

Maria Nowicka-Skowron, Joanna Nowakowska-Grunt, Anna Brzozowska
Politechnika Częstochowska

A logistics system in management of flows in the area of agribusiness

System logistyczny w zarządzaniu przepływami w obszarze agrobiznesu

Abstract. Today, the subject of management in Polish agribusiness needs to be looked at in a more comprehensive way. With Poland's accession to the European Union, it is necessary to implement the solutions defined by the Common Agricultural Policy in agribusiness, whereas entrepreneurs from rural areas need to give more attention to issues connected with logistics and the process of management. This paper consider the problems of logistics management in the area of agribusiness. It has been pointed out that new paradigms that continuously appear in this area pose a huge challenge both for theoreticians and practitioners. Aiming to achieve a synergy effect and added value for activities that involve movement processes in agribusiness, both decision-makers and those managing farms and rural areas should consider and implement the right principles and solutions that will allow them to achieve this goal.

Key words: logistics system, agrilogistics, food supply chain, synergy effect

Synopsis. Dziś temat zarządzania w polskim agrobiznesie należy rozpatrywać w bardziej kompleksowy sposób. Wraz z przystąpieniem Polski do Unii Europejskiej konieczne jest wdrożenie rozwiązań określonych we wspólnej polityce rolnej w agrobiznesie, podczas gdy przedsiębiorcy z obszarów wiejskich powinni poświęcić więcej uwagi zagadnieniom związanym z logistyką i procesem zarządzania. W niniejszej pracy omówiono problemy zarządzania logistyką w obszarze agrobiznesu. Zwrócono uwagę, że nowe paradygmaty, które ciągle pojawiają się w tym obszarze, stanowią ogromne wyzwanie zarówno dla teoretyków, jak i praktyków. Dążąc do osiągnięcia efektu synergii i wartości dodanej dla działań obejmujących procesy przemieszczania się w agrobiznesie, zarówno decydenci, jak i ci zarządzający gospodarstwami i obszarami wiejskimi powinni rozważyć i wdrożyć odpowiednie zasady i rozwiązania, które pozwolą im osiągnąć ten cel.

Słowa kluczowe: system logistyczny, logistyka rolnicza, łańcuch dostaw żywności, efekt synergii

Introduction

Agriculture is the main source of livelihood for most inhabitants of rural areas. Changes in agriculture driven by the obligation to implement the solutions defined by the EU Common Agricultural Policy [Brzozowska et al. 2017] in Polish agribusiness and changes in using the potential of rural areas for economic growth and employment provide a huge chance for the development of these areas. Particularly valuable can be augmentation of logistic functions through transferring specific activities to specialised entities, e.g. in storage of agricultural products. Such solutions allow farms to avoid high costs connected with storage of raw materials and products, and generate new jobs. Thus, intermediation in the area of logistics may contribute to combating the phenomenon of peripheralization of rural areas. It should be stressed that there is a growing trend in pursuing education among young people in rural areas, which in turn leads to a gradual change in the occupational structure in rural areas [Zarębski 2002, Michalewska-Pawlak 2013]. Thus, the new professional groups that emerged from the process of transformation represent a potential for the field of logistics [Bruska 2012].

Research aim and methodology

This paper attempts to find an answer to the questions concerning the demand for managerial activities in logistics of rural areas. Performed observations allow us to state that the process of management, given microeconomic factors of the development of agricultural entrepreneurs who employ different strategies to diversify their activity, needs such support. The fundamental issue is whether given the lack of competitiveness in the agribusiness sector, which relies on various forms of sectoral support, agrilogistics will have a chance for effective development. Having said that, it is also important to pay attention to the solutions that can optimise flows in the dynamic model of the logistics system in rural areas.

Integrated logistics system of rural areas

When considering logistic conditions in the development of Polish agribusiness, it is worth highlighting the systemic approach to logistics processes, which should be based on interrelationship among the different areas [Sołtysik 2003]. From the very first stage, i.e. already in the process of planning, these areas should combine into a whole to enable in the future integrated logistics activities, which are based on optimal management of processes on a farm, and subsequently in the whole logistic chain.

Agricultural enterprises rely on logistics solutions in their activities. Nowadays, there is no need to store means of production for a long time, as they are widely available, and service providers usually use their own transport. However, it is possible to lower total production costs through optimal solutions in this area, e.g. by creating a base and defining key principles governing physical flows so that they can approach perfection [Brzówska and Jelonek 2015]. This requires agricultural entrepreneurs to develop new principles and attitudes as well as abilities to dynamically adapt to changes in the logistics system

(as illustrated in the figure) so that their enterprises can function effectively. The necessary costs connected with such activities should be estimated based on a detailed analysis of logistics infrastructure [Wajszczuk et al. 2002].

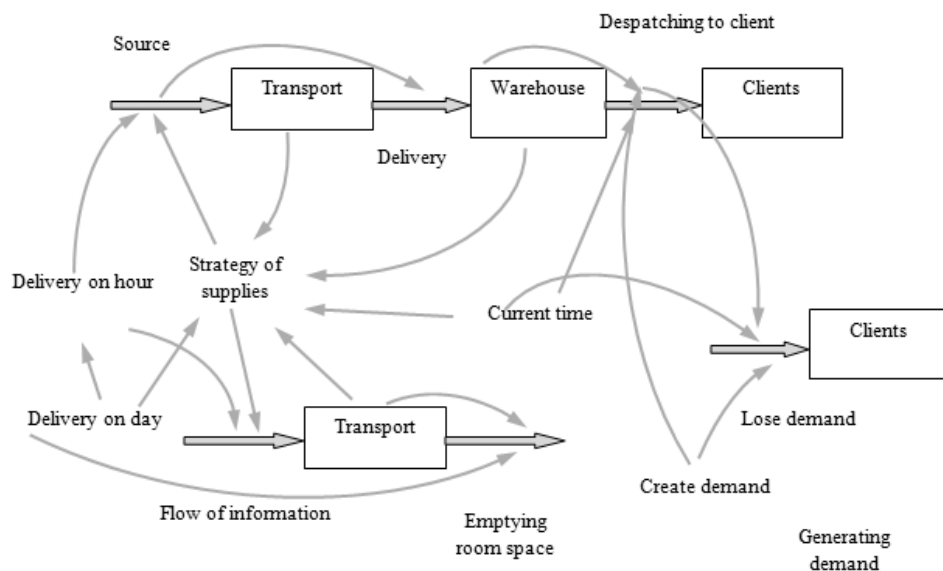


Figure. Dynamic model of a logistics system
 Rysunek. Dynamiczny model systemu logistycznego

Source: work based on Schafers and Schmidt [2015], cited after: Nowicka-Skowron [2017].

The dynamic model of the logistics system in agricultural enterprises is an integrated system of activities which is supported by specialist scientific knowledge on strategic and logistics [Barcik et al. 2017] management and involves all processes of production and distribution [Zaburanna et al. 2012]. It allows farms to efficiently function in a market economy. By viewing and analysing logistic processes in rural areas in comprehensive, we can identify business models in such areas that have an impact on the type of competitive advantage. Enterprises in the sector of agribusiness possess skills which underlie the strategy they use, which are helpful both in agribusiness and agrilogistics [Bruska 2012].

Activities in the area of agrilogistics concentrate on enhancement of flows and their optimisation in current conditions. They also involve improvement in the aspect of relations with basic processes that take place in rural areas. Gradual partial and descriptive identification of these relations enables optimisation of basic processes and creation of new logistic concepts [Stevens 1989, Christopher 2005].

The discussion above shows that the dynamic logistics model in the systemic approach in the area of agribusiness supports decision-making processes and involves new directions of development.

Elements of logistic support in enterprises from the agribusiness sector

A logistic process is inseparably connected with multifaceted management that defines standards and strategies of action as well as processes of movement in various environments [Kadłubek 2018] and warehousing, taking into account the costs of such operations [Foltynowicz et al. 2008]. Processes that guarantee all the resources that are required to execute a basic task can be referred to as logistic processes [Chaberek and Karwacka 2009]. In a market economy, every process of meeting the needs involves a flow of goods and resources or transporting a customer, or a combination of such transfers. When such flows take place in an integrated way, in compliance with the concept of logistics as part of optimised logistics systems [Bruska 2012], their execution is economically efficient. Appropriate support in utilising microeconomic factors is indispensable in every activity, both business and other, and the quality, cost and time it takes to complete a basic task is determined by efficiency of the management of these processes [Chaberek and Karwacka 2009]. The factors driving the development of agricultural enterprises mainly include efficiency of management and professionalism as well as entrepreneurship and innovativeness [Stępień and Łęgowik-Świącik 2017] of the managerial staff, i.e. farmers themselves and their nearest environment. Any business and non-business activity requires knowledge on management and logistics activity, which delivers certain objectives through available technical, infrastructural, organisational and legal means using appropriate techniques, methods and people. Thus, a system of logistic support involves all logistic means and processes which determine the execution of the above-mentioned tasks [Chaberek 2002]. It enables the use of specific techniques and methods to achieve the objective, i.e. to deliver, in an integrated way, appropriate resources to basic processes [Chaberek and Karwacka 2009]. Adopting the system of logistic support in a broader scale of the activity undertaken in agribusiness, it is important to specify the basic tasks of a logistic process which supports satisfaction of the needs at a commune level [Bruska 2012]. It involves tasks aiming to meet consumer needs of individual farms and provide access to mass consumption services, as well as processes connected with the needs reporting by local producers [Bojar and Kłosowski 2015]. The current development of rural areas and modernisation of farms raise questions about a gradual modernisation of agricultural equipment and optimisation of the methods. The lack of harmony between the two above-mentioned areas of activity applies to factors that theoretically facilitate the development of agricultural production. However, good effects can be achieved through development of external logistics services focused on key agricultural products in a given area, especially through development of local and regional initiatives in the area of agribusiness [Bruska 2012].

An important role may be played by a coherent network of logistics centres focused on agricultural products for farms which are dynamically developing in the direction of intensive farming. The traditional purchase forms are no longer attractive, especially for a potential customer, and the investments in the development of a farm, without a potential additional logistics support, are becoming insufficient.

Strategies for diversification of activity in agribusiness

Agriculture is no exception to the fast economic and social changes that take place in today's world. Both commune and individual farmers need to adapt to the current conditions of functioning in a highly competitive environment [Doh 2000], employing solutions from the areas of management, logistics, marketing and knowledge management [Paliszkiwicz and Koohang 2013] to ensure optimal development of their enterprises [Malara 2008]. Nowadays, farms are perceived as enterprises which have to consider managerial aspects in their marketing activity, such as product development, proper pricing policy, selection of distribution channels and promotion tools [Niedziółka 2016]. Thus, it is necessary to search for the best competencies in logistics, based on both their agricultural and non-agricultural activity, in the area of microeconomic factors in the development of agricultural enterprises (Table).

Table. Average score for factors in the different groups of respondents
Tabela. Średni wynik dla czynników w różnych grupach respondentów

Factor	Multi-skilling	Horizontal diversification	Vertical diversification	Parallel diversification
Competencies, knowledge and qualifications of the owner-manager	5.96	5.39	5.63	5.60
Amount of own financial capital	4.65	4.09	4.42	4.67
Amount of own physical capital	4.39	4.61	4.68	5.07
Applied technologies	5.70	5.61	5.68	5.87
Available housing resources	5.17	5.35	4.79	4.87
Organisational factors (e.g. distribution of tasks and responsibilities)	5.78	5.78	6.05	5.67
Location of the activity	5.78	6.13	6.74	7.00
Environmental conditions	5.30	4.87	5.47	5.93
State of technical infrastructure	5.09	5.04	5.79	5.73
Access to the Internet	5.87	5.96	6.63	6.27
Access to qualified employees on the local labour market	5.74	5.00	5.26	5.13
Extend to which the local authorities are favourably inclined towards rural entrepreneurs	5.04	5.09	5.16	5.80
Extend to which the local community is favourably inclined towards rural entrepreneurs	4.91	5.13	5.11	5.80
Availability of business environment institutions	5.17	5.22	4.84	5.07
Level of market competition intensity	4.65	4.26	4.84	5.33
Number of customers within the reach of the activity	5.70	5.13	5.95	6.20
Access to target recipients of services and products	5.83	5.13	6.32	6.27

Source: [Żmija 2017].

The empirical studies on multi-skilling and diversification [Borowiecki and Jaki 2017] found out that:

1. The lowest level of positive assessments was received by the group of horizontally diversified entrepreneurs. The lower level of assessments concerns: competencies, knowledge, qualifications of the manager, amount of own capital, innovativeness, infrastructure, competitiveness. Higher scores were received by housing resources and availability of business environment institutions.
2. Within the group of multi-skilled respondents, lower scores were received by the amount of own capital, location, access to the Internet and relationships with the local authorities. Higher scores concerned: own competencies, knowledge, qualifications and availability of employees on the local labour market.
3. The vertical diversification group scored below average in availability of local resources and business environment institutions. A positive assessment within this group was received by organisation, development of technical and logistic infrastructure and access to the Internet.
4. The group of developing entrepreneurs received higher scores in the amount of own capital, innovativeness, location, environmental conditions, relationships with the local authorities and competitiveness. Only the organisation received the lowest score.

It should be stressed that the assessments presented here are findings of studies covering the activity of entrepreneurs engaged mainly in agribusiness.

In each of the factors listed here, both in small agricultural enterprises and international agrarian corporations, managers implement various strategies. The assignment criterion has an impact on the area of influence of the individual tasks executed as part of physical flows [Lichtarski and Nowosielski 2017].

Summary and conclusions

The discussion about the essence of and possibilities created by the implementation of the idea of logistic support for the development of rural areas, as presented in this paper, indicates the interrelation between these two systems. Rural areas generate huge demand for logistic processes that support the flows of goods. At the same time, it is in these areas that most of these processes are performed due to their dominant share in the territory of the country. The quality of the infrastructure in rural areas allows logistic processes to be executed regardless of the place of residence of their recipients (in the country or the city). Thus, there is a need for a deep analysis of the system of flows in the agribusiness sector, where a range of optimisation possibilities exists. Searching for the synergy of logistics operations may lead to identification of a coherent system for monitoring of logistic support, and to an increase in the effectiveness of flows in rural areas.

Competitiveness and constant presence on the market require a farm, just like any other enterprise, to adjust the production to the current needs, invest in its development, continuously improve the quality of products and modernise itself. A farmer entrepreneur should be able to predict and meet consumer needs. Management of agricultural enterprises is specific in character, as the decision-making concerns not only the issues of production and investment, but also inspiration of activities that rely on management

and logistics solutions. Therefore, the concept of management in rural areas and on farms should be viewed in terms of the possibilities of integrating it with the area of management, logistics and assignment of a farm. This approach means a full consolidation of the principle and processes of logistic management in rural areas and on farms at every level of operational, strategic and normative management. A farmer, who manages an agricultural enterprise, usually not only wishes to derive financial benefits from his/her work, but is also highly motivated and wants to feel satisfied with day-to-day life, which conforms with the assumptions of the behavioural school of management. The multifaceted character of the problem of economic cooperation in view of the processes of globalisation imposes high requirements on logistic functions that support such cooperation. It is likely that an integrated environment of economic activity management will be ultimately built. Economic activity is closely connected with the environment, which comprises all the elements of the economic, political and social world. Not so long ago, economic entities perceived their environment as a static reality, and the events taking place in it were easy to predict. However, the last thirty years have seen processes in the political, social and economic world that completely changed the view of the conditions of economic activity. These changes also affected agribusiness as a sphere of the implementation of logistic principles and solutions to develop a system of the flow of goods and information on agricultural and food markets. This activity, focused on the development of farms, is reflected in the issues connected with agrilogistics.

References

- Barcik A., Dziwiński P., Jakubiec M., 2017: The Potential of Academic Entrepreneurship in Universities of Visegrad Group Countries, M. Szajt (ed.), *Zeszyty Naukowe Politechniki Częstochowskiej* 27, 19.
- Bojar E., Kłosowski G., 2015: Metody identyfikacji i ocena mega trendów na biznes lokalny i globalny, *Przegląd Organizacji* 12, 28.
- Borowiecki R., Jaki A., 2017: Przedsiębiorstwo w gospodarce rynkowej: Transformacja – Rozwój – Zarządzanie, Fundacja Uniwersytetu Ekonomicznego, Kraków.
- Bruska A., 2012: Wsparcie logistyczne na obszarach wiejskich-istota i wyzwania, *Journal of Agribusiness and Rural Developmen* 3(25), 44–54.
- Brzozowska A., Bubel D., Kalinichenko A., Nekrasenko L. 2017: Transformation of the Agricultural Financial System in the Age of Globalization, *Agricultural Economics – Czech*, 63(12), 557.
- Brzóska J., Jelonek D., 2015: Koncepcja pomiaru wartości tworzonej przez aplikacje modeli biznesu. podstawy teoretyczne i studium przypadku, *Przegląd Organizacji* 9, 48–55.
- Chaberek M., Karwacka G., 2009: Logistyka jako praktyczne urzeczywistnienie prakseologicznych zasad dobrej roboty, *Acta Universitatis Nicolai Copernici Ekonomia XI – Nauki Humanistyczno-Społeczne* 391, Toruń, 9–10.
- Chaberek M., 2002: Makro- i mikroekonomiczne aspekty wsparcia logistycznego, *Wydawnictwo Uniwersytetu Gdańskiego*, Gdańsk, 112.
- Christopher M., 2005: *Logistics and Supply Chain Management*, PEL, 19.

- Doh J.P., 2000: Entrepreneurial Privatization Strategies: Order of Entry and Local Partner Collaboration as Sources of Competitive Advantage, *Academy of Management Reviews* 3, 555–571.
- Foltynowicz Z., Jasiczak J., Szyszka G., 2008: *Towaroznawstwo, opakowania, logistyka*, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań, 229–230.
- Kadłubek M., 2018: Selected Issues of Management of Green Logistics in Transport Sector, [in:] *Shaping the Future of ICT*, El Emaryg I.M.M, Brzozowska A. (ed.), CRS Press, 413.
- Lichtarski J., Nowosielski S., 2017: O potrzebie porządkowania pojęć związanych z logistyką, [in:] *Wyzwania i perspektywy zarządzania organizacją sieciową. Logistyka w świetle współczesnych badań*, J. Nowakowska-Grunt, A. Mesjasz-Lech, S. Kot (eds.), Wyd. WZ Politechniki Częstochowskiej, Częstochowa, 11–29.
- Malara Z., 2008: Przedsiębiorstwo wobec wyzwań współczesności, [in:] *Strategie przedsiębiorstw w otoczeniu globalnym*, Z. Dworzecki, Romanowska M. (eds.), Szkoła Główna Handlowa, Warszawa, 31–32.
- Michalewska-Pawlak M., 2013: Priorytety i wyzwania polityki rozwoju obszarów wiejskich Unii Europejskiej, *Oficyna Wydawnicza ASPRA*, Warszawa, 35–39.
- Niedziółka A., 2016: Zarządzanie jakością w rozwoju agroturystyki w wybranych powiatach województwa małopolskiego, Gaziński R. (ed.), *Ekonomiczne Problemy Turystyki*, 1(33), Wydawnictwo Uniwersytetu Szczecińskiego, 325.
- Nowicka-Skowron M., 2017: Functional-Decision Making Dimension of Logistics Systems and Networks, *Przegląd Organizacji* 9, 55.
- Paliszkiewicz J., Koohang A., 2013: Organizational Trust as a Foundation for Knowledge Sparing and its Influence on Organizational Performance, *Online Journal of Applied Knowledge Management* 1, 2, 117.
- Schafers P., M. Schmidt, 2015: Entwicklung lines integrative logistikmodells fur wirtschaftlichen Fabrikbetrieb, *ZWF Zeitschrift fur wirtschaftlichen Fabrikbetrieb* 110, 12, 775–778.
- Sołtysik M., 2003: Zarządzanie logistyczne, *Wydawnictwo Akademii Ekonomicznej im. Karola Adameckiego w Katowicach*, 28–37.
- Stevens G.C., 1989: Integrating the supply chain, *International Journal of Physical Distribution and Materials Management* 19, 9, 3–8.
- Stępień M., Łęgowik-Świącik S., Kuraś M., 2017: Wpływ prawa bilansowego i podatkowego na innowacyjność przedsiębiorstw, *Przegląd Organizacji* 1, 10.
- Wajszczuk K., Baum R., Majchrzycki D., Pepliński B., 2002: Analiza infrastruktury logistycznej w rozwojowych gospodarstwach rolniczych, [in:] *Przemiany w agrobiznesie i obszarach wiejskich oraz ich następstwa*, *Prace Naukowe Akademii Ekonomicznej we Wrocławiu, Agrobiznes* 941, 443.
- Zaburanna L.V., Balanovska T.I, Gogulya O.P., 2016: The Mechanism of Enterprise Logistics System, *Ekonomika i Organizacja Logistyki* 1(3), 97–109.
- Zarębski M., 2002: Bariery i możliwości wielofunkcyjnego rozwoju obszarów wiejskich, *Uniwersytet im. M. Kopernika, Toruń*, 48.
- Żmija K., 2017: Mikroekonomiczne czynniki rozwoju przedsiębiorstw w ocenie rolników-przedsiębiorców realizujących odmienne strategie różnicowania swojej działalności, [in:] *Przedsiębiorstwo w gospodarce rynkowej. Transformacja – Rozwój – Zarządzanie*, R. Borowiecki, A. Jaki (eds.), *Uniwersytet Ekonomiczny w Krakowie*, 151–152.

A logistics system in management of flows...

Adres do korespondencji:

prof. dr hab. Maria Nowicka-Skowron

Politechnika Częstochowska

Wydział Zarządzania

Instytut Logistyki i Zarządzania Międzynarodowego

Dyrektor Instytutu

tel. (+034) 3250 309

e-mail: maria.nowicka-skowron@wz.pcz.pl