, and indicators of export resilience. A logical continuation of the study is the empirical testing of the index and the analysis of its relationship with the economic performance of enterprises under conditions of economic turbulence.

At the same time, the study is intentionally focused on the agri-food sector, which represents a strategically significant component of Ukraine's export structure and provides a relevant context for analyzing the role of digital marketing transformation under

conditions of economic turbulence. This sector-specific focus allows for a deeper examination of the mechanisms linking digital transformation, branding, and export resilience.

At the same time, the applicability of the proposed model may vary across sectors with different technological intensity and value creation logics. Therefore, future research may extend the analytical framework by incorporating cross-sectoral data, enabling a broader assessment of the impact of digital marketing transformation on export performance and economic recovery.

4. Practical Implementation of the Model: Sectoral Justification and Empirical Application

Under conditions of a wartime economy and increased external turbulence, the priority of a sector for the empirical testing of the digital transformation of marketing model should be determined not only by export volumes but also by its systemic role in foreign currency revenues, its capacity to ensure export resilience, and the presence of potential for growth in value-added products through deeper processing and the development of branding.

Foreign trade in Ukraine remains a critical channel for maintaining macroeconomic stability, which is reflected in the basic macroeconomic indicators of the State Statistics Service, particularly in the indicators of exports of goods and services. At the same time, within the framework of a wartime economy, the key issue is not merely the recovery of gross export volumes but the qualitative structural modernization of the export portfolio, specifically, the expansion of advanced product categories in exports capable of generating higher margins, employment, and tax revenues.

In order to identify the sector with the most relevant potential for structural transformation, a comparative analysis of exports by major commodity groups for the period 2022–2025 was conducted (Table 2). This approach makes it possible to evaluate both the export significance of sectors and their dynamics under wartime conditions, which serves as an empirical marker of resilience.

Table 2. Trends in Ukraine's exports by key commodity groups, 2022–2025 (USD million)

	Export volumes, million USD				Deviation		
Commodity Groups	2022	2023	2024	2025	2023/2022	2024/2023	2025/2024
II. Products of plant origin	13 472	11 717	13 528	12 940	–1 755	+1 811	–588
III. Fats and oils	5 949	5 649	5 756	5 420	–300	+107	–336
IV. Prepared food products	2 497	3 272	3 756	4 410	+775	+484	+654
I. Live animals and animal products	1 472	1 363	1 644	1 710	–109	+281	+66
Total agricultural sector (I–IV)	23 390	22 001	24 684	24 480	–1 389	+2 683	–204
XV. Base metals	6 003	3 916	4 456	4 520	–2 087	+540	+64

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

	Export volumes, million USD				Deviation		
Commodity Groups	2022	2023	2024	2025	2023/2022	2024/2023	2025/2024
V. Mineral products	4 323	2 415	3 432	3 510	–1 908	+1 017	+78
XVI. Machinery and equipment	3 732	2 621	3 143	3 680	–1 111	+522	+537
VI. Chemical products	1 287	888	973	1 020	–399	+85	+47
IX. Wood and wood products	1 885	1 493	1 466	1 430	–392	–27	–36
Other commodity groups	1 044	848	880	910	–196	+32	+30
Total exports of Ukraine	44 136	36 183	41 733	40 560	–7 953	+5 550	–1 173

Source: compiled based on data from the State Statistics Service of Ukraine.

The results presented in Table 2 demonstrate that commodity groups I–IV maintain a leading role in the export structure throughout the entire period and, therefore, are the most suitable for analyzing the mechanisms of export resilience. At the same time, within the agricultural block, a critically important trend for the topic of this study becomes visible. The segment of prepared food products demonstrates a stable positive dynamic during 2023–2025, which may be interpreted as a marker of the potential a shift from a raw-material export structure toward a value-oriented economic model.

A critically important characteristic of export resilience under wartime risks is not only the volume of deliveries but also the ability of the sector to maintain its production and processing base under conditions of structural shocks.

According to preliminary estimates of the State Statistics Service of Ukraine, in 2025, the volume of agricultural production declined compared with 2024. This dynamic indicates the presence of supply shocks and reinforces the need to increase the market adaptability of enterprises through the digital transformation of marketing, the development of international sales channels, and the verification of product quality. At the same time, indicators of business statistics reflect the condition of the processing component, particularly in the production of food products, beverages, and tobacco products, which represent a direct link in the creation of value-added within agri-food value chains.

However, in order to justify the selection of the agri-food sector, an analysis of export dynamics alone is not sufficient. It is also necessary to take into account the condition of the production base of the sector, since it determines the potential for the generation of value-added and the resilience to external shocks. For this purpose, production indices for the period 2023–2025 were analyzed (Table 3).

Table 3. Indicators of the Production Base of the Agri-Food Sector of Ukraine, 2023–2025

Indicator	Years			Deviation	
	2023	2024	2025	2024/2023, %	2025/2024, %
Agricultural production index, % compared with the previous year	97,8	102,4	95,2	+4,6	–7,2
Production index of food products, beverages, and tobacco products, % compared with the previous year	101,5	104,1	103,6	+2,6	–0,5

Source: compiled based on data from the State Statistics Service of Ukraine (annual production indices).

The analysis of the dynamics of production indices for the period 2023–2025 demonstrates higher volatility in primary agricultural production compared with the processing component of the agri-food sector. While the agricultural production index declined in 2025 after a period of relative stabilization in 2024, the production of food products maintained a positive dynamic. This asymmetry indicates greater adaptability of the processing segment and confirms the presence of a structural reserve for increasing value-added. In this context, the digital transformation of marketing is considered an instrument for strengthening this structural shift through the development of branding, diversification of sales channels, and reduction of transaction costs.

Thus, the agricultural sector, in combination with food processing, represents a relevant object for testing the integral index of the digital transformation of marketing (DMTI) for three main reasons. First, the macroeconomic significance and export weight of the sector confirm its systemic influence on economic recovery. Second, the presence of a structural reserve, reflected in the growth of the prepared food segment, creates a basis for examining mechanisms for increasing value-added through branding, digital channels, and analytics. Third, the high sensitivity to transaction costs and trust-related requirements, including certification, traceability, reputational risks, quality control, and logistical constraints, makes agri-food markets an environment in which the digital transformation of marketing may produce the most measurable effects through the reduction of market entry costs, acceleration of partner search, and the formation of brand premium.

Therefore, the agri-food export sector allows for empirical testing of the central assumption of the study that the digital transformation of marketing and branding acts as a factor in the transition toward exports with higher value-added and in the strengthening of export resilience under conditions of a wartime economy.

Given the substantiated selection of the agri-food sector as the object of the study, the next stage involves testing the conceptual model at the sectoral level through the analysis of the structural transformation of agri-food exports. The empirical part of the study is aimed at verifying the hypothesis that the structural shift toward value-added products is associated with increased export resilience, market diversification, and the formation of a price premium under conditions of economic turbulence. Within the framework of the study, the structural modernization of exports is interpreted as an

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

aggregated manifestation of the effects of the digital transformation of marketing and branding.

The empirical analysis is based on official international foreign trade statistics obtained from the Trade Map and UN Comtrade databases. The study covers the period 2022–2025, which makes it possible to analyze the transformation of Ukraine's agri-food exports under the conditions of a wartime economy and increased external turbulence.

The unit of analysis consists of agri-food sector commodity groups aggregated at the HS-4 level. This level of disaggregation ensures sufficient precision for structural analysis while avoiding excessive data fragmentation. Within the framework of the study, commodity positions are conditionally divided into two groups: primary raw materials and value-added products. The first group includes cereals, oilseed crops, and other products of primary agricultural processing. The second group includes processed food products, such as vegetable oils, prepared food products, confectionery, processed vegetables and fruits, and other products of deeper processing.

This classification makes it possible to empirically assess the structural shift from a raw material export model toward a model oriented toward the generation of value-added.

For the quantitative assessment of structural changes, the high-value segment of exports in total agri-food exports is used as a key indicator. This indicator is calculated as the ratio of the export value of processed products to total agricultural exports in the corresponding period. Growth of this indicator is interpreted as evidence of structural modernization of the export portfolio.

The second key indicator is the average export price, or unit value, which is defined as the ratio of export value to the physical volume of shipments. Unit value is used as a proxy indicator of product quality, brand premium, and competitive position in international markets. A comparison of the dynamics of this indicator for raw materials and processed goods makes it possible to evaluate the presence of a price advantage for products with a higher level of processing.

To assess export resilience, several complementary indicators are used. First, the export volatility coefficient is calculated as the ratio of the standard deviation to the mean value of export volumes over the period under study. Second, the dynamics of export recovery after the shock of 2022 are analyzed, which makes it possible to evaluate the speed of adaptation to crisis conditions.

In addition, the export concentration index by partner countries (HHI) is calculated, which is defined as the sum of the squares of the shares of the main importing countries in total exports. A decrease in the value of the HHI indicates increasing diversification of export markets and a potential improvement in export resilience.

The consolidated system of indicators used in the study is presented in Table 4.

Table 4. Indicators of the Empirical Analysis of the Structural Transformation of Agri-Food Exports

Indicator	Notation	Calculation Method	Economic Interpretation
Share of value-added products	VAS	Export_processed / Export_total	Level of structural modernization

Indicator	Notation	Calculation Method	Economic Interpretation
Average export price	UV	Export_value / Export_quantity	Proxy for quality and brand premium
Export volatility	ER_1	σ(Export) / μ(Export)	Level of export resilience
Concentration index (HHI)	HHI	Σs_i^2	Market diversification

To ensure analytical precision in the empirical study, the structural transformation of agri-food exports was analyzed at the level of four-digit codes of the Harmonized System commodity classification (HS-4). This level of disaggregation makes it possible to avoid excessive aggregation of data while ensuring sufficient representativeness of the sample. Within the framework of the study, commodity positions are grouped into two conditional categories: raw material products, including cereals and oilseed crops, and value-added products, including vegetable oils, processed food products, and prepared food items. The selection of subgroups was carried out with consideration of their share in the structure of agricultural exports and their role in generating value-added within agri-food value chains. This approach makes it possible to quantitatively assess the depth of the structural shift from a raw material export model to a model oriented toward products with a higher level of processing.

The main hypothesis of the study states that the increase in the share of value-added products in agri-food exports is associated with higher export resilience, the emergence of a price premium, and greater diversification of export markets.

To test this hypothesis, regression analysis in a time series framework is applied. The basic model involves estimating the influence of the structural indicator VAS on indicators of export resilience and competitiveness.

The model of the relationship between export resilience and export structure is defined as follows:

$$ER_t = \alpha + \beta VAS_t + \varepsilon_t \quad (6)$$

The model describing the influence of the contribution of processed output the average export price is defined as follows:

$$UV_t = \alpha + \beta VAS_t + \varepsilon_t \quad (7)$$

Similarly, the relationship between structural modernization and market diversification is estimated through the following model:

$$HHI_t = \alpha + \beta VAS_t + \varepsilon_t \quad (8)$$

The obtained estimates make it possible to determine whether the structural shift toward processed products is accompanied by greater export adaptability and strengthened competitive positions. The selected approach is based on the use of official international

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

foreign trade statistics, which ensures the comparability and reproducibility of the research results.

The structural shift toward value-added products is interpreted as a macro-level manifestation of the modernization of marketing mechanisms, the development of branding, certification systems, and the integration of digital sales channels into international trade.

Thus, the share of processed products in exports is interpreted as an aggregated indicator of the effects of the digital transformation of marketing in the agri-food sector. Testing the statistical relationship between this indicator and indicators of export resilience makes it possible to empirically assess the relevance of the proposed conceptual model.

For the practical implementation of this approach, a dataset of primary statistical data was compiled for the selected commodity subgroups at the HS-4 level. Table 5 presents the dynamics of export values, physical shipment volumes, and the geographical structure of sales for the period 2022–2024, which makes it possible to comprehensively assess structural shifts across the raw material and processed segments of agri-food exports.

The combination of value and quantity indicators provides a basis for calculating the average export price, the share of value-added products (VAS), the market concentration index (HHI), and indicators of export resilience, which enables the transition from descriptive analysis to the quantitative testing of the research hypotheses.

Table 5. Dynamics of Exports of Agri-Food Commodity Subgroups (HS-4) and Indicators of the Geographical Structure, 2022–2024

Product name	HS-4 code	Group (Raw/Processed)	Export value (million USD)			Number of partner countries			Physical volume, tons			Share of top 3 countries, %, 2024
			2022	2023	2024	2022	2023	2024	2022	2023	2024	
Wheat	1001	Raw materials	2,7	2,9	3,7	66	64	52	11 223 215	16 151 705	20 664 816	48,5
Barley	1003	Raw materials	0,45	0,36	0,6	32	38	31	2 144 355	2 161 969	3 377 106	58,1%
Maize	1005	Raw materials	5,9	4,9	5,1	56	58	61	25 176 648	26 367 037	29 631 700	40%
Soybeans	1201	Raw materials	0,9	1,3	1,3	40	49	42	2 000 875	3 489 891	3 428 255	54,6%
Rapeseed	1205	Raw materials	1,6	1,2	1,8	39	44	36	3 136 246	3 027 034	3 879 903	73,9%
Sunflower seeds	1206	Raw materials	1,3	0,3	0,07	53	43	36	2 767 006	797 492	213 098	48,2%
Soybean oil	1507	Value-added products	0,3	0,3	0,3	35	36	48	238 244	297 529	386 782	75%

Product name	HS-4 code	Group (Raw/Processed)	Export value (million USD)			Number of partner countries			Physical volume, tons			Share of top 3 countries, %, 2024
			2022	2023	2024	2022	2023	2024	2022	2023	2024	
Sunflower oil	1512	Value-added products	5,5	5,0	5,1	125	120	127	4 310 079	5 740 754	6 008 523	34,7%
Sugar	1701	Value-added products	0,1	0,4	0,4	23	40	76	181 310	516 032	749 772	27,3%
Bakery products	1905	Value-added products	0,2	0,2	0,3	83	81	87	69 077	88 942	107 561	37,8%
Processed fruits and vegetables	2008	Value-added products	0,01	0,009	0,011	34	38	36	3 761	2 954	3 584	53%
Other prepared food products	2106	Value-added products	0,03	0,03	0,04	45	37	37	9 886	8 869	11 483	56,7%

Source: generated based on TRADE MAP, compiled based on data from the State Statistics Service of Ukraine

The analysis of the data presented in Table 5 reveals several structural characteristics in Ukraine's agri-food exports over 2022–2024. Raw material commodity positions continue to dominate in terms of absolute volumes. In particular, maize and wheat account for the largest share of foreign currency revenues. At the same time, the dynamics of several subgroups indicate significant structural shifts within the sector.

The most illustrative case is the sunflower segment. Exports of sunflower seeds declined from USD 1.3 billion in 2022 to USD 0.07 billion in 2024, while exports of sunflower oil consistently exceeded USD 5 billion annually. This dynamic indicates a redistribution of value-added in favor of processing and a gradual shift from raw material exports toward products with a higher level of processing.

At the same time, this structural shift should be interpreted in a broader institutional context. In particular, wartime conditions have significantly influenced export patterns through logistics constraints, changes in transport routes, and state policy measures aimed at supporting domestic processing. The disruption of traditional supply chains and the need to optimize export logistics have created additional incentives to export processed products rather than raw materials.

Thus, the observed transformation reflects not only the impact of marketing and branding strategies but also the combined effect of institutional factors, including policy support, infrastructure limitations, and supply chain restructuring. This interaction highlights the multifactorial nature of export transformation under conditions of economic and geopolitical instability.

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

The geographical structure of exports also demonstrates differentiation between segments. Processed products are characterized by broader diversification of export markets, with sunflower oil exported to 127 countries in 2024. In contrast, certain raw material commodities exhibit a higher level of concentration; for example, the share of the three largest importers of rapeseed reaches 73.9 percent. At the same time, sugar exports show a significant expansion of geographical coverage, increasing from 23 countries in 2022 to 76 countries in 2024, which may indicate active market expansion.

The identified trends at the level of individual commodity subgroups require further aggregation in order to quantitatively assess the balance between the raw material and processed segments.

In order to integrate the obtained results and provide an aggregated assessment of structural transformation, the indicators were summarized across two segments: raw material products and value-added products (Table 6).

Table 6. Aggregated Indicators of the Structural Transformation of Agri-Food Exports, 2022–2024

Year	Raw material exports, billion USD	Value-added exports (Processed), billion USD	Total exports, billion USD	Share of processed products (VAS), %	Average price of raw materials, USD per ton	Average price of value-added products (Processed), USD per ton
2022	12,85	6,14	18,99	32,3	–	–
2023	10,96	5,94	16,90	35,1	–	–
2024	12,57	6,15	18,72	32,8	205	846

Source: generated based on TRADE MAP, compiled based on data from the State Statistics Service of Ukraine

The aggregated calculations confirm the continued dominance of the raw material segment in terms of absolute export volumes while simultaneously indicating the presence of a moderate structural shift toward processing. The total export value of the selected subgroups amounted to USD 18.99 billion in 2022, declined to USD 16.90 billion in 2023 (–11.0%), and recovered to USD 18.72 billion in 2024. The raw material segment accounted for USD 12.85, 10.96, and 12.57 billion, respectively, whereas value-added products demonstrated relative stability at USD 6.14, 5.94, and 6.15 billion.

The share of processed products (VAS) increased from 32.3% in 2022 to 35.1% in 2023 and subsequently stabilized at 32.8% in 2024. The increase in VAS in 2023 occurred against the background of a sharper contraction in raw material exports, which may indicate relatively greater adaptability of the processed segment under conditions of wartime turbulence.

The calculation of the average export price further confirms the economic significance of processing. In 2024, the average price of raw materials was approximately USD 205 per ton, whereas for value-added products it reached USD 846 per ton, which is more than four times higher than the corresponding indicator for raw materials. Such a

difference indicates the presence of a substantial price premium and strengthens the argument in favor of structural modernization of exports.

The obtained aggregated estimates form a descriptive empirical basis for further testing of the hypothesis regarding the influence of the structural category of goods on indicators of competitiveness and market diversification.

For this purpose, panel regression analysis was applied at the level of HS-4 commodity subgroups for the period 2022–2024. The unit of observation is commodity subgroup *i* in year *t*. As a proxy indicator of structural modernization, a binary variable *Processed_i* (1 for value-added products; 0 for raw materials), corresponding to the classification presented in Table 5. The dependent variables were constructed based on Trade Map data.

UV_it denotes the average export price (USD per ton);

Partners_it denotes the number of partner countries;

Top3Share_i,2024 denotes the share of the three largest importers in 2024.

The basic specification of the models is as follows:

(1) $UV_it = \alpha + \beta \cdot Processed_i + \varepsilon_it$

(2) $Partners_it = \alpha + \beta \cdot Processed_i + \varepsilon_it$

(3) $Top3Share_i,2024 = \alpha + \beta \cdot Processed_i + \varepsilon_i$

The estimation results are presented in Table 7.

Table 7. Results of the Panel Regression Analysis of the Effect of the Structural Category of Goods (Processed) on Indicators of Competitiveness and Market Structure, 2022–2024

Model	Dependent variable	Coefficient for Processed	Standard error	t-statistic	p-value	R^2
(1)	Average export price (UV), USD per ton	1612,1	264,3	6,10	<0,001	0,522
(2)	Number of partner countries	14,89	8,56	1,74	0,091	0,082
(3)	Share of top 3 countries, %, 2024	–6,46	8,58	–0,75	0,471	0,054

Note:
Processed = 1 for value-added products (1507, 1512, 1701, 1905, 2008, 2106);
Processed = 0 for raw material products (1001, 1003, 1005, 1201, 1205, 1206).
Estimation was performed using OLS on panel data (36 observations).

The results of the regression analysis confirm a statistically significant differentiation between the raw material and processed segments of agri-food exports. The most convincing effect is observed in model (1): value-added products exhibit, on average, an export price that is USD 1612 per ton higher than that of raw materials ($p < 0.001$). This finding indicates the presence of a price premium and confirms the economic rationale for a structural transition toward processing.

The obtained result is consistent with the theoretical framework of the study, according to which the digital transformation of marketing and branding contributes to the formation of intangible product value, reduces information asymmetry, and increases the willingness of importers to pay a premium price.

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

In model (2), the processed segment demonstrates a tendency toward a broader geographical distribution of exports, averaging an additional 14.9 partner countries. This partially confirms the hypothesis of increased market diversification. At the same time, the statistical significance of this effect is moderate, which may be explained by the influence of wartime logistical constraints.

Model (3) does not reveal a statistically significant difference in the level of market concentration between the segments in 2024, indicating that key export markets continue to play an important role regardless of the degree of processing.

Overall, the results of the econometric analysis confirm the central component of the research hypothesis: a structural shift toward value-added products is associated with the formation of a stable price premium and improved competitive positioning in international markets.

The obtained empirical results make it possible to generalize the role of the digital transformation of marketing as a systemic factor of the structural modernization of exports. The observed structural shift toward value-added products is accompanied by the formation of a substantial price premium and relatively higher export adaptability. At the same time, the key task is not only to identify this shift but also to interpret it through the mechanisms of reducing transaction costs, generating brand premium, and strengthening export resilience under conditions of a wartime economy.

Within the proposed conceptual model, the share of value-added products (VAS) is interpreted as an aggregated manifestation of the effects of the digital transformation of marketing and branding. This refers not merely to the use of digital communication channels but to an integrated system that includes data-driven analytics, digital sales platforms, online reputation management, and verification of product quality.

Digital marketing transformation influences the structure of exports through three key mechanisms.

The first mechanism is the reduction of transaction costs. Digital channels for partner search, online platforms, automated data management systems, and digital certification reduce the costs of information search, verification, and contract formation. Under wartime conditions, this becomes critically important, since the speed of adaptation determines the ability of enterprises to maintain their presence in foreign markets.

The second mechanism is the formation of a brand premium. The difference between the average export price of raw materials (USD 205 per ton) and value-added products (USD 846 per ton) in 2024 indicates the presence of an intangible component in the price structure. This premium is generated through digital branding, personalized communications, transparency of origin, certification, and trust management. Digital instruments make it possible to scale a brand in international markets without a proportional increase in costs.

The third mechanism is market diversification. Processed products demonstrate a broader geographical distribution of exports, which reduces the risk of dependence on individual partners. Digital communication channels and e-commerce platforms lower the barriers to entry into new markets, which directly affects the concentration index and export resilience.

Thus, this transformation functions not merely as a tactical sales instrument but as a structural factor in the modernization of the export model (Figure 1).

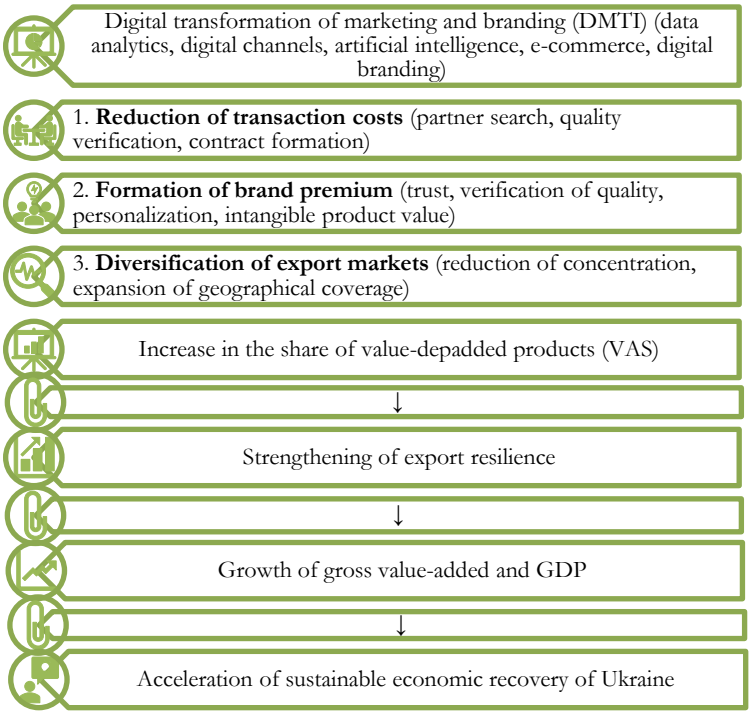

Figure 1. Conceptual model of the impact of the digital transformation of marketing and branding on the structural modernization of exports and the economic recovery of Ukraine.
Source: developed by the author

4. Conclusion

The study confirms that the digital transformation of marketing and branding can be considered a structural factor in the modernization of the export model and in accelerating Ukraine's economic recovery. In contrast to approaches that interpret digital marketing primarily as a tool for improving communication efficiency or optimizing costs, this study interprets it as a systemic mechanism for generating value-added at the macroeconomic level.

The empirical analysis throughout Ukraine's agri-food export flows in 2022–2024 demonstrates that value-added products are characterized by a significantly higher average export price and by relative adaptability under conditions of wartime turbulence. The difference between the average export price of raw materials (USD 205 per ton) and processed products (USD 846 per ton) indicates the presence of a brand premium and an intangible component of competitiveness.

The obtained results make it possible to formulate several key scientific conclusions.

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

First, an integrated conceptual model is proposed that combines transaction cost theory, dynamic capabilities theory, and approaches to the digital transformation of marketing within a unified framework of export structural modernization.

Second, the study substantiates the interpretation of the share of value-added products (VAS) as an aggregated macroeconomic manifestation of the digital transformation of marketing and branding. This interpretation makes it possible to move from micro-level marketing metrics toward the analysis of the impact of digitalization on the structure of national exports.

Third, it is demonstrated that the digital transformation of marketing operates through three interrelated channels: the reduction of transaction costs, the formation of a brand premium, and the diversification of markets. Together, these mechanisms facilitate the structural transition from commodity-based exports toward a value-creation-driven model.

Thus, the study expands the theoretical understanding of the role of marketing under conditions of a wartime economy, demonstrating its significance as an instrument of macroeconomic transformation.

The practical significance of the results lies in the fact that the digital transformation of marketing and branding should be considered an element of structural economic policy rather than merely a component of corporate strategy. For enterprises, this implies the necessity of investing in data-driven analytics, digital sales platforms, online reputation management, and the verification of product quality in order to generate a sustainable brand premium in international markets. For public policy, the results highlight the importance of integrating business digitalization programs, support for e-commerce, international certification, and the development of export brands into the system of post-war economic recovery. In the strategic perspective, digital marketing and the branding of value-added products function not as auxiliary sales instruments but as key drivers of growth in gross value-added, export resilience, and the global competitiveness of Ukraine.

Future research may extend the proposed approach by incorporating comparative analysis across countries experiencing structural economic shocks, which would allow for testing the generalizability of the model in different institutional environments. In addition, longitudinal studies examining the relationship between the level of digital marketing maturity and export resilience over time would provide deeper insights into the stability and long-term effects of digital transformation processes. Such research directions would contribute to validating the proposed conceptual model and to refining its applicability in diverse economic contexts.

This study contributes to the literature by bridging the gap between firm-level digital marketing transformation and macro-level export structural change, demonstrating how marketing capabilities can function as a driver of economic recovery. Unlike prior research, the proposed model integrates branding, transaction costs, and export resilience into a unified analytical framework applicable under conditions of wartime economic disruption.

References

Tanasiichuk A., Kovalchuk S., Nianko V., Boiko R., Drazhnitsya S., Holovchuk Y., Sirenko S. (2022). Innovative Methods of Assessing the Efficiency of Internet Communications of Enterprises. European Journal of Sustainable Development, 11(2), 15–31. https://doi.org/10.14207/ejsd.2022.v11n2p15

Tanasiichuk A., Kovalchuk S., Sokoliuk, K., Sokoliuk S., Liubokhynets L., Sirenko S., (2023). Resilient Strategies of International Marketing Segmentation. European Journal of Sustainable Development, 12(2), 174–191. https://doi.org/10.14207/ejsd.2023.v12n2p174

Tanasiichuk A., Mykhailyshyn L., Fedoryshyna L., Lagodiienko V., Polyova N., Yurchenko O. (2024). Strategies for Sustainable Development of Companies in International Markets in the Context of Digitalization. European Journal of Sustainable Development, 13(2), 12. https://doi.org/10.14207/ejsd.2024.v13n2p12

Tanasiichuk A., Tyukhtenko N., Zaburmekha Y., Sokoliuk S., Prokopchuk O., Krupskyi A., Tsurkanov M. (2024). Sustainable Development Strategy of Enterprises in International Markets: Opportunities and Challenges. European Journal of Sustainable Development, 13(3), 311. https://doi.org/10.14207/ejsd.2024.v13n3p311

Davenport T., Guha A., Grewal D., & Bressgott T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48, 24–42. https://doi.org/10.1007/s11747-019-00696-0

De Bruyn A., Viswanathan V., Beh Y. S., Brock J. K. U., von Wangenheim F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. International Journal of Research in Marketing, 37(1), 91–105. https://doi.org/10.1016/j.ijresmar.2020.04.007

Verhoef P. C., Broekhuizen T., Bart Y., Bhattacharya A., Dong J. Q., Fabian N., & Haenlein M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. Journal of Business Research, 122, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

Kshetri N., Dwivedi Y. K., Davenport T. H., Panteli N. (2024). Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda. International Journal of Information Management, 75, 102716. https://doi.org/10.1016/j.ijinfomgt.2023.102716

Mariani M., Dwivedi Y. K. (2024). Generative artificial intelligence in innovation management: A preview of future research developments. Journal of Business Research, 175, 114542. https://doi.org/10.1016/j.jbusres.2024.114542

Zahoor N., & Lew Y. K. (2024). Enhancing international marketing capability and export performance of emerging market SMEs in crises: strategic flexibility and digital technologies. International Marketing Review, 41(5), 1158–1187. https://doi.org/10.1108/IMR-12-2021-0350

Pfajfar G., Mitręga M., Shoham A. (2024). Systematic review of international marketing capabilities in dynamic capabilities view – calibrating research on international dynamic marketing capabilities. International Marketing Review, 41(1), 237–272. https://doi.org/10.1108/IMR-12-2022-0276

Akter S., Mohiuddin Babu M., Hossain T. M. T., Dey B. L., Liu H., Singh P. (2024). Omnichannel management capabilities in international marketing: the effects of word of mouth on customer engagement and customer equity. International Marketing Review, 41(1), 42–73. https://doi.org/10.1108/IMR-09-2022-0203

Vardarsuyu M., Spyropoulou S., Menguc B., Katsikeas C. S. (2024). Managers' process thinking skills, dynamic capabilities and performance in export ventures. International Marketing Review, 41(1), 302–332. https://doi.org/10.1108/IMR-10-2022-0224

Ciszewska-Mlinarič M., Siemieniako D., Wójcik P. (2024). International dynamic marketing capabilities and international performance during the pandemic: a study of export manufacturers from Poland. International Marketing Review, 41(3). https://doi.org/10.1108/IMR-08-2022-0181

Weng C., Liu M. J., Ye, D., Huang J., Liu P. C. Y. (2024). Platform success in the international marketplace: reconfiguring digital resources for marketing agility. International Marketing Review, 41(5). https://doi.org/10.1108/IMR-08-2023-0199

Keegan B. J., Canhoto A. I., Yen D. A. (2022). Power negotiation on the tango dancefloor: The adoption of AI in B2B marketing. Industrial Marketing Management, 100, 36–48. https://doi.org/10.1016/j.indmarman.2021.11.001

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

Baabdullah A. M., Alalwan A. A., Slade E. L., Raman R., Khatatneh K. F. (2021). SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices. Industrial Marketing Management, 98, 255–270. https://doi.org/10.1016/j.indmarman.2021.09.003

Ciszewska-Mlinarič M., Siemieniako D., Wójcik P. (2023/2024 online first). (If you need the "official issue date" only, we can keep 2024 per IMR issue assignment.) International Marketing Review. https://doi.org/10.1108/IMR-08-2022-0181

State Statistics Service of Ukraine. URL: https://www.ukrstat.gov.ua/

Trade statistics for international business development. URL: http://www.trademap.org. [Last accesed 28.02.2026].