SUSTAINABLE AND MODERN METHODS FOR THE LOGISTICS OF AGRICULTURAL PRODUCTS

Cristian DELIBAȘ[1], Andy Felix JITĂREANU [1], Mioara MIHĂILĂ[1], Ciprian Ionel ALECU [2], Elena LEONTE[1]

e-mail: mioara.mihaila@iuls.ro

Abstract

Agricultural production proves to be a priority in the market analysis. In the current economy, the interest for a diversified and increased production remains at a high level, starting primarily from the basic needs that agricultural products satisfy and the increased demand. Commercial, financial, technological, logistical interests are also added to this, all being components of market studies. The present paper approaches, in an interdisciplinary manner, three directions of agricultural products market analysis: sustainable marketing, logistics and the need-production-consumption relationship. The data used for the analysis are from official sources such as Eurostat and NIS, and data from the companies that are subjects of the analysis: Agricover, PrimeAgiculture, Kompass, Agromontana. The results highlighted that adapting production to market requirements is a vital component of the marketing plan, and the distribution and commercialization pillars directly impact on production, even if the consumer is in the foreground as a focus. The lack of efficiency in the logistic system leads to loss of capital and image, so ensuring the sustainability of these pillars is a way to ensure the success of companies present on the agricultural products market.

Key words: agricultural products, marketing, logistics, sustainability, efficiency

Agricultural production activity has been and remains vital for economic growth and development, regardless of the evolution of socio-economic systems or market orientations. However, in order for production to reach the consumer market, namely the final customer who needs agricultural products, the rigorous organization of the production-consumption market route is mandatory. The marketing components that prove to be vital for supporting, in conditions of sustainability of this path, are the logistics & distribution of agricultural production. Without a functional, efficient and rigorously organized distribution system, the production-consumption chain becomes inoperable or is burdened with unjustified costs.

The main pillars mentioned above target both production and distribution activities, being increasingly influenced by sustainability rules. From the perspective of globalization and to respect the sustainable development rules, the logistic steps have become the nucleus of attention in both market research, and planning processes.

Although, the agricultural production still remains a priority in the market and consumption investigations, in the same time the production is becoming increasingly dependent on the distribution rules and its functionality. On the one hand, production depends entirely on inputs provided through an operative and rigorous distribution, respectively it depends entirely on the distribution systems that ensure sales and sales to intermediary or final customers. The interest for a diversified and increased production remains at a high level, but new commercial, financial, technological and logistical interests are added, being a particularity of a developed economy.

This paper approaches the three directions of the nowadays agricultural products market analysis: sustainable marketing, logistics and distribution, and the need-production-consumption relationship. Some supplementary requirements are related to respecting the sustainability rules in the logistic steps. Why? Because the technology and means of distribution are very well developed and the commercial policies take them into account. Also, globalization is another factor with big influence for the market analysis, mainly for the production planning processes, logistics adaptation, and relationship between market actors.

The main objective of this paper is to analyse the conceptual and practical framework

[1] Ion Ionescu de la Brad" University of Life Sciences Iași
[2] "Gheorghe Zane" Institute for Economic and Social Research, Iași

regarding the sustainable dimensions of logistic and distribution as the vital branches of marketing specific for the agricultural products. The data used for the analysis are collected from official sources and from the following Romanian companies, which are subjects of the analysis: Agricover S.A., Prime Agiculture S.R.L., Kompass România S.R.L. și Agro Montana S.R.L.

The research carried out is part of the observation, synthesis and analysis category and aims to highlight the role and involvement of the agricultural product distribution system within large agricultural production companies. It is also considered for investigation and adaptation to both the demands of the consumer market, as well as to the requirements associated with the principles of ensuring sustainability. The empirical idea on the basis of which the working hypothesis was built is that adapting production to market requirements is a vital component of any marketing plan, especially in a free, highly competitive economy.

In the light of these aspects, it is observed that the distribution and marketing pillars directly and significantly impact production, even if the final target, the consumer, is in the foreground or constitutes a focal point. Another hypothesis analyzed in this paper is the following: the lack of efficiency of the logistics and distribution system, as a marketing pillar, leads to both loss of capital and profit, as well as the image of the production unit. Thus, ensuring the sustainability of these marketing pillars is a guaranteed way to ensure the success of agricultural production companies.

Essentially, the functionality of logistics and distribution systems within the production-consumption chain must be perceived as a healthy organism, in which each process, sub-process and mechanism correlates in a functional interdependence, without significant errors.

MATERIAL AND METHOD

The analysis of the distribution system within the marketing mechanism, as well as the implicit logistics chain, is embodied in an analysis of the supply or the offer dependent by production.

In particular, the offer of agricultural products is characterized by features that influence the market dynamics: seasonality zoning, perishability, inconstancy, uncertainty, zonal specificity, gradual reduction/increase in consumption, long production cycle time, agricultural policies.

The concept of logistics, both theoretically and practically, is present and active in the literature, being in the area of interest of numerous studies for more than 50 years; in the activity of companies, it is a major necessity, and adaptation to the latest requirements and developments is imperative for the smooth running of the activity, in conditions of profitability.

The concept of "logistics chain" refers to "the grouping of companies involved in providing products and services on the consumer market" (Lambert D.M. *et al*, 1998), respectively "a logistics chain is formed by all parties involved, directly or indirectly, in fulfilling a customer request". (Chopra S., Meindl P., 2007) The functions of the logistics chain include: new product development, marketing, operations, distribution, finance and customer service." (Albăstroiu I., Felea M., 2013). Kotler (2006) stated that “logistics involves the planning, realization and physical control of materials and finished products, from points of origin to points of use, in order to satisfy consumer needs, while obtaining profit.” But, the unprecedented evolution of technology and management systems, have made it possible for “logistics to be a tool for increasing the competitiveness and positioning of an organization on the market, globally becoming one of the essential areas of the organization’s activity”. (Golea P., 2020)

Currently, one of the newest and major challenges of logistics and distribution in the agricultural sector is the advancement to the Logistics 4.0 system. This involves the integration and alignment of companies’ supply chains with the progress of digital technologies, based on automation and digital connectivity. Logistics 4.0 aims to optimize workflows through automation, leading to better efficiency and profitability.

The factors that make up the complex Logistics 4.0 system and influence its functionality and performance are highlighted in *Figure 1*.

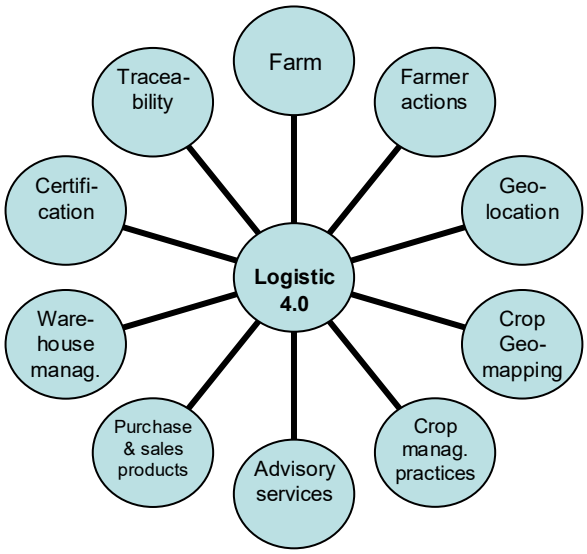

Figure 1 **Component factors of the Logistics 4.0 system.**

Source: adapted from Javaid *et al*, 2022

The basic characteristics of this modern and complex logistics system are connected with the following aspects:

- transport systems: it is considered the most important part of efficient agriculture;
- the main role: to deliver agricultural products from farms to markets and consumers;
- correct logistics: is the key to managing the assets from the point of origin to the consumers;
- the national well-being depends on transport, logistics and distribution.

If from a theoretical and conceptual point of view, the literature is rich especially on the topic of marketing and distribution, when it comes to sustainable marketing, we believe that there is still room for new approaches.

Essentially, logistics refers to a way of management, as a process through which a company's resources are transferred between points of interest on the map of the respective business. Given that the supply of agricultural products is characterized by fragmentation, dispersion and irregularity, the distribution process and logistical organization are vital for the protection of production, producer profitability, market stability and consumer satisfaction.

In this sense, the role of the paper is to emphasize the importance of sustainability in organizing logistics and distribution systems in the agricultural sector, since sustainable marketing guarantees efficiency and stability in the production and consumption market.

The orientation towards sustainable practices not only in the production and consumption sectors, but also in those of logistics and distribution, is materialized in consolidating the market position and ensuring competitiveness through a qualitatively superior production possible to achieve through the use of new, modern and high-performance technologies, the use of means of transport and storage with a protective role for agricultural goods, enrolment in international trade and an increasingly active presence on the international market, including the stimulation of advantageous import-export relations.

Methodologically, the paper is an empirical, descriptive analysis, which has as its foundation the incursion into conceptual and practical literature. The working methods are observation, selection, grouping and synthesis, starting from the hypotheses mentioned above.

RESULTS AND DISCUSSIONS

The future of logistics and farm transportation should pivot towards technology and innovation, focusing on sustainability and efficient transport. But, in this regard, a question arises: are the companies ready for these changes and challenges? We must take into account new approaches and challenges: novelty, impact on the environment, new technologies, mentality etc.

One of the most relevant pillars of the sustainable marketing is sustainable logistics, observed as an increasingly important topic in the logistics industry and recognized as a need to balance economic growth with environmental and social responsibility (Beredugo M., 2024).

”The sustainable practice of multinational logistics service providers is an effective means of achieving the sustainable transformation of supply chains in the context of sustainable development.” (Li *et al*, 2021 cited by Su *et al*, 2022).

We consider that the benefits of sustainable logistics consist of: more investment for packaging methods and storage systems, increased production, reaching international markets, expanding business, etc. Otherwise, there is a risk of damaging the merchandise, lack of efficiency, decrease of reputation etc.

A main request in this context is to improve the agricultural logistics and distribution systems. With the rise of e-commerce, transportation providers must operate more efficiently and quickly to meet the increasing consumer demand. Many logistics companies are still adjusting to the new circumstances.

Also, to stay in the market, it is important to use new technologies as they become more and more popular. Farms will be more profitable, efficient, safe, by developing sustainable agriculture based on advanced devices, precision farming and robotic systems.

The aim was to highlight that these companies, regardless of size, age or nature of the shareholding, are oriented towards supporting a high-performance logistics system that will position them advantageously on the production and consumption market.

Table 1 present a set of characteristics and parameters with high significance for the adaptation of the analysed companies to the sustainable requirements of modern logistics. In the same time, it was summarized that the interest to be competitive on the market is still a priority.

The table below summarizes the logistics activity of some of the largest operators on the Romanian agricultural market. Following the collection of information from these companies regarding the adaptation of the logistics and distribution system to the latest technological and market requirements, we have carried out a SWOT analysis.

Table 1

Parameters and characteristics of modern logistics for the analyzed companies

Agricover Distribution S.A.	- prompt delivery of products and high level product quality - purchasing inputs for farms, quickly and easily - opening the ”Agricover” online shop - modern digital ecosystems - more than 10.000 partners and a net consolidated profit of 44 million lei in 2023 - creating the ”Agricover Distribution” division as a customer base consolidation, with 4% more farmers served in 2023 compared to 2022 - even if 2022 was a year marked by instability and major disruptions of logistics chains worldwide, Agricover Distribution obtained an EBITDA of 37.6 million lei
Prime Agiculture S.R.L.	- grain storage, - silos, conveyors, cleaners - varied range of equipment related to storage activity, transport and conditioning of cereals - solutions for the efficiency of the cereals flow - modern equipment in accordance with the Logistics 4.0 system: grain silos, conveyors, grain bucket elevators, grain dryers and cleaners, laboratories equipped for grain samples, modern weighing systems, equipment for monitoring grain temperature, modern ventilation systems, maintenance and upkeep services
Agro Montana S.R.L.	- distribution of HoReCa products - 200 products and 50 partners - a distribution company - a portfolio of products aimed at collective consumption and HoReCa, covering the Bucharest and Ilfov areas
Kompass România S.R.L.	- online promotion and visibility of the company and its offer of products and services - targeted advertising - databases and online applications dedicated to sales and marketing - access to public tenders from Romania and other 210 countries - telemarketing and lead generation campaigns - ”EasyBusiness” an online application, built using the most accurate and complete database of companies, products and services and managers from over 70 countries - the Kompass database includes 50,000 companies, profiled in detail, providing more than 800,000 products and services and more than 130,000 managers - international distribution in Europe (91%), Pacific Asia (6%), Africa (2%), Middle East (1%).

Source: personal processing and synthesis based on data collected from companies

It can be seen the orientation towards a sustainable performance of the logistics system as a priority in which a lot of investment is made.

CONCLUSIONS

Nowadays, both the quality of products and the quality of transport are essential for the buyer's satisfaction. Harvesting, threshing, winnowing, bagging, processing, and storage are all steps in the process of gathering a harvest, each requiring meticulous quality control to ensure transportation quality is as crucial as its availability. Given that the supply of agricultural products can register significant variations in the short term, understanding and planning the supply by considering the logistics chain is essential for the efficient management of the supply chain and the overall activity of the company. The authors' contribution focuses on identifying a common core for the concepts of marketing, logistics and sustainability: efficiency in operating on the agricultural production market by directly reporting to the need for consumption.

REFERENCES

Albăstroiu I., Felea M., 2013 - *Definirea conceptului de management al lanţului logistic şi relevanţa sa pentru mediul academic şi practicienii din România,* Amfiteatru Economic, Vol. XV, nr. 33, pp.43-58.

Beredugo M., **2024 -** *Sustainable logistic*. Conference paper presentation at Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary.

Chopra S., Meindl P., 2007 – *Supply chain management: strategy, planning, and operations*, Prentice Hall, Upper Saddle River.

Golea P., 2020 - *Logistica și distribuția mărfurilor,* ”Tomis” University Constanța Publishing House.

Javaid M. et. al., 2022 - *Enhancing smart farming through the applications of Agriculture 4.0 technologies***,** International Journal of Intelligent Networks, vol. 3, pp. 150-164.

Kotler P., 2006 - *Marketing Management*, Prentice-Hall, New Jersey.

Lambert D. M., Stock, J. R., Ellram, L. M., 1998 - *Fundamentals of Logistics Management*, Irwin/McGraw-Hill, Boston, MA.

Su M., Fang M., Pang Q., Park K-s., 2022 - *Exploring the role of sustainable logistics service providers in multinational supply chain cooperation: an integrated theory-based perspective*. Front. Environ. Sci. 10:976211.