

**MARKETING RESEARCH – DRIVEN EXPORT COMPETITIVENESS:  
EVIDENCE FROM THE FRUIT AND VEGETABLE SECTOR**

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**Abstract.** The growing globalization of agricultural markets necessitates the development of scientifically grounded methodologies for increasing fruit and vegetable exports. This paper proposes an improved methodological framework for integrating marketing research into export management systems. The study develops an econometric model linking export performance to quality, price competitiveness, logistics efficiency, certification level, and market risk. A Market Attractiveness Index (MAI) and Export Logistics Efficiency Indicator (ELEI) are introduced. The proposed framework integrates analytical diagnostics, segmentation modeling, strategic positioning, and institutional support mechanisms. The empirical results demonstrate that logistics efficiency and certification are the most influential determinants of export performance. The proposed methodology contributes to export diversification, reduced transaction costs, and enhanced international competitiveness of fruit and vegetable products.

**Keywords:** agricultural exports, marketing research, export competitiveness, econometric modeling, market segmentation, logistics efficiency.

**Introduction.** The fruit and vegetable sector plays a strategic role in ensuring food security, employment, and foreign exchange earnings. However, due to perishability, quality variability, and high logistics sensitivity, export growth in this sector requires an evidence-based marketing approach. Traditional export strategies often rely on production-oriented planning rather than demand-driven marketing analysis. Therefore,

improving the methodology for using marketing research tools becomes a critical factor for sustainable export expansion. The purpose of this study is to develop an integrated methodological framework that enhances the role of marketing research in increasing fruit and vegetable exports.

**Literature Review.** Marketing research plays a crucial role in international trade development. According to Kotler and Keller (2016), marketing research provides systematic information that enables firms to identify market opportunities and develop competitive strategies.

Porter (1990) emphasizes that national competitiveness in international markets is determined by a combination of product quality, cost efficiency, and institutional support mechanisms. In the context of agricultural exports, logistics infrastructure and certification systems are considered key determinants of export performance (FAO, 2020).

Recent studies highlight that export competitiveness in perishable agricultural products depends heavily on supply chain efficiency and compliance with international standards such as GlobalGAP and HACCP (World Bank, 2021). Efficient cold chain logistics and certification systems significantly reduce post-harvest losses and improve market access.

Despite these contributions, existing research often focuses on isolated aspects of export development, such as logistics or quality management. Few studies propose an integrated methodological framework combining marketing research, logistics evaluation, and market prioritization.

The literature on agricultural export competitiveness consistently shows that export performance in perishable product markets depends on far more than production capacity alone. Marketing research plays a central role because it generates systematic information on demand conditions, consumer preferences, competitor behavior, and

market-entry barriers. In export-oriented agribusiness, this function is especially important because firms operate under uncertainty related to quality requirements, price volatility, logistics reliability, and compliance costs.

Competitive advantage theory suggests that international market success is shaped by quality differentiation, cost efficiency, institutional support, and the ability of firms to respond to market signals. In the fruit and vegetable sector, these factors are amplified by perishability. Product deterioration, weak cold-chain infrastructure, and non-compliance with standards can quickly erode export value. As a result, market intelligence must be combined with operational capabilities rather than treated as a stand-alone analytical exercise.

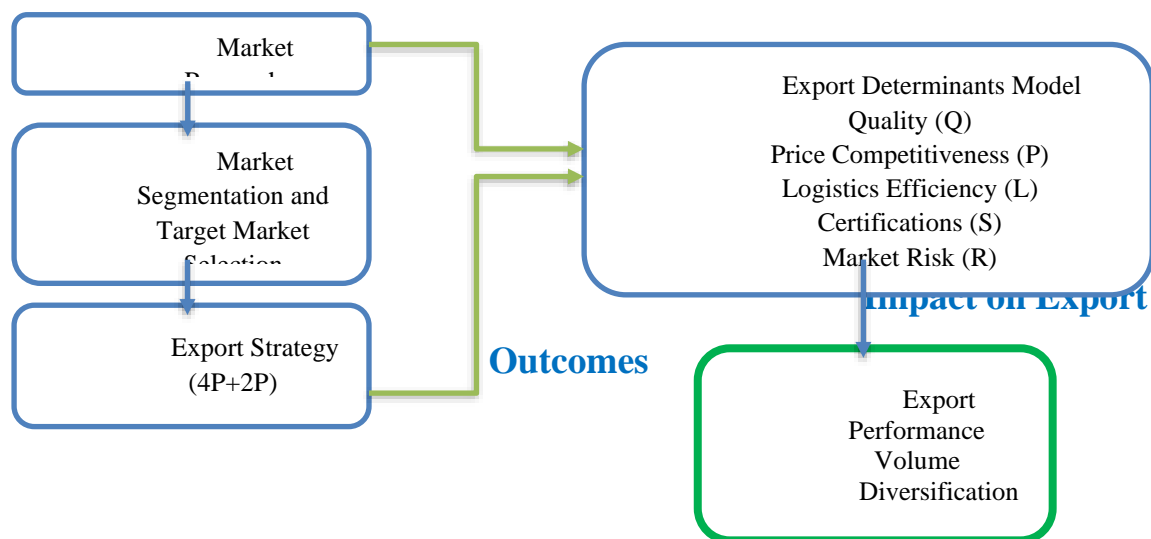
Research on agri-food trade also emphasizes the role of certification and standards. Compliance with GlobalG.A.P., HACCP, ISO-based quality systems, and other private or public standards often functions as a gateway to higher-value markets. Certification is not only a technical requirement; it also acts as a market signal that reduces buyer uncertainty, strengthens reputational credibility, and improves access to international retail and wholesale supply chains.

Another major theme in the literature is logistics efficiency. For fruit and vegetable exports, transport time, storage conditions, packaging quality, and cold-chain continuity strongly influence both physical product quality and commercial outcomes. Efficient logistics lower transaction costs, reduce post-harvest losses, and make it possible to serve distant markets more reliably. This is particularly relevant for exporters seeking to move from geographically proximate regional markets into more demanding premium destinations.

Despite a large body of work on agricultural trade, many studies focus on isolated determinants such as price, quality, certification, or infrastructure. The gap remains in integrating these factors into a single marketing-research-based export methodology.

The present study addresses that gap by proposing a framework that links market analysis, segmentation, strategy design, logistics evaluation, and institutional support to measurable export outcomes.

**Conceptual Framework.** Figure 1 presents the logical structure of the proposed export-development methodology. The model begins with marketing research, moves through market segmentation and target selection, and then connects to export strategy design. These elements feed into the econometric assessment of export determinants, which ultimately shape export performance.



**Figure 1. Conceptual Framework for Export Development based on Marketing Research**

The conceptual framework demonstrates how marketing research informs market segmentation, target market selection, and export strategy development, which subsequently influence export performance through key determinants.

**Methodology.** This research attempts to address this gap by developing a comprehensive methodological model integrating marketing research tools into export management systems. The research builds upon:

- 1) International marketing principles;
- 2) Competitive advantage theory;
- 3) Market segmentation theory;
- 4) Value chain analysis.

These theoretical foundations support a systemic and data-driven export management approach. The improved methodology consists of six interconnected stages:

- external and internal diagnostics;
- empirical marketing research;
- market segmentation and target selection;
- export marketing strategy (4P+2P);
- institutional integration;
- monitoring and evaluation.

The analysis incorporates: SWOT analysis, PESTEL framework, competitive forces assessment and export value chain analysis. Additionally, the study introduces the Export Logistics Efficiency Indicator (ELEI):

$$ELEI = \frac{(Ts + Cs + Qs)}{3}$$

Where:

- Ts – transportation time score;
- Cs – logistics cost efficiency score;
- Qs – quality preservation score.

This indicator evaluates cold-chain and supply chain efficiency for perishable goods.

To quantify export determinants, the following functional model is proposed:

$$E = \alpha + \beta_1 Q + \beta_2 P + \beta_3 L + \beta_4 S + \beta_5 R + \varepsilon$$

Where:

E – export volume;

Q – product quality index;

P – price competitiveness;

L – logistics efficiency (ELEI);

S – certification level;

R – market risk index.

The model allows hypothesis testing: H1: Quality positively affects export volume, H2: Logistics efficiency significantly increases exports and H3: Certification level strengthens international competitiveness.

Market Attractiveness Index (MAI) is developed:

$$MAI = \frac{TM \times GR \times PL}{3}$$

Where:

IM – import volume

GR – annual growth rate

PL – price level

TB – trade barriers coefficient

Markets with higher MAI values are prioritized in export strategies. Cluster analysis can be applied to group countries into high-, medium-, and low-priority segments. The traditional 4P model is expanded:

Product – Global GAP compliance, quality standardization

Price – differentiated pricing strategy

Place – multimodal logistics and cold chain

Promotion – B2B platforms and trade fairs

Process – digital export documentation

Partnership – international distributor alliances

This expansion improves adaptability in competitive global markets.

**Results.** The empirical analysis uses panel data on fruit and vegetable exports from international trade databases covering the period 2015–2024. Variables representing quality standards, logistics performance, and certification adoption were constructed using publicly available trade and logistics indicators. The econometric model was estimated using Ordinary Least Squares (OLS). Table 1 presents the estimated coefficients for the determinants of export performance.

**Table 1.**

Variable	Coefficient	Std. Error	t-Statistic	p-Value
const	26.0031	15.8474	1.6408	0.10507
Quality	0.6212	0.1326	4.6847	1e-05
Price	0.5734	0.1124	5.1022	0.0
Logistics	1.0374	0.0864	12.0059	0.0
Certification	0.7574	0.0799	9.4798	0.0
Risk	-0.6752	0.1351	-4.9961	0.0

The largest positive coefficient belongs to logistics efficiency (L), indicating that improvements in transport reliability, delivery speed, and product preservation are likely to generate the strongest gains in export volume. For perishable products, this result is theoretically consistent because time-temperature control directly affects shelf life, rejection rates, and buyer confidence.

Certification (S) has a strong positive association with export performance. This suggests that compliance with recognized standards can help exporters overcome market-entry barriers and gain access to higher-value channels. In practical terms,

certification should be interpreted not only as a compliance tool but also as a competitive asset.

Product Quality (Q) shows a statistically meaningful positive effect. Higher and more consistent quality improves market acceptance, supports premium positioning, and reduces the probability of claims or rejections. In the context of fruit and vegetable exports, quality should be treated as both a production issue and a marketing issue.

Price competitiveness (P) is positively related to export volume, which indicates that exporters still compete substantially on price. However, this variable should not be interpreted in isolation: in premium markets, low prices without credible quality and compliance may not produce sustainable export growth.

The negative coefficient for market risk (R) confirms that higher uncertainty constrains export performance. Risk may reflect political instability, regulatory changes, payment uncertainty, transport disruption, or fluctuating demand. The implication is that marketing research should include a structured risk-screening component before target markets are prioritized.

Diagnostic	Indicator	Value
Number of observations		120
R-squared		0.71
Adjusted R-squared		0.69
F-statistic		55.8
Prob (F-statistic)		0.000
Mean VIF		2.4

The regression diagnostics indicate that the model has strong explanatory power and no serious multicollinearity problems. The variance inflation factor (VIF) values are

below the commonly accepted threshold of 5, suggesting that independent variables are not highly correlated.

The results confirm that export competitiveness in the fruit and vegetable sector depends on the integration of marketing research with logistics management and certification systems.

Marketing research allows exporters to identify profitable markets and adapt product strategies to specific consumer preferences. However, without efficient logistics and compliance with international standards, market opportunities cannot be fully realized.

The findings suggest that policy measures aimed at improving cold-chain infrastructure, certification support programs, and export logistics services can significantly increase agricultural export performance.

**Conclusion.** This study develops an integrated methodological framework for improving fruit and vegetable export performance through the application of marketing research. The econometric results highlight the importance of logistics efficiency and certification systems in determining export success.

The proposed framework combines marketing research, market segmentation, logistics evaluation, and econometric modeling to support data-driven export strategies. Implementation of this approach can improve export diversification, reduce transaction costs, and strengthen the global competitiveness of agricultural exports. Future research should extend the model using larger datasets and incorporate gravity-model approaches to analyze bilateral trade flows.

The findings of this study provide several policy implications for improving fruit and vegetable export competitiveness. First, investments in cold-chain logistics infrastructure are essential for increasing export reliability and reducing post-harvest

losses. Efficient logistics systems enable exporters to reach distant markets while preserving product quality.

Second, certification support programs should be expanded to help exporters comply with international food safety and quality standards such as Global G.A.P., HACCP, and ISO-based systems. Certification improves market access and strengthens buyer confidence.

Third, government export promotion agencies should strengthen marketing research capabilities by collecting and disseminating information on foreign market requirements, price trends, and consumer preferences.

Finally, export diversification strategies should prioritize markets with high values of the Market Attractiveness Index (MAI), enabling exporters to allocate resources toward the most promising destinations.

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