ZESZYTY NAUKOWE
POLITECHNIKI CZĘSTOCHOWSKIEJ

ZARZĄDZANIE
Nr 21

redakcja
Anna Brzozowska
Bogusława Ziółkowska

Częstochowa 2016

ISSN 2083-1560

Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej
42-200 Częstochowa, al. Armii Krajowej 36 B
tel. 34 32 50 480, e-mail: wyd.wz@zim.pcz.pl

TABLE OF CONTENT

Od Redakcji

Niniejsza publikacja obejmuje wyniki badań, które zostały przeprowadzone w oparciu o projekty w ramach międzynarodowej współpracy pomiędzy Połtawską Państwową Akademią Rolniczą w Połtawie (Ukraina) i Politechniką Częstochowską w Częstochowie (Polska).

Pomimo tego, iż współpraca została nawiązana stosunkowo niedawno, jej rozwój przebiega w sposób niezwykle dynamiczny. Pomimo iż tematyka i zakres znakomitej większości tych badań zostały ustalone w ramach oficjalnej współpracy naukowej, warto podkreślić, że różnorodność prezentowanych tematów w projektach i koncepcjach wynika z indywidualnych zainteresowań naukowych badaczy.

Obszary badawcze odzwierciedlają ogromną różnorodność ośrodków badawczych, akcentując przy tym wspólny kierunek strategiczny, który jest oparty na przesłankach mających na celu zapewnienie skutecznego rozwoju rolnictwa i obszarów wiejskich. Szczególną uwagę przywiązuje się do celowości wprowadzenia skutecznych metod marketingu, zarządzania, działań logistycznych i możliwości wykorzystania IT w badanym zakresie. Wybór obszaru badań został określony przez priorytet mający na celu zapewnienie zrównoważonego rozwoju sektora rolnego w Polsce i na Ukrainie.

Warto zwrócić uwagę i podkreślić, że przyczyniły się do tego także walory historyczno-kulturowe i gospodarcze obu państw, a także wymagania oraz zalecenia Wspólnoty Europejskiej, która w ostatnich latach kładzie szczególny nacisk na konieczność poprawy dobrobytu ludności wiejskiej, jak i bezpieczeństwa środowiskowego w produkcji rolnej. Zapewnienie efektywności ekonomicznej produkcji, która zaspokaja potrzeby społeczności lokalnych i zachowuje stan środowiska wymaga połączenia wielu badań naukowych i trwałej praktyki wdrażania otrzymanych efektów. Oznacza to, że szczegółowe informacje, wspierane poprzez konsultacje, dostęp do innowacji technologii informacyjnych, optymalizację przepływów logistycznych i dystrybucji stanowią najważniejszy klucz do sukcesu.

Ze względu na fakt, że głównym celem projektu jest analiza zdobytych doświadczeń w Polsce i na Ukrainie z możliwością ich implementacji w innych krajach, język angielski został zwyczajowo zaakceptowany, jako język roboczy badań. Dlatego też wszystkie materiały opublikowane w tym numerze są prezentowane w tym właśnie języku.

Mamy nadzieję, że przedstawione wyniki wspólnych badań w ramach międzynarodowej współpracy naukowej przyczynią się do tego, że audytorium naukowe wykaże zainteresowanie tematyką reprezentowanych zagadnień.

Anna Brzozowska
Bogusława Ziółkowska

From the Editor

The format of the current issue of the journal is quite unusual due to the fact that it is entirely dedicated to the description of studies conducted within the international cooperation projects between Poltava State Agrarian Academy (Ukraine) and Technology University of Częstochowa (Poland) to the whole extent.

Despite being relatively recent, the cooperation between the aforementioned universities is quite dynamic and rapidly evolving. Although the majority of the studies were conducted within the official scientific collaboration, the wide variety of the presented topics of the initiatives and projects meeting the individual scientific interests of the researchers needs to be underscored.

A wide range of topics presented in the journal demonstrates a vast diversity of the existing research centers. However, they all have a common strategic direction, based on the priorities to ensure the effective development of agriculture and rural areas. Particular attention is paid to the feasibility of introducing the effective methods of marketing and management as well as logistics activities and IT technologies.

The choice of the research topic was predetermined by the priority to provide a balanced development of the agricultural sector both in Poland and in Ukraine. It is necessary to highlight that this is not only due to historical-cultural and economic values of both countries, but is also resulting from the requirements and recommendations of the European community, which has been putting a special emphasis on the need to increase the welfare of the rural population and the environmental safety of agricultural production.

In order to ensure economic efficiency of production in balance with the needs of local communities, while preserving the environment, further scientific studies and the constant practical implementation of the acquired results are needed. We believe that by the methods for providing the wide information and consultation support, IT innovations, optimization of logistics flows and distribution is the key to success.

The main purpose of our projects is to study the experience of Poland and Ukraine as well as the possibility of its application in other countries. Therefore, all articles in this issue are written in English, which was previously approved as the working language.

We hope that the effort to demonstrate results of the joint international scientific collaboration will not only increase the interest of scientific audience in the represented topics.

Anna Brzozowska
Bogusława Ziółkowska

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 7–16
dostępne na: http://www.zim.pcz.pl/znwz

THE FACTORS OF INFLUENCE ON THE FORMATION OF A REGIONAL TRANSPORT-LOGISTIC SYSTEM

Valentyna Aranchiy, Olexandr Pomaz, Julia Pomaz
Poltava State Agrarian Academy, Ukraine

Abstract: The kind and degree of the main external and internal factors' influence on the formation of regional transport-logistic system in Ukraine have been specified in the given article using determination method of environment profile.

Keywords: transport-logistic system, factors, region, transport-logistic management

DOI: 10.17512/znpcz.2016.1.01

Problem statement

The end of the XXth – the turn of the XXIst centuries is characterized by logistization of supply, production, and trade activities of enterprises in developed countries. Transport is extremely important in logistics system because the circulation of material flows is impossible without it. Transport-logistic system is a complex system with the feedback; it performs various logistic functions and operations, consists of several subsystems, and has rather developed connections with external environment. The series of studies and experience of developed countries prove that the most effective way of developing the transport sector of Ukraine can be realized by the formation of transport-logistic system in the country on the whole and its separate regions. Thus, determining the factors of influence on the formation of the regional transport-logistic system in Ukraine is very important.

The works by Ukrainian and foreign scholars, such as: J.D. Bauersoks. D.D. Kloss, S.M. Minakova, O.D. Moroz, A.L. Nosov, V.I. Perebyynis, O.V. Perebyynis, O.V. Skoryk, V.I. Sergeyev, A.A. Kyzym, P.A. El'yashevych, O.V. Tkach, I.A. Voloshchuk, and others are devoted to the question of functioning and problems of transport-logistic system formation. The necessity of its development is put forward in these works. The scientists consider different aspects of developing and functioning of transport-logistics systems, theoretical and methodological backgrounds, and definitions in their works. A number of scholars recognize that insufficient replacement of fixed assets, the discrepancy of their technical level with modern requirements, slow updating of transport technologies and their not close connection with production, trade, storage, and customs technologies, low level of information system development of transport process – are only a few factors that have a negative impact on the development of transport branch. So, the problem of determining the factors of influence on the regional transport-logistic system requires further research.

The statement of the purpose

The purpose of this article is the revealing of the internal and external factors and macro-factors of the regional logistic-transport system formation in Ukraine, as well as defining the degree of their influence.

The main materials of the investigation

Freight logistics systems are commonly thought to be an indispensable component of modern societies. Accordingly, they are not only necessary in today's world, but can also provide many non-essential benefits to citizens. The operation of transportation determines the efficiency of moving products. The progress in techniques and management principles improves the movement of load, delivery speed, service quality, operation costs, usage of facilities, and energy saving. Reviewing the current conditions, a strong system needs a clear frame of logistics and a proper transport implements and techniques to link the production procedures. Logistics is defined as "the part of supply chain management that plans, implements, and controls the effectiveness of the flow of goods, their storage. It also concerns the services and corresponding information from the place of dispatch to the place of consumption in order to meet consumers' demands. Transportation is represented in this case by the word "flow". Transport provides the flow of materials in the supply chain from the places of dispatch to the places of destination, where the goods are consumed. Most businesses manage both incoming and outgoing logistics. Incoming logistics includes buying of materials and goods from suppliers. Outgoing logistics comprises the supply of materials and goods to customers. Therefore, transportation concerns both the incoming and outgoing sides of the business (Goldsby, Iyengar, Rao 2014).

V.I. Perebyynis and O.V. Perebyynis determine the transport-logistic management as a set of control functions and methods that are aimed at the rational use of transport resources in the process of transport-logistic provision of production-commercial activities of economic subjects and receiving profit (Перебийніс, Перебийніс 2006, p. 207).

According to the international experience, the most effective growth direction of Ukrainian transport sector can be implemented by the formation of transport-logistic system of the country which provides the cooperation of all the participants in transport-distribution process in organisational-economical, technical, technological, and informational aspects during the movement of cargo traffic flows and also enables to occupy the competitive positions on international markets of transport-logistic services (Мінакова 2014, pp. 844-847; Brzozowska 2015, pp. 182–188).

Transport-logistic system is a whole complex of the subjects of transport-logistic activities and objects of transport-logistic infrastructure that interact with each other for the purposes of optimizing the flow of cargo traffic from "the door-to-the door" at minimum cost and on most beneficial terms (Ткач, Волощук., 2013, pp. 221-226).

Regional logistic systems are complex open economic systems which include sub-systems interacting with each other and with external environment. These sub-sysyems ensure the process of functioning economic relations of the regional branches and enterprises in the regional logistics chains, the formation of which is aimed at achieving social-economic goals of devepolment in the region on the basis of economic flows' optimization (Мороз 2010, p. 7).

For defining the system of factors for the regional transport- logistic system formation, for dividing them into external and internal, and for determining their significance, the fundamental principles of the Delphi method of expert assessment (Грабовецький 2003, pp. 120–158) as well as the determination method of the environment profile (Урожай Знань 2004) have been used. The experts' questionnaire survey has been conducted in two rounds. Expert group included 30 experts among whom there were professionals of agrarian and processing companies, teachers of higher educational establishments. In the first round of the survey, using the questionnaire the expertss defined the system of factors of the regional transport-logistic system formation, dividing them into external, internal factors, and macro-factors. In the second round, the experts worked with the questionnaire in which they could give their expert evaluation for every investigated factor. The expert evaluation was made according to the following grading scale:

- the importance of the factor for the regional transport-logistic system formation (3 – strong; 2 – moderate; 1 – weak);
- the impact on the formation of the regional transport-logistic system (3 – strong; 2 – moderate; 1 – weak; 0 – the impact is absent);
- the type of influence (+1 – positive; -1 – negative).

The result of the three above-mentioned expert estimations is integrated index that shows the degree of its importance for the enterprise (Урожай Знань 2004). The level of the experts' competence which was defined according to the method of S. D. Beshelyev and F. H. Hurevych was taken into account (Бешелев, Гуревич 1981, p. 214; Бауэрсокс 2001, p. 639).

The experts' evaluation results of external factors of the regional transport-logistic system formation have been represented in Table 1.

Transport-logistic system like every material system exists in the concrete environment that comprises everything which is outside the system. Each system constantly receives the materials, energy, information from the environment with the aim of ensuring its activities, growth, development, and improvement (Глобальные логистические системы 2001, p. 240; Носов 2007; Скорик 2014 pp. 200–206). The material system cannot be indifferent to the environmental influence. The system can develop successfully if the environment is favourable, but under the influence of negative factors the system may be destroyed.

It has been established that the key factors of the environment that have the impact on the formation of the regional transport-logistic system are:

- spatial balance between the production, processing and products' consumption regions (6 points, positive influence direction);
- reliability of transport means (6,6 points, the influence can be both positive and negative);

– the level of prices on raw materials and power sources in the world and in the country (7,15 points, expressed negative influence);
– the possibility of increasing the number of automobiles by purchasing new machinery at the expense of commercial loans, financial leasing, government allowance (4,8 points, positive influence direction).

Table 1. The experts' analysis of external factors of the regional transport-logistic system formation

The factors of external environment	The importance for the formation of transport-logistic system	The influence on the formation of the regional transport-logistic system	The direction of influence	The degree of influence
1. Spatial balance between production, processing, and products' consumption regions	2,5	2,4	+1	6
2. Available density and quality of traffic network on the main routes outside the enterprise	1,95	1,96	+1 / -1	3,8/-3,8
3. Reliability (permanent character of transport means' specifications during their operation)	2,4	2,75	+1 / -1	6,6/-6,6
4. The compliance of transport means' design with working conditions and load classification, their loading capacity	1,85	2,05	+1 / -1	3,79/-3,79
5. The supply of loading-and-unloading facilities on the market	1,25	1,34	+1	1,68
6. Organizational level of transport processes outside the enterprise (traffic capacity of roads that determines transport road speed, working activities of management concerning receiving, weighing, loading and unloading operations at processing companies)	1.3	1.82	+1 / -1	2,4/-2,4
7. Price level on raw materials and power supply in the world and in the country	2,6	2,75	-1	-7,15
8. Design peculiaritieses of transport means, availability of spare parts' supplies	1,7	1,85	+1 / -1	3,1/-3,1
9. Increasing the number of automobiles by purchasing new machinery at the expense of commercial loans, financial leasing, government allowance (through the partial compensation of the purchased technology cost)	2,0	2,4	+1	4,8
10. Staff training opportunities	1,22	1,56	+1	1,9
11. Developing of transport-logistics infrastructure in the region	1,1	1,4	+1 / -1	1,54/-1,54

Source: the results of experts 'questionnaire survey, own estimations.

The more moderate influence is caused by such factors as availability, branching, density, and quality of traffic network on the main routes outside the enterprise (3,8 points, diversified influence); transport means' design compliance with working conditions and load classification, their loading capacity (3,79 points, diversified influence), and others (Figure 1).

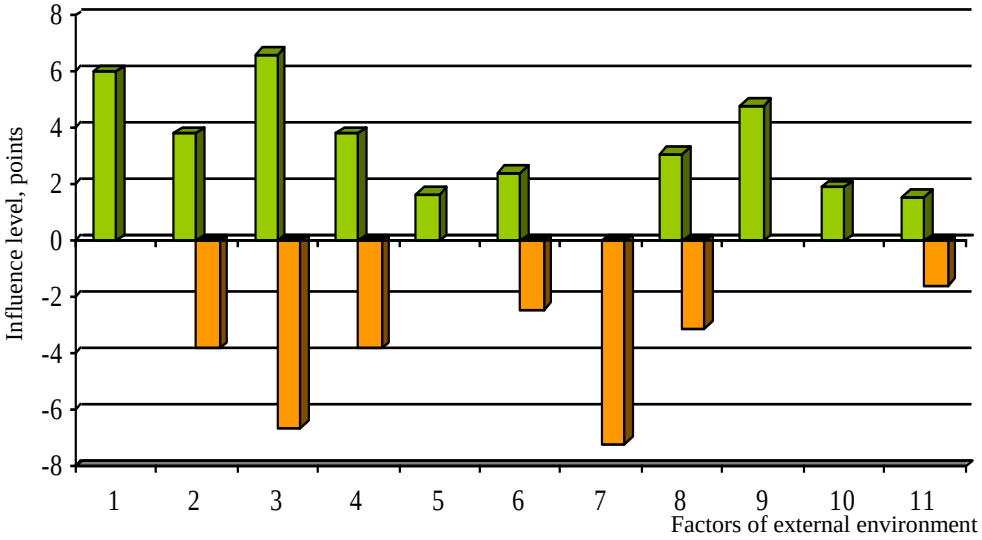

Figure 1. The level of external factor's influence on the formation of the regional transport-logistic system

Source: the results of experts' questionnaire survey, own estimations.

The experts' evaluation results of internal factors of the regional transport-logistic system formation have been represented in Table 2.

These factors should be payed special attention as they are typically subject to inspection and their influence is the subject to correction by the company's chief executives.

Internal environment of transport-logistic systems is a relative term and it largely depends on the accepted system of control. The biggest increase is achieved by such internal factors as management of coordinated functioning of harvesting units, hauling stock and loading/unloading machinery in the enterprise's premises (7,2 points, positive influence direction) and the management of the rational use of resources and energy at the enterprise (7,28 points, positive influence direction).

Such factors as timely high quality repairs of machinery and its maintenance at the enterprise, the use of components and assemblies of exchange stock (6,65 points, diversified influence), service life of transport means at the enterprise (5,5 points, negative influence direction), increasing the number of automobiles by purchasing new machines by the enterprises, reequipping the available means of transport according to the modern requirements (5,64 points, negative influence

direction), timely grain transportation from harvesting units to the thrashing floor as it is required, the necessity of harvest transportation within the shortest possible period of time for ensuring its storage are also very important (5,87 points, diversified influence) (Figure 2).

Table 2. The experts' evaluation results of internal factors of the regional transport-logistic system formation

Factors of internal environment	The importance for the formation of transport-logistic system	The influence on the formation of thr regional transport-logistic system	The direction of influence	The degree of influence
1. Spatial location of objects in the enterprise's premises	1,2	1,3	+1; -1	1,56; -1,56
2. Availability, branching, density, and quality of road network within the enterprise	1,8	1,9	+1; -1	3,42; -3,42
3. Service life of transport means at the enterprise	2,2	2,5	-1	-5,5
4. The assortment of optimal composition of machinery concerning loading capacity, type of work, and classification rating at the enterprise	1,9	2,2	+1; -1	4,18; -4,18
5. The structure of machinery concerning unloading, mechanical handling facilities, the availability of loading-and-unloading facilities, and weighing devices at the enterprise.	1,5	1,8	+1; -1	2,7; -2,7
6. Management of coordinated functioning of harvesting units, loading/unloading machinery in the enterprise's premises	2,25	3,2	+1	7,2
7. Management of the rational use of resources and energy at the enterprise	2,6	2,8	+1	7,28
8. Timely and high quality repairs of transport means and their maintenance at the enterprise using the assemblies of the renewed machine stock	2,42	2,75	+1; -1	6,65; -6,65
9. Increasing the number of automobiles by purchasing new machines by enterprises, renewing the available means of transport according to modern requirements	2,3	2,45	+1	5,64
10. The number of employees, involved in transportation operations and maintenance staff per one means of transport, their qualification, providing financial and moral incentives for their activities, consumer services	2,25	2,3	+1; -1	5,18; -5,18
11. The enterprise's reputation and image, partnership relations	2,3	2,55	+1; -1	5,87; -5,87

Source: results of experts questionnaire survey, own estimations.

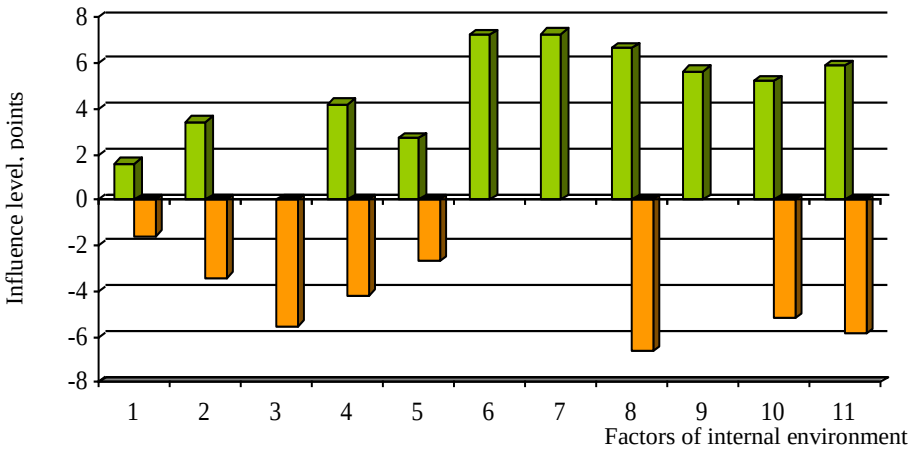

Figure. 2. The level of internal factors' influence on the formation of the regional transport-logistic system

Source: the results of experts' questionnaire survey, own estimations.

Besides the above mentioned factors, the so called macro-factors of external environment, in other words, external factors that have indirect impact and uncontrolled character are important for the formation of regional transport-logistic system (Table 3, Figure 3).

Table 3. The experts' evaluation results of macro-factors which have an impact on the formation of the regional transport-logistic system

Macro-factors	The importance for the formation of transport-logistic system	The influence on the formation of regional transport-logistic system	The direction of influence	The degree of influence
1. Critical state of the economy	1,3	1,1	-1	-1,3
2. Military operations in the East of Ukraine, terroristic threats, unstable political situation, and confrontation of political forces	1,25	0,8	-1	-1
3. The level of corruption in the country	1,2	1,2	-1	-1,44
4. Substantial decrease in the value of the national currency unit	1,5	1.23	-1	- 1,85
5. High level of inflation and unemployment	1,23	0,9	-1	- 1,1
6. Weather and climatic conditions	1,1	0,8	+1; -1	+0,88;-0,88
7. Not al lthe passed laws have been effective and obeyed	1,2	1,2	-1	-1,44
8. The integration of the Ukrainian transport system into the international transport system	1,9	1,5	+1	+2,85

Source: the results of experts questionnaire survey, own estimations.

The most important and the only positive macro-factor which influences the regional transport-logistic system formation is the prospective integration of the Ukrainian transport system into the international transport system that becomes possible as a result of joining World Trade Organisation and signing the Association Agreement between Ukraine and the European Union.

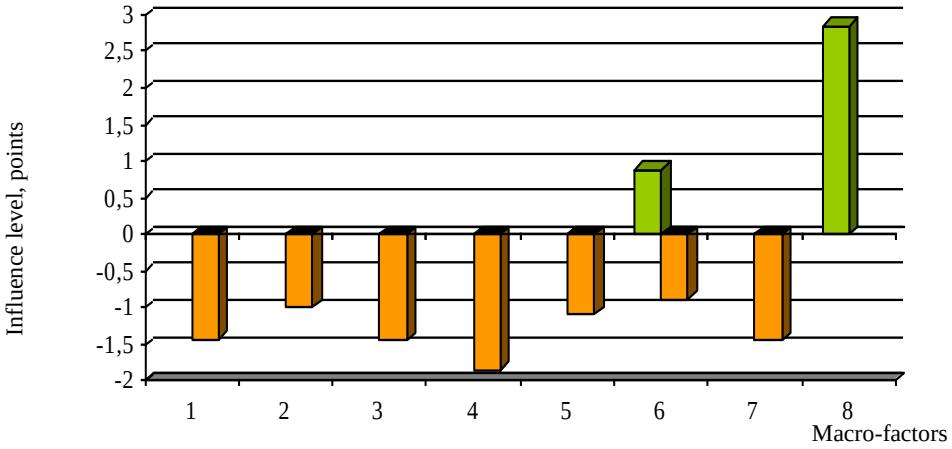

Figure 3. The level of macro-factors' influence on the formation of the regional transport-logistic system

Source: the results of the experts' questionnaire survey, own estimations.

The Political part of the Agreement was signed on March 21, 2014, the Economic - on June27, 2014 (2,85 points).

The following factors have the negative influence:

- the deterioration of economic situation in our country (1,43 points, the negative influence direction);
- military operations in the East of Ukraine, terroristic threats which have extremely negative influence on political and legislative, social and economic situation in the country, bring the additional risks to Ukrainian enterprises, distract prospective investors (1 point, the negative influence direction);
- substantial devaluation of the national currency unit and as a consequence, increasing the prices of the means of production and raw materials, including vehicles, spare parts, lubricants, fuel, etc. (1,85 points, the negative influence direction);
- high level of corruption in the country (1,44 points, the negative influence direction);
- the imperfection of the legislative basis (not all the passed laws have been effective and obeyed (1,44 points, the negative influence direction).
- a high level of inflation and unemployment (1,1 points, the negative influence direction).

Such factor as weather-climatic conditions is variable (0,88 points, diversified influence).

Conclusions of the present observation

According to given observation, the use of up-to-date methods is possible and necessary. New theoretical and practical approaches become more urgent in solving the problem of the regional transport-logistic system formation. One of such approaches is the method of defining environmental specifics. The undertaken study has permitted to reveal the main external, internal, and macro-factors of the regional transport-logistic system formation in Ukraine as well as define the degree of their influence.

References

1. Brzozowska A., Dacko M., Kalinichenko A., *Sources and determinants of the innovativeness of enterprises.* J. Actual problems of economics, Nr 9 (171), 2015, pp. 182–188.
2. Goldsby T. J. , Iyengar D. , Rao S., *The Critical Role of Transportation in Business and the Economy By CSCMP* . Published Jan 16, 2014 by Pearson FT Press. Part of the Council of Supply Chain Management Professionals series. Access mode: http://www.ftpress.com/ authors/bio/f42e9e22-2bff-4d8f-9d72-ce16a792a2ef.
3. Бауэрсокс Дональд Дж. Логистика: интегрированная цепь поставок / Дж. Дональд Бауэрсокс, Дж. Дейвид Клосс; [пер. с англ.]. – М. : ЗАО «Олимп-бизнес», 2001, p. 639.
4. Бешелев С. Д., Гуревич Ф. Г., *Экспертные оценки*. – М.: Наука, 1981, p. 214.
5. Глобальные логистические системы: учеб. пособие/ [В. И. Сергеев, А. А. Кизим, П. А. Эльяшевич и др.]; под общ. ред. В. И. Сергеева. – СПб: Издательский дом «Бизнес-пресса», 2001, p. 240.
6. Грабовецький Б. Є., *Економічне прогнозування і планування*: Навч. посіб. – К.: Центр навчальної літератури, 2003, pp. 120–158, p. 188.
7. Мінакова С. М. *Обґрунтування концептуальних засад розвитку логістичних транспортних систем в умовах глобалізації* [Електронний ресурс] // Глобальні та національні проблеми економіки. – 2014. – груд. (Вип. 2), pp. 844-847. Режим доступу: http://global-national.in.ua/archive/2-2014/175.pdf.
8. Мороз О. Д., *Формування регіональних логістичних систем: автореферат дисертації на здобуття наук. ступеня кандидата економічних наук*; Луцький національний технічний університет. – Луцьк, 2010, p. 7, p. 17.
9. Носов А. Л. Региональная логистика / А. Л. Носов. – М. : Альфа-Пресс, 2007. – 168 с.
10. Перебийніс В. І., Перебийніс О. В., *Транспортно – логістичні системи підприємств: формування та функціонування:* Монографія. – Полтава: РВЦ ПУСКУ, 2006, p. 207.
11. Скорик О. В. Особливості функціонування регіональних логістичних центрів і компаній України / О. В. Скорик // Регіональна економіка. – 2014. – №2(72), pp. 200–206.
12. Ткач О.В., Волощук І.А., *Транспортно-логістичні системи: теоретичні основи формування та напрями розвитку* // Наука й економіка. – 2013. – Вип. 3, pp. 221-226. – Режим доступу: http://nbuv.gov.ua/j-pdf/Nie_2013_3_37.pdf.
13. *Урожай Знань. Розвиток приватного бізнесу. Європейська Комісія та інші донори*. Матеріали бізнес-тренінгів. Проведення діагностичного аналізу підприємства. Виконавець проекту Беарінг Поінт. – 2004.] Harvest of Knowledge. Private Business Development. European Commission and Other Donors. Business training materials. Enterprises Restructuring Facility Project. Bearing Point. – 2004.

WPŁYW CZYNNIKÓW NA KSZTAŁTOWANIE SIĘ REGIONALNEGO SYSTEMU TRANSPORTOWO-LOGISTYCZNEGO

Streszczenie. W opracowaniu określono rodzaj i stopień wpływu głównych czynników zewnętrznych i wewnętrznych na kształtowanie się regionalnego systemu transportowo-logistycznego na Ukrainie z pomocą metody określania profilu środowiska.

Słowa kluczowe: system transportowo-logistyczny, czynniki, region, zarządzanie transportowo-logistyczne

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 17–25
dostępne na: http://www.zim.pcz.pl/znwz

BUZZ MARKETING AS AN EFFECTIVE TOOL TO SUPPORT INFORMATION PROCESSES IN AN ENTERPRISE LOCATED AT THE RURAL AREA

Nicoletta Baskiewicz, Ewa Kempa
Czestochowa University of Technology, Poland

Abstract: Thea aim of this article is to present the phenomenon of buzz marketing as an effective tool supporting the information process in an enterprise located in a rural area. Information, both in- and output, is considered a key asset determining the competitiveness of the enterprise. Having in mind the commonly acknowledged and still actual norms of behavior, the authors suggest that buzz marketing may play an important role in passing information between the enterprises and its environment in r.

Keywords: buzz marketing, information, information processes, information channels

DOI: 10.17512/znpcz.2016.1.02

Introduction

The operation of a modern enterprise should be based on an effective management of information, which is considered not only a valuable asset of the company, but even a factor that integrates internal and external activities of the enterprise, including marketing activities. Moreover, it should be noted that information is also an integral part and foundation of management. Because management is a continuous process, information plays a vital role in formulating the enterprise itself, and later its strategic and operational goals (Moszkowicz, 2005, p. 312). Information should be defined as a set of data (numbers, facts), that went through mental processing. Gathered information form strategies in global and functional dimensions; on the other hand, their conscious distribution from the enterprise through varied channels help tighten the bond between the enterprise and its customers: both current and potential.

Information as an essential asset of the operation of enterprise

Information is considered a key asset of current enterprises, and modern economy is commonly referred to as "knowledge based", which is determined by the effectiveness of gathering, transforming and adapting information. Information should be distinguished from data, which is defined by raw, unanalyzed facts, numbers and events, that can be transformed into information, e.g. level of stock. Therefore information is analyzed or processed data which inform the recipient of the situation (Stoner, Wankel 1996, p. 477). The process of data interpretation requires specified knowledge of the described world and language in which the data are written. Knowledge plays an active role in data interpretation, as it gives the data meaning (sense). By drawing conclusions from received information and possessed knowledge, with own experience and skills, we attach the information to our knowledge, transforming it or creating new knowledge. Thus:

New knowledge = information + context (held knowledge) + experience in transforming knowledge (information)

(http://www.inzynieriawiedzy.pl/wiedza/wiedza-informacje-dane, odczyt: 24 stycznia 2016)

This "definition" shows that creating new knowledge is realized in a given cognitive context, i.e. in the field of possessed knowledge, used to "interpret" examined information, which broaden or modify possessed knowledge.

Knowledge management, and hence information management, currently became a factor determining competitive advantage. "The challenges of modern, globalized *landscape* of competition are making the use of knowledge necessary in all processes and levels of enterprise operation, hence the requirement of rational knowledge management translates to tasks and desired characteristics of almost all components of competitiveness potential" (Stankiewicz 2002, p. 229). It is worth noting, that currently the problem is not the difficulty of gathering the information, but the skill of choice of the information required in the aspect of specified needs, because of the information overflow. It is widely recognized that in the choice of information, following parameters should be evaluated: quality, topicality, volume, relevance to tasks.

We can view information management in the aspect of three areas of their acquiring, direction of provision, and place of use:

1) valuating and acquiring data from the outside and their transformation into information relevant to enterprise development (information from suppliers, customers, contractors, competitors, used for optimization of decision process and the quality of decisions);
2) creating databases and gathering information in the enterprise itself, for the use of the enterprise (information on effectiveness of production processes, employees, optimal workload of machines and devices);
3) communicating information outside the enterprise (all informational activities, including advertising and recruitment, information on sales promotions, quality of services).

In literature, the processes of information transformation into knowledge are widely written about. In this study assumes that the process of creating knowledge from information consists of the following stages: information, interpretation and study of their usefulness, integration in the collection, location in the database, obtain and match information to the situation and application. Between the usage and collection of information there also combinations, which can cause the whole process to start again based on new information regarding their previous usage. It is noted in this process that the phase of obtaining and fitting is the action, which has a goal of transferring information into knowledge. In the process of thought are integrated collections of information then followed by questions being asked, seeking answers to formulate opinions (Mikuła, Ćwikliński 2001). Additionally, through careful management of knowledge, which undoubtedly arises from the information also stimulates the development of procedural competence of team members. M. Sarvary distinguishes three knowledge management subprocesses, in which information plays a key role (Sarvary 1999):

- organisational learning – the process of gathering information and/or knowledge,
- creating knowledge - a process of transformation and integration of information into knowledge, making them useful in solving business problems,
- distribution of knowledge - a process that gives members access to knowledge organization and allows it to use.

Modern conditions determine the necessity of acquiring knowledge by the company in a particular place and time so that it can operate efficiently and can be competitive in the market. The real revolution in business will happen when employees get rid of their inhibitions in using other people's knowledge and the fear of sharing their knowledge to all interested parties. Learning and managing results of this process, known as knowledge management are the essence of the challenges they face in today's new generation.

In literature, we can find that there are five of the following factors that are created in an organization based on knowledge (Baskiewicz 2012, pp. 58–60):

- the requirement of problem and unconventional perception processes in the organization and systematic approach to solving them. The point is that all company employees without exception, were able to lead a deep analysis of the problems to go beyond the simple answers. Solving problems should not preclude continuous self-denial, denial of the selected strategy, the creation of alternative scenarios, examining various solutions, often totally contradictory with the existing;
- experimenting with new ideas. It is understood to gain experience by putting into practice new, often unconventional solutions for which may be specifically understood transformation of knowledge known to us in the knowledge that is deeply understand. In other words, the process may be moving the organization to a higher level of knowledge, which is the transition from descriptive knowledge to explanatory knowledge (to know how something works and to know why it works). In this sense, experimentation in the organization should be treated as a continuous process, which means performing a series of small experiments aimed at the continuous improvement of processes;
- learning from experience. This process requires a systematic review and analysis of past results and achievements of enterprise and storage. This process should be subject to both solutions, which have brought success, as well as those that ended in failure. This allows employees at any time, to reach into existing solutions and experiences, to avoid committing the same mistakes or take advantage of positive experiences to new projects. There is a saying that "a smart man learns from his mistakes, but the smarter man learns from the mistakes of others." These "mistakes of others" is the knowledge base for those searching for success;
- learning from others. To succeed, a company must be open to new values, ideas, technology and the experience of other companies. The aim should be to meet new best practices, patterns of different industries or sectors and adapt them to their own conditions;

– promoting positive experiences and knowledge in the enterprise. These activities require the use of written and visual reports, visits, organizing training courses and training. Employees with extensive knowledge and skills are transferred to different organizational units in order to be able to share their knowledge.

The processes of acquiring, transforming and passing information are relevant in all of areas mentioned above, considering the pools of data or the directions in which these information flow. For strategic management, probably the most important are information from the environment, because they shape, or even determine the strategic options of the enterprise. For the increase of operationalization or rising effectiveness of internal processes, most important will be information concerning effectiveness of staff, machinery and devices, used management methods or techniques. For the increase of interest in the enterprise, usually reflected in a positive sales dynamic, the most important will be information from the enterprise, directed to its customers, i.e. the market. For an effective process of passing information to take place, the following conditions must be met (Falkowski, Tyszka 2001, pp.22–29):

– the information is passed in a language understood by both parties,
– effective medium of information is applied,
– message remains clear, i.e. unaffected by external factors,
– transmission is reflected,
– the information is intended for the recipient.

The sender transmits in the communication process specific information encoded in a manner understandable to the recipient chosen communication channel. Channels of communication can be: verbal communication and social media, as essential channels for buzz marketing.

Buzz marketing as an effective tool of passing information to the customer

Having in mind the fact, that the competition is „not for the products, but for perception" (Ries, Troutb 1997, p. 12), to reach intended goals, it is necessary to optimize the flow of desired and selected information concerning the enterprise, from the enterprise to its environment, especially its potential customers. The relevance of this process can be highlighted with the words of P.F. Drucker – "the only right definition of business goal is: create customers (Drucker 1994, p. 52)".

Buzz marketing is a modern form of marketing, the concept of which up to recently was based on bringing the marketing information to the receiver through direct verbal communication (Gardner 2005; Gicquel 2006). Besides face-to-face communication, a perfect medium for buzz marketing is the Internet, especially via discussion forums, e-mail, or instant massaging. The new forms of marketing activities rise upon the use of newest information technologies, which create versatile opportunities for information transfer and data exchange during the communication between market participants. The global computer network facilitates the integration of marketing activities, including promotion. Recently,

also social networking sites like Facebook are being used to pass "confidential" information or advice, thus not only direct discussion or stories are information channels, but computer networks as well (Allen 2009). Internet buzz marketing is not always based on spontaneous customer opinions. More often companies hire specialists, who are responsible for creating opinions on company's products or services. It is also common, that these activities are outsourced to companies specialized in creating positive image of the order-giver (see Agent Buzz (http://agentbuzz.pl), Brandle (http://www.brandle.pl.), among others). It rises the hypothesis, that the activities of buzz marketing may be classified as a part of widely understood public relations.

Buzz marketing is based on positive impressions on the product, service or the enterprise. The profits the customer had motivate him to give positive recommendation to his acquaintances. People are generally more likely to believe positive opinions on products or services they heard from their friends, than from e.g. TV commercials (Sernovitz 2014; Mourdoukoutas, Siomkos 2009).

Buzz marketing is becoming more and more powerful marketing medium, capable of bringing attention to products that no one ever heard before. Spectacular success of products like Harry Potter, foldable scooters, Chrysler PT Cruiser or "Blair Witch" movie are a few examples of recent years. Despite them, still lot of CEO's and marketing managers underestimate buzz marketing and hold on to its popular stereotypes. Renée Dye lists brings down those myths (http://www.hbrp.pl/redakcja_poleca.php?id=1065&t=fama-to-dobra-reklama, odczyt: 24 stycznia 2016):

Myth 1. Buzz accompanies only outrageous or edgy products. In fact, buzz can be gained by even the least expected products.

Myth 2. Buzz just happens. In reality it is the effect of well-thought marketing tactics, including "seeding" a vanguard group, ration supplies, use celebrities to generate buzz, leverage the power of ranking lists, and initiating grassroots marketing.

Myth 3. Best customers are the best choice for creating buzz. In fact, often countercultures are great in generating buzz.

Myth 4. Only a fast operating market leader can benefit from buzz. In reality, "copycats" can also benefit on buzz, if they know how to play the game.

Myth 5. Buzz is created through media and advertising. Actually, media and advertising should not be overused, or else there will be not enough time and space for the buzz to fully develop.

Through globalization and international spread of brands, buzz marketing can have a substantial influence on the shape of the market. No doubt that companies with no control of that may soon sadly realize, that buzz marketing has the control over them. Especially, if more often the channel for realization of buzz marketing is the Internet environment, which enables communication with customers while integrating all marketing elements. Moreover, the Internet is a medium of advertising communication reaching the most numerous group of potential customers, enabling long-term contacts with them, while being cost-effective.

The role of buzz marketing in the process of passing information in an example enterprise based in a rural area

To identify the role of buzz marketing in the process of passing information from the enterprise to its customers, an empirical research was conducted with the method of a survey ran in a chosen rural area based enterprise. The chosen enterprise is operating for over ten years in a rural community in south-west part of Częstochowa county, with a population of 10500. The enterprise is providing educational services in the form of teaching foreign languages, for both institutional and individual entities. The institutional customers include three enterprises in Częstochowa and three kindergartens. However, the most important process realized in the analyzed enterprise is organizing and facilitating stationary, 1-year courses. Individual customers use the services in the building located in the center of the community, which is a property of the enterprise. The building consists of 3 classrooms, waiting room, office and sanitary room. Individual customers are aged 4 to 56, although it is worth noting that 80% of customers consists of schoolchildren. As for today (16th January 2016) the total number of customers is 128.

The survey was conducted between 11th and 15th January 2016. The respondents consisted of company's students and their parents. To reach a deeper understanding of the phenomenon, the survey was followed-up by an unstructured interview with the enterprise owner.

The research was conducted on 197 respondents; 102 students including 34 girls and 68 boys and 95 parents (Table 1).

Tabela 1. Characteristics of the research sample

Characteristics of the research sample			
Students	Girls	34	17%
	Boys	68	34%
Parents	Women	83	43%
	Men	12	6%
Total		**197**	**100%**

Source: Own work.

When asked "which of the following factors is most often critical in your decision when you choose school courses?", 87% of respondents chose the good opinion and recommendation from friends and family, which confirms the hypothesis, that buzz marketing plays a key role in communication processes especially in rural areas. Another important factor was the familiarity and trust in the company's owner, chosen by 67%. It is worth noting that the owner is a native inhabitant and an active member of the local community in which the research took place. Other important factors included kind service (43%) and the presence of leaflets and brochures informing about realized courses (40%) (figure 1).

To get more precise information on the relevancy of opinions, the respondents were asked to rate their importance. 95% of respondents rated opinions on the service quality as "very important". Such high rating also highlight the importance

of buzz marketing. It is worth noting that most of the course participants are students of one of two local primary schools, one kindergarten and one secondary school (gymnasium). This situation enables better communication between the students themselves and between their parents. Most of these people know each other and it is common to see groups of parents talking to each other after walking their children to school (figure 2).

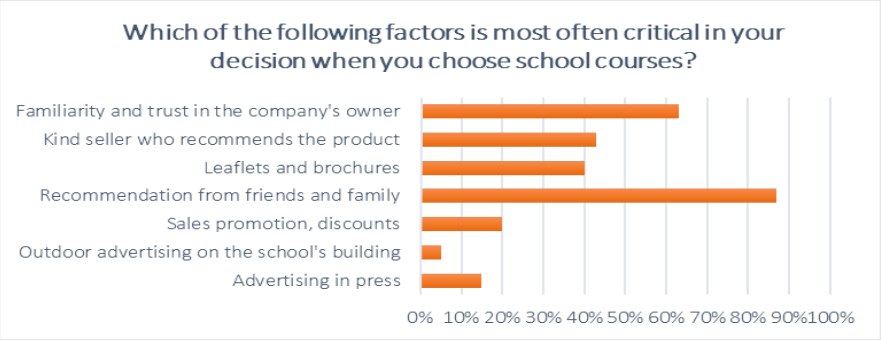

Figure 1. Which of the following factors is most often critical in your decision when you choose school courses?

Source: Own work based on research results.

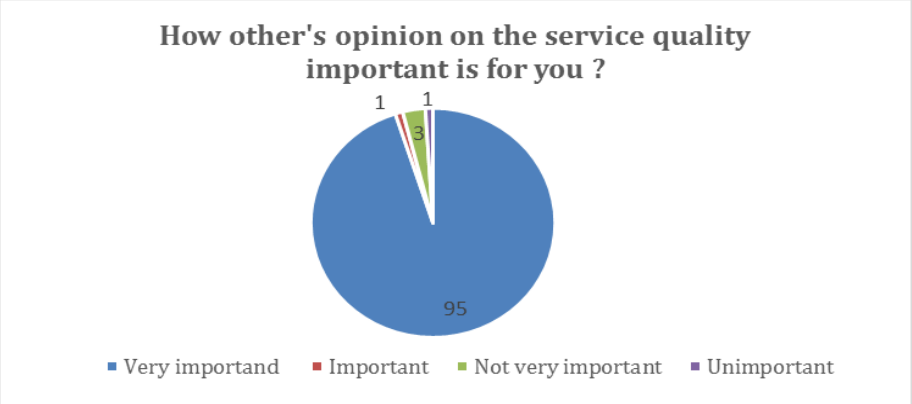

Figure 2. How others's opinionon the serivice quality important is for you?

Source: Own work based on research results.

The results of the research show that almost half of the respondents (45%) willingly exchange information concerning products or services they use every day. 23% respondents share this information but not on every meeting, and only 10% declare they do not exchange their opinions on products or services they use (figure 3).

Family is the main source of information concerning company's services, as shown by 78% of respondents. The second most popular source is a group of friends, chosen by 67%. It is worth noting that family plays a more important

informative-advisory function than friends. It is interesting, if in large cities, where buzz marketing also plays a vital role, family would also be higher rated than friends? There are evidence suggesting that in urban areas friends take over the role of family, including the informative-advisory function.

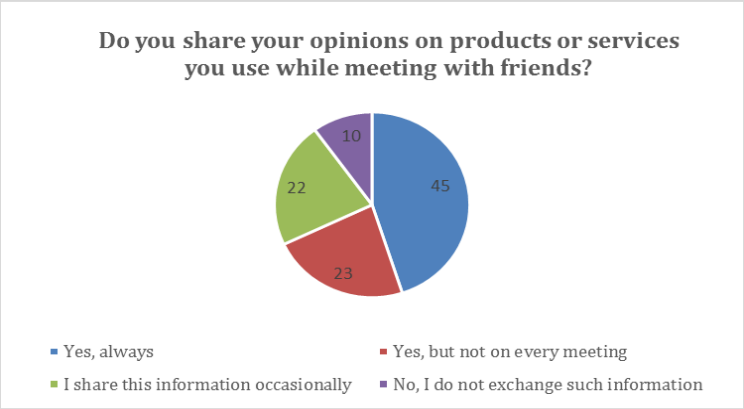

Figure 3. Do you share your opinions on products or services you use while meeting with friends?

Source: Own work based on research results.

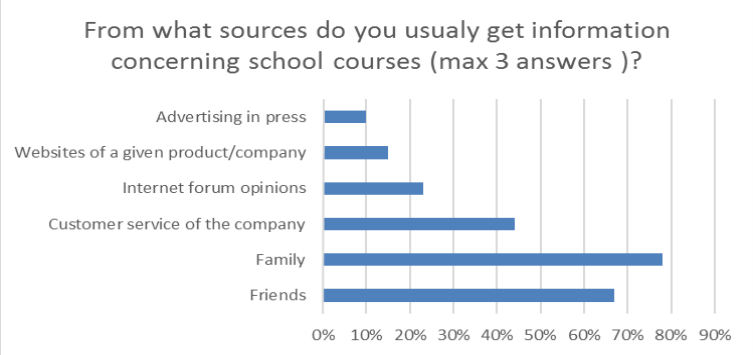

Figure 4. From what sources do you usualy get information concerning school courses (max 3 answers)?

Source: Own work based on research results.

Summary

The active stimulation of buzz marketing is giving the companies (especially those based in rural areas) new possibilities and chances, which if used correctly, enable not only staying on the market, but also improving the market position, through development, raising the company image. Buzz marketing is shaping the needs and expectations of both society and local community. It contributes to better communication inside the company, and with the market environment, it helps integrate realized market activities. In times when products do not vary in quality

or price, enterprises race to effectively gain social favor, which in a long term perspective will contribute to a bigger customer base and raised income.

References

1. Allen K., *Viral marketing 100 success secrets: secret strategies, buzz marketing and interactive marketing tips and tricks-- 100 simple online campaign principles***.** Emereo Publishing 2009.
2. Baskiewicz N., *Information as a Factor in the Growth of Competence in Process Units,* [in:] *Enterprise During Global Market Instability*. Edited by A. P. Balcerzak, Polish Economic Society Branch in Toruń, Toruń 2012, pp. 58–60.
3. Drucker P.F., *Praktyka zarządzania.* AE w Krakowie, 1994, p. 52.
4. Falkowski A., Tyszka T., *Psychologia zachowań konsumenckich*. Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2001, pp.22–29.
5. Gardner S., *Buzz Marketing with Blogs For Dummies,* Hoboken, N.J. Chichester, Wiley 2005.
6. Gicquel Y., *Le buzz marketing: Le génie des glaciers.* Chambéry, 2006.
7. http://agentbuzz.pl.
8. http://www.brandle.pl.
9. http://www.hbrp.pl/redakcja_poleca.php?id=1065&t=fama-to-dobra-reklama, odczyt: 24 stycznia 2016.
10. http://www.inzynieriawiedzy.pl/wiedza/wiedza-informacje-dane, odczyt: 24 stycznia 2016.
11. Mikuła B., Ćwikliński M., *Integracyjna rola zarządzania wiedzą*. Przegląd Organizacji, nr 4, 2001.
12. Moszkowicz M., *Zarządzanie strategiczne. Systemowa koncepcja biznesu*. PWE, Warszawa 2005, p. 312.
13. Mourdoukoutas P.; Siomkos G. J., *The Seven Principles of WOM and Buzz Marketing: Crossing the Tipping Poin*t, New York, Springer Oct. 2009.
14. Ries A., Troutb J., *22 niezmienne prawa marketingu. Seria Marketing bez tajemnic*. PWE, Warszawa 1997, p. 12.
15. Sarvary M., *Knowledge Management and Competition in the Consulting Industry*. California Management Review, No. 12, 1999. DOI: 10.2307/41165988.
16. Sernovitz A., *Marketing szeptany*. Wolters Kluwer Polska, 2014.
17. Stankiewicz M.J., *Konkurencyjność przedsiębiorstwa. Budowanie konkurencyjności wczasach globalizacji*. Wydawnictwo Dom Organizatora, Toruń 2002, p. 229.
18. Stoner J., Wankel Ch., *Kierowanie*. PWE, Warszawa 1996, p. 477.

MARKETING SZEPTANY JAKO SKUTECZNE NARZĘDZIE WSPOMAGAJĄCE PROCESY INFORMACYJNE W PRZEDSIĘBIORSTWIE ULOKOWANYM NA OBSZARZE WIEJSKIM

Streszczenie: Celem niniejszego artykułu jest prezentacja zjawiska marketingu szeptanego, jako skutecznego narzędzia wspomagającego procesy informacyjne w przedsiębiorstwie mającym swą siedzibę na obszarze wiejskim. Sama informacja, zarówno ta wejściowa jak i wyjściowa uznana została jako kluczowy zasób determinujący konkurencyjność przedsiębiorstwa. Biorąc pod uwagę powszechnie uznane i wciąż aktualne standardy zachowań, uznano, iż na obszarach wiejskich w procesie przekazywania informacji z firmy do otoczenia zasadniczą rolę może odgrywać marketing szeptany, co zostało potwierdzone badaniami empirycznymi prowadzonymi metodą ankiety oraz wywiadu swobodnego ukierunkowanego.

Słowa kluczowe: marketing szeptany, informacja, procesy informacyjne, kanały informacyjne

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 26–35
dostępne na: http://www.zim.pcz.pl/znwz

PROBLEMS AND PROSPECTS OF LOGISTICS IN MARKET OF MEAT AND MEAT PRODUCTS

Ludmyla Berezina, Iulia Samoilyk, Olha Sosnovska
Poltava State Agrarian Academy, Ukraine

Abstract: The article reports on the problems and explores the prospects of logistics in the market of meat and meat products. The need of dividing the agriculture into five areas has been justified: production of fixed and working capital for the first and second areas; agriculture; processing enterprises; service; trade and commerce. The interpretation of the category "logistics system in market of meat and meat products" has been improved, which, unlike existing covers eight stages of creating products meat industry: forage production, resourcing, production, processing, preparation, storing, transporting, and trading. Logistics system connects these elements, products, minimizes transaction costs and enhances flexibility, adaptability, management system emergence of subjects of this market segment. The approaches to classification of logistics systems in meat industry have been further developed. The following forms of logistics systems in meat industry have been offered: logistics system of vertically integrated structures; cooperative logistics system; independent logistics system. The model of logistic system on the market of meat and meat products has been elaborated. The principles and levers of the functioning and development of it model have been distinguished.

Keywords: logistics, logistic system, agro-industrial complex, market of meat and meat products market, classification of logistics systems

DOI: 10.17512/znpcz.2016.1.03

Introduction

Agro-industrial complex is a very sophisticated economic system. The efficiency of agro-industrial complex is dependent on the balance of relations between the sectors of this area. The combination of these components should be made on the basis of logistics. It will minimize transaction costs, optimize logistics and information flows. The market of meat and meat products is one of the largest segments of the agricultural market. It significantly differs from the other components of the agro-industrial complex by another technological process, conditions of storage, elasticity of demand. The implementation and development of logistics systems in this area is necessary because these will solve following problems: reduce the costs of contracts and delivery of products; determine the optimal amount of production and sale of meat and meat products; optimize production technology; form a competitive product assortment of finished products.

Logistic system on the market of meat and meat products (meat products logistic system) is segmental subsystem of agro logistic system. It covers eight stages of creating products of meat industry: forage production, resourcing, production, processing, preparation, storing, transporting, and trading. Logistics

system connects these elements, provides optimization of material and information flows among the chain links of the meat products, minimizes transaction costs and enhances flexibility, adaptability, management system emergence of subjects of this market segment.

The review of recent research and publications

The formation of logistics systems in agriculture has lately attracted the attention of a number of scientists, particularly interesting is the study of A. Wieliczko, A. Hadzhynskyj. I. Kravchuk, A. Kalchenko, E. Krykavsky, S. Moroz, M. Oklander, Y. Ponomareva, O. Bag, E. Skakalina, N. Chukhrai and others. The scientists indicate at a number of problems in the development of logistics systems in agriculture and, particularly, in the meat industry. It determines the relevance of research topic.

A Purpose of the research

The objective of the article is to improve the interpretation of the category "logistics system in the market of meat and meat products", develop the approaches to structuring the agricultural sector in areas, the classification of logistics systems in the meat industry, and build a model of logistics system on the market of meat and meat production.

Rendering of the main results of research

The inter-economic relations are the main factors of developing logistics in market of meat and meat products. According to A. Bunchykov, O. Holodov, E. Bunchykova, "In a market economy it is very important to adapt the basic principles of organizational and economic relations of subjects of agriculture. All their activities should be based on mutual interest, partnership. Thus, the importance belongs to economic relations, as the incomes are distributed through this mechanism among all participants of the food market" (Бунчиков, Холодов, Бунчикова, 2009, pp. 79–83).

Classical scholars of economics subdivide agriculture in to three areas. The first area is the production of fixed and working capital for the second and third areas of agriculture. The second sector is agriculture. The third sector is processing and service enterprises. However, the development of market relations requires more detailed structuring of agriculture.

For example, some authors identify the fourth area of agro-industrial complex – servicing enterprises in agriculture. Makin H. justified the need for the fifth area – the area of circulation sector (wholesale and retail trade, procurement of products) (Макин 1998, p.214).

We support the views of scientists on expediency of changing approaches to structuring the agricultural sector and consider it appropriate to of service as distinguish agro-industrial the fourth area. This area includes the transportation companies, organizations of warehousing and storage, repair crews.

The fifth area should include trade and marketing companies. Herewith, logistics management should comprise all the five levels of relationships (figure 1).

Thus, in agriculture the implementation of logistics systems should be considered in terms of their integration into the management system, as well as a mechanism for modernization of the infrastructure of the economic system.

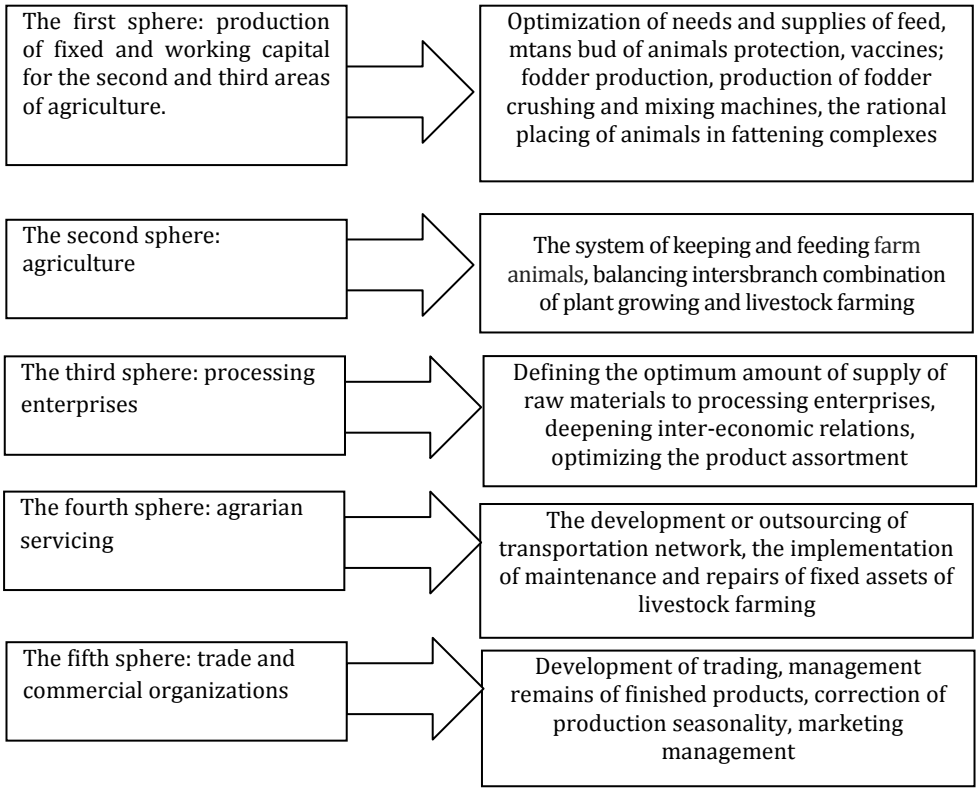

Figure 1. Model of logistic management system of relations in the market of meat and meat products

Source: Developed by the author.

Logistics in agriculture encompasses several operational stages: preparation of raw materials, production, processing, marketing, distribution, warehousing of finished products. According with it there are should be distinguished procurement, production and the food, distribution, transport and marketing. Types of logistics and construction areas of logistics systems are based on the development and specialization of agricultural enterprises. Thus, the market of meat and meat products is providing such specific types of logistics: feed production, fattening, examination, veterinary, production and processing. Therefore, it is appropriate to consider the classification of logistics and identify specific classification features in the meat industry.

The formation and classification of logistics systems in agriculture has recently attracted the attention of a number of scientists, particularly interesting is the study of A. Wieliczka, A. Hadzhynskoho, I. Kravchuk, A. Kalchenko, E. Krykavsky, S. Moroz, M. Oklander, Y. Ponomareva, O. Bag, E. Skakalinoyi, N. Chukhrai and others.

Summarizing the views of scientists on classification of agrologistics systems, it should be noted that the mechanism of their formation differs significantly depending on the type, size and legal form of market entities.

The study of A. Sumets is substantial in logistics. He analyses quite thoroughly the approaches to systematization and classification of logistical activity of agricultural enterprises and the distinguishes its types: localization of production and storage, purchasing the necessary material and technical resources to ensure the enterprise is functioning, delivery of spare parts, transportation and movement of material and technical resources their warehousing and inventory management, materials handling, processing and packaging of products, monitoring the movement of agricultural products, forming and maintaining relationships with suppliers, intermediaries and consumers, distribution and customer service in specific market segments (Сумець 2014, pp. 157–163; Brzozowska, Kalinichenko, Kabus, 2015, pp. 10–14).

The scientist identifies 19 types of logistics activities as a result of systematization and generalization. These type are carried out within the logistics system of production and processing of agricultural enterprises. The scientist identifies functional and phase logistics systems. Functional logistics includes operational processes such as procurement, movement and transportation, inventory management, customer service, handling, delivery of spare parts, monitoring the movement, storage, communications, packaging, staffing, the location of production and warehouses. Phase logistics is formed depending on the stage of production of goods (works, services) of financial and information flows, sourcing, manufacturing, distribution and marketing, return, recycling, destruction.

Scientific approaches to the classification of logistics, including agro-industrial, are very common, that once again underlines the appropriateness to identify specific classifications based on industry and specialization of production activity of the agricultural enterprises (table 1).

We are to highlight specific features in the meat industry on the basis of summarizing the classification approaches in agro logistics. One of these signs is the legal form of elements interaction of the economic system. According to this feature independent logistics can be selected, emerging in companies that do not belong to any associations agroformations; logistics of vertically integrated structures which is particularly characteristic of agricultural holdings, which have vertical supply-product chain; cooperative logistics (it is formed on the basis of agricultural service cooperatives, which may include different size and organizational legal forms of entities and households).

It is expedient is distinguishing basic logistics by the character of business processes (this type of logistics includes the production of finished products and is subdivided in to faltering, production and processing, distribution) and auxiliary-

serving (formed within the auxiliary and service processes that accompany and promote the production of the main products: feed production, examenation, veterinary and ecological). Two types of logistics should be considered in management area: infrastructural logistic that promotes the formation of production and auxiliary facilities serving economic system; and marketing and management, which involves the integration of management functions in the management of information and material flows to ensure the marketing orientation of production.

Table 1. General classification system of logistics in the meat industry

Classification feature	Type of logistics	Characteristics
According to the level of formation	Micrologistics	Formation of logistics systems within the enterprise
	Mezologistics	Formation of logistics systems within the region
	Macrologistics	Formation of logistics systems within the state
	Megalogistics	Formation of logistic systems international on the level
According to environment implementation	Internal	Combines one economic system (enterprise, legally incorporated group of companies)
	External	Combines several economic systems
According to functional basis	Operating	Covers production and nonproduction processes (purchase, movement and transportation, choice of technology, primary production, processing, sales of finished products, inventory management, service organization, loading, unloading, delivery of spare parts, warehousing, communications forming, packaging)
	Stage-by-stage	Combine stage of production, work, services (contracting, procurement, production, processing, distribution, sales, return, formation supplies)
According to the level of coverage	General	Covers all the processes and stages and operations of the economic system
	Local	Covers the part of processes operations stages of the economic system
According to form of realization	Own	Implementation through services one is own economic resources
	Outsourcing	Envisages attraction of external logistics

Source: Developed by the author.

Thus, the formation and development of logistics systems in the meat sector of agricultural enterprises is a complex process that requires sophisticated mechanisms. According to this, different types of logistics can be used in this industry in obedience to the following general classifications: the level of formation, the environment of implementation, functional basis, the level of coverage, the form of implementation. It is helpful to distinguish specific features (according to the legal form of interaction between the elements of the economic system, the nature of business processes, management area). These types of logistics determine the mechanism of construction and operation of the logistics system for this market segment.

It should be noted the mechanism of building logistics systems differs significantly depending on the type, size and legal form of market entities.

It is worth paying attention to the views of A. Wieliczko. He differentiates corporate and cooperative logistics in agribusiness and notes that corporate agro logistics is a logistics, in which the successive stages of the supply, production and distribution are within one or several person control to maximize corporate financial results. Cooperative agro-logistics is a logistics, in which the successive stages of the supply, production and distribution are controlled through democratic governance and many persons equal co-ownership, mainly on non-profit basis, in order to minimize logistics costs of the owners (members) (Величко 2012, pp. 233–238).

The current state of the agricultural market is accompanied by a dynamic development of agricultural service cooperatives, in this regard in recent years there has been a significant number of works devoted to the development of this form of associations of enterprises, and, in particular, agro-logistics building systems on a cooperative basis. These questions have been studied by V. Andriychuk, V. Zinovchuk, A. Krysalnyj, M. Kisil, T. Kosarev, I. Kravchuk, P. Makarenko, M. Malik, G. Pidlisetskyj, P. Sabluk, V. Yurchyshyn and others.

Kravchuk I. notes that service cooperatives in the agri-food logistics are the subjects of integration between producers of agricultural raw materials, processing enterprises, other members of the agricultural market. Their activities are aimed at optimizing the supply chain of agricultural products, which helps to reduce transaction costs and economic risks of suppliers, improves the incomes of agricultural producers makes impossible "dictating terms" by the processing unit to producer-seller (Кравчук 2014, pp. 132–136).

The constructing of agro-logistics systems in vertically integrated structures has significant peculiarities. Skakalina E. notes that integration in the field of agribusiness is economically feasible process that can reduce transaction costs, ensure a steady supply of resources and marketing products. However, the factor of reducing transaction costs is offset in vertically structured corporations by the need to maintain the structure of vertical integration elements with low or negative profitability. The implementation of the benefits of integration is possible only in corporations with a rational shaping of their organizational and production structure that takes into account both the technological features of production and external conditions. The integration of information flows is of great importance in the process of optimizing logistics processes. The integration of the necessary information flows (forecasts, orders, marketing plans, reports on the status of orders and sent cargo) that circulates within the agricultural holding and between partners in the distribution channel, significantly improves the efficiency of inventory using and business as a whole, and helps to reduce uncertainty (Скакалина 2014, pp. 106–108).

Thus, the formation of logistics systems in agriculture is complex and can take many forms depending on the organizational and legal status. This issue is covered in a significant number of scientific papers, which address differences and features of logistics systems for agricultural enterprises different size and legal form.

However, in modern of literature there are only a few works which are devoted to the fundamental and applied basis of the sectoral features of systems livestock farming, in particular agro-logistics.

The approach to building an integrated logistics system on a corporate basis is a new one in the scientific literature. These logistics system is the most characteristic of agricultural holdings, and cooperative basis, which is a characteristic manifestation of agricultural service cooperatives.

Both corporate and cooperative forms of agribusiness play an important role in the control of the logistics value chain of products and protect economic interests (Величко 2012, pp. 233–238).

The logistics division into internal and external is the most common.

Cooperative or corporate business organizations are subjects of internal logistics in system of cooperative and corporate agribusiness. They independently form such external processes as procurement, storage, sale, transportation, etc., the subjects of logistics are specialized cooperative or corporate enterprises (logistics operators) than ensure the implementation of part or the complex of flow processes of separate cooperative or corporate organization). Internal logistics provides service of exclusively its own flow processes (closed or limited logistics), and in conjunction with this, the additional use of logistics facilities on the side (insorsing). Agro logistics insorsing in agricultural service cooperatives involves the use of logistic capacities to provide services to both its members and other customers. Agro logistics subcontracting of in agricultural service cooperatives is the traditional service connected with transportation and storage with insignificant integration with the serviced customer (Величко 2012, pp. 233–238).

Kravchuk I. proposes to consider private and corporate and farm-cooperative logistics. The scientist noted that "private and corporate and farm-cooperative forms of agricultural enterprise hip are promising in the development of agro logistics in Ukraine, where agricultural service cooperatives are the main local agents. Regional integration of agricultural service cooperatives, processors, retailers (supermarkets), and other subjects of the food market is effective factor of agro-logistics. The possibility from formation of analytical and information support of members of cooperatives, professional implementation of business planning, legal assistance, capacity for vertical integration with various corporate entities within and outside the region are advantages of regional cooperative centers" (Кравчук 2014, pp. 132–136).

Thus, the following forms of logistic systems should be distinguished in meat industry: logistic system of vertically integrated structures; cooperative logistics system; independent logistics system.

This division of logistics systems is associated with the form of the loss of the legal independence of market entities. There are enterprises that fully or partially, formally or informally, lose their freedom to make management decisions and change their legal form. In particular, vertical or horizontal integration of enterprises in the establishing agricultural holdings, concerns, conglomerate mongering of companies because such structures are dominated by internal logistic system, as most market transactions are replaced by internal farm.

The market of meat and meat products in modern conditions is characterized mostly by functioning independent producers and agricultural holdings, is this market segment is dominated by vertically integrated logistic structures and independent logistics. The cooperative movement in the meat industry is at the stage of development, there more created milk cooperatives since the industry has a higher level of competitiveness and the cooperation of manufacturers of these products is easier, compared to meat branch.

The mechanism of formation and development of logistics systems in meat and meat products agricultural enterprises should be based on the following levers of economic management: coverage of all parts of the food supply-chain; automation and computerization of logistics flows; target-oriented approach; alternative in building logistics systems.

Local logistics systems can also exist within the overall economic system. They unite the individual stages or operations with livestock production, such as forage production and feeding. However, these local systems have to be integrated into the overall logistics system to facilitate obtaining synergies and forming an efficient logistics infrastructure.

The mechanism of logistics systems in meat and meat products market will be effective subject to the implementation of modern computer technology, navigation, automated systems for controlling, ensuring the optimization of operations and processes at all stages of production and minimize the loss of materials and information. The creation of effective transport systems is very important in meat industry. These transport systems are save resources, contribute to the preservation of qualitative properties of meat products. It will be positively displayed on its realization value.

Management decisions in logistics systems must be based on linking objectives with the resources. It is necessary to develop complex interrelated logistics projects, covering all the processes and transactions in the chain "supply-production-processing-storage- trading".

The main principles of formation of logistics systems in the meat industry are: flexibility and adaptability of the logistics system; consideration of integration and cooperative mechanisms in this market segment; coordination of all elements of the logistics system; structuring logistics subsystems depending on the market environment (micro, meso, macro, global level); reflect the specificities of meat products; the use of innovative approaches. These principles should be observed collectively and complementary logistic mechanism of the meat products logistics.

The efficiency of the logistics system may be achieved by provided agricultural cooperation of economic structures, including agricultural enterprises, farms and households, combined in agricultural service cooperatives, and local communities (figure 2).

The construction of agro-logistics systems based on agricultural holdings is effective, but it may prove uncompetitive in the long run because the main purpose of the large vertical structures is profit maximization at the moment.

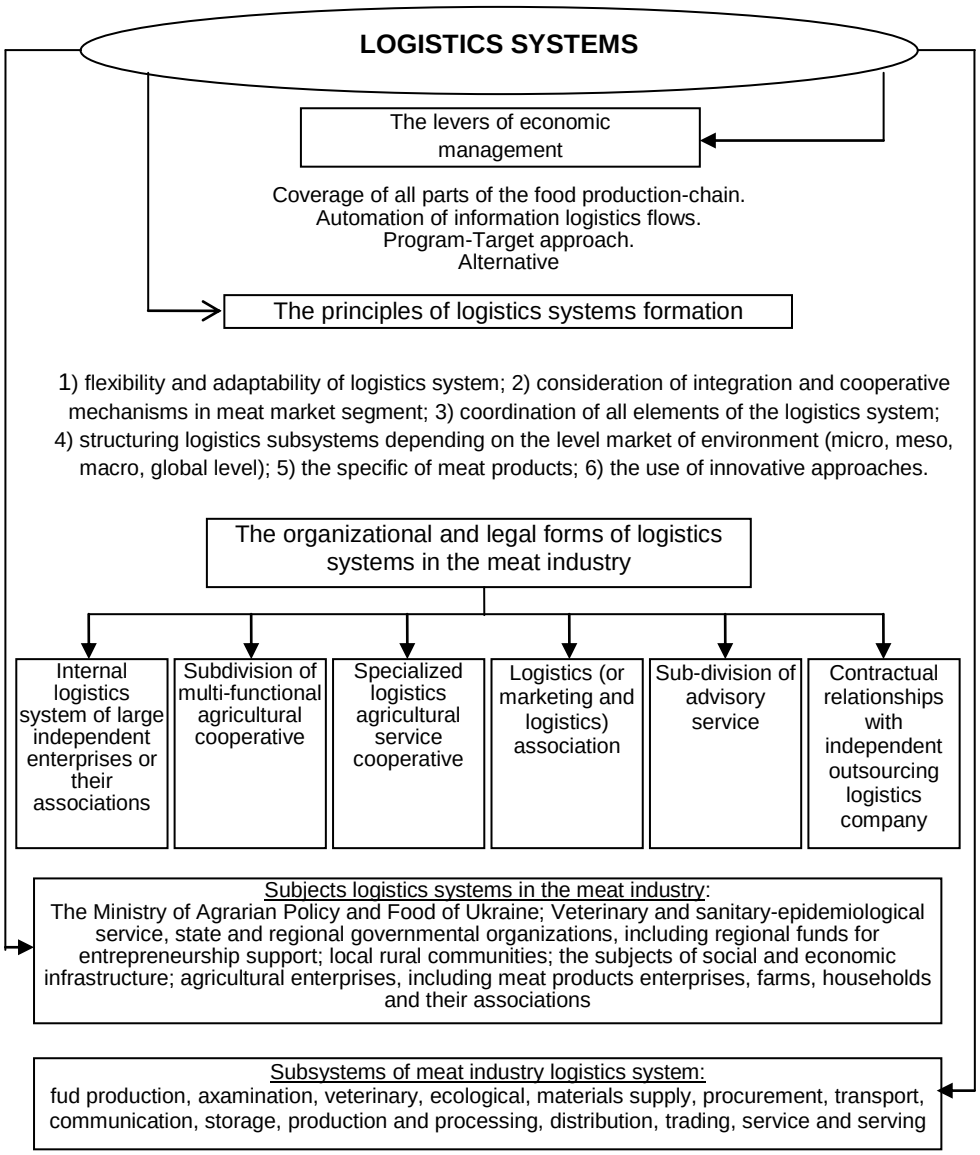

Figure 2. The model of the logistic system in market of meat and meat products

Source: Developed by the author.

Conclusions

In order for the market of meat and meat products to be efficient, the development of agro logistics systems is crucial. The use of logistics in meat industry is an integrative part of agricultural farm management and an important element of economic subject infrastructure. The main factors of economic management and logistics systems development in meat industry are: all parts of

food supply-chain, leveraging information technology for logistics, target-oriented approach. There are following leading organizational and legal forms of logistics systems: internal logistics systems of larger independent companies or enterprises, multifunctional agricultural cooperative, specialized logistics agricultural service cooperatives, logistics (or marketing and logistics association), a subdivision of advisory service, the contractual relationship agro-logistics with independent outscoring logistics company.

References

[1] Brzozowska A., Kalinichenko A., Kabus J., *Analyzing the strategies used in media discourse management*, J. Eastern-European Journal of Enterprise Technologies, Vol 5, No 3(77) (2015), pp. 10–14. DOI: http://dx.doi.org/10.15587/1729-4061.2015.51397

[2] Бунчиков О.Н., Холодов О.А., Бунчикова Е.В., *Сущность и особенности экономических отношений в АПК* / // Вестник аграрной науки Дона. – 2009. - № 1, pp. 79–83.

[3] Величко О.П., *Корпоративна і кооперативна логістика в агробізнесі* // Вісник Хмельницького національного університету – 2012. – № 1, pp. 233–238.

[4] Кравчук І.А., *Роль обслуговуючих кооперативів в агропродовольчій логістиці* // Кооперативні читання: 2014: матеріали Всеукр. наук.-практ. конф., 27–29 берез. 2014 р. – Житомир: ЖНАЕУ, 2014, pp. 132–136.

[5] Макин Г.И., *Система управления агропромышленным комплексом в переходный период*. – М.: АгриПресс, 1998, p.214.

[6] Скакалина Е.В., *Структура логистической компоненты ERP-системы агрохолдинга* // Вестник Полтавской государственной аграрной академии. – 2014. – № 1, pp. 106–108.

[7] Сумець О.М., *Систематизація видів логістичної діяльності підприємств агропромислового комплексу* // Економічний форум. – 2014. – № 2, pp. 157–163.

PROBLEMY I PERSPERTYWY LOGISTYKI NA RYNKU MIĘSA I PRODUKTÓW MIĘSNYCH

Streszczenie. Uzasadniono konieczność podziału rolnictwa na pięć sfer: wytwarzanie kapitału trwałego i obrotowego dla pierwszej i drugiej sfery; rolnictwo, przedsiębiorstwa przetwórcze; sfera obsługi oraz handel. Zaprezentowano ulepszoną interpretację kategorii "system logistyczny na rynku mięsa i produktów mięsnych", która, w przeciwieństwie do poprzednich, obejmuje osiem etapów tworzenia produktów przemysłu mięsnego: produkcja paszy, zapewnianie niezbędnych środków, produkcja, przetwarzanie, przygotowanie, przechowywanie, transportowanie oraz handel. System logistyczny łączy te elementy, zapewnia optymalizację przepływu materiałów i informacji pomiędzy ogniwami łańcucha produktów mięsnych, minimalizuje koszty transakcji i zwiększa elastyczność, zdolność przystosowania się. W dalszej części rozwinięto podejścia do klasyfikacji systemów logistycznych w przemyśle mięsnym. Zaproponowano następujące formy systemów logistycznych w przemyśle mięsnym: system logistyczny struktur zintegrowanych pionowo, wspólny system logistyczny, niezależny system logistyczny. Szczegółowo omówiono model systemu logistycznego na rynku mięsnym i produktów mięsnych. Zidentyfikowano zasady i instrumenty funkcjonowania tego modelu.

Słowa kluczowe: logistyka, system logistyczny, kompleks rolno-przemysłowy, rynek mięsa i produktów mięsnych, klasyfikacja systemów logistycznych

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 36–46
dostępne na: http://www.zim.pcz.pl/znwz

THE ANALYSIS OF COMPETITIVENESS MANAGEMENT SYSTEM OF FOOD ENTERPRISES IN THE DIFFERENT DISTRIBUTION CHANNELS ON THE EXAMPLE OF UKRAINE

Kostiantyn Bereznytskyi, Yulia Kalyuzhnaya, Natalia Protsuik
Poltava State Agrarian Academy, Ukraine
Joanna Nowakowska-Grunt
Czestochowa University of Technology, Poland

Abstract: The article describes the specifics of the concept of competitiveness and its management at food enterprises as well as prerequisites for the regional food associations' formation as a means of improving the industry competitiveness.

Keywords: competitiveness, regional associations,food industry, agro-industrial complex, strategic management, domestic and foreign distribution channels

DOI: 10.17512/znpcz.2016.1.04

The problem statement in general and its connection with important scientific and practical tasks

The financial crisis makes food industry enterprises think about increasing their competitiveness.

The intensive growth of biotechnologies, increased production of computers and software, the development of chemical and pharmaceutical industries, and a number of other innovative technologies have led to a substantial progress in traditional industries, including food products' complex.

According to its technological and economic contents the food industry is a field of production which is closely connected with agriculture. So, it is natural that crop failures, market price fluctuations on raw materials lead to fluctuations in supply and demand for certain products. The most important factor of increasing food industry efficiency is a good management system, which is connected with territorial associations of producers. These innovative regional associations might be a guarantee of strengthening competitiveness in the national and foreign markets. They might have the opportunity to reduce their transaction costs, thanks to joint research, technological, and economic cooperation of its members. The serious problem concerning enterprises' competitiveness is the choice of the distribution channel, as an important element in the activities of enterprises and their groups. In many cases, the choice determines the appropriate distribution channel to achieve success of the enterprises in the market,

especially concerning the efficiency of logistics operations, and satisfy the demand of final consumers, as well as ensure the availability of products on the international market.

The analysis of recent studies and publications, which discuss the problem

The theory of competitiveness has been studied by such foreign and Ukrainian scientists as M. Porter, I. Ansoff, A. Gradov, V. Dykan, I. Ivanov, I. Herchikov, A. Mazaraki, N. Ushakova, S. Lytvynenko, I. Smolin, I. Balabanova, O. Shishkova, and others (Gorynia, Nowak, Trąpczyński, Wolniak, 2013, pp.184 – 216; Romanowska, Gierszewska 2009; Nogalski, Waśniewski, Dryl 2014, pp. 279–290; Kościelniak 2006, pp. 61–63; Nowodziński 2011, pp. 179–190;Skowron-Grabowska 2006, pp.77–82; Grabowska 2014, pp. 21–31).

The problem statement

The aim of the study is to analyze competitiveness management system of the food enterprises in the domestic and foreign markets.

The results

The problems of competitiveness have been studied by many scientists and economists, among them are: M. Albert, I. Blank, A. Gradov, M. Meskon, R. Fatkhutdinov, F. Hedouri, V. Shinkarenko, D. Yudanov, and others.

M. Meskon, M.Albert and F. Hedouri note that a competitive enterprise is the enterprise which has a strong competence, so it functions better than its competitors, and competitiveness allows to attract consumers (Meskon, Al'bert, Khedoury 1998, p. 800).

I. Blank defines competitiveness as the evaluation system of the company's economic activities, affecting the results of the competition with other companies in the consumer market (Blank 1997, p. 408).

A. Yudanov defines competitiveness as the ability of companies to produce and sell competitive products. The author notes that the company's competitiveness depends on its overall activities' efficiency and the effective use of enterprise's resources (Юданов 1998).

A. Gradov interprets the term "competitiveness" as the enterprise's comparative advantage in relation to other enterprises of the given branch in the country and abroad (Экономическая стратегия фирмы 2000, p. 588).

Competition is an integral part of a developed market. So there is an urgent need to study this phenomenon, its level and intensity, forces and market opportunities of the strongest competitors, the prospects of competition in the selected food industry markets.

The Law of Ukraine "About the Protection of Economic Competition" defines competition as "a contest between economic subjects in order to obtain benefits through their own achievements over other entities. As a result, consumers,

businesses are able to choose among several sellers, while a separate entity cannot determine the conditions of circulating goods on the market" (Закон України 2001). It should be noted that the Law does not regulate the concept of "competitiveness", the Law also does not refer to the methodology of evaluating the competitiveness of businesses.

The competitiveness in the food industry is characterized by the level of performing specific functions, and depends on the efficiency of its functioning, which is measured not only by traditional criteria, but according to the industry peculiarities, the degree of the vitality and dynamism of the industry or its complexes at different levels of economic development in the regions, countries or the world on the whole.

Food industry is a very important economic sector of our country; this is explained by its share in the total production volume, export potential, and tax revenues which it provides. In 2014, the food industry occupied the second place in the sales volume; its share was 17%, including drinks and tobacco.

The highest rate of decline is typical for the production of meat and dairy products, butter, cheese, flour, bakery products (see table 1).

According to the State Statistics Service of Ukraine, the profitability of food industry is quite low. As a result, the number of food enterprises and therefore the number of employees are constantly decreasing.

Table 1. The dynamics of the production volumes of the major Ukrainian food products during the period from 2009 to 2014

	2009	2010	2011	2012	2013	2014
The production of meat and meat products, thousand tons	1,501.8	1,442.8	1,352.4	1,450.8	1,439.7	1,268.5
Processing and canning of fruits and vegetables, thousand tons	1,199.7	1,151.6	919.6	924.2	851.2	834.5
The production of oils and fats, thousand tons	2,545	2,183	3,149	3,393	3,529.2	1,385
The production of dairy products and ice-cream, thousand tons	1,932	1,852.9	1,734.6	1,730	1,691.1	1,753.1
The production of milling and cereals processing industry products, starch etc., thousand tons	3,226	3,393	3,131	2,972	2,569.1	2,856
Manufacturing of other food products, thousand tons	4,951	4,631	4,146	4,699	5,326	3,589
The production of drinks, mln.dal	774.9	745.9	666.9	687.9	644.3	548.6
The production of cigarettes, billion pieces	129	130	114	103	95.5	126

Source: http://www.ukrstat.gov.ua/

Further the geographical structure of production in the food industry will be characterized.

Ivano-Frankivsk region has the highest increase rate in food production. (110,79%), it is by 10,79% more than the average indicators in Ukraine. Such regions as Cherkasy (809%), Lviv (6,87%), Zaporizhzhia (6,68%), Kirovohrad (5,69%), Poltava (3,24%), Volyn (2,84%), Mykolaiiv (1,65%), Kyiv (0,44%), Zhytomyr(0,36%), Vinnytsia (0,12) also have higher than the average rate of food industry development. Dnipropetrovsk (99,92%), Khmelnytsky (99,86%), Kherson (99,82%), Ternopil (99,36%), Rivne (99,35%), Chernihiv (99,03%) regions show almost the average rate. The biggest decline in food production is observed in Zakarpattia (93,31%) and Odesa (93,45%) regions.

According to advance regional coefficient, the regions can be devided into three groups (table 2).

Table 2. The grouping of the regions according to the food industry development in Ukraine

Group	Advance regional coefficient	Regions
Regions of fast development	101.65-110.79	Ivano-Frankivsk, Kirovohrad, Cherkasy, Lviv, Zaporizhzhia, Poltava, Volyn, Mykolaiv
Regions of medium development	99.03-100.44	Kyiv, Zhytomyr, Vinnytsia, Dnipropetrovsk, Khmelnytskyi, Kherson, Ternopil, Rivne, Chernyhiv
Regions of slow development	93.31-98.04	Chernyhiv, Kharkiv, Sumy, Odesa and Zakarpattia

Source: own elaboration.

This table shows the regions with effective competitiveness management at food enterprises and the regions which are characterized by low the developed food industry.

Thus, a regional approach can be considered as an effective way of characterizing the development of the regional food industry, as a new tool for improving regional competitiveness management, based on effective use of agro-industrial, scientific, technological, and innovative regional policy. The regional economic strategy of the food industry development, should be aimed at stimulating the development of the above mentioned relations, and, thus, creating the competitive food industry.

The main task of the state strategy concerning the regional associations' development is to create the conditions for their effective work. Regional authorities should stimulate innovative and investing activities of food enterprises in order to manufacture competitive products in the region, to create innovative regional associations and the regional innovation and investment system in the food production sector of agro-industrial complex.

The term "regional association" as a peculiar and independent phenomenon in the economy appeared during the studying of geographically localized groups and companies' associations engaged in certain kinds of economic activities. Alfred

Marshall (Маршалл 1993) studied the peculiarities of the industrial regions and noted that a lot of specialized companies were concentrated in such regions. But M. Porter was the first who noted the benefits of competitive advantages of such companies. In his theory of national and local competitiveness he (Портер 2002, p. 49) determined that the most competitive multinational companies are not located haphazardly in various countries, but tend to be concentrated in one country or even in one region of the country. It is explained by the positive influence of competitive companies on the close surroundings: suppliers, customers, competitors, and the success of the surroundings influence the further growth of the company's competitiveness. Later on, M. Porter gave the following definition: "An industrial group is a group of close, geographically interdependent companies and related organizations that operate together in the same business, and complement each other" (Портер 1993, p. 896).

S. Sokolenko believes that "regional associations in Ukraine provide a unique basis for the innovative activities, increase productivity and profitability of the small and medium enterprises. These associations are a real "child" of globalization, they help to increase the role of the regions, to attract foreign investments, to teach a wide range of entrepreneurs, develop small and medium enterprises, to increase companies' flexibility and mobility, to create a wide range of networks. At the same time, regional associations are the link between business, government, and research institutions in developing competitive advantages within the city, region, province, state, country and even on the international level" (Соколенко 2007, p. 21).

At present, regional processing production complexes should become the driving force in developing the food industry. Various investigations show that the increasing level of economic freedom and independence of the regional processing businesses have a significant impact not only on social and economic regional development (progressive and regressive), but also on the factors and instruments ensuring their competitiveness and socio-economic stability. So, the competitive advantages of these associations can be emphasized.

Firstly, regional innovation associations have a stable system of propagating new technologies, knowledge, products, the so-called technological network which is based on the common scientific basis.

Secondly, regional food industry associations have additional competitive advantages thanks to the possibility of performing internal specialization and standardization, minimization of innovation costs.

Thirdly, innovative associations include flexible small businesses, which allow to form innovative places for the economic growth in the region.

Fourthly, regional innovation associations are extremely important for the small business development, because they provide a high degree of specialization in servicing specific business niches, provide facilitated access to industrial enterprise's capital, an active exchange of ideas takes place, the knowledge from experts to entrepreneurs is spread.

Each separate food enterprise interacts with the regional agrarian innovative association to develop more effective investment projects and financial mechanisms of their implementation. Compared to a single enterprise or

agricultural holding, the regional association has a great potential to be included in the regional and other programs, to receive preferential loans, to lease equipment. Therefore, regional associations have more possibilities for innovative development, for increasing their competitiveness, entering inter-regional and international markets, providing guaranteed purchasing of agricultural products, for the state support on the basis of state and private partnership.

These associations are mostly experimental in Ukraine, and in general, this practice is not widespread. However, there are significant changes now: Ukraine's joining the WTO, and accordingly, opening the borders for foreign companies; the economic crisis which has significantly weakened the Ukrainian producers, lead to the increased competition between national and international producers. So, in our opinion, the creation of regional associations is the most effective way to protect national food producers. Regional associations are locally and hierarchically integrated companies, financial and business structures that provide high price, innovative and technological competition of manufactured products (Kalinichenko, Minkova, Kalinichenko 2015, pp. 68-75).

The model of the regional association can be represented as follows (figure 1). This type of association is competitive both in the domestic and foreign markets.

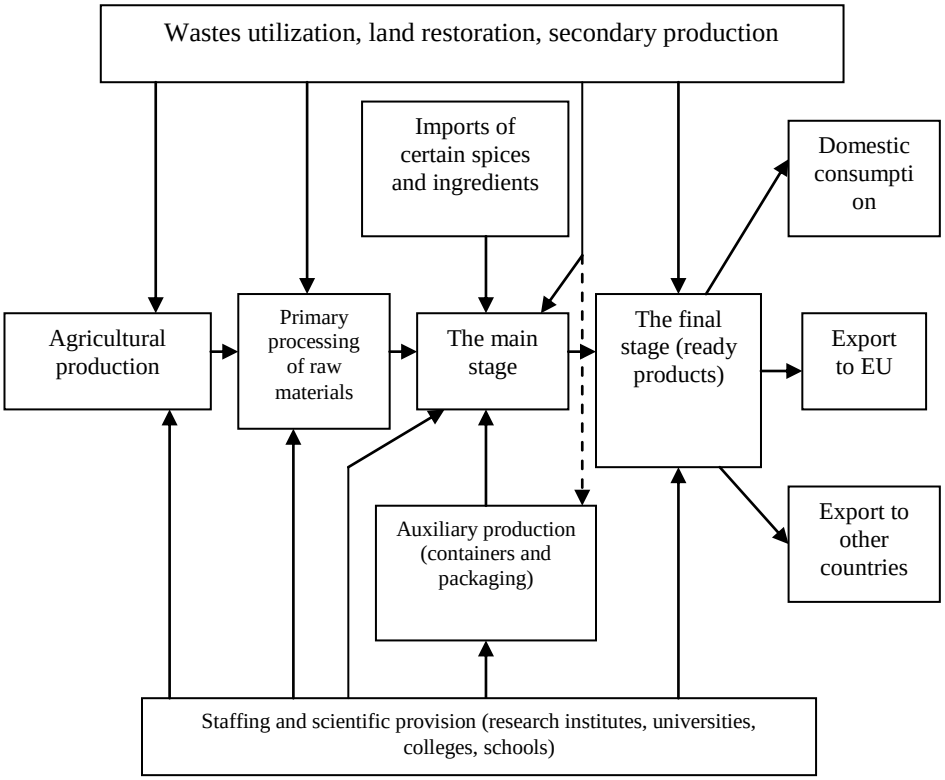

Figure 1. The model of the regional food association

Source: Own elaboration.

As you can see, the given model is more vertically integrated, compared to the typical model of production organization, and it also includes a number of auxiliary industries (additives, packaging).

From the point of view of processing and logistics activities it seems important to integrate all the elements that affect the physical flow of goods and information. The using of logistics management in coordinating activities is also significant: it results in the decrease of logistics costs. This is particularly important in the context of high competitiveness that exists in the international market of food products. So, the goods produced in Ukraine must be competitive concerning low-cost production, packaging, distribution, etc. (Brzozowska, Bubel 2014, pp. 27–30.19].

Let us consider the problem of long-term goals for ensuring the competitiveness of food industry enterprises.

It is proposed to list the priority of strategic goals in accordance with the forecasted state of the environment being mainly oriented at its state closer to the end of the strategic planning period. Significant changes of the environment may require corresponding corrections of the current target priorities envisaged by the strategic plan in order to prevent the termination of the food enterprise functioning as an independent production and operation unit. The process of forming the evaluation of the food enterprise activities' efficiency based on setting the priority goals, as it is seen by the author, is presented in figure 2.

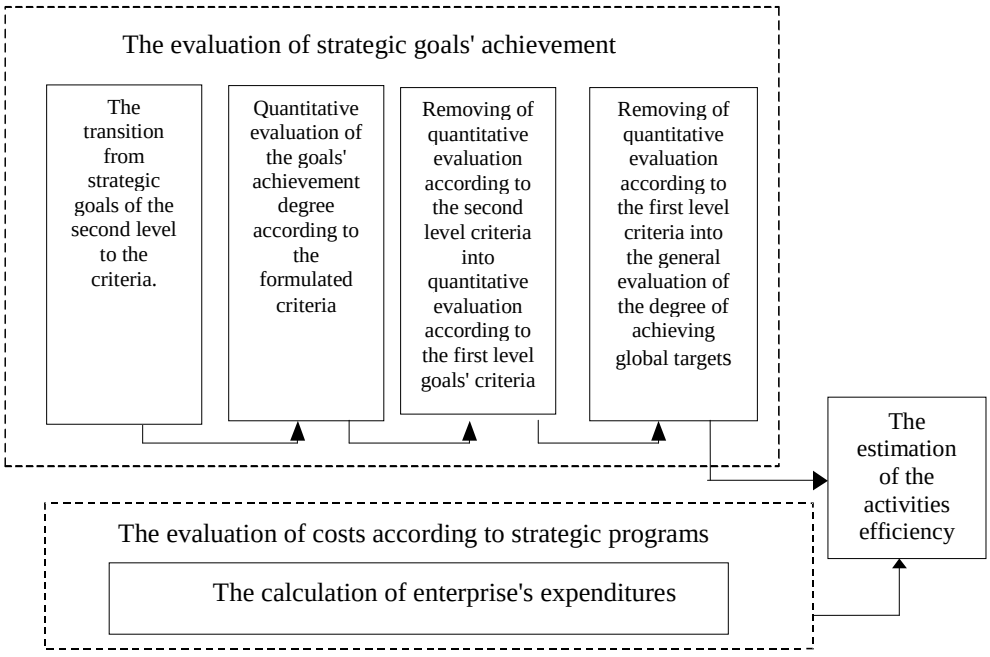

Figure 2. The scheme for the evaluation of the efficiency of the food enterprise's activities based on defining the priority of its goals

Source: (Ігнатьєва 2004, pp. 135–14020].

The method of establishing the goals' priority of the food enterprise with the aim of further using evaluation results to make the analysis of the enterprise's activities on the whole has been suggested within the system concept. The geometrical method of the system state diagnostics is its basis. The evaluation of the environment should be used for the analysis of the enterprise's competitive advantages. According to I. Ignatiev (Ігнатьєва 2005, pp. 1129–1140) the evaluation of competitive advantages of the enterprise can be represented by the following scheme (figure 3).

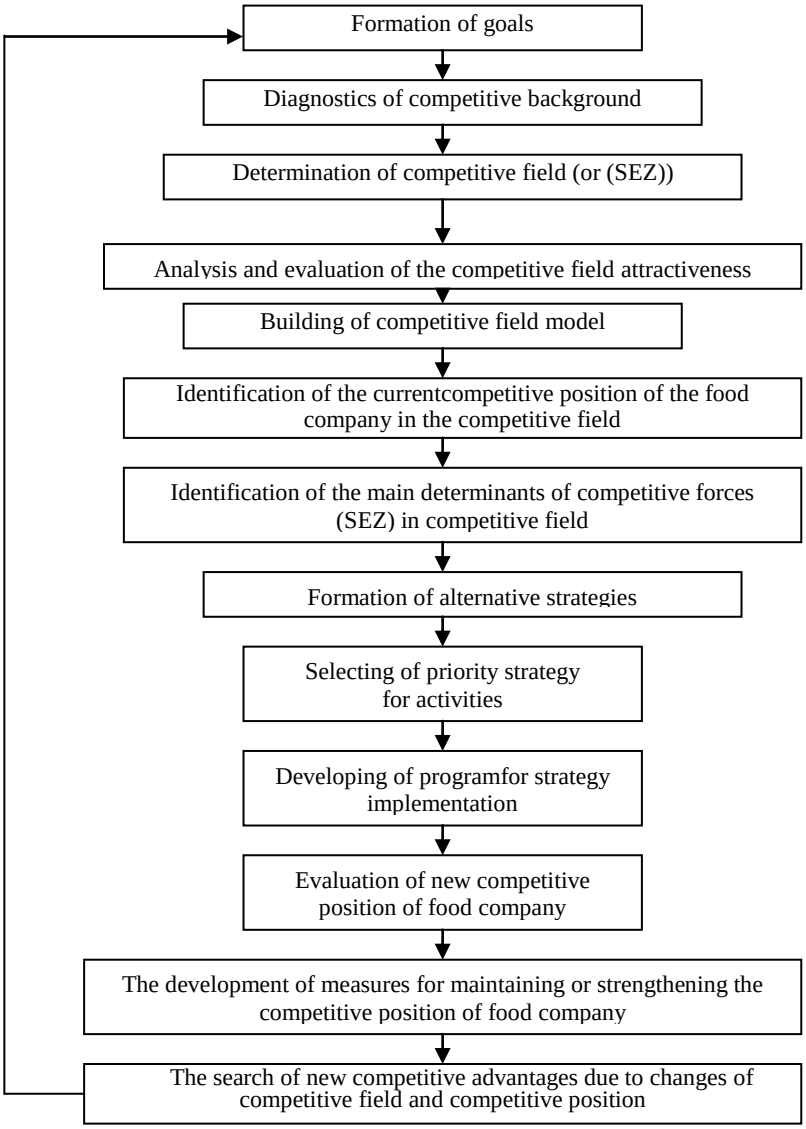

Figure 3. The scheme for evaluation methods of food enterprisecompetitiveness

Source: Own elaboration.

The author states that competitive advantages are a quite complex multi-level concept, so their analysis and evaluation should be closely associated with the competitive background and competitive field, especially its level. In separating the competitive field, the three levels of competitive relations were taken into account: micro-level (specific types of the company's products); meso-level (industries, corporated enterprises); macro-level (the economy of the country).

It should be noted that such structuring of competition subjects has allowed to give a more accurate characteristics of these elements' composition and identify their relationship. It has also helped to prove the effectiveness of the approaches in evaluating the food enterprise position in accordance with the competitive field, which opens additional possibilities for defining the strategic directions of increasing competitiveness on each level. Such structuring is the more important, the more complex the competitive field and the relationship between the subjects of competition are.

Thus, we have come to the conclusion that the defining of a competitive background is not only the revealing of the factors which are not connected with the market directly, but also determining the importance of these factors for the enterprise's activities.

The process of competitive background analyzing is a complex and time-consuming procedure, and its final results are the following:

1) the identification of relatively important factors, which could affect the development of the industry and changes in the market, and the force of each factor of influence;
2) the creation of the possible way of development of the competitive background components within the specified period of time;
3) the identification of main competitive background advantages that are the main components of the economic system functioning (global, national, regional).

Studying the attractiveness of the competitive field is the following very important element in the evaluation of the enterprise's competitive position. It is necessary to establish a strategic economic zone (SEZ) of the food enterprise, which includes three stages: focusing (distinguishing the evaluation indicators), verification (distinguishing possible/threats); conclusions (choosing the category of the market attractiveness).

Successful selection of the SEZ will provide:

– more complete evaluation of the attractiveness and viability of the SEZ establishing;
– a clear definition of the enterprise's current competitive position;
– the right choice of the enterprise'scompetitive strategies to achieve more stable and strong positions in the competitive field..

The conclusions

Each food enterprise must develop its own system of competitiveness management taking into account its specifics and peculiarities. All the components of the food enterprise competitive potential – modern technology, equipment,

trained staff, and other resources, which are used for company's functioning and its strategic development in a competitive environment – are to be the objects of management. To increase the competitive position of the food enterprise, it is necessary to satisfy consumers' demands completely; to develop infrastructure of supply and marketing; to provide proper scientific support of the branch.

Justifying the necessity of the territorial organizing of the food industry, detecting and taking into account its components help to form the scientific basis for solving the problems of optimal location of food enterprises. It is also important to keep the balance of raw materials' base and preserve the enterprises' capacity, to find the reserves for the increase of production effectiveness, to evaluate regional potential opportunities in food production, to form the reserve fund and the state's export potential, to forecast the development of food industry and its branches.

However, the technological level of the Ukrainian agro-industrial complex on the whole and its food industry is very low. So, the creation of regional associations may be a good solution in solving the problem.

The manufacturing of competitive products is impossible without scientific provision of the branch. To develop science in the food industry it is necessary to accumulate the finance of enterprises. This will help to conduct the general research work: the revision of regulation and technical documentation, the development of new competitive products, the creation of advanced technologies and equipment, etc.

Thus, the regional approach can be viewed as an effective way to develop regional food industry, as a new tool for improving regional competitiveness management, based on the effective use of agro-industrial, scientific, technological, and innovative regional policy.

After evaluating the state and prospects of the Ukrainian food industry enterprises, the following ways to improve their competitiveness in the national and international markets have been suggested: the evaluation of consumer products' preferences; constant updating of fixed assets; the development of innovations in the food industry; choosing the effective sales channels; forming the promotion strategy in the Ukrainian and foreign markets, and so on.

References

1. Blank Y.A., *Torhovyi menedzhment* [Trade management]. – K.: Ukraynsko-fynskyy instytut menedzhmenta y byznesa, 1997, p. 408.
2. Brzozowska A., Bubel D., *Communication Management in the aspect of Food Industry*, Proceedings of the International Forum on Agri-Food Logistics. IInd Domestic Scientific Conference AGROLOGISTYKA 2014. Efficient Logistics as a Chance of Efficient Consumer Response in the Agri-Food Sector. Poznań, Poland, September 9-13th, 2014, pp. 27–30.
3. Gorynia M., Nowak J., Trąpczyński P., Wolniak R., *Internationalization of Polish Firms via Foreign Direct Investment: A Multiple-Case-Study Approach.* DOI 10.1057/9781137369413_8, ed. M. Marinov, S. Marinova Successes and Challenges of Emerging Economy Multinationals Palgrave Macmillan, 2013, pp.184 – 216, DOI 10.1057/9781137369413
4. Grabowska M., *Aspects of Relationships in Interorganizational Enterprises*, [in:] *Managing Organizations in Changing Environment*. Models - Concepts – Mechanisms, Crakow 2014, pp. 21–31.
5. http://www.ukrstat.gov.ua/

6. Kalinichenko A., Minkova O., Kalinichenko O., *Development of ukrainian organic products sector in the international context.* J. Socio-Economic problem and the State [online], 2015, Vol. 13, No. 2, pp. 68-75.
7. Kościelniak H., *Analysis of the Cost of Capital, Processes of Capital Supply in Production Enterprises.* Joint Work Edited by Helena Kościelniak. Prace Wydziału Zarządzania Politechniki Częstochowskiej Serie Monographs No 1., 2006, pp. 61–63.
8. Meskon M., Al'bert M., Khedoury F., *Osnovy menedzhmenta* [Fundamentals of Management]. Per. s anhl. – M.: Delo, 1998, p. 800.
9. Nogalski B., Waśniewski J., Dryl T., *Brand of a product and knowledge about its producer as factors determining consumers trust in brand*, [in:] *Managing organizations in changing environment.* Cracow 2014, pp. 279–290.
10. Nowodziński P., *Choosen Issues Affecting Company's Strategy in Competitive Environment. Theoretical Findings., Managing a Business - Strategic Management*. Monograph. Ed. Dejan Erić, Helena Kościelniak, Paweł Nowodziński, Institute of Economic Sciences, Belgrade, 2011, pp. 179–190.
11. Romanowska M., Gierszewska M., *Strategic analysis in the enterprise*. PWE Warsaw 2009.
12. Skowron-Grabowska B., *Costs in the Financial Strategies of the Enterprises*, [in:] *Processes of Capital Supply in Production Enterprises. Joint Work Edited by Helena Kościelniak*. Prace Wydziału Zarządzania Politechniki Częstochowskiej Serie Monographs No 1., Czestochowa 2006, pp.77–82.
13. *Закон України «Про захист економічної конкуренції»* № 2210-III від 11.01.2001 [Електронний ресурс] - Режим доступу: http://zakon4.rada.gov.ua/laws/show/2210-14.
14. Ігнатьєва І.А., *Діагностування виробничих систем на основі встановлення пріоритетності стратегічних цілей* // ВІСНИК КНУТД, 2004. – № 6, pp. 135–140.
15. Ігнатьєва І.А., *Проблеми оцінки конкурентних позицій промислових підприємств // Економика: проблемы теории и практики*. – 2005. – № 205, pp. 1129–1140. (0,5 д.а.).
16. Маршалл А., *Принципы экономической науки*. – М, 1993. В 3-х т. – Т. 1.
17. Портер М., *Конкуренция*: Пер. с англ. – М.: Издательский дом "Вильямс", 2002, p. 496.
18. Портер М., *Международная конкуренция: конкурентные преимущества стран*. – Пер. с англ. – М.: Международные отношения, 1993, p. 896 с.
19. Соколенко С.И., *О кластеризации в странах ОЧЭС*. – Деловой вестник – № 12(163), 2007, p. 21.
20. *Экономическая стратегия фирмы*: Учеб. пособие /Под ред. А.П. Градова. – 3-е изд., испр. – СПб.: Спец-Лит, 2000, p. 588.
21. Юданов А.Ю., *Конкуренция: теория и практика*: Учебно-практическое пособие. – 2–е изд.– М.: Ассоц. авторов и издателей «Тандем»; ГНОМ-ПРЕСС, 1998. – 384 с.

ANALIZA SYSTEMU ZARZĄDZANIA KONKURENCYJNOŚCIĄ PRZEDSIĘBIORSTW SPOŻYWCZYCH W RÓŻNYCH KANAŁACH DYSTRYBUCJI NA PRZYKŁADZIE UKRAINY

Streszczenie: W opracowaniu przedstawiono koncepcję konkurencyjności i zarządzania nią w przedsiębiorstwach spożywczych, jak również warunki wstępne utworzenia regionalnych stowarzyszeń branżowych przemysłu spożywczego, jako sposobu na zwiększenie konkurencyjności branży.

Słowa kluczowe: konkurencyjność, stowarzyszenia regionalne, branża spożywcza, kompleks rolniczo przemysłowy, zarządzanie strategiczne, kanał krajowy i dystrybucji

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 47–56
dostępne na: http://www.zim.pcz.pl/znwz

MANAGEMENT AND INFORMATION IN RURAL AREAS IN DECISION-MAKING PROCESSES BY AGRICULTURAL ENTREPRENEURS

Anna Brzozowska
Czestochowa University of Technology, Poland
Pavlo Pysarenko
Poltava State Agrarian Academy, Ukraine

Abstract: The aim of the paper is to identify technologies designed for diffusion of management and information in rural areas and to define their significance in decision-making processes by agricultural entrepreneurs. IT-based specialisation of agricultural holdings is regarded in the paper as the main characteristic of the current stage of modernisation. The current stage of modernisation of rural areas consists in limiting further industrialisation of agricultural holdings by embedding them in networks conducive to sustainable development. Such rooting of agricultural holdings is connected with the development of IT technologies. The paper also shows how important it is to use information in logistics of rural areas, where proper information can speed up the flow of materials, raw materials and services, contributing directly to their rational use. It highlights the use of GIS technology in various aspects of the development of rural areas. Proper combination of information about e.g. agricultural production with spatial data provides material for analysis, which can contribute to optimisation of numerous elements of agricultural activity, such as throughput, production or distribution of agricultural crops.

Keywords: knowledge, information, IT technology

DOI: 10.17512/znpcz.2016.1.05

Introduction

The change of the conditions of functioning of agricultural holdings in rural areas made them more open to external factors whose impact creates production and services environment. A significant part of agricultural entrepreneurs still make decisions following advice from their fathers, neighbours or friends. Meanwhile, a farmer-entrepreneur running a farm is subject to the same market limitations as other economic entities. The necessity to gain competitive advantage on the market forces farmers to increase efficiency and improve effectiveness of farming. Agricultural entrepreneurs should thus more actively use and acquire information (Bernacki 2004, p. 6).

Modern services of provision or exchange of information involve all types of voice, text and image transmissions that carry messages addressed to specific recipients. New techniques, in particular the Internet, allow information to be acquired from a large number of sources distributed all over the world. The issue of the development of the market of modern information services is increasingly applying also to rural areas where it is necessary to improve economic activity and develop entrepreneurship.

Decision as a consequence of information management

Decision-making is a complex process that comprises: registration and assessment of information, identification of the decision problem and application of the adopted criterion for choice, definition and issue of the decision and information about its implementation (Griffin 2002]. Decisions connected with management in rural areas, which impact management of a whole farm, are made based on information acquired by farmers from various available sources (Cupiał 2006). The way of managing rural areas depends on the quantity and quality of acquired information.

Traditionally, land, labour and capital are analysed as the main resources of agriculture. This division of production factors was used to describe and analyse both traditional agricultural holdings and changes in their functioning in the period of agriculture industrialisation. Restructuring of capitalism initiated in the last decade of the 20th century (Castells 2011, p. 46), pressure for growth and implementation of this imperative in compliance with the principles of sustainable development (Binswanger 2011) result in management being mentioned among important resources of rural areas (Kulawik, Wieliczko 2012, p. 4, p. 36). It is the quality of management that determines the art of managing other resources – their mobilisation, restructuring or diversification, which ensure transformation of rural areas in multifunctional ones that implement various paths of sustainable development. The increasing importance of management as a production factor is connected with recognition of a hypothesis in economics about the dynamic character of competition and its evolution in changing social structures which create a certain institutional environment and co-management structures.

An intelligent specialisation of IT technologies should lead to change of social structures of regions and has to be connected with all policies, including cohesion policy and common agricultural policy.

Obtaining high quality products in the conditions of sustainable development requires the application of modern methods of management and use of much more information than several decades earlier, which can be facilitated by IT technologies. The quality of decisions made by an agricultural producer is a consequence of many factors and results from character traits, knowledge and skills of the manager. Due to dynamics of processes in an enterprise and its environment, a huge role is played by sources of information. They should ensure information that is complete, accurate, up-to-date and at a reasonable price (Potrzeby informacyjne w przedsiębiorstwem rolnym 2008).

Lack of information makes it difficult to make decisions or leads to making decisions that are wrong in a given situation. Information that is not delivered on time or is delivered in an incomplete form also has an disadvantageous impact on the process of managing a farm (Cupiał 2005, pp. 119–124). Assuming that proper functioning of rural areas to a large extent depends on farmers' activity in acquiring sources of information serving diffusion of information management, the paper proposes that the main characteristic of the present stage of transformation is effectiveness of decision-making in rural areas operating in a turbulent environment.

The role of information in the modern world is continuously increasing, specifically information about the business environment (Jelonek 2002). Without it there cannot be effective management that allows possessed resources to be rationally used in order to achieve maximum profit and meet the requirements of competition. The necessity of generating products and services of increasing quality to meet the demands of the modern market requires possession of appropriate knowledge and access to up-to-date information (Pawlak 1998). Lack of information makes it difficult to make decisions or leads to making decisions that are wrong in a given situation.

Transformation of IT technology in the model of rural areas in which (Tomczak 2009, pp. 171–193) – agriculture "shifts from the resource character, with the deciding role of traditional production factors (land, capital, employment), to scientific character, i.e. receptivity for technical, agribiological, organisational and market progress" makes traditional resources change; now they involve human capital and are mobilised, restructured and diversified thanks to knowledge, information and innovations. Processes of rational decisions should be connected with mapping of processes taking place in agricultural holdings. One of the causes of the strategic gap in thinking about the use of IT technologies is the need to manage information in the development of rural areas. It should constitute the theoretical basis for regional strategies for the development of rural areas and agriculture which define the room for IT system in the functioning of rural areas.

Information as an imperative of knowledge

In modern agricultural management, information is one of the most important resources of every economic entity. Knowledge about market allows you to make decisions that carry less risk regardless of which sector of the economy you are operating in. Information is necessary both to agricultural producers and manufacturers and suppliers of production means as well as recipients of agricultural products. Up-to-date information is necessary in particular for expansive agricultural holdings which modernise their production and introduce modern technologies in crop and livestock production based on proper selection and rational use of technical and energetic means (Kuboń 2007, p. 95).

Due to increasingly emphasised imperative of growth and necessity of its implementation by all sectors of the economy, including rural areas, we can expect that knowledge accumulation will take place much more quickly than before.

In managerial approach to rural areas, we also notice the relationship between the effectiveness of introduced changes and structures of co-management and institutional effectiveness.

Therefore, of importance is knowledge that is necessary for the economic transformation that is currently taking place (Tomczak 2009, pp. 171–193). Effective management of agricultural holdings depends on various types of knowledge.

Like in other sectors of the economy, knowledge is distributed in nature. It is thus necessary to identify sources of various types of knowledge (Bisaga 2009, pp. 143-146). Accessible sources of knowledge and information in a changing environment are the following ones: TV, the Internet, magazines, agricultural

advisers, training courses, the radio, sales representatives, poviat divisions of the Agency for Restructuring and Modernisation of Agriculture, information from neighbours, gmina's employees, poviat divisions of the Agency for Regional Development, employees of cooperative banks, employees of Agricultural Advisory Centres, Chambers of Agriculture. The most extensive networks are created based on knowledge in the form of: market information, information about necessary adjustment processes to EU's standards, state's agricultural policy and support instruments of the Common Agricultural Policy. The least extensive networks refer to knowledge about possibilities of concluding contracts. The density of networks were assessed by means of concentrations created around specified nodes by type of knowledge and information (Bubel 2014, pp. 67–69). For instance, strong relationships with agricultural advisers are created in the case of knowledge concerning principles of good agricultural culture and SMR, knowledge concerning Common Agricultural Policy support instruments and knowledge about requirements for farms arising from various EU directives. Due to the inclusion of management of agribusiness into diffusion of knowledge and information, representatives of various corporations build relations with agricultural entrepreneurs thanks to provision of knowledge about quantitative requirements for agricultural raw materials, new species of plants and animals and are a source of market information. Agencies of these corporations participate in the organisation of training courses in new systems of agricultural production. Institutional innovations proposed by network supply chains should be generally positively evaluated. However, they also generate a need for a public institution of managerial representation that would verify provided information.

Spatial information systems in the Polish agriculture

A spatial information system is a process of acquisition, processing and sharing of data containing spatial information and accompanying descriptive information about facilities distinguished in the spatial part covered by the system. Spatial Tools can be also used for supporting rgional e-Entrepreneurship (Jelonek, Pawełoszek, Stępniak, Turek 2015, pp. 988–995). Taking into account accuracy and detailedness of information storage, we distinguish:

- Geographic Information System (GIS) - which is based on processed, secondary information,
- Land Information System (LIS) - which is based on primary information, acquired based on direct field measurements or large scale aerial photographs.

GIS is a system that enables combining various types of data stored in different formats and coming from various sources. It makes it possible to acquire, process, store and analyse data that spatially refers to the surface of earth. This system contains a lot of already mentioned procedures, such as storage, analysis, processing, updating or editing, the use of which depends on possessed software and skills of people that use it.

The numerous functions of the system can be arranged as follows:

- data acquisition,
- data processing,
- presentation of the results.

GIS makes mechanisms for data gathering and sharing available; the next stage is its proper management - figure 1. It thus enables preliminary verification and selection of data, contributing to its cohesion. The data gathered in the system allows analyses to be conducted on its basis using spatial relations between objects. The results of the analysis may be presented in the descriptive form, in table or - most popular – in the graphical form. It includes maps, graphs or drawings.

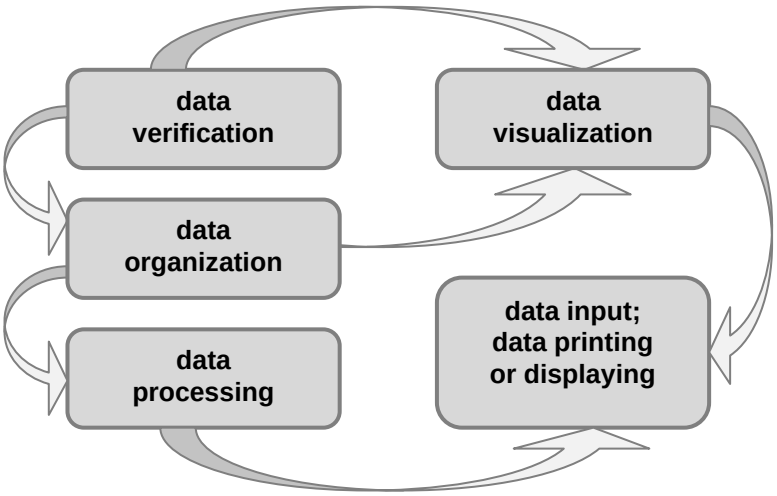

Figure 1. Modular structure of GIS system

Source: Kędzia, Ociepa 2015, p. 201.

The development and increasingly wider application of GIS in recent years created new possibilities not only in the way and scope of data gathering but also in data sharing and processing. Information received thanks to such system is more legible, and can be found more quickly and much more easily. Information legibility impacts drawing proper conclusions based on information, which is significant when conducting large scale spatial analyses and visualisations.

Apart from spatial data, CAD data, information about the form of the landscape, placed in a relatively logical way in a single database, GIS system allows information to be gathered about land survey, GPS measurements, and aerial and satellite pictures. The descriptive data gathered in this system provides information about the use of fields, individual agricultural or forest areas, or areas used for agricultural purposes. GIS enables description of the surrounding reality in a comprehensive way that has never been more accurate.

The constituents of GIS include: gathered data, algorithms and procedures for data processing and sharing, computer equipment and software, as well as people creating and using the system. As a source of data, GIS uses information from the real world, which is different in character and has different origins. Nowadays, possibilities of data acquisition are practically unlimited – it is possible to take pictures by means of satellite navigation or aerial pictures.

The use of GIS is based on metadata (i.e. data about data) which makes it easier to manage possessed resources and find a detailed description of a given object in a clear and simple way. For the purpose of writing it, various, sometimes generally available text files, XML files, table records or databases are used.

Management of metadata will significantly improve its saving in a clear form, regardless of what system was used to save it and what skills the man who created it possessed. An important advantage of metadata is that compared to the size of spatial data its size is small, which makes it easier for it to be transmitted. Therefore, information about the existing data is easily available to all users in a given institution. The plus of metadata is also the fact that it is no longer necessary to make copies or duplicates, as it is appropriately catalogued and described.

Data available in GIS can be divided into two groups:

- spatial data (spatial attributes) - which defines the location and shape as well as topographical relationships with other objects, showing thus the location of an object and its character,
- descriptive attributes – textual and descriptive data, which provides characteristic quantitative and qualitative data with respect to an object.

Recent years have seen a dynamic development of spatial information systems worldwide. GIS is used in a number of economic sectors, such as geology, forest management or environmental protection. In agriculture, the use of GIS provides unusual possibilities, both at the micro and macro levels, and can be a tool for optimising the whole production cycle, ending in appropriate distribution.

An example of the level of spatial information infrastructure in Poland may be Land Parcel Identification System (LPIS), which is maintained by the Agency for Development and Modernisation of Agriculture. The GIS technology enables integration of data from registers of land and buildings; it contains cadastral maps, vector boundaries of plots which are e.g. eligible for payments, and much more other data that complements information available in the system.

At the regional level, geographical information systems are mainly used in precision farming where various works and their scope can be planned using data on the form of the landscape, chemical composition of the soil, productivity, meteorological forecast. By means of GIS, the Chief Sanitary Inspectorate in Poland monitors the quality of potable water at the regional level. Selected points of monitoring have been established and then spatially visualised and complemented with data on the topography from a vector map. Additionally, in the case of testing the quality of water it is also possible to gather information about the chemical composition of water to assess and describe the levels of concentration of chemical compounds. The data gathered on this basis may be used to conduct analyses at the regional or national levels.

Current features of GIS systems, maintaining standardisation in the area of making spatial information available, can be used for the purpose of the global infrastructure of global network.

GIS technology allows to create comprehensive solutions based on development of systems whose functionality can be designed specifically for the needs of the agricultural market. GIS systems provide server technologies, desktop software and enable work directly in the field via using mobile devices.

Geographical information systems, due to their capabilities, should become a common platform for many systems and activities in the area of management of rural areas, their proper use, development and modernisation. Their use, both regionally and on the scale of the whole country, may significantly contribute to efficient transmission and processing of information coming from distributed and varied sources.

GIS systems are essentially used to build, catalogue and store data at the level of a country or region; they are designed to be used by specialised agencies or government agencies to create a coherent and relatively comprehensive information system. Such information may facilitate a better use of the potential of rural areas, and help in attempts to obtain funds or use uncultivated land.

Precision farming as an example of the development and applications of ICT

Recent years have seen intensification of changes to the natural environment. This impacts the quality of production and the quantity of received crops. In order to minimise losses due to unfavourable conditions, more and more attention is given in recent years to precision farming.

Precision farming, due to increasing changeability of the soil structures, also with reference to agro-technics, observed even in fields belonging to one enterprise or farm, is becoming an increasingly important element of agriculture. Changes in the characteristics of the soil, heterogeneity of the mineral composition and other physical and chemical properties often make it necessary to use variable, sometimes different, dozes of production means. As this trend is set to continue and even deepen, precision farming should be regarded as one of important prospective production systems.

According to the most general definition, precision farming consists in the use of differentiated doze of production within a field that matches the real needs. As a result of the development of various systems of precision farming, a farm may use differentiated dozes of fertilisers, plant protection products as well as seed and other necessary means. Some theoreticians regard precision farming as a management strategy which, based on the evaluation of the characteristics of plants, their development, as well as weather conditions, enables the use of variable dozes of fertilisers or plant protection products, seed or working parameters of machines to optimally use the soil resources and production potential of plants. It is also important that these activities are possibly least harmful for the environment. With such an approach to precision farming it is obvious that its functioning is based on the use of highly advanced navigation and information technologies, namely:

- GPS satellite location systems,
- GIS spatial methods and systems.

The foundation in precision farming is the GPS technology; the quality of work performed by machines interacting with this technology relies on accuracy of signals from a Differential Global Positioning System (DGPS). Signal

Interference may have various sources, but they can be verified, as additional signals can correct errors of the signals transmitted earlier. This operation can be carried out using two GPS receivers; one is positioned in a specific place in the ground, while the other inside a working machine. For the system to be able to function relatively properly, it is necessary to have own reference station within fields where agro-technical operations are performed. Placing such a station provides high probability that the accuracy of performed activity will be at the level of several centimetres.

Using GPS, it is possible to take measurements of the surface, examine mineral substances of the soil, gather data about crops to create the so-called maps of crops. Later, it can be used to determine fertilisation in the real time. However, errors may occur when performing works using this system. i.e.:

- certain works can be performed twice in a given field,
- a certain area of a field can be omitted, with no works performed on it.

Flaws of this type can be avoided by using the so-called parallel driving system – an appliance installed in a machine works with GPS signal and the computer should show the correct track, parallel to the previous track of the machine.

Precise definition of the parameters of fertiliser or seed dozes allows for optimal use of these agents and leads to savings in the long-run - it will be easier to define real material needs in the future. The quantity of the agents transported directly to the field may decrease. We can expect the following as the result of activities as part of precision farming:

- improvement of the individual processes,
- better and rational use of agricultural machines and devices,
- appropriate application of plant protection products, which can decrease their use and reduce costs,
- possibility of more precise definition, based on earlier developed map of crops, of demand for their transport,
- systematisation and detailing of information on production processes.

Undoubtedly, precision farming is an excellent chance for appropriate use of the potential of a given agricultural holding, optimisation of costs and expenses. However, at the present level of development very high costs of the purchase of specialist GPS devices, on-board computers or reference stations constitute a significant barrier that limits its use. The investment repayment period is relatively long and the present development of a precision farming involves joint investments by a group of enterprises or a group of farmers, especially that the system can be optimally used in the areas of large, distributed farms.

Summary

The material presented in the paper can also be interpreted in a broader way. It confirms that rural areas are entering another stage of transformation where their development is determined not only by traditional production factors (land, capital, labour), but also by management, information, IT information and knowledge, which facilitate economic progress of rural areas.

Changes connected with this stage of transformation refer to:

- types of knowledge identified as necessary for management of rural areas,
- restructuring of agricultural holdings in the process of modernisation in real and virtual spaces,
- participation of sales representatives in the process of knowledge and information diffusion
- institutional innovations.

The modernisation processes that are taking place do not exclude the use of traditional sources of knowledge and information in rural areas, such as the television or magazines. The role of the Internet as a tool for learning is dynamically increasing.

At the present stage of IT transformation in rural areas, information is becoming a fundamental factor that gives production and services resources in agriculture the economical value that determines their usability. In these circumstances, the main challenge facing IT is to strengthen the innovation capacity of rural areas and speed up technological, organisational and social progress. From this perspective, IT information has to be embedded in the system of agricultural management and information and implement the objectives of regional strategies of rural area development.

References

1. Bernacki A., *Informatyka w gospodarstwie rolniczym.* Materiały konferencyjne, „Nowoczesne techniki informacyjne w nauce, edukacji i doradztwie dla wsi i rolnictwa", Materiały konferencyjne, Brwinów. Warszawa 2004, p. 6.
2. Binswanger H.Ch., *Spirala wzrostu*. Zysk i S-ka Wydawnictwo, Poznań 2011.
3. Bisaga A., *Mapowanie wiedzy jako instrument zarządzania w rolnictwie*. Współczesne Zarz.ądzanie 4/2009, pp. 143-146.
4. Bubel D., Management of Knowledge and Information in Logistic Processes. Logistyka 2014, no. 3, pp. 67–69.
5. Castells M., *Społeczeństwo sieci*. Wyd. Nauk. PWN, Warszawa 2011, p. 46.
6. Cupiał M., *Informacja techniczna w rolnictwie Małopolski*. Inżynieria Rolnicza. Nr 3(63), Kraków 2005, pp. 119–124.
7. Cupiał M., *System wspomagania decyzji dla gospodarstw rolniczych*. Inżynieria Rolnicza Nr 9 (84). Kraków 2006. ISSN 1429-7264.
8. Griffin R.W., *Podstawy zarządzania organizacjami*. PWN. Warszawa 2007.
9. Jelonek D., Pawełoszek I., Stępniak C., Turek T., *Spatial Tools for Supporting Regional e-Entrepreneurship. ICCMIT 2015*. International Conference on Communications, management, and Information technology (ICCMIT'2015), Procedia Computer Science, 2015, Vol. 65, pp. 988–995.
10. Jelonek D., *Systemy komputerowego wspomagania monitorowania otoczenia przedsiębiorstwa*. Wydawnictwo Wydziału Zarządzania Politechniki Częstochowskiej, Częstochowa 2002.
11. Kędzia W., Ociepa E., *Systemy informacji przestrzennej GIS w zarządzaniu infrastrukturą wodociągową i kanalizacją*. Inżynieria i Ochrona Środowiska 2015, vol. 18, no. 2, p. 201.
12. Kuboń M., *Poziom wyposażenia i wykorzystania elementów infrastruktury informatycznej w gospodarstwach o różnym typie produkcji rolniczej.* Inżynieria Rolnicza 9(97). Kraków 2007, p. 95.

13. Kulawik J., Wieliczko B., *Wybrane finansowe aspekty konkurencyjności rolnictwa*. Zag. Ekon. Rol. 2012, p. 4, p. 36.
14. Pawlak J., *Znaczenie informacji dla rolnictwa*. IBMER, Warszawa 1998.
15. *Potrzeby informacyjne w przedsiębiorstwem rolnym* [online]. [access date 02-02-2008] Available on the Internet: http: //www.dss.iung.pulawy.pl/Documents/ipr/eneeds.html.
16. Tomczak F., *Wyzwania i siły rozwojowe wsi i rolnictwa w warunkach globalizacji gospodarki światowej* [in:] *Wokół trudnych problemów globalnego rozwoju obszarów wiejskich, gospodarki żywnościowej i rolnictwa*. eds. K. Kuczkowska-Małysz, A. Szymecka, Oficyna Wydawnicza SGH, Warszawa 2009, pp. 171–193.

ZARZĄDZANIE I INFORMACJA NA OBSZARACH WIEJSKICH W PROCESACH PODEJMOWANIA DECYZJI PRZEZ PRZEDSIĘBIORCÓW ROLNYCH

Streszczenie: Celem opracowania jest identyfikacja technologii służących dyfuzji zarzadzania i informacji na obszarach wiejskich oraz określenie ich znaczenia w procesach podejmowania decyzji przez przedsiębiorców rolnych. Opartą na technologii informacji IT specjalizację gospodarstw rolnych uznano w opracowaniu za główną cechę obecnego etapu modernizacji. Obecny etap modernizacji obszarów wiejskich polega na ograniczeniu dalszej industrializacji gospodarstw rolnych przez ich osadzenie w sieciach społecznych sprzyjających zrównoważonemu rozwojowi. Takie ich zakorzenienie jest związane z rozwojem technologii IT. W artykule wskazano również, jak ważne jest wykorzystanie informacji w logistyce obszarów wiejskich, gdzie odpowiednia informacja jest w stanie przyspieszyć przepływ materiałów, surowców i usług, przyczyniając się pośrednio do racjonalnego ich wykorzystania. Zwrócono uwagę na zastosowanie technologii GIS w różnych aspektach rozwoju obszarów wiejskich. Właściwe połączenie informacji na temat np. produkcji rolnej z danymi przestrzennymi dostarcza materiału do analizy, która może przyczynić się do optymalizacji wielu elementów działalności rolniczej, jak przerób, produkcja czy dystrybucja płodów rolnych.

Słowa kluczowe: wiedza, informacja, technologie IT

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 57–69
dostępne na: http://www.zim.pcz.pl/znwz

ATTRIBUTES AND DETERMINANTS OF AN AGRICULTURAL ENTERPRISE MANAGEMENT

Dagmara Bubel
Czestochowa University of Technology, Poland

Abstract: The aim of the paper is to analyse solutions connected with the complex nature of an enterprise and to attempt to identify the characteristics of a modern enterprise. An enterprise as the most important link in the chain of the national economy is a complex research unit. Due to variety of enterprises and uniqueness of managerial practices, management of an enterprise is analysed and described by numerous scientific disciplines.

Keywords: management of an enterprise, agricultural enterprises, management of agricultural holdings

DOI: 10.17512/znpcz.2016.1.06

Introduction

The economic changes taking place throughout the decade of the 1990s and the first decade of the 21st century brought a lot of changes in the perception of enterprises as economic entities. Among the most important issues connected with the new way of perceiving enterprises is distinction between study of an enterprise and business economics. While the latter deals with the production process and assesses it from the economic point of view, stressing the issues of revenue, cost, income or profit from the individual activities and the whole entity, the former treats them as the subject of investments and production, i.e. it examines the issue of the functioning of enterprises in a broader sense. Business economics is very useful in the process of management, as it provides the necessary knowledge about profitability of the different economic activities. It is hard to imagine a modern manager who does not link his/her decisions with economic balance. Business economics is highly useful: it focuses on determining the economic result of the different activities and the whole entity and provides the main support in the management process. Right managerial decisions are those that ensure a positive financial result that enables reproduction of the assets. Economics perceives an enterprise as an existing entity and does not examine sources of its financing, i.e. it does not treat an enterprise as an investment entity. In contrast, study of an enterprise not only deals with decision-making, but, more importantly, treats an enterprise as an investment entity. This approach makes it go beyond the conceptual framework in which business economics is interested, as study of an enterprise takes into account invested capital and expects a satisfactory rate of

return, taking into account not only the cost of outside capital, but also that of equity. The cost of equity is equal to the value of lost profits, i.e. we can talk in this case about an alternative cost. Therefore, not every level of profit is satisfactory for the owner of capital. The minimum of satisfaction is such a level of operating profit that after taxation will be at least equal to the weighted cost of equity and outside capital. The formula that presents an enterprise's economic results in this way is economic added value (Czyżewski, Kryszak 2015, pp. 21–32).

The aim of the paper is to present and diagnose certain changes occurring in management of agricultural enterprises. Through analysis of the attributes and determinants characterising modern enterprises, the paper highlights the process of blurring of differences between agricultural enterprises and enterprises from other industries in terms of applied methods and instruments of management. The discussion on the complexity of processes in enterprises was based on findings of German researchers' works.

The position and value of a modern agricultural enterprise

Analysis of modern enterprises shows the emphasis of the leading role of an enterprise's owner who invests equity and expects profits from its increase. Therefore, the owner is directly interested in the current and perspective effectiveness of the functioning of the enterprise. He/she is not interested in activity aimed at production at any cost, does not agree to maintain assets that are not directly connected with production activity, does not tolerate bureaucracy, generation of too many posts outside production or excess staff. The principles of the functioning of enterprises in a centrally controlled economy and lack of the capital market created a unilateral and simplified way of perceiving the value of an enterprise.

The value of an enterprise was equated only with the value of the real capital in the form of assets, while ignoring the value that shows the dynamic aspect of capital, which is connected with the process of multiplying its value. The rules of the functioning of the market economy lead to enterprises being assessed mainly in terms of their ability to generate revenue. Apart from assets, many other elements serve this purpose, connected, among other things, with proper structure of an organisation, production structure, proper management, professionalism of the staff and many non-production factors that create the so-called value of reputation. Because of that, the value of an enterprise may significantly differ from the value of its material assets. Thus, if we view the problem retrospectively, we can say that the book value has been replaced by the market value. This necessitates departure from the previous indicators of an enterprise assessment that focused on analysis referring to the past. This is characteristic of all accounting indicators connected with balance sheet and outturn account. They reflect, in a static and short-term way, the past rather than what is the most important thing from the perspective of a company's owner, i.e. the future value and expected rate of return from the capital invested. Another characteristic of modern agricultural enterprises is decreased number of employees compared with the level of staffing from the second half of the 20th century. There

has been an increase in the level of employees' education and possibilities of working at multiple posts. The increase in the education level of employees corresponds to the level of technical equipment. Modern, efficient machines are not only expensive, but also their operation is technically complicated, therefore they require extensive technical knowledge. We can also observe changes in employees' mentality – they identify themselves with their place of work, being aware that job safety requires showing care about the place of work. The employees are not longer divided into those who produce and those who deal with sales. Nowadays, all employees are interested not only in production but also sales, which is connected with manufacture of products with high qualitative parameters. There is a quite large group of farms that represent production level comparable with leading European entities in all parameters. It should be added that high production is connected with high profitability in such entities. This debunks the myth of unprofitable production when its level significantly exceeds the average one.

In large-scale agriculture we can observe a change in the organisational form. In the traditional approach, the owner of the property was at the same time the manager. In today's conditions, there are two fundamental options describing separation of the ownership of the property from its management. One is connected with an investor who invests his/her capital in agricultural assets, while the other option involves a number of smaller investors whose capital forms the assets of an enterprise. In both cases, there is departure from the traditional model of a private enterprise - this new organisational and legal form is regarded as the biggest departure in the theory of enterprises' behaviour.

Consequences of this phenomenon are visible both in the emergence of new types of the ownership of enterprises and the necessity to revise the existing views on the formulation and definition of the objectives of their activity (Jaki 2012, pp. 115–119).

Separating the function of ownership from management was in the first place connected with the process of capital concentration, which required that an enterprise obtained necessary financial resources directly on the market - from investors, who often remained anonymous. The employment of capital from a wide and numerous group of anonymous co-owners in the activity of enterprises leads, on the one hand, to dispersal of ownership among many stakeholders, while on the other hand, to demand for management specialists who are responsible for managing increasing enterprises. In this way, the once common capitalism of entrepreneurs has changed into managerial capitalism. A further consequence of this state of affairs is the fact that a hired manager running an enterprise of anonymous and dispersed owners has become a very important, and sometimes the only decision-maker in matters concerning operational management of an enterprise. He/she acquired not the right to a thing or the right to profits, but he/she actually acquired the economic ownership title. This phenomenon leads to emergence of managerial capitalism in agriculture (Haipeter 2016, pp. 11–43).

However, nobody understands the enterprise so well, nobody is ready to devote his/her own income for the benefit of the company, and nobody links his/her fate with the enterprise so strongly as the owner. Only the owner thinks about the

future, resigns from current consumption, denying himself/herself profits today so that the next generations could gain competitive advantage. Therefore, professional managers should also be connected with the enterprise they manage through property.

Management of an enterprise by a manager does not decrease the owners' pressure on increased effectiveness of the capital employed, especially the equity. Therefore, institutional owners strive to guarantee the achievement of their objectives, including the main objective, i.e. seeking to maximise the market value of an enterprise. This requires the use of effective management instruments and supervision of enterprises, which has been presented in figure 1.

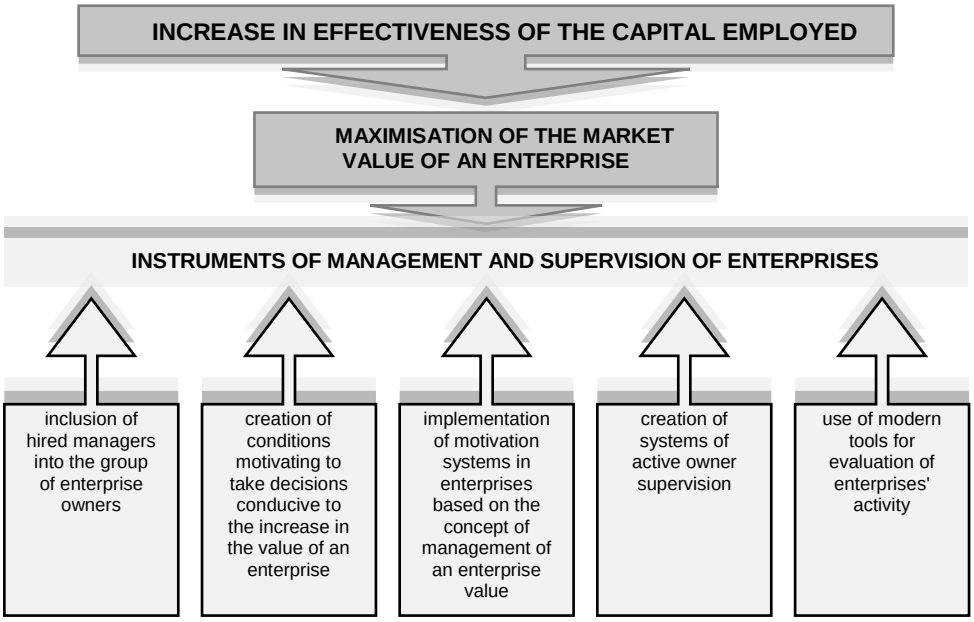

Figure 1. Instruments of management and supervision of enterprises

Source: Own study based on: Burmann 2013, pp. 34–37.

Looking at agricultural enterprises analytically, one can notice that they use an appropriate organisational structure, as they prefer flat structures with a small number of intermediate levels between the decision-making body and implementing body. In Polish agricultural enterprises, the process of labour substitution is at a more advanced level than in agricultural enterprises in France, England, Germany or other countries, although labour costs are relatively low. Despite low profitability of agriculture, agricultural enterprises are successful in ensuring production profitability and financing economic activity. We no longer act according to the model in which all available resources are consumed in the period of prosperity, and when the economic situation in agriculture gets worse it means a period of risk. Today's farmers-entrepreneurs are very prudent in gathering and allocating means of

payment. Maintaining financial reserves is nowadays an almost common practice. The approach to the problem of investing in fixed property differs, but it does not result from lack of knowledge of the problem, but from different situations connected with the form of possession. While owners of fixed property can plan their activity prospectively, taking into account plans of long-term development, entrepreneurs-leaseholders are in a much more complicated situation. Unsuccessful attempts to solve the problem of reprivatisation are a serious setback in rational long-term planning. This is because planning is an important element of running a company in a wise manner.

Operational management, designed to control an enterprise on a continuous basis, is not sufficient especially in agriculture, where the quality and distribution of soils are constant, and possession of livestock buildings determines livestock raising and makes prediction of the future an important element of rational management.

Due to their distinguishing features, agricultural enterprises are a separately treated group of economic entities, although this separateness is nowadays significantly diminished. Fundamental differences occur at environmental and technical levels, while in terms of management principles the similarity is large. This similarity can be clearly seen in the reaction to the present crisis. Studies were conducted (Wulf 2013; Kleinhanß 2015), to find out the reactions of agricultural enterprises to the crisis and compare them with corresponding behaviour of industrial enterprises.

Analysis of the study results

Crisis is not a phenomenon that has been repeatedly described in economic literature. In 2014 (Domańska, Serwa 2013, pp. 3–19), conducted studies analysing the impact of world economic crisis on the functioning of agricultural enterprises in Europe. Summing up the findings of the studies, it can be said that one of the more important signs of the crisis was decrease in prices of agricultural crops, which affected all enterprises, with only pig farmers registering the increase in the demand. There was an increase in prices on the market of products for agricultural production. As a result of the decreased demand for agricultural products, companies purchasing these products had problems with settling current liabilities, which led to increasing payment gridlock. In 45% of the enterprises surveyed, it was necessary to collect the money due. Despite the above-mentioned difficulties, an overwhelming majority of enterprises did not consider cutting employment. The reason for that could have also been the fact that the employment in the enterprises surveyed was low - 4.09 full-time employees per 100 ha UAA (Domańska, Serwa 2013, pp. 3–19). There were also no intentions to reduce employees' remuneration. The crisis affected in particular the area of investments in fixed assets. Over 75% of enterprises decided to reduce investments, although, at the same time, 27% of enterprises declared increase in investments, trying to take advantage of favourable prices of building materials and relatively low prices of construction works (Feist, Fuchs 2013, pp. 197–209). Interestingly, enterprises did not intend to reduce the level of intensity.

Access to capital is of fundamental importance for the functioning of enterprises. Surveys show that 42% of enterprises had a more difficult access to short- and long-term capital. Banks' problems during a crisis and unwillingness to grant credits lead to the privileged position of the equity. This results in decrease in investments and decrease in investment demand, and consequently reduction of employment (Kozak 2013, p. 224–230).

It should be also stressed that during the crisis agricultural managers showed a good knowledge, ability to cope in difficult conditions, high managerial intuition, ability to consolidate the staff and ability to control costs. The surveys showed that most enterprises wanted to wait out, concentrating on limiting the consequences of the crisis and waiting for economic recovery.

The farmers surveyed did not take significant investment measures, did not consider organisational changes, better adjustment of the production structure to the market needs, wider use of the key success factors, etc. A small group of enterprises that were in a good economic situation when the crisis hit, considered whether activation made sense.

In Poland, the crisis was not as severe as in other EU countries. Economists agree that it was caused by a slight decrease in spending on investments and consumption, Polish currency weakening and limited linkage between the Polish and international economies.

Just as the crisis in Poland wasn't as severe as in other countries, its extent in agriculture in the Polish economy was smaller. The typical signs of crisis in agriculture include a decrease in prices and sales due to a significantly reduced demand. There was also a decrease in the number of yield-forming factors used in farms. The above-mentioned effects of a crisis do not pose a significant threat to further development of agriculture.

The uniqueness of the crisis situation poses a lot of questions and makes one wonder whether science sufficiently knows the symptoms of crisis; whether it can formulate appropriate ways of dealing with crisis; whether it can indicate managerial recommendations to minimise the effects of crisis; whether crisis is democratic, i.e. it equally affects all the entities; whether small enterprises take advantage of the rubber effect and large ones are stable; whether crisis triggers entrepreneurship or causes uncertainty, apathy, discouragement, or rather it sparks new initiatives, is a stimulus for new strategies or even a breakthrough in management.

Sinecure of management in agricultural enterprises

A thorough analysis of behaviour of enterprises shows significant weaknesses in their management. With respect to all enterprises, not only agricultural ones, it is justified to say that their management is based too much on intuition rather than on a professional analysis, managers have insufficient analytical basis to use it for taking authorised managerial decisions, and costs of production activity are evaluated intuitively instead of a professional analysis of costs. It should also be stressed that there are no organisational audits, there is little discussion about

models as desired organisational structures, and monitoring of changes should be replaced by planning of costs and analysis of the production structure. The budget method can by all means be also used in management of agricultural enterprises. Often, what is intuitively evaluated as the best functioning part of an enterprise turns out to be the worst after a professional analysis is implemented. Introduction of full settlement of costs in an enterprise leads in many cases to reduction of investment purchases, and even results in the sale of part of the property.

Agricultural enterprises are integrally connected with the picture of rural areas and are actively shaping it. The impact of large-scale farms on the life of rural areas has always been visible and is still significant. Such farms have always been centres of the agricultural culture: both in the area of agro-technics and animal breeding. They have always been promoters, often the most effective ones. It is therefore no accident that the leading plant and animal breeding centres are situated in large estates. However, there is a growing number of smaller farms with significant achievements in the area of breeding progress. It should be added that both in non-agricultural activity and in agriculture, we can clearly notice benefits of the economics of scale (Wigier 2013, pp. 22–41). Because of this fact, large entities can to a larger extent use the benefits of the progress. There is greater use of labour resources and means of production, therefore production means wear out faster and are replaced by newer work tools more frequently. This is very important, as the more specialist the equipment, the more expensive it is, and the narrower the labour resources. The progress in modernising means of production is faster in the area of technologically advanced equipment than less complex solutions. This explains why the latest generation technical solutions are encountered in large enterprises. We can talk here about circles of impact - farms located closer to large estates can constantly watch introduced changes and successively monitor their effects.

The picture of agricultural enterprises will be affected in the future by the concept of sustainable development of agriculture, implemented and propagated as part of common agricultural policy. It assumes that agricultural holdings harmoniously and simultaneously fulfil three functions: agricultural-environmental, economic and social (Matysiak, Struś 2015, pp. 11–21). According to these assumptions, sustainable agriculture means systematic and permanent development as well as an increased level of production that enables increased profit, modernisation of technical equipment, increase in work efficiency and security as well as in social security, while fulfilling certain social and ecological expectations (Home, Jawtusch, Moschitz 2015, pp. 33-58).

In the economic practice, this means introduction of production technologies that are socially accepted, economically justified and environmentally admissible. Such approach to the issue of sustainable development seems particularly justified in the case of large-scale farms, i.e. large entities that attach great importance to competitiveness (Kagan 2015, pp. 78–94). Such enterprises use the so-called economies of production scale or apply simplifications in farming, therefore they are not predisposed for organic farming. However, they still are able, especially when using the latest technical and technological solutions, i.e. the so-called

precision farming (Wójcicki, Rudeńska 2015, pp. 5–15), to meet the minimum requirements of environmental protection, not to mention meeting certain social expectations, such as ensuring food safety or high quality of offered products. This is all the more so since there is an increasingly widespread view among economists that sustainable development should be understood and perceived as aiming for achieving the state of balance rather the state itself. Achievement of the state of balance seems difficult due to the variety of the factors and the fact that this situation does not carry any element of development in it.

The approach to balance in agricultural holdings is also evolving, which can be confirmed by the fact that in the market economy, in order to achieve balance between the most important balance sheets in an agricultural holding, the participation of external inputs is allowed. In this context, introduction of numerous new solutions in the area of agricultural ecosystem does not have to lead to the inevitable clash between the imperative of ecology or sociology and the imperatives of economy. The proof confirming this hypothesis is the introduction of modern methods of logistics management (Brzozowska 2013, pp. 44–54) in agricultural enterprises, among other things, which contribute to a visible reduction of costs and increase in the effectiveness of a company. In order to meet certain social expectations, it may be helpful when agri-business enterprises introduce such concepts as: corporate social responsibility, ethical business, *triple bottom line* or stakeholder relation management.

It should be stated that it is very likely that adoption of a development strategy oriented towards modern agriculture, which is efficient in technical and economic terms and at the same time environmentally and human friendly, will cause many important changes to the image of agriculture and strengthen the position of large agricultural enterprises.

Processes of organisation, economics and management have no end, but they have their optimum in the static perspective, whereas in the dynamic perspective, i.e. under specific conditions and in real structures, they remain only an unavailable ideal. One should assume that future changes referring to agricultural enterprises will be similar to those observed in other sectors of the national economy. Continuous changes occur in the environment of enterprises, which has been presented in figure 2:

Due to the dynamic character of the functioning of an enterprise, the significance and importance of various management methods and techniques change. In the near future, agricultural enterprises should consider, to a greater extent than before, active participation in clusters whose development in Poland still lags behind foreign countries. Food clusters (Figiel., Kuberska, Kufel 2014, pp. 23–27) have optimistic conditions of development, and agricultural enterprises and institutions operating in agriculture and for the benefit of agriculture will play a key role in the process of their development. Agricultural managers will probably be interested in alliances as a special form of cooperation based on mutual benefits. Perhaps some enterprises will choose heterarchy as the most appropriate form of cooperation that strengthens the market position (Winkler, 2016, pp. 85–102). Even today, many enterprises should use the method of *lean*

management and develop it, as it brings measurable benefits in the process of production, warehouse management and employment. The aim of *lean management* is to make an enterprise leaner by introducing significant changes in the area of their activity, in the structure of a company's assets, way of organisation and in HR management. *Lean management* brings measurable benefits. Studies show that using this technique it is possible to reduce stocks, decrease storage area, increase work productivity and reduce production costs (Wiedemann 2015, pp. 215–226).

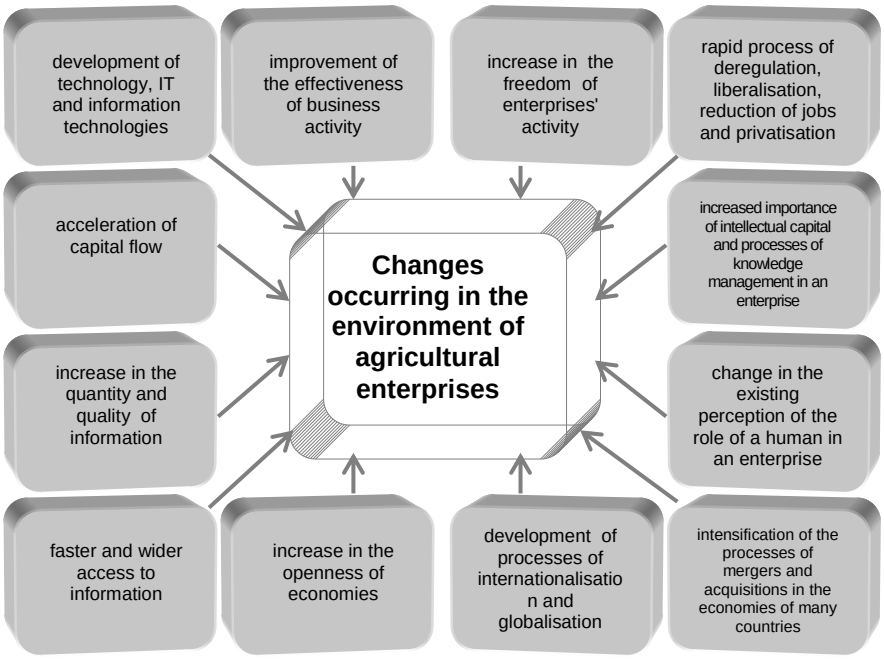

Figure 2. Changes occurring in the environment of agricultural enterprises

Source: Own study based on: Schäfer 2013, p. 222.

Seeking ways to improve their financial situation and build market advantage, some enterprises use the technique of benchmarking. Benchmarking consists in comparing processes and practices used by own enterprise with those used in enterprises regarded as the best in a specific field. The result of such an analysis serves as the basis for improving business processes. Benchmarking is not simply imitation, but it is about observing how others work and doing the same. It is about identifying factors that cause the analysed process to be performed effectively, and indicating similar possibilities in own enterprise. It is, however, necessary to warn against the temptation to automatically transfer someone else's solutions, even very good ones, as they may have been tested but in a different environment, different conditions that do not occur in a given enterprise. Therefore, benchmarking is about learning and creative adaptation of the best practices (Frank, Fischer, Voeste 2014, pp. 217–230).

An important role in management of enterprises is played by *outsourcing*, which consists in using external resources, contracting out processes necessary for the functioning of own enterprise to specialised external entities which can perform them more effectively than in the own enterprise. This usually refers to auxiliary tasks that require appropriate qualifications, knowledge, equipment or possession of appropriate means of production. Today, the following services are very often outsourced: security, legal, IT and cleaning services, services connected with accountancy, transportation, warehousing, picking or distribution (Stabryła 2014, pp. 495–504). Evidence of changes is also the strengthening of the theory of stakeholders. A view is becoming established that the role and importance of an enterprise is not an interest of the enterprise alone. It is not only the owners of the property that are interested in the situation of an enterprise, but also numerous stakeholders: employees, customers, partners, lenders, the state, society and the media. Taking into account a wide range of stakeholders, four dimensions of the activity of an enterprise can be distinguished, as presented in figure 3.

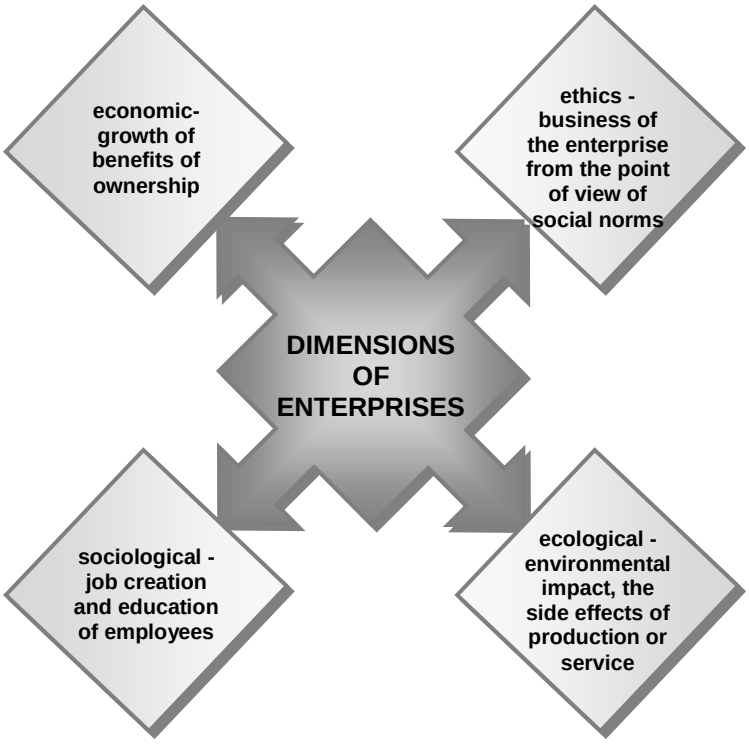

Figure 3. Dimensions of enterprises' activity

Source: Own study based on: Stabryła 2014, pp. 495–504.

Increasing attention is given to the importance of knowledge and its impact on the results of the activity of enterprises. It is thought that the process of knowledge creation and distribution is nothing else but a special kind of services activities Thereby, knowledge enters the market and takes on the form of a commodity. In

the market economy, this means that knowledge as a commodity that is traded on the market can be sold and purchased. Thus, if knowledge is marketed, then it has value and price, which, in turn, shows that it has many aspects, which has been presented in figure 4.

Since knowledge is marketed, it means that it may be an important source of an enterprise's value. Knowledge as an important element of intangible assets is included both among intangible assets, i.e. in balance sheet, and outside of it. Thus, knowledge can significantly impact the value of an enterprise, and consequently possibility of obtaining more capital than indicated in the balance sheet, and in this aspect it becomes an important factor in development. Knowledge is the most creative source of the development of every enterprise. Since agricultural enterprises include entities whose value is to a large extent created by knowledge, it should be believed that with the increasing importance of knowledge in the economic development the share of knowledge in the value of enterprises will grow as well.

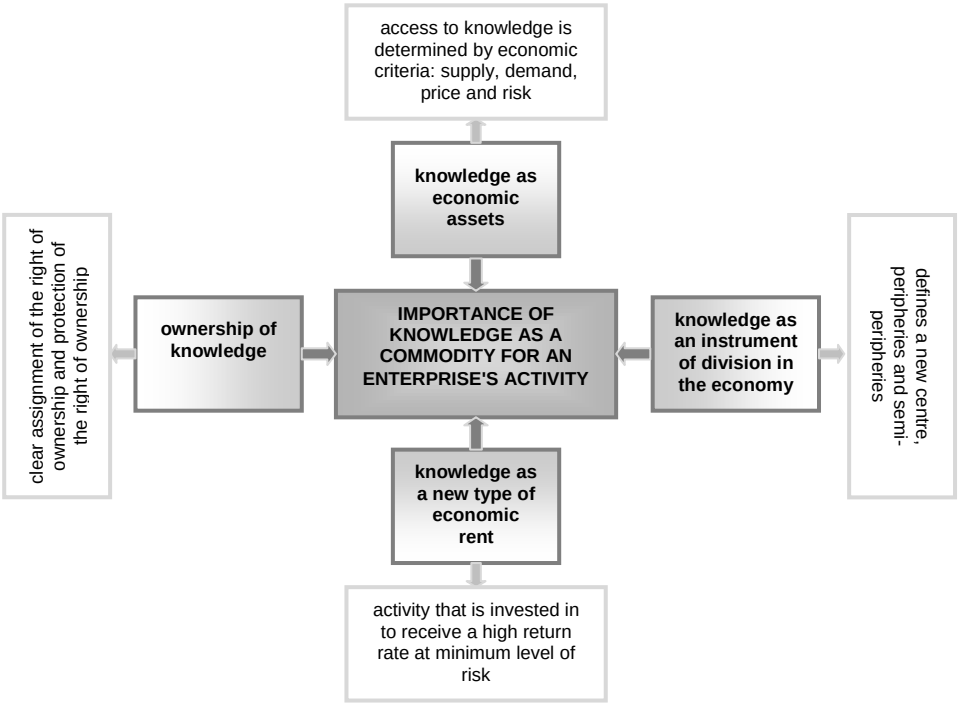

Figure 4. Importance of knowledge as a commodity for the activity of enterprises

Source: Own study based on: Bisaga 2014, pp. 17–25.

Summary

Based on the discussion in this paper, a thesis can be formulated about comprehensiveness of the issues of management of enterprises. The definition of an enterprise according to which it is an organised system of tangible and intangible assets, singled out in organisational, economic and legal terms, that

conducts business activity, should be regarded as reductive. Many researchers rightly stress that an enterprise is inscrutable, rich in terms of research problems and constitutes an exciting research subject. Uniqueness of entities, variety of managerial situations, and uniqueness of every man, and thereby a manager, guarantee huge diversity that is interesting from the scientific perspective. These issues will be topical as long as a human will exist with his/her needs, because enterprises will also exist to meet these needs.

References

1. Bisaga A., *Rola sieci dyfuzji wiedzy i informacji w procesie modernizacji gospodarstw rolnych na przykładzie województwa opolskiego*, [in:] Journal of Agribusiness and Rural Development, 2014, Vol. 2, No. 32, pp. 17–25.
2. Brzozowska A., *Program Rozwoju Obszarów Wiejskich w procesie zarządzania gospodarstwami rolnymi*. Wydawnictwo Politechniki Częstochowskiej, Częstochowa, 2013, pp. 44–54.
3. Burmann Ch., *Strategische Flexibilität und Strategiewechsel als Determinanten des Unternehmenswertes*. Springer-Verlag, Wiesbaden, 2013, pp. 34–37. DOI 10.1007/978-3-322-81984-0
4. Czyżewski A., Kryszak L., *Sytuacja dochodowa gospodarstw rolniczych w krajach UE-15 i w Polsce w latach 2007-2013 w świetle statystyki FADN*, [in:] Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie. Problemy Rolnictwa Światowego, 2015, Vol. 15 (XXX), No. 1, pp. 21–32.
5. Domańska A., Serwa D., *Koszty kryzysu gospodarczego w Europie na tle innych regionów świata–analiza przekrojowa*, [in:] Optimum Studia Ekonomiczne, 2013, Vol. 6, No. 66, pp. 3–19.
6. Feist M., Fuchs D., *Agrarpolitik und Ernährungssicherheit im Strudel der Finanzkrise*, [in:] Zeitschrift für Außen-und Sicherheitspolitik, 2013, Vol. 6, No. 1, pp. 197–209. DOI 10.1007/s12399-013-0375-7.
7. Figiel S., Kuberska D., Kufel J., *Modelowanie rozwoju klastrów rolno-żywnościowych w Polsce*. Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej - Państwowy Instytut Badawczy, Warszawa, 2014, pp. 23–27.
8. Frank M., Fischer K., Voeste D., *BASF: Messbarkeit gemeinsamer Wertschöpfung in der Landwirtschaft*, [in:] CSR und Value Chain Management. Springer Berlin Heidelberg, 2014, pp. 217–230. DOI 10.1007/978-3-642-39889-6_8.
9. Haipeter T., *Finanzmarktkapitalismus und Arbeit*, [in:] Arbeit und Arbeitsregulierung im Finanzmarktkapitalismus, Springer Fachmedien Wiesbaden, 2016, pp. 11–43. DOI 10.1007/ 978-3-658-10177-0_1.
10. Home R., Jawtusch J., Moschitz H., *Das landwirtschaftliche Wissenssystem in der Schweiz: Herausforderungen einer nachhaltigen Entwicklung des ländlichen Raums*, [in:] Journal of Socio-Economics in Agriculture (Until 2015: Yearbook of Socioeconomics in Agriculture), 2013, Vol. 6, No. 1, pp. 33–58.
11. Jaki A., *Mechanizmy procesu zarządzania wartością przedsiębiorstwa*, [in:] Zeszyty Naukowe/Uniwersytet Ekonomiczny w Krakowie. Seria Specjalna, Monografie, 2012, No. 215, pp. 115–119.
12. Jarka S., *Wykorzystanie outsourcingu w przedsiębiorstwach wielkoobszarowych w Wielkopolsce*, [in:] Roczniki Ekonomii Rolnictwa i Rozwoju Obszarów Wiejskich, 2013, Vol. 100, No. 2, pp. 88–96.
13. Kagan A., *Efektywność i konkurencyjność wielkotowarowych przedsiębiorstw rolnych*. Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, Warszawa, 2015, pp. 78–94.

14. Kleinhanß W., *Einkommen versus Faktorentlohnung in der deutschen Landwirtschaft,* [in:] Berichte über Landwirtschaft-Zeitschrift für Agrarpolitik und Landwirtschaft. 2015, Vol. 93, No. 2. DOI: http://dx.doi.org/10.12767/buel.v93i2.84.g188.
15. Kozak S., *Kryzys finansowy a działalność kredytowa banków spółdzielczych w Polsce,* [in:] Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu, 2013, Vol.15, No. 4, pp. 224–230.
16. Matysiak A., Struś M., *Paradygmat rozwoju zrównoważonego*, [in:] Studia Ekonomiczne, 2015, No. 213, pp. 11–21.
17. Schäfer H. B., *Landwirtschaftliche Akkumulationslasten und industrielle Entwicklung: Analyse und Beschreibung entwicklungspolitischer Optionen in dualistischen Wirtschaften*. Springer-Verlag, Berlin Heidelberg, 2013, p. 222. DOI 10.1007/978-3-642-68991-8.
18. Stabryła A., *Metodyka badania zdolności rozwojowej przedsiębiorstwa*, [in:] Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 2014, No. 366, Zarządzanie strategiczne w teorii i praktyce, pp. 495–504.
19. Wiedemann H., *Die Unternehmensentwicklung unter der Lean–Thematik,* [in:] Das Unternehmen als dialektisches System. Springer Fachmedien Wiesbaden, 2015, pp. 215–226. DOI 10.1007/978-3-658-07856-0_12
20. Wigier M., *Model rozwoju rolnictwa polskiego w świetle efektów realizacji WPR*, [in:] *Zagadnienia Ekonomiki Rolnej*, 2013, Vol. 1, No. 334, pp. 22–41.
21. Winkler P., *Grenzen der Flexibilisierung? Bedeutung, Herausforderungen und Konsequenzen der Heterarchie für die interne Kommunikation*, [in:] Interne Kommunikation im Wandel. Springer Fachmedien Wiesbaden, 2016, pp. 85–102. DOI 10.1007/978-3-658-11022-2_6.
22. Wójcicki Z., Rudeńska B., *Systemy rolniczej produkcji ekologicznej i precyzyjnej (informacyjnej),* [in:] Problemy Inżynierii Rolniczej, 2015, Vol. 23, No. 2, pp. 5–15.
23. Wulf T., *Entwicklung ostdeutscher Unternehmen: Eine Fallstudienanalyse privatisierter Industrieunternehmen*. Springer-Verlag, Wiesbaden, 2013. DOI 10.1007/978-3-663-07976-7

ATRYBUTY I WYZNACZNIKI ZARZĄDZANIA PRZEDSIĘBIORSTWEM ROLNYM

Streszczenie: Celem artykułu jest analiza rozwiązań związanych ze złożoną naturą przedsiębiorstwa oraz próba identyfikacji cech współczesnego przedsiębiorstwa. Przedsiębiorstwo, jako najważniejsze ogniwo w łańcuchu gospodarki narodowej jest złożoną jednostką badawczą. Różnorodność przedsiębiorstw oraz niepowtarzalność praktyk menadżerskich powodują, że zarządzanie przedsiębiorstwem jest analizowane i opisywane przez wiele dyscyplin naukowych.

Słowa kluczowe: zarządzanie przedsiębiorstwem, przedsiębiorstwa rolne, zarządzanie gospodarstwami

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 70–79
dostępne na: http://www.zim.pcz.pl/znwz

THE SYSTEM OF AGRARIAN LOGISTICS: DEFINITION, MAIN TASKS AND CONDITIONS OF ITS FUNCTIONING

Tetiana Chaika, Tetiana Voronko-Nevidnycha, Ilona Yasnolob, Oleksii Zoria
Poltava State Agrarian Academy, Ukraine

Abstract. The article deals with the problem of the definition of the term "logistics". It describes the main functional spheres and the tasks of logistics of agrarian enterprises. The authors define the distinctive features of marketing and logistics and prove the urgency of the introduction of both conceptions with the purpose of the optimization of selling activity of agrarian enterprises. The article offers the model of the system of agrarian logistics including crop growing, livestock breeding, fishing and bee keeping logistics with a detailed classification of branches according to the main types of products. The authors describe the factors of the influence of the selling process in agriculture on the system of logistics with the aim of adaptation to the specific character of agrarian enterprises.

Keywords: logistics, introduction, management, agrarian enterprise, purchase, sales, production

DOI: 10.17512/znpcz.2016.1.07

Problem statement

Since Ukraine has become a member of WTO and because of the country's integration to the world food market, national producers have faced with a problem of raising their competitiveness. Agrarian producers also have to adapt to the conditions of international competitive environment. These problems and the necessity to provide national food security require the introduction of new and more effective methods and technologies into the process of agrarian enterprises management which can improve the level of development of agriculture as well as enable to gain a market share in international environment. In this context much attention is given to such methods of optimization of economic activity that can provide synergic effect in the process of interaction of economic entities with other participants in the chains of promotion of agrarian products. In these conditions we consider the concept of logistics to be the most efficient. This concept is quite widespread in world practice, but relatively new for Ukrainian management instrumentation.

The analysis of the latest research and publications

The problems of logistics in organizing the process of selling are researched in a large number of works by such foreign and national authors as: B. Anikin, J. Bolt, O. Hadzhynskyi, O. Hirna, M. Edous, A. Kalchenko, I. Krykavskyi, M. Meskon, L. Moroz, I. Nerush, M. Oklander, O. Khromov, A. Chudakov,

N. Chukhrai etc. At the same time, a lot of questions concerning the usage of logistic approach in the process of selling products of agrarian enterprises are still not fully studied.

The objective of the research

The objective of the article is to describe the role of logistics in the process of selling products of agrarian enterprises taking into account their peculiarities.

The main part of the research

The idea of application of logistics in business administration emerged only in 1970s although this term appeared in Ancient Greece meaning the art of making payments (Родников 2000, p. 352). In general, logistics was developing in three trends, such as military, mathematical and economical, with the first trend being the most recognized. Since logistics can be applied in various spheres, there are different approaches to the definition of this term. In our opinion, this fact and the relative novelty of the economic trend in logistics were the reasons for the late introduction of this concept into the national categorical apparatus of economic terms. For instance, in Ukraine it began to be used in the early 1990s both in special books and mass media meaning the theory and practice of management of tangible and information flows (Крикавський, Чухрай, Чорнописька 2006, p. 340). However, nowadays there is no generally accepted definition of the term logistics even in its economic aspect and its objects and tasks are not clearly determined.

For instance, T. Skorobohatova defines logistics as the science of management of tangible and information flows in a certain system (Скоробогатова 2005, p. 116). However, we consider this definition to be incomplete as it does not give the detailed information about the area of application of logistics and does not focus on its importance. The similar definition is given by T. Kosarieva who thinks that logistics is the science and practice of management of flow processes (Косарева 2008, pp. 12–19).

The more substantial definition is given by O. Trydid, H. Azarenkova, S. Mishyna and I. Borysenko. In their opinion, logistics is the science about the optimal management of tangible, information, and financial flows in economic adaptive systems with synergic relations (Тридід, Азаренкова, Мішина, Борисенко 2008, p. 566). This definition describes the area of application and the object of logistics, but the word combination "synergic relations" needs a more detailed explanation. In addition to it, the availability of these relations in the economic system does not stipulate the application of logistics, although the introduction of logistics facilitates these relations to appear.

O. Hutorov, O. Lebedynskyi, N. Prozorova, U. Albekov, V. Fedko and O. Mytko consider logistics to be a science. They define logistics as the science about the planning, control and management of transportation, storage and other tangible and intangible operations which appear in the process of transporting of raw materials to manufacturing enterprises, processing of raw materials, stuff and

semi-finished products and delivery of finished products to customers according their interests and requirements as well as the transferring, storing and processing of appropriate information (Альбеков, Федько, Митько 2001, p. 512; Гуторов, Лебединська, Прозорова 2011, p. 322; Brzozowska, Bubel, Kalinichenko 2015, pp. 29-35). This definition is the most common in economic literature. It gives a rather clear understanding of the functional sphere of logistics by dividing the total tangible flow process into stages and it makes managerial functions of logistics more specific. However, this definition does not describe the possibility of application of logistics in optimization of management of finance flow which accompanies tangible flow. Moreover, only transportation and storage are not the full list of all processes included into logistics.

At the same time, logistics is considered to be not only a science but also a process. For instance, this opinion is given by I. Krykavskyi, N. Chukhrai and N. Chornopyska. They define logistics as the process of management of sufficient and effective (concerning time consumption) flow of raw materials supply, materials, semi-finished and finished products, services, finance and corresponding information from the place of appearance of this flow to the place of its consumption (including reception, dispatch, internal and external transfer) in order to meet all customer's requirements (Крикавський, Чухрай, Чорнописька 2006, p. 340). However, the possibility of full-fledged management of materials in external environment contradicts market economy conditions. On the base of this fact we think that the given above definition is also not very complete.

So, despite various approaches to defining logistics, the semantic analysis of the given definitions has enabled us to find their similarity. For instance, all scientists define its object as the movement of flows and optimization of links relations. Taking this and other critical statements into account we define logistics as the science about management of tangible and appropriate information and finance flows and their optimization within economic system where they occur from the moment of their appearance to the final consumption with the purpose to satisfy the final customer's needs.

Most researchers think that the objective of logistics is to follow "six logistics rules", such as: to produce the needed product of appropriate quality and in necessary amount and deliver it to a certain place at required time with minimum expenses (Крикавський, Чухрай, Чорнописька 2006, p. 340; Тридід, Азаренкова, Мішина, Борисенко 2008, p. 566; Гурч 2008, p. 560; Логістика: опорний конспект лекцій для напряму 0502 «Менеджмент» 2010, p. 116). So, logistics is aimed at the optimization of demand oriented production by means of efficient organization of flow processes which can provide the highest profitability in specific conditions of a certain economic system.

The main attention in logistics is focused on the organization of the sole through flow of transfer of materials and information from a producer to a customer. This requires making the sole integrated system which will unite the processes of materials and machinery supply, production, storage, selling, transporting as well as processing and transfer of appropriate information. This shift of priorities of

economic activity – from product to flow process – is the novelty of the logistic approach which can raise the efficiency of work on each stage of promotion chain, improve internal economic links and result in synergic effect.

In economic literature logistics is subdivided into such interrelated parts as supply, production, selling and transport logistics (Скоробогатова 2005, p. 116). In addition to it some researchers add storage, intermediary and information logistics to the above mentioned list. The fullest description of functional spheres of logistics is given by O. Ieltenko. He defines logistics in supply, transport, storage, service, purchase, selling, production, information, finance and management (Єлтенко 2008, pp.135–141). On the base of all these classifications and with the help of functional approach we can define the main subdivisions of logistics corresponding to the main stages of flows in business, such as purchase, production and selling (figure 1).

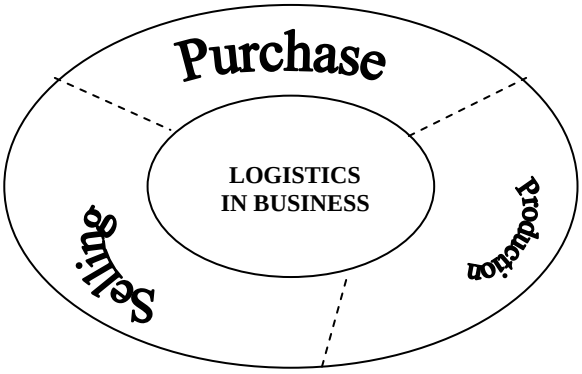

Figure 1. The main functional spheres of logistics in business

Source: worked out by the authors

However, it is necessary to mention that this subdivision is quite relative, as the stages of economic activity are interrelated and this results in the interrelation and interdependence of logistics tasks on each stage (Нікітіна 2013, pp. 132–133). For example, in order to determine the volume of purchase of necessary raw materials, their quality and term of purchase, it is necessary to take into account the productive capacity of a business, some peculiarities of its economic activity and development strategy. The latter one is in some way caused by customers' wants which should be taken into account in determining commodities range in order to improve production and selling processes.

According to some peculiarities of economic system tangible flow has its own form on each stage of movement and logistics has its object and specific tasks (table 1).

So, logistics makes it possible to solve a number of problems of economic activity of agrarian businesses. Its application provides a great potential to raise competitiveness of domestic agrarian products as in market conditions it enables businesses to evaluate and satisfy the customers' needs more fully.

Table 1. Logistics tasks in agrarian businesses

Stage of movement of tangible flow	Form of tangible flow	Logistics tasks
Purchase	Seeds, feeds, seedlings, fuel and oil materials, means of protection of plants and animals, inventory, equipment, machinery, and other materials	1) improving of purchase of production goods needed for manufacturing process according to agrarian and technical requirements, technological cards and development plans; 2) determining of methods to organize purchase; 3) organization of quality control of purchased products; 4) working out of a mechanism of selection of suppliers
Production	Productive livestock, growing and fattening animals, perennial plants and all kinds of crops	1) solving problems of optimization of business size; 2) determining the necessity and structure of a machinery park and formation of its rational structure; 3) determining the need for raw materials; 4) organization of efficient use of production goods; 5) providing of technical support of machinery, buildings and equipment
Selling	Milk, eggs, grain, vegetables, fruit and other products	1) determining of selling strategy; 2) selection of the structure of logistics chain; 3) decisions making concerning forms and technology of transportation of agrarian products and selection of dispatch tactics; 4) determining the necessity of establishment of collective food markets of agrarian products.

Source: Worked out by the authors on the base of (Божидарнік, Божидарнік 2011, pp. 27–31; Струк 2009).

Oversaturation of a market, which is proved by works of national and domestic researches, needs reorientation of business from production to distribution and this fact focuses on selling logistics and marketing as priorities. It is necessary to apply both conceptions because their functions are quite different although both improve selling process aimed at satisfying customers' wants. For instance, the marketing conception researches the market and evaluates the demand while logistics provides transportation of goods and satisfaction of the demand with minimal expenses (Лужин 2011, pp. 22–23). Their objects, subjects and conclusions also differ (table 2).

However, the systems of marketing and logistics are closely connected to each other which can be proved by the similarity of their certain elements. For instance, the closest relation between logistics and marketing can be found in the provision of the availability of a necessary product at an appropriate place. The other elements (quantity, quality, time, expenses and consumer – from logistics side and price, package, people and promotion – from marketing side) do not have a direct connection though they are also interrelated and interdependent. Thus, optimization of selling activity requires introduction of both logistics and marketing mechanisms.

Table 2. Distinctive features of marketing and logistics

Compared features	Marketing	Logistics
The object of the research	Market, demand, supply	Tangible flow
The subject of the research	Behaviour on a market	Tangible flow management
The result of the research	Range of products, their sales markets, means to stimulate demand	Location of warehouses, transportation schemes, consignments, term of selling, chain of goods flow

Source: Worked out by authors on the base of (Репич 2008, pp. 86–89).

Agriculture has its own specific features, for instance, the products of this branch are the base of food which makes the loss of demand for it impossible. Accordingly, the need to stimulate sales is not so urgent and that is why marketing becomes not very efficient and significant in this sphere. Although the specific features of agrarian products exclude the possibility of their overproduction in global aspect and their relatively short storage life causes the necessity for an elaborated and efficient system of selling these products. At the same time a long flow of goods from a producer to a final consumer results in raising prices for agrarian products which makes them less attractive in terms of low paying capacity, nevertheless, these goods are sufficient in consumer's basket. Thus, the all above mentioned problems, which finally result in aggravation of food security on the one hand and in cutting profits of agrarian businesses on the other hand, require the introduction of logistic approaches into selling activity.

Agrarian logistics is on the stage of its formation and we consider its further development as its subdivision into logistic spheres according to specific features of agrarian products. For instance, it is necessary to subdivide national agrarian logistics into such spheres as, crop growing, livestock breeding, fishing and bee keeping logistics with a detailed classification of branches according to the main types of products (figure 2).

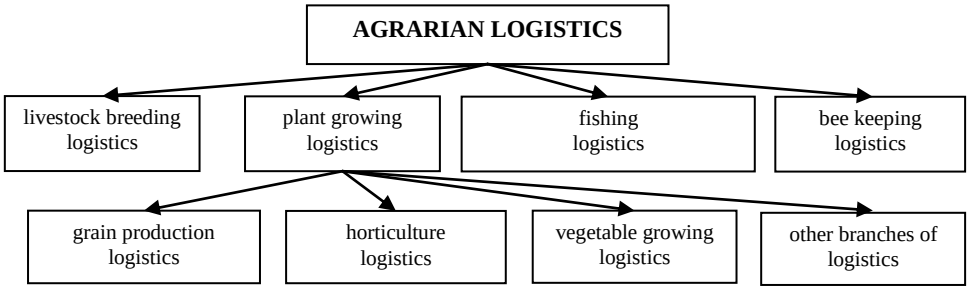

Figure 2. The system of agrarian logistics

Source: Worked out by the authors.

The necessity of introduction of logistics into Ukrainian agriculture is also considered by D. Krysanov. For instance, he points out that the establishment of flexible logistics systems will make the process of formation of consignments of goods quicker; it will also facilitate the delivery of products to necessary places with minimal expenses and provide competitive advantages (Крисанов 2010, pp. 39–41). Moreover, the competitiveness of businesses using logistic approach is provided by the means of cost reduction and improvement of reliability and quality of delivery. While establishing the selling logistics system in business it is necessary to take into account a number of internal and external factors assisting in its adaptation to certain specific features of business, market conditions and customers' needs (figure 3).

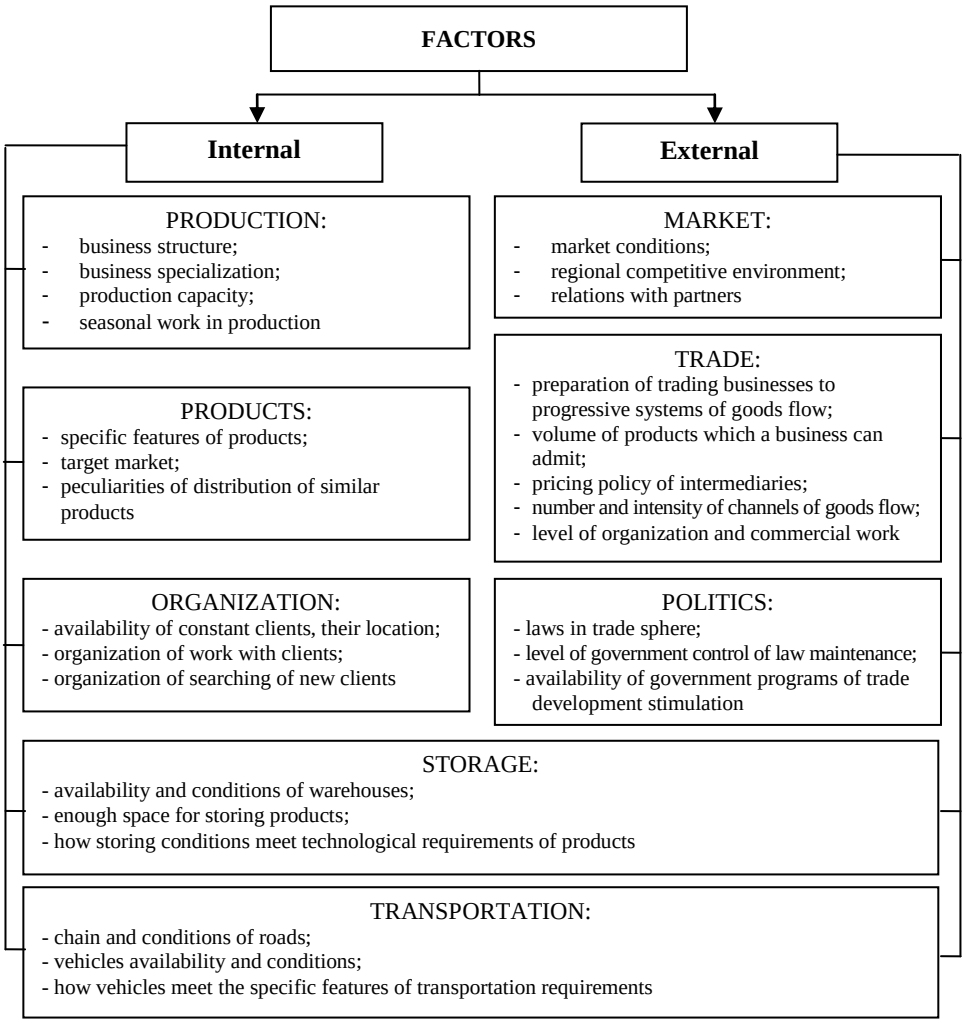

Figure 3. Factors affecting the system of logistics in selling process in agriculture

Source: Worked out by authors on the basis of: Тридід, Азаренкова, Мішина, Борисенко 2008, p.566; Кислий, Біловодська, Олефіренко, Смоляник 2010, p. 360.

It is necessary to point out that the subdivision of logistics into spheres on the base of livestock breeding branches (cattle breeding, pig fattening and poultry farming) is rather difficult which is caused by the lack of fundamental organization and technology differences between them as well as by the orientation of their products to the same markets and meeting the similar customers' requirements.

At the same time this system can be supplemented with other types of logistics which will develop on the base of domestic agriculture and will have their own specific features affecting their management.

It is obvious that the present situation expects from agrarian sector not only high quality products but also solving the new types of problems such as: when, where and in what amount it is necessary to supply goods to customers with minimum expenses. This has become the stimulus to the development of agrarian logistics.

Nowadays there are some barriers to efficient functioning of agrarian logistics such as:

- the lack of state programs of development of agrarian logistics;
- the low investment attractiveness of agrarian branches in Ukraine which is caused by inefficient legal framework and unstable political situation in the country;
- the lack of automobile and railroad transport in peak periods of agrarian campaigns;
- the lack of funds for building modern warehouses;
- the delays of payments to agrarian transporters;
- the delays in service of agrarian transporters;
- the lack of highly qualified logistic staff in agrarian businesses;
- the delays in delivery of products;
- the wear of vehicles and difficulties in their updating;
- the lack of funds for the purchase of modern vehicles;
- the fluctuations in transport tariffs;
- the decrease in competitiveness of Ukrainian transporters compared to the foreign ones;
- the lack of funds for introduction of logistics approaches as logistics software is too expensive for national businesses;
- the failure in provision of transport to be loaded at agreed dates;
- the difficulties in working out transport routes;
- the poor quality of roads, inefficient digital software GPS-provision of Ukrainian roads and the lack of communication networks for trucks;
- the difficulties in organization of transportation including several kinds of transport;
- the insurance of loads and vehicles;
- the unpredictable risks connected with climatic changes.

In addition to these barriers, it is necessary to mention some ways of the improvement of the system of agrarian logistics such as: reforms in agrarian sector and the establishment of appropriate legal framework in regulation of activities of

agrarian logistic companies; the adoption of the national program of the development of agrarian logistic according to the examples of advanced countries; the development and introduction of the appropriate system of financing of agrarian logistics; the raising of investment attractiveness of logistic sector by the means of using special regimes in taxation and reduced customs tariffs for limited periods (1-3 years); the provision of this branch with highly qualified staff and necessary software, etc.

Conclusions

For the last several years national agrarian businesses have begun to take into account the fact that the sphere of supplying raw materials and services has a great impact on the ability of economic entities to satisfy customers' needs.

Thus, the introduction of logistics into business has a large potential for the improvement of selling, promotion of innovation activities and raising the competitiveness of agrarian enterprises.

The use of logistic approaches in the management of Ukrainian enterprises and the management of supplies is a relatively new direction; moreover these approaches are still being formed in agriculture.

The urgency of introduction of logistics into the activities of national agrarian enterprises can be explained by the need for reducing the intervals between supplying raw materials and delivery of products to final customers. Logistics enables enterprises to minimize stock of goods and in several cases even to refuse it, as well as to reduce delivery time, facilitate the process of receiving information, and improve the quality of service.

References

1. Brzozowska A., Bubel D., Kalinichenko A., *Tendencies in financing the agricultural and food sector under the common agricultural policy*. J. Socio-Economic problem and the State [online], 2015, Vol. 13, No. 2, pp. 29-35.
2. Альбеков А.У., Федько В. П. , Митько О. А., *Логистика коммерции*: [учебн.]. – Ростов-на-Дону: Феникс, 2001, p. 512.
3. Божидарнік Т. В., Божидарнік Н. В., *Основні шляхи застосування логістики в агропромисловому комплексі України* // Економічний форум. – 2011. – №1, pp. 27–31.
4. Гурч Л. М. *Логістика*: [навч. посіб.] . – К.: Персонал, 2008, p. 560.
5. Гуторов О.І., Лебединська О.І., Прозорова Н.В., *Логістика*: навч. посіб. // Харк. нац. аграр. ун-т. – Харків: Міськдрук, 2011, p. 322.
6. Єлтенко О.В. *Проблеми сучасної логістики та шляхи їх вирішення* // Актуальні проблеми економіки. – 2008. – № 4, pp.135–141.
7. Кислий В. М., Біловодська О. А., Олефіренко О. М., Смоляник О. М., *Логістика: Теорія та практика*: [навч. посіб.]. – К.: ЦУЛ, 2010, p. 360.
8. Косарева Т. В. *Логістична система: сутність дефініцій* // Економіка АПК. – 2008. – № 11, pp. 12–19.
9. Крикавський Є. В., Чухрай Н. І. , Чорнописька Н. В. , *Логістика: компендіум і практикум*: [навч. посіб.]. – К.: Кондор, 2006, p. 340.
10. Крикавський Є. В., Чухрай Н. І., Чорнописька Н. В., *Логістика: компендіум і практикум*: навч. посіб. – К.: Кондор, 2006, p. 340.

11. Крисанов Д. Ф. *Передумови та чиники впровадження логістичних інновацій в агропродовольчому комплексі України* // Економіст. – 2010. – № 12, pp. 39–41.
12. *Логістика*: опорний конспект лекцій для напряму 0502 «Менеджмент» [Електронний ресурс] / уклад. С. О. Казаков. – Електрон. текст. дані. – Миколаїв: МДАУ, 2010, p. 116 Режим доступу: libserver.mdau.mk.ua /docs/eldocs /2010/Kazakov_Logistika.pdf.
13. Лужин А.Л. *Логистика и маркетинг: точки соприкосновения* // Молочное дело. – 2011. – № 7, pp. 22–23.
14. Нікітіна Р. Є. *Логістика як інструмент удосконалення збутової діяльності сільськогосподарських підприємств* // Менеджмент і логістика – перспективні напрями розвитку економіки: Матеріали Міжнародної науково-практичної конференції: тези допов. – Київ. – 20-21 вересня 2013, pp. 132–133.
15. Репич Т.А. *Маркетинг и логистика. Что важнее*? // Мясной бизнес. – 2008. – №5, pp. 86–89.
16. Родников А.Н., *Логистика*: терминологический словар: [2-е изд., испр. и доп.] — М.: ИНФРА-М, 2000, p. 352.
17. Скоробогатова Т.Н. *Логистика*: [учеб. пособ. ; 2-е изд.]. – Симферополь: ДиАйПи, 2005, p. 116.
18. Струк Н. Р. Напрями застосування логістики у підприємствах аграрного сектору економіки [Електронний ресурс] – Режим доступу: archive.nbuv.gov.ua/portal/chem_biol/ vldau/APK/2009/ files/09snxsoe.pdf.
19. Тридід О. М., Азаренкова Г. М., Мішина С. В., Борисенко І. І., *Логістика*: [навч. посіб.] – К.: Знання, 2008, p. 566.
20. Тридід О. М., Азаренкова Г. М., Мішина С. В., Борисенко І. І., *Логістика*: [навч. посіб.]. – К.: Знання, 2008, p.566.

SYSTEM LOGISTYKI ROLNEJ: DEFINICJA, GŁÓWNE ZADANIA I WARUNKI FUNKCJONOWANIA

Streszczenie: W opracowaniu zbadano istotę terminu „logistyka” i podano jego najpełniejszą definicję. Uzasadniono główne obszary funkcjonowania oraz zadania logistyki przedsiębiorstw rolnych. Określono charakterystyczne cechy badań marketingowych i logistyki, jak również realność ich wdrożenia w celu optymalizacji działań marketingowych. Zaprezentowano system logistyki rolniczej, w tym logistyki upraw, żywego inwentarza, hodowli ryb oraz pszczelarstwa, a następnie wyszczególniono branże ze względu na główne produkty. Ukazano czynniki wpływu na system procesu wdrażania logistyki w sektorze rolniczym w celu adaptacji do specyfiki przedsiębiorstwa rolnego.

Słowa kluczowe: logistyka, wdrożenie, zarządzanie, przedsiębiorstwo rolnicze, zaopatrzenie, sprzedaż, produkcja

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 80–87
dostępne na: http://www.zim.pcz.pl/znwz

THE CREATION OF MODERN SYSTEM OF INFORMATIONAL – ADVISORY SUPPORT AS A NECESSARY CONDITION FOR THE DEVELOPMENT OF RURAL AREAS

Oleksandr Chekhlatyi, Oleksandr Galych
Poltava State Agrarian Academy, Ukraine
Antonina Kalinichenko
Opole University, Poland

Abstract: This article reviews the current state of informational-advisory support of the agrarian sector of Ukrainian economy, key moments and features of the organization of advisory services in Poltava region. The basic problems and the ways of their solving, prospects and plans of advisory services in the implementation of measures to promote employment of the rural population are found out.

Keywords: informational-advisory support, advisory services, agricultural producers, rural areas

DOI: 10.17512/znpcz.2016.1.08

Problem statemen

In the process of formation and development of market relations in Ukrainian agriculture newly created and reformed subjects of economic activity are faced with the global problems of the market economy, a significant need for new knowledge and expert advice. As a rule, in the developed countries in the world such assistance to private farmers informational-advisory support services provide. Long and very successful experience in the development of the agricultural sector in many European countries shows that effective activities of such services is one of the main factors of sustainable development of agricultural production, magnification of production and sales of agricultural products, improvement its quality (Калініченко 2009, p. 60; Державна цільова програма розвитку українського села на період до 2015 року)

Therefore, in Ukraine, including Poltava region, the creation and improvement of services in informational-advisory support of agro-industrial complex (AIC), for further more efficient reformation of agricultural sector of the economy, stimulation of agricultural production, positive social-economic changes in rural areas began. One of the key factors in improving the efficiency of these services is the study and implementation of the positive international experience on the functioning of information and consultation of agricultural producers, fruitful cooperation with the similar organizations abroad, and reinforced national and international financial support of advisory services in Ukraine.

Analysis of recent researches and publications

In Ukraine, the first scientific research in the sphere of informational- advisory support began at the end of the XX century thanks to the works of O.M. Borodina, V.V. Derlemenko, R.Y. Korinets, T.P. Kalna-Dubinyuk, M.F. Kropyvka, M.I. Lobanova, P.T. Sabluk, R.M. Shmidt and others. They greatly expanded the theoretical basis of foundations of advisory and consultancy of the agricultural sector by creating conditions for identifying key aspects of the dissemination of information services in rural areas. In the works of Ukrainian scientists the essence of the counsel's activity was disclosed and the ways for improving the system of information support were proposed. First of all, determined that to achieve efficiency of advisory services required a systematic approach to the study of urgent issues and active involvement of international experience in the sphere of information and consultation support (Франчук 2010, p. 376-380).

The main purpose of the article is to study current conditions of functioning informational-advisory support system of agro-industrial complex in Ukraine, the main results of advisory services in Poltava region, their international cooperation, implementation of international experience in the advisory services, the main sources of financing and the prospects for future activities.

The main research material

Considering the fact that in different sectors of the economy development of scientific-technological progress occurred nonuniform, governments around the world have been developed special programmes of rural development, the main point of which was to ensure wide public access to innovative knowledge and information. Unfortunately in Ukraine only at the beginning of the XXI century creation an effective network of agricultural advisory structures began. Several targeted government programmes were developed and laws on development of informational-advisory support were adopted (Франчук 2010, p. 376-380).

One of the key factors in improving the efficiency of these services is the study and implementation of the positive international experience on the functioning of information and consultation of agricultural producers, fruitful cooperation with the similar organizations abroad, and reinforced national and international financial support of advisory services in Ukraine. In this regard the problem of informational consultation for ensure agriculture is seen primarily as a tool of agro-industrial complex reforming. For the rural producers it is more important to receive opportune expert information and consulting assistance at present than in the past. Rural producers need timely adjust production to changes in external factors (Франчук 2010, p. 376-380).

The tasks of created informational-advisory services is to promote the development of agricultural production and improve social-economic conditions in rural areas by creating information, consulting and training support system for business entities in agriculture and other industries, rural infrastructure and rural population. It allows spreading knowledge, providing technical assistance and other services to interested people.

However, the main problem of the formation of effective advisory services today is the lack of sources of financing of their activities and the general financial and economic crisis that prevails in the country, total unemployment and partial employment of population.

Carrying out economic reforms in recent years in the agrarian sector of Ukraine led to the situation in rural areas in preserving social standards, employment, state of industrial relations became extremely dangerous for the existence of the village, collective and individual agricultural production. As of September 1, 2015 at employment centres of the country 1,135,6 thousand unemployed people were registered. Of the total number of unemployed – 414,8 thousand people or 36,5% lived in rural areas (Державна служба статистики України [Електронний ресурс]. – Режим доступу: http://www.ukrstat.gov.ua).

However, in reality, the level of hidden rural unemployment is much higher than official, and some decrease in registered unemployment in the summer is a typical trend for this time of year due to seasonal and temporary employment in such kind of economic activity as agriculture. In Poltava region unemployment situation is even worse than in the whole country and is 12,8% of the economically active population of working age, compared with 10,2% on average in Ukraine. In accordance, loading the unemployed rural population (vacancy rate for one vacancy) is 18 people (Державна служба статистики України [Електронний ресурс]. – Режим доступу: http://www.ukrstat.gov.ua). Rural unemployment in Poltava region, recently quite prosperous agricultural region, now has become an acute social-economic problem, sharply aggravated social-labour relations in the countryside.

According to the State Statistics Committee of Ukraine, the average salary in agriculture per full-time employee in January-October 2015 amounted to 3093 UAH. It is one of the lowest salaries in comparison with salaries in other sectors of economic activity and accounts for only 76,1% of average salary in Ukraine during the same period. Salary indebtedness is also a problem. According to the State Statistics Committee of Ukraine, indebtedness on October 1, 2015 was 1906,1 million UAH (Державна служба статистики України [Електронний ресурс]. – Режим доступу: http://www.ukrstat.gov.ua/).

Specific feature of the rural labour market is situation in which from nearly twenty economic activities in rural areas directly on the agricultural sector accounts for about 50% of the employed population that works by place of residence. These data indicate a small labour mobility, limited sources of income of the rural population, its slow conversion to non-agricultural activities. It follows that in the period of insufficient funding and lending, complication of economic life in the country, the welfare of rural residents increasingly depends on self-employment in a private farm and the efficiency of its activity. Therefore, in conditions of prospects of holding inefficient private farms the need for reorientation of the working rural population in other non-agricultural activities, which can be possible in rural areas, are raised (Могильний 2008). Appropriate services should facilitate it, they provide socially oriented advisory services that are necessary to the rural population and have the greatest social effect – for productive self-employment of rural population, creation of small enterprises in the sphere of social services, agricultural tourism and other non-agricultural activities.

Their work in this direction is precisely determines and directs the Law of Ukraine "On Agricultural Advisory Activities", which in addition to determining the legal principles of agricultural advisory activity in Ukraine, aimed at improving the welfare of the rural population and development of countryside, promoting non-agricultural entrepreneurship in rural areas and employment of rural population (Закон України 2004).

It is known that in the process of formation and development of market relations in agriculture of Ukraine newly created and reformed subjects of economic activity are faced with the global problems of the market economy, informational isolation of the village a significant need for new knowledge and expert advice. As a rule, in the developed countries in the world such assistance informational-advisory support services provide to private farmers. Long and very successful experience in the development of the agricultural sector in many European countries shows that effective activities of such services is one of the main factors of sustainable development of agricultural production, magnification of production and sales of agricultural products, improvement its. quality, reduction of social tensions and improvement of social-labour relations in the countryside.

Therefore, in Ukraine, including Poltava region, the creation and improvement of services in informational-advisory support of agro-industrial complex (AIC), for further more efficient reformation of agricultural sector of the economy, stimulation of agricultural production, positive social-economic changes in rural areas began. Today the activities of advisory services should be primarily aimed to help agricultural producers in solving their problems – increasing the level of knowledge and practical skills of profitable farming entities, providing advisory services on economy, technology, management, marketing, accounting, taxes, law, ecology etc., solution of social problems in rural areas (Галич 2007).

Two agricultural advisory services, operating in Poltava region were engaged in these tasks. The first organization that provides the assistance to agricultural producers in Poltava region called OOO "Poltava Regional Agricultural Advisory Service". "Poltava Regional Agricultural Advisory Service" (PRAAS) was established in 2004 thanks to the "German-Ukrainian project of official agricultural advisory service in Poltava region" (Ukrainisch-Deutsches landwirtschaftliches Offizialberatungsprojekt Poltawa – UDOP). Teachers of Poltava State Agrarian Academy (PSAA) took active part in its creation. This advisory service operated and provided consulting services primarily thanks to financial support from the Ukrainian-German project, as well as regional budget (Калініченко 2009, p. 331-334).

Because of the expansion of demand for qualified advisory services, the need to solve the problem of the lack of effective mechanisms of cooperation of agricultural science, education and agriculture, the necessity appeared to create in Poltava region alternative to existing advisory service that would provide effective social-focused advisory services to agricultural producers and rural residents using existing technical, scientific and organizational potential of Poltava State Agrarian Academy.

This service, with the right to provide socially oriented advisory services from the State budget, was established in 2007 on the basis of Poltava State Agrarian Academy. Chairman of the Board of the newly established NGO became Vice-rector on

scientific-pedagogical, scientific work of PSAA, PhD, associate professor O.O. Gorb. Ministry of Agrarian Policy of Ukraine on November 1, 2007 Advisory Service was listed in the Register of Agricultural Advisory Services with obtaining the certificate number 9, which gives the right to provide socially oriented advisory services from the State budget. The organization got the name – Poltava Regional Public Organization (PRPO) "Official Agricultural Advisory Service" (Калініченко 2009, p. 331-33).

In the first year of its activity this advisory service was provided and implemented at the expense of the State budget a number of measures to provide socially oriented advisory services in the areas of Poltava region. The main focus of the service was to conduct training seminars. During the year 59 seminars were held on growing and marketing of environmentally friendly agricultural products, optimization of crop rotation, the prevention of epizootic situations, preventive sanitary and veterinary measures in case of avian influenza, rabies of all species, environmental livestock, information and advice on the productive breeds of cattle, the conditions of their detention and technologies, introduction of new technologies in livestock production and other necessary points for peasants and farmers (Калініченко 2009, p. 331-33).

PRPO "Official Agricultural Advisory Service" was quite extensive experience of international cooperation and participation in various projects, making it possible not only to learn from best practices, but also to obtain the necessary funds for a variety of educational events, providing socially oriented advisory services, such as thematic seminars, for wide range of agricultural producers and rural people. One of the results of the latest projects was the creation of "Agro-Ecological Centre of Poltava". For agricultural producers as a region and Ukraine as a whole, quite valuable information is posted on the website of Agro-Ecological Centre. An interesting idea is the digital library of the Centre for an effective distance studying of agricultural producers. The site contains the electronic edition of the series "Environmental Library of Poltava region", booklets on the state of environment in Poltava region, which provided analytical information on air quality, water resources, quality of drinking water, land resources, waste and recreational resources of Poltava region (Міжнародний Агро-екологічний Центр [Електронний ресурс]. – Режим доступу: http://aec.org.ua/).

For training specialists of advisory services, students in higher educational establishments by the Ministry of Agrarian Policy of Ukraine scholars of Poltava State Agrarian Academy according to special curriculum developed an electronic textbook on advisory services that includes 5 modules. This textbook was developed and became the first electronic textbook, which is approved by the Ministry of Agrarian Policy of Ukraine and offered for free sale. Teachers of the Academy, candidates of economic sciences Galych O.A. and Sosnovska O.O. according to the current needs of Agrarian Policy of Ukraine developed the study guide "Agricultural Advisory Service" approved by the Ministry of Education and Science of Ukraine.

One of the main problems for the establishment and effective operation of agricultural advisory services in Ukraine and Poltava region in particular, is to find sources of funding. In 2009, due to the financial crisis and reduction of state funding,

the intensity of advisory services for the provision of socially oriented informational-advisory services in rural areas has dropped significantly, but did not stop.

Order of the Ministry of Agrarian Policy of Ukraine and the Cabinet of Ministers of Ukraine 5 million UAH has allocated for the development of advisory activity in Ukraine, including 205 thousand UAH for the needs of advisory services in Poltava region. However, it was less than half the amount of money provided by the State target programme of the development of agricultural advisory activity for the period till 2009. In this situation Poltava Regional Council supported the initiative of the State Administration of allocation 100 thousand UAH for execution of regional programme of agricultural advisory service (Калініченко 2009, p. 60-68).

Following years have not been better in terms of financing of advisory activity. On the State Budget of Ukraine for the year separate line provided funds to finance state programme of agricultural advisory. However, for state support of socially oriented advisory services in 2010, as in the following years only 2 million UAH was allocated. It was only 0,035% in expenditure of Ministry of Agrarian Policy, while in 2007 the sum was 10 million UAH (0,1538%). But even this amount was too meager for the development and establishment of advisory services in the country (Крот 2013, p. 92-96).

Local governments and local administrations, according to the social-economic development projects each year have been involving local budget funds for advisory service. But financial assistance to local administrations unfortunately cannot improve the situation with financing advisory activity for the better.

Except state target programme of agricultural advisory activity, at the list of the State programme for economic and social development of Ukraine included a number of other government programmes aimed at developing of agriculture and rural areas. In particular, this is State target programme on development of Ukrainian village until 2015. In each of these programmes there is a component which provides for social advisory services to improve the efficiency of the results of these programmes. To cover the costs, connected with providing these services, the estimate of each programme should be provided at least 5% of the total programme cost. However, the state target programme of development of Ukrainian village for the period until 2015 provided for provision of advisory service only 0,1% of the total cost of the programme, that is 96,3 million UAH (Крот 2013, p. 92-96).

So we can say that state financing of advisory services in Ukraine, including Poltava region, is extremely insufficient.

We can hope only at improvement in the future economic situation, achieving at least relative financial stability. It will revitalize advisory services for providing socially oriented advisory services and therefore give a chance to stabilize the number of employed in rural areas and even increase the number of jobs. Everything will be possible on condition of adaptation of agricultural production to the requirements of customers, both internal and external markets, changing it on environmental technologies, more deep processing of agricultural raw materials, improving the quality and safety of food.

One of the main directions for ensuring optimal employment of the economically

active rural population should be primarily the formation of regional centres and countryside network of service, procurement and marketing cooperatives, rural service centres and other facilities for integrated development of social infrastructure. Each community must create associations of landowners and agricultural producers, which will be based on a combination of individual and group interests. It will increase productivity, will develop new agricultural enterprises and their profitable activities and will make more efficient use of human resources of the village.

Conclusions

Ukrainian producers must accelerate the growth of their competitiveness, which is impossible without a modern system of information and consultation support. At the moment it does not meet the level of international experience. Despite the fact that in recent years the number of advisory services increased, many of them were created with the direct financial support of foreign partners and programmes. Therein lies the danger. In the case of financial crisis and changes in activities of investors they will likely suspend their funding. Therefore, the branch of information and consultation support must solve the issue to ensure self-sufficiency, the ability to implement effective activities of small government grants and how can less dependent on foreign investors.

It should be noted that the activities of advisory services in Poltava region, as in Ukraine as a whole, in recent years has been primarily aimed at improving knowledge and practical skills of farming agricultural producers, rural population in a market economy. Advisory services of Poltava region made a significant contribution to the organization of agricultural producers informing, the problem of rural employment. The main area of their work was to conduct training seminars that are the best suited to the mass dissemination of knowledge among interested people, provide an opportunity to obtain the necessary information on a productive self-employment of rural population, creation of small enterprises in the sphere of social and living services, agricultural tourism and other non-agricultural activities.

References

1. Галич О.А., Сосновська О.О., *Сільськогосподарське дорадництво*: [Навчальний посібник]. – К.: Центр учбової літератури, 2007, p. 368.
2. *Державна служба статистики України* [Електронний ресурс]. – Режим доступу: http://www.ukrstat.gov.ua/
3. *Державна цільова програма розвитку українського села на період до 2015 року: Постанова Кабінету Міністрів України* [Електронний ресурс]. – Режим доступу до нормативного документа: http://www.minagro.kiev.ua.
4. *Закон України "Про сільськогосподарську дорадчу діяльність"*/ Відомості Верховної Ради (ВВР), 2004, – N 38, p. 470.
5. Калініченко А.В., Чехлатий О.М., *Розвиток та міжнародне співробітництво служб інформаційно-консультативного забезпечення АПК Полтавської області* // Збірник наукових праць Харківського національного аграрного університету. Вісник ХНАУ. Серія "Економіка АПК і природокористування". – Харків, 2009,pp. 60–68.

6. Калініченко А.В., Чехлатий О.М. , Костоглод К.Д., *Роль інформаційно-консультативних служб у становленні системи соціально-трудових відносин на селі* // Збірник наукових праць Подільського державного аграрно-технічного університету. Випуск 17. Том 3. – Кам'янець-Подільський, 2009, pp. 331–334.
7. Крот Л.М., *Проблеми та перспективи фінансування дорадчої діяльності в аграрній сфері України* // Інвестиції: практика та досвід. –2013. – №7, pp. 92–96.
8. *Міжнародний Агро-екологічний Центр* [Електронний ресурс]. – Режим доступу: http://aec.org.ua/
9. Могильний О.М. *Бюджетна політика щодо сприйняття зайнятості в сільській місцевості* [Електронний ресурс]. – Режим доступу: http://www.nbuv.gov.ua/-portal/Soc_Gum/Rpzn/2008-3/08momvsm-2.pdf. – Заголовок з екрану.
10. Франчук В.М. *Система інформаційно-консультативного забезпечення АПК як основа нагромадження інноваційного досвіду у сфері людського капіталу* //Вісник Харківського національного технічного університету сільського господарства: Економічні науки. Вип. 104. – Харків: ХНТУСГ. – 2010, pp. 376–380.

TWORZENIE WSPÓŁCZESNEGO SYSTEMU WSPARCIA INFORMACYJNO-DORADCZEGO JAKO NIEZBĘDNEGO WARUNKU ROZWOJU OBSZARÓW WIEJSKICH

Streszczenie: Artykuł ten stanowi przegląd obecnego stanu wsparcia informacyjno-doradczego dla sektora rolnego w gospodarce ukraińskiej, kluczowych momentów oraz cech organizacji usług doradczych w regionie połtawskim. Określa podstawowe problemy oraz sposoby ich rozwiązywania, perspektywy i plany usług doradczych w zakresie wdrażania środków służących promowaniu zatrudnienia wśród ludności wiejskiej.

Słowa kluczowe: wsparcie informacyjno-doradcze, usługi doradcze, producenci rolni, obszary wiejskie

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 88–102
dostępne na: http://www.zim.pcz.pl/znwz

THE INFLUENCE OF AGRICULTURAL HOLDINGS ON THE DEVELOPMENT OF RURAL AREAS

Natalia Demianenko, Hanlar Makhmudov, Tatyana Schetinina
Poltava State Agrarian Academy, Ukraine

Abstract: The paper deals with the effect of concentration of agricultural holdings of farmland on the development of rural areas. The analysis of this problem has revealed a number of problems of social and environmental nature. Sustainable tendency to increase the concentration holdings of farmland does not have a proper positive impact on the development of rural areas. It has been noted that there are no effective mechanisms of influence on agricultural holdings of public authorities and local governments. The situation of increasing the area of agricultural land of farms of Myrhorod district of Poltava oblast, within the vertically-integrated companies has been studied. The mechanism of agricultural holdings' involvement in territorial cluster to establish the cooperation on the implementation of social, economic, and environmental community projects has been proposed. It has proved the necessity of the consolidation of social responsibilities of agricultural holdings to support rural communities at the legislative level, where the companies use farm land for their work.

Keywords: agricultural holdings, land-use, concentration of farmland, rural areas, sustainable development, development program, social infrastructure, community support

DOI: 10.17512/znpcz.2016.1.09

The statement of the problem

The development of rural areas largely depends on the activities of local agricultural enterprises. Considering the fact that in recent years, more and more farmers are joining vertically integrated companies, it is advisable to consider the impact of agricultural holdings on the development of rural areas. They concentrate a considerable part of land and funds available for investment. At the present stage agricultural holdings in Ukraine rapidly increase the volume of agricultural production and meet the demand of domestic and foreign agricultural markets of the country. However, their activities do not make for the development and social well-being of rural areas. Therefore, we consider it relevant to study the correlation between the concentration of agricultural holdings of agricultural land and rural development.

The analysis of recent studies and publications

The issue of the formation and activities of agricultural holdings in Ukraine is the subject of thorough scientific studies of the economists (I. Lukinov, P. Sabluk, S. Demianenko, V. Andriychuk, V. Boiko, V. Vasylenko, A. Dankevych, O. Krysalnyi, A. Mazur, M. Malik, Y. Nesterchuk, O. Onyshchenko, V. Tereshchenko,

G. Cherevko, V. Yurchyshyn and V. Yatsenko). The scientists pertinently note that in recent years agricultural holdings take the form of «economics in economy» (Кропивко, Лупенко 2013, pp. 5–21; Brzozowska, Kalinichenko, Kabus 2015, pp. 10-14). The growing influence of the holding companies in the agricultural sector of Ukraine encourages the scientific community to in-depth studies of various aspects of this trend.

An important direction of research studies is the analysis of the impact of agricultural holdings on the state of rural areas.

The objective of the paper is to study the impact of the concentration of agricultural holdings of farmland on rural development in Ukraine.

The main material research

Nowadays the decline of rural areas is one of the most acute social and economic problems in Ukraine. Since the independence in 1991, special attention has been paid to the issues of social and economic revival of the rural areas in each legislative acts dealing with the development of agriculture and the economy of the state as a whole. The concepts, strategies and development programs to improve economic and social living standards in rural areas are developed by the efforts of public authorities and research institutions at different levels of management. Despite considerable efforts and funds spent on rural development, the system results are not significant. There was a gap between agriculture, from a purely economic point of view, and rural areas that were historically and are linked to agriculture, – on social and ecological sides (Шанін 2015, pp. 189–194).

It should be mentioned that the reform of land relations in Ukraine over the last decades has been largely aimed at supporting village.

Scientists quite rightly point out «that small farm business with the lack of reliable channels of material supply and final products marketing and in light of not having sufficient financial resources for the modernization of production equipment and innovation cannot compete with other agricultural producers, including foreign ones» (Шувар, Підгребельна 2015, pp. 58–64).

In contrast, large integrated associations have impressive economic results – agricultural holdings, the actual influence on the living standards and well-being of rural areas is not significant.

The Law of Ukraine «On holding companies in Ukraine» regulates the formation and development of agricultural holdings. Article 1 of the Law states that holding company is a joint-stock company that owns, uses and disposes of holding corporate shareholding (parts, shares) of two or more corporate enterprises. N. Zarytska points out that «the leading way of their [agricultural holdings] formation … has been the infusion of domestic and foreign capital in non-agricultural processing industry and the subsequent marketing, for the purpose of self-sufficiency in raw materials, development of agriculture» (Зарицька 2010, p. 312)

The appearance of holding companies in agricultural sector of Ukraine has caused a problem of concentration of agricultural lands by one entity. This

situation has significantly affected the prospects for the development of rural areas and has showed the new context of studies of agricultural holdings to wide scientific public and managers.

In particular, P. Kulinich is considering the sale of tenant rights on agricultural land. The author points out that «powerful offensive of agricultural holdings is happening in terms of the moratorium on sale of agricultural land, using the tenant right» and stresses that «all the farm tenure of agricultural holdings is based on lease contract of farm lands» (Кулініч 2014). The researcher concludes that agricultural holdings have a negative influence on the development of the market turnover of agricultural lands and the formation of the farm sector of agricultural production.

O. Volovyk also comes to such critical conclusions about the negative effects of agricultural holdings on the development of land relations. The scientist says that «since 2004, a large-scale concentration of land-use has begun and manifested in increasing the area of leased land, formation of new agricultural holdings, vertically and horizontal by integrated structures, are as of tens, hundreds of thousands of hectares of land. The concentration has monopolized the benefits of international trade in farm products and foodstuffs» (Воловик 2012, p. 4).

The analysis of agricultural holdings as a business entity in the agricultural sector gives the author the opportunity to emphasize their negative impact on rural development: «By skillfully using tax advantages and preferences provided by the legislation for agriculture, these economic structures appropriate the costs to be a source of full reproduction of the used natural and social resources in rural areas and improving the quality of life of the local environment, but actually «washed out» from the village».

Nowadays there is the indisputable fact that agricultural holdings, using the mechanisms of mergers and acquisitions of agricultural enterprises of the traditional type, have increased the size of landuse. The concentration of agricultural holdings of farmland took place regardless of whether enterprises were limited liability companies or private companies or turned into organizational departments of new companies.

In 2014 5,85 million hectares or nearly 28% of all farmland were under the control of agricultural holdings, which are in use of agricultural enterprises. In comparison with the last year, the total land bank of holdings has been down by 0,19 million ha. However, the land-use share has increased from 27,4% to 27,9% (figure1) because of exclusion of agricultural land of Crimea from the calculations. In general, the annexation of Crimea has coursed the total land bank of holdings' reduction by at least 125 thousand ha (Найбільші агрохолдинги України [Електронний ресурс]: веб-сайт агропорталу AgriSurver – Режим доступу: https://docviewer.yandex.ua)

The trend towards increasing the concentration of agricultural land is confirmed in the analysis of data from the ten largest Ukrainian agro-enterprises over the period of 2012-2014 (table. 1). The agricultural holding UkrLandFarming occupies a leading position, which has increased by 162 thous. ha (31,9%) the size of farmland in 2014, compared to 2012. The company «Kernel Group» for the same

period has increased their land bank by 75 thous. ha or 22,7%. PJSC «Myronivskyi Hliboproduct» has increased in 2014, compared to 2012, the size of farmland by 40 thous. ha or 14,3%. The size of farmland, concentrated by other agricultural holdings, remained almost unchanged over the period 2012-2014 (on February 5, 2015, the company New Century Holding (NCH) went on record increasing its land bank by 30 thous. ha (Агропросперис (NSH) / Агропортал Latifundist.com [Електронний ресурс] – Режим доступу: http://latifundist.com/rating/top100/27938-new-century-holding)).

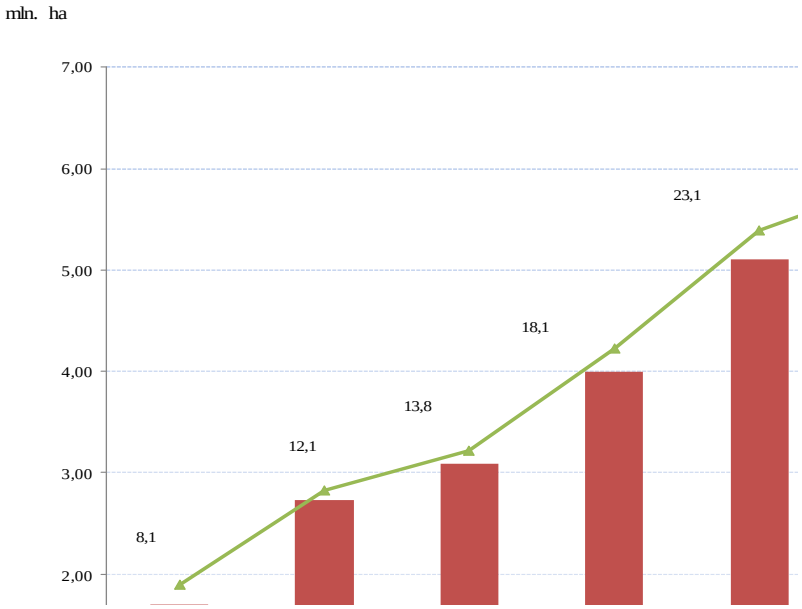

Figure 1. Land Bank of agricultural holdings of Ukraine, 2007-2014

Source: Worked out by authors on the basis of: Найбільші агрохолдинги України [Електронний ресурс]: веб-сайт агропорталу AgriSurver – Режим доступу: https://docviewer. yandex.ua.

The analysis of the concentration of agricultural holdings of farmland on the territorial component is significant too. The agricultural holding «UkrLandFarming» occupies again a leading position, which cultivates farmland in 23 oblasts (administrative districts) of Ukraine (most land under the control of the company is located in Poltava and Sumy oblasts – more than 50 thous. ha as a detailed map of the agricultural holding assets informs on its official website (Ukrlandfarming. Publik Limited Company: Офіційний сайт [Електронний ресурс] – Режим доступу: http://www.ulf.com.ua/ru)). PJSC «Mriya» takes the second place, occupying 16 oblasts. Then we can also note the company New Century Holding (NCH) (13 oblasts) and Kernel Grupp (11 oblasts) (table. 1).

The analysis of the data presented in table 1, shows that the priority farmland for agricultural holdings is of Poltava and Kharkiv oblasts, where 6 out of 10 companies have their land banks. There is farmland in Ternopil, Sumy, Kharkiv

and Khmelnytskyi, managed by 5 out of 10 agricultural holdings. The Land of Vinnytsia, Chernihiv and Chernivtsi oblasts attracted interests of 4 out of 10 agricultural companies.

Thus, Ukrainian agricultural holdings over the period 2012-2014 continued the trend towards the concentration of farmland. In addition, these companies have showed the greatest active attitude to the formation of their own land banks in the districts with fertile black soil.

Table 1. The dynamics of the size of farmland used by the largest agricultural enterprises in Ukraine (as on January 1, 2012-2014.), thous. ha

The name of the agricultural holding	Years			2014 from 2012, (+, -)	Oblasts (administrative districts), where land of agricultural holdings is located
	2012	2013	2014		
UkrLand-Farming	508	532	670	162	23 oblasts of Ukraine
Kernel Grupp	330	330	405	75	Ternopil, Odesa, Mikolayiv, Kirovohrad, Cherkasy, Poltava, Sumy, Chernihiv, Kharkiv, Dnipropetrovsk, Khmelnitskyi
New Century Holding (NCH)	-	400	400	x	Sumy, Chernihiv, Kharkiv, Poltava, Mykolayiv, Vinnitsa, Chernivtsi, Zhytomyr, Khmelnytskyi, Ternopil, Rivne, Volyn, Lviv
Myronivkyi Hliboproduct	280	280	320	40	Kiev, Cherkasy, Poltava, Sumy, Dnipropetrovsk, Donetsk, Kherson, Vinnytsia and Ivano-Frankivsk
Mriya	295	295	298	3	In 16 oblasts of Ukraine (the largest area of farmland – in Chernihiv, Kirovohrad, Sumy, Poltava and Chernivtsi)
Ukrainian Agrarian Investments	-	260	261	x	Ternopil, Khmelnytskyi, Ivano-Frankivsk, Chernivtsi, Lviv
Astarta-Kyiv	245	220	245	0	Poltava, Kharkiv, Vinnytsia, Khmelnytskyi, Ternopil and Zhytomyr
HarvEast	220	220	197	-23	Donetsk
Agroton	170	171	151	-19	Luhansk and Kharkiv
Sintal Agricultur	150	150	150	0	Kharkiv and Kherson

Source: Топ 100 латифундистов Украины [Електронний ресурс]: веб-сайт агропорталу Latifundist.com – Режим доступу : http://latifundist.com.

V. Urkevych says that «agricultural holdings provide the concentration of land by forcing a certain number of agricultural enterprises and farmers out the letting land market, exacerbating social and economic situation in rural areas. Its main features are: the loss of farms in certain area; decline in employment in rural areas; lack of tax revenues to local budgets; lack of funding of development of rural infrastructure, traditionally carried out by agricultural enterprises» (Уркевич 2014).

Agricultural holdings are active tenants of farmland on a large scale all over Ukraine, including Myrhorod district of Poltava oblast.

A number of agricultural enterprises located here are included into the structures of agricultural holding companies, including: LLC «Promin-Pryvat» and LLC «Savyntsi» that belong to the famous corporation «Pryvat-Agro»; LLC «UkrLatAgro», that is a part of the agricultural holding, whose parent company is located in the Republic of Latvia; LLC «Agrotech-Garantiya», that cultivates over 16 thous. ha of land.

Now we are going to analyze the farmland size distribution of existing farms of Myrhorod district of Poltava oblast (table 2), that will be a criterion dividing the enterprises into groups: «small performers», «followers», «average performers», «sub-leaders», «leaders» [criteria development – author N. Demianenko].

Table 2. The farmland size distribution of farms of Myrhorod district of Poltava oblast 2009, 2014

Groups of enterprises of agricultural area land, ha	Number of enterprises		In % of the total number		Area of farmland 1 company, ha		Area farmland of total area, %	
	2009	2014	2009	2014	2009	2014	2009	2014
Small performers – to 1000 ha	x	6	x	30,0	x	437,7	0	3,6
Followers – from 1001 to 3000 ha	7	3	50,0	15,0	1731,3	1411,5	21,0	5,8
Average performers – from 3001 to 5000 ha	3	5	21,4	25,0	3874,9	3775,5	20,2	25,9
Sub-leaders – from 5001 to10000 ha	2	5	14,3	25,0	5416,6	6175,0	18,8	32,5
Leaders – over 10000 ha	2	1	14,3	5,0	11508,5	17792,0	40,0	32,2
Total	14	20	100,0	100,0	57594,0	72766,8	100,0	100,0

Source: Own elaboration.

During the study period, there was a break-up of the enterprises of Myrhorod district of Poltava oblast: 6 companies (30%) of less than 1000 ha, have been formed cultivating 3,6% of the total farmland. This has happened due to the decrease from 7 to 3 companies ranging in size from 1000 to 3000 ha (a group of «followers»). A positive fact is increasing «average performers» by 2 enterprises, but it also happened only due to the break-up of the companies. There is a growing number of «sub leaders» to 5 companies, with increased land-use by an average of 4645,5 ha for a company. In addition, this group LLC «UkrLatAgro gradually begins to succeed (a branch of the agricultural holding with Latvian investments). Also, there is a process of concentration of farmland, which the «leader» – LLC

«Agrotech-Garantiya» having concentrated to 16154 ha (22,2% of total farmland) – implements. We believe that this is largely due to the «Agrarian technological company – A.T.C.» co-partnership from Zhytomyr. The latter is a vertically- integrated agricultural company, one of the largest companies producing cereals, oilseeds and potatoes (only in Zhytomyr oblast in 2013 rented 19,3 thousand. ha of land) (У Житомирській області більше половини родючих земель обробляють заїжджі інвестори [Електронний ресурс] – Режим доступу: http://www.zhitomir.info/news_124007.html)).

So, there is consolidation of agricultural enterprises, while the largest farms of Myrhorod district of Poltava oblast have concentrated farmland with an area of – 16154 ha (LLC «Agrotech-Garantiya»), 6875 ha (LLC «UkrLatAgro»), 5809 ha (LLC «Savyntsi»), 4102,3 ha (LLC «Promin-Pryvat»). Of these, only the enterprises of corporation «Pryvat-Agro» are engaged in production of animal products.

Nevertheless, today it is very problematic to fully evaluate the total rented farmland areas of these structures, because the recognized statistics does not reflect many aspects of this phenomenon. In addition, non-transparent relations in the integration structures greatly complicate the possibility of any cooperation with the executive authorities and local self-government. Indeed, sometimes the heads of department of agricultural and industrial development of district state administrations do not even know the name of the main enterprise that has located an affiliated organization in Myrhorod district and rented farmland.

An inadequate information on the activities of agricultural enterprises that are the members of the agricultural holdings can be displayed, to some extent, in the form of a pyramid (example – subordination of agricultural enterprises of Myrhorod district, the members of the agricultural holding «Pryvat-Agro») (figure 2).

Even regardless of activities of agricultural holdings, we understand the direct link between the well-being of rural communities and the effective management of agricultural commodity producers. In this case, it is quite logical to expect the new job formation for local residents, an increase in budget revenue from tax payments, improvements in infrastructure for the rural areas. As the researcher S. Demianenko rightly pointed out, such expectations are based on the fact that «the founders of these companies are the residents of the village, and they and their family members take advantage of this infrastructure: means of communications, medical, cultural and educational institutions (children go to kindergarten and schools, cultural centers, libraries, etc.)» (Дем'яненко 2008, p. 12). Such «scheme» of expectations could be implemented on condition of management of typical agricultural enterprises – JLLC, farms and cooperatives. It would seem that on the condition of the activities of the agricultural holding, the well-being of rural areas should grow in proportionately with the large-scale use of farmland of these companies.

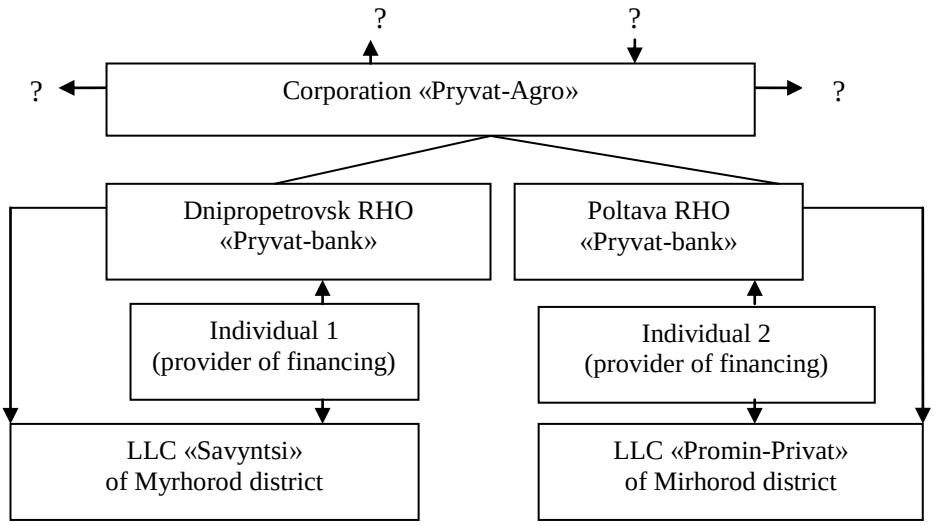

Figure 2. A fragment of a «pyramid» of subordination of agricultural enterprises as a part of the agricultural holding «Pryvat-Agro» [development of N. Demianenko]

Source: Own elaboration.

However, we can see a completely different picture. This is due to the lack of legal norm regarding all social duties of agricultural holdings to the community in rural areas. The founders of agricultural holdings often live in a completely different area, and neither they nor their family members use the rural infrastructure, this does not eventually promote the development of rural infrastructure, while some agricultural holdings are implementing the policy of social responsibility, have Regulations on Partnership, Social Programme, etc. Nevertheless, this is not typical for all these companies. In most cases, this is the PR-actions, and not of a systemic nature.

We can analyze the social and economic work of agricultural enterprises, which is typical for groups of the enterprises, divided according to the area of farmland (table 3).

Even not a deep analysis of the situation in agriculture in recent years of Ukraine shows that the majorities of small and medium-sized agricultural enterprises «continues to systematically show the unprofitablility and, therefore, are not able to support the village» (Шанін 2015, pp. 189–194). Therefore, table 3 confirms the scientific thought about small businesses that operate non-systematically and are unprofitable.

Agricultural holdings get substantial profits, as they use low-paid work force, for example, the level of wages in the LLC «Promin-Pryvat» was the lowest – 2044,75 UAH per / month. To 1 ha to cultivate this enterprise they need 1 or 2 farm machinery operators. Companies of the agricultural holdings of Poltava oblast actively employ the students of Poltava State Agrarian Academy. The most popular specialties are an agronomist and a mechanical engineer. The increase of the number of young people is due to new and risky ideas of youth that promote agricultural development.

Table 3. Economic efficiency and social community support by enterprises of Myrhorod district of Poltava oblast (depending on the area group), 2014

Groups of enterprises of agricultural area land, ha	Profit (loss) from 1 ha, thousand UAH	The cost of 1 ha, UAH	Number of workers persons	The average wage, UAH	The size of state support, thousand UAH	The rent for 1 ha of land share, UAH
Small performers (LLC «Khorol-Don»)	0,5	8,2	47	2212,60	162,0	1098,6
Followers (JLLC «Slavutych»)	1,3	5,9	28	2505,95	665,0	1218,2
Average performers (LLC «Promin-Pryvat»)*	6,8	1,1	162	2044,75	893,0	1134,9
Sub-leaders (LLC «UkrLatAgro»)*	7,0	2,2	58	2401,23	120,6	1115,3,
Leaders (LLC «Agrotech-Garantiya»)*	7,4	4,6	351	3210,00	0,0	1419,6

* Members of the of agricultural holdings

Source: Own elaboration.

LLC «Promin-Pryvat» has the lowest rent for the land – 1134,9 UAH per 1 ha of land share. At the same time, in addition to substantial grants from the parent company «Pryvat-Agro» this company got 839 thousand UAH of state support.

In addition, these enterprises, which are the members of agricultural holdings, have a low level of production costs per 1 ha. This is a factor of profit growth because of using cheap resources and raw materials in the vertical and horizontal integration. We note, however, that in many agricultural holding companies (46%) livestock forming is developing as a supporting industry to improve the productivity of grain farms (Кропивко, Лупенко 2013, pp. 5–21).

In addition, if at the time of the Soviet Union, rural social infrastructure was on the balance of state farms and collective farms, since the period of independence of Ukraine it has passed to the balance of rural (village) councils which now are not able to fund it at a proper level. Present agricultural enterprises do not direct their work to the development of rural areas, even getting profits. This is due to farmland fragmentation of agricultural holdings between rural councils. Furthermore, many companies are located at cities such as LLC «Agrotech-Garantiya» – in Myrgohod, the same tax liabilities are for the development of the city.

Social support of local communities is carried out periodically by agricultural enterprises, and not systematically. To determine the specific sums of the enterprises is impossible, since these expenses in the financial statements are presented as manufacturing. The reason for this approach is the high level of taxation on social spending of business. Imperfect tax legislation of Ukraine should be classified as factors that provide negative impact of agricultural holdings on the social and economic development of rural areas.

Studying the impact of agricultural holdings on social and economic development of rural areas, the scientist V. Zalizko defines a number of negative consequences of this process (Залізко 2013, pp. 71–78). Negative consequences given by the researcher, both in the sphere of social relations, and in the sphere of ecological safety of the population, are directly related to the problem of the concentration of agricultural holdings of farmland. Thus, the negative social consequences of the activities of agricultural holdings in rural areas include the following:

- hyper-capitalization of land bank of agricultural holdings can lead to the fact that rural residents would lose control over most fertile farmland. Furthermore, there is a low percentage of landlords fees for the use of land shares;
- the growth of unemployment among the rural population due to the displacement of labor-intensive agricultural production, the transition to mono-production and the usie non-diversified agricultural machinery.

It should be noted that agricultural holdings require highly skilled professionals for new foreign technology service. However, the available rural labour force in terms of the development of high technology and machinery does not meet these requirements. For the reason of economy, agricultural holdings are not going to finance the training of specialists of the rural sector at the place of the leased farmland, and employ workers from other districts who have received vocational training by their own or at state expense. Such approach, in practice, leads to higher unemployment in rural areas among residents with educational level, and among those who have received higher education and have a high skilled level.

Thus, in 2009 JSC «Scientific and Production Company «Harvest», that is a member of the vertically-integrated business PJSC «Myronivkyi Hliboproduct», leased the land with the area of 43 districts of 5 districts of Cherkasy and Kyiv oblasts. However, on the average five locals from the village were involved in production operations. It is quite clear that there is a need for state regulation of employment of working rural population in the areas of agricultural holdings. In addition, it would be wiser to provide the landlords with the right of high priority employment in the structure of the enterprise-renter.

The impoverishment of rural population, the development of migration and extinction of rural areas could lead, in the nearest future, to the fact that most rural areas simply become a base area for the increase of farmlands of agricultural holdings.

In addition, the trend towards concentration of agricultural holdings of farmland and their further ruthless exploitation has a negative environmental impact (Залізко 2013, pp. 71–78).

Negative impact, as determinated by scientists, of the activities of agricultural holdings on ecology is significantly strengthened by the fact that the residents of rural areas are alone in the struggle with the consequences of this influence. The budgets of the rural communities are not able to finance the environmental actions. In reality, the program at a districtal level will only be able to work on ther condition of appropriate funds from the government budget.

Thoroughly analyzing the impact of agricultural holdings on agricultural development of Ukraine, S. Demianenko concludes: «It should be noted that some agricultural holdings are responsible for costs associated with social infrastructure support. However, due to the fact that agricultural holdings are located mainly in the cities, they almost do not pay taxes to the local budgets of rural areas. The former collective farms, which have lost the status of a legal identity, have become subsidiaries or divisions of agricultural holdings. This is often a disadvantage for rural areas. Therefore, it is necessary to introduce a mechanism that would ensure the payment of taxes by enterprises and organizations, where agribusiness is not located of the main company but of the location of their subdivisions, i.e., in the countryside. This allows the rural councils to accumulate funds of local budgets for the development of social infrastructure» (Дем'яненко 2008, p. 12).

Therefore, for the organization of co-operation of all agricultural enterprises (especially of agricultural holdings), bodies of local government and communities of villages and towns we offer to use a mechanism of interaction, that will function on the basis of partnership (figure 3).

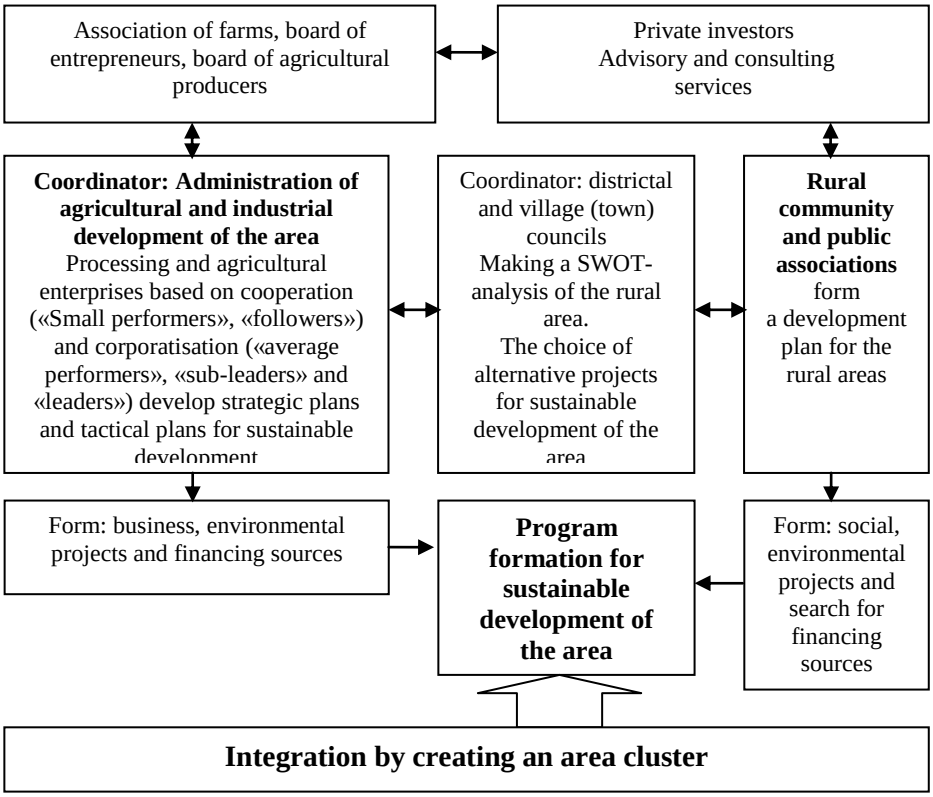

Figure 3. The model of strategic planning for the development of cooperative and corporative structures based on rural development [author model of N. Demianenko]

Source: Own elaboration.

So, it is advisable for small producers to be integrated as cooperatives, and to make development business plans that will provide employment for rural population. Corporate formation (enterprises that are members of holding companies) should be directed to horizontal diversification. Moreover, due to increasing the profitability it is advisable for all businesses to allocate funds for social development of the projects of the community of villages and towns. An integrator two poles at the districtal level should be the districtal and village (town) councils. To encourage agricultural enterprises and investors' participation in the implementation of these projects, we offer for them to determine the obligations of state authorities to support the implementation.

Also, during the development of the economic strategies and programs of most small businesses («small performers», «followers»), we recommend to practice coupled specialization in the production of land-poor labor-intensive crop and livestock products, and to enter into a joint business activity, using the mechanism of cooperation and clustering based on social support of rural areas.

Moreover, we propose to agricultural holdings to develop environmental-oriented agricultural and industrial production, raise the level of social orientation of their activities and act as an integrator of joint economic activities, increase the level of social orientation of their work and act as integrators of joint economic activities. It is advisable to recommend the structures of agricultural holdings to create the department of information and social policy. This institution, in an integrated manner with local authorities and local territorial communities, based on conclusion of social responsibility agreement with the head of the village council, will provide solving the most important financial problems in the areas of education, medicine, spiritual dimension, landscape design of rural areas and so on. Such proposals must have a clear legislative consolidation that will allow to monitor the activities of agricultural holdings at the state level.

A detailed mechanism of co-financing of projects of sustainable rural development is shown in figure 4.

Thus, based on the proposed mechanism agricultural holdings together with other governmental and non-governmental organizations will fund rural development. Both the state budget (within the state development programs of agricultural and industrial production and rural areas) and local budgets can serve as the source of public funding of rural development.

Summarizing the presented material, for increasing social orientation of agricultural holdings we offer to implement the following measures:

1. Agricultural holdings should develop Programs of social investments aimed at financial support of the most important projects initiated by territorial communities.
2. Agricultural holdings should form the fund of sustainable development of rural areas, and provide funding for each hectare of leased land.
3. For the use of rural social infrastructure services (water, roads, electricity, etc.) we offer to the fund of social development of agricultural holdings to allocate funding to the territorial community fund annually. It is necessary to calculate the costs depending on the area of land leased by agricultural holding.
4. It is obligatory to work closely with agricultural universities and to establish joint training centers.

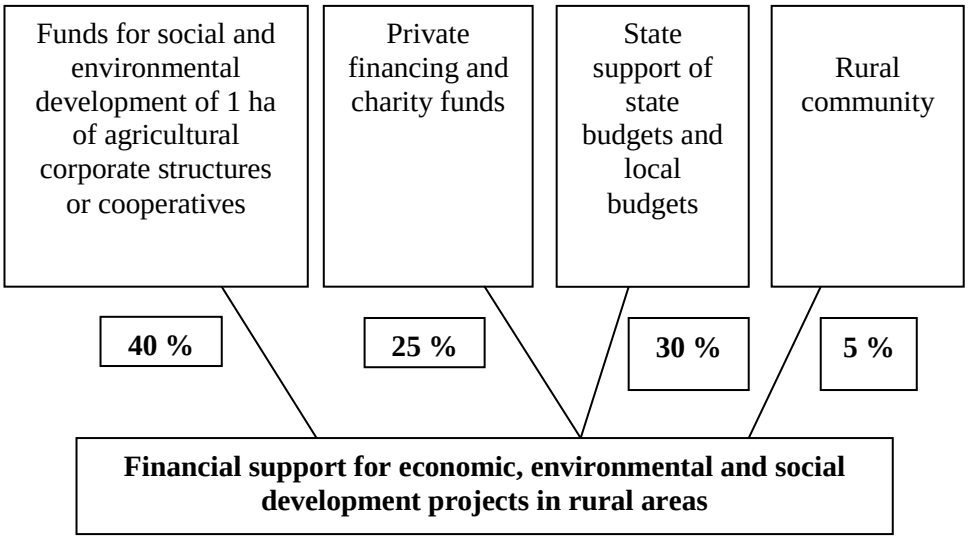

Figure 4. The mechanism of financial support for projects in rural areas [developed by the authors on the basis

Source: Обласна цільова програма впровадження в Полтавській області ІІІ фази Проекту Європейського Союзу (ЄС) та Програми Розвитку Організації Об'єднаних Націй (ПРООН) «Місцевий розвиток, орієнтований на громаду» на 2015-2017 роки [Електронний ресурс] – Режим доступу: https://docviewer.yandex.ua

To attract young promising professionals into the agricultural production and support persons wishing to move to rural areas, it might be necessary to oblige agricultural holdings at the legislative level to create favorable conditions, first of all, to provide young families with housing accommodations.

Conclusions

The development of agricultural holdings in Ukraine as a whole, and the analysis of individual vertically-integrated agricultural enterprises of Myrhorod district of Poltava oblast have found their strong economic growth with a significant social and environmental decline of rural areas, within the enterprise economy.

Therefore, in future it is necessary to increase state control over the activities of agricultural holdings to involve them to the system-forming mechanism of a sustainable development of rural areas. It is necessary to introduce a mechanism that would ensure the flow of funds in the implementation of community projects in the places of activities of agricultural divisions of corporations. At the same time, as an alternative of further limit the land tenure of large corporate structures, the state should create the right conditions for the organization of cooperatives.

Thus, agricultural enterprises, which are members of agricultural holding companies, accumulating considerable resources of farmland, must develop and act only on the condition of sufficient level of social and economic life of rural areas.

References

1. Brzozowska A., Kalinichenko A., Kabus J., *Analyzing the strategies used in media discourse management*, J. Eastern-European Journal of Enterprise Technologies, 2015, Vol. 5, Nr 3(77), pp. 10-14. DOI: 10.15587/1729-4061.2015.51397.
2. *Ukrlandfarming*. Publik Limited Company: Офіційний сайт [Електронний ресурс] – Режим доступу: http://www.ulf.com.ua/ru.
3. *Агропросперис* (NSH) / Агропортал Latifundist.com [Електронний ресурс] – Режим доступу: http://latifundist.com/rating/top100/27938-new-century-holding
4. Воловик О. А., *Щодо причин усталеності в Україні деяких архаїчних форм господарювання: інституціональний підхід* // Часопис Академії адвокатури України. – 2012. – № 4, p. 4.
5. Дем'яненко С. І. *Агрохолдинги в Україні: добре чи погано? Німецько-український аграрний діалог* [Електронний ресурс]. К.: Ін-т економ. дослід. та політич. консультацій, 2008, p. 12, Режим доступу: http://www. ier.com.ua/files/publications/Policy_papers /Agriculture_dialogue/ 2008/AgPP_21_Ukr.pdf.
6. Залізко В.Д. *Вплив агрохолдингізації сільськогосподарських підприємств на соціально-економічний розвиток сільських територій* // Економіка України. — 2013. — № 6. — pp. 71–78.
7. Зарицька Н.П., *Ретроспектива розвитку агрохолдингів в Україні крізь призму менеджменту* // Розвиток агробізнесу в Україні: проблеми, пріоритети, перспективи: матеріали Всеукр. наук.-практ. конф., присвяченої 10-річчю факультету аграр. менеджменту (Україна, м.Житомир, 25–27 березня 2010 р.). – Житомир: Вид-во ЖДУ ім. І. Франка, 2010 p. 312.
8. Кропивко М. Ф., Лупенко Ю.О., *Агрохолдинги в Україні та посилення соціальної спрямованості їх діяльності* // Економіка АПК. – 2013. – № 7, pp. 5–21.
9. Кулініч П., *Ринок сільськогосподарських земель в Україні: чи зможе він функціонувати на праві оренди* [Електронний ресурс] // Юридичний журнал. – 2014. – № 4. – Режим доступу: http://www.justinian.com.ua/article.php?id=4068
10. *Найбільші агрохолдинги України* [Електронний ресурс]: веб-сайт агропорталу AgriSurver – Режим доступу: https://docviewer.yandex.ua.
11. *Обласна цільова програма впровадження в Полтавській області III фази Проекту Європейського Союзу* (ЄС) та Програми Розвитку Організації Об'єднаних Націй (ПРООН) «Місцевий розвиток, орієнтований на громаду» на 2015-2017 роки [Електронний ресурс] – Режим доступу: https://docviewer.yandex.ua.
12. *Топ 100 латифундистов Украины* [Електронний ресурс]: веб-сайт агропорталу Latifundist.com – Режим доступу : http://latifundist.com.
13. *У Житомирській області більше половини родючих земель обробляють заїжджі інвестори* [Електронний ресурс] – Режим доступу: http://www.zhitomir.info/news_ 124007.html.
14. Уркевич В.Ю., *Правові проблеми функціонування агрохолдингів в Україні* [Електронний ресурс]. – Режим доступу: http://ndipzir.org.ua/wp-content/uploads/2014/01/Urkevych.pdf.
15. Шанін О. В. *Концепція селоутворюючого підприємства в системі розвитку сільських територій* // Ефективна економіка. – 2015. – № 4, pp. 189–194.
16. Шувар Б. І., Підгребельна М. І., *Особливості діяльності великотоварних аграрних підприємств та їх вплив на аграрний ринок україни* // Вісник аграрної науки Причорномор'я. – 2015. – Вип. 1, pp. 58–64.

WPŁYW GOSPODARSTW ROLNYCH NA ROZWÓJ OBSZARÓW WIEJSKICH

Streszczenie: Opracowanie podejmuje kwestię wpływu koncentracji gospodarstw rolnych na rozwój obszarów wiejskich. Analiza tego zagadnienia ujawniła szereg problemów natury społeczno-środowiskowej. Stała tendencja zwiększania koncentracji gospodarstw rolnych nie wywiera odpowiedniego, pozytywnego wpływu na rozwój obszarów wiejskich. Zauważono, że nie istnieją skuteczne mechanizmy wpływu na państwowe i samorządowe gospodarstwa rolne. Zbadano sytuację wzrostu powierzchni gruntów rolniczych gospodarstw w regionie myrhorodzkim w obwodzie połtawskim w obrębie poziomo zintegrowanych przedsiębiorstw. Zaproponowano mechanizm uczestnictwa gospodarstw rolnych w klastrze terytorialnym w celu nawiązania współpracy w zakresie realizacji projektów społecznych, ekonomicznych i środowiskowych. Udowodniono konieczność konsolidacji odpowiedzialności społecznej gospodarstw rolnych dla wsparcia społeczności wiejskich na poziomie legislacyjnym, w których przedsiębiorstwa wykorzystują grunty rolne dla swojej działalności.

Słowa kluczowe: gospodarstwa rolne, użytkowanie gruntów, koncentracja pól uprawnych, obszary wiejskie, zrównoważony rozwój, program rozwoju, infrastruktura społeczna, wsparcie społeczne

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 103–111
dostępne na: http://www.zim.pcz.pl/znwz

FEATURES OF FORMATION OF LOGISTICS SYSTEMS IN FODDER PRODUCTION

Lesya Demydenko, Olha Dyvnych, Oleg Gorb
Poltava State Agrarian Academy, Ukraine

Abstract: In the paper theoretical approaches to the definition of «logistics system of fodder production» are presented, its main tasks are highlighted. The author's approach to the formation of logistics system of fodder production is proposed. The principles of logistics systems formation according to a system approach are discussed. The role of information flows in fodder production is substantiated and their characteristics are considered. The paper describes a methodical approach to evaluating the efficiency of the logistics system of fodder production that based on the integral index calculating.

Keywords: logistics; fodder production; logistics system; logistics chain; information support; information flow; efficiency

DOI: 10.17512/znpcz.2016.1.10

Market conditions involve the using a logistics approach by a business entity in production, marketing and other commercial activities. This approach allows to outline prospects for a company out of crisis, to choose the right strategy and tactics of effective management, to determine perspective areas for further development. The novelty of the logistics approach is integration of different sectors of activity in order to achieve the desired results with minimal time and resources by means of end-to-end management of material and information flows. The concept of logistics is the system of approaches to rationalization of economic activities by optimizing flow processes.

According to experts, the comprehensive introduction of logistics at enterprises can provide a reduction in stocks by 50% and 50 – 70% – order fulfillment at an enterprise, which manufactures products (Кальченко 2003, p. 87). Studies show that logistics involves «distribution the right product, in the right quantity and right quality, in the right place and at the right time to the right consumer at the right price» (Mangan, Lalwani, Buther 2008, p. 9.).

Modern agricultural production and logistics are developing in accordance with three main trends: consumers of agricultural products orientation, core competencies specialization, the increasing the use of information technology in the agricultural business (Косарева 2003, pp. 23–27; Kalinichenko 2014, pp. 230-237).

The concept of logistics is becoming more widely used. It is defined by managers, decision-makers at the enterprises, as an effective motivational approach to management with the purpose of reducing production costs. This concept becomes the basis for the economic strategy of the company: logistics is used as

a tool in the competition and considered as managerial logic for plan implementation, allocation and control of financial and human resources. This approach provides close coordination of logistic support and production strategy.

If this coordination is achieved, then the result according to A. Rusalieva's research will be (Русалева 1996, pp. 22–23):

- right stock lines at the right place and the right time;
- coordination of internal and external transport, that guarantees timely delivery in accordance with the economic requirements;
- synchronicity of operation of storage facilities, packaging and transport, to minimize the cost of raw materials, that enables to reduce its stock at the place of production and stocks of finished products;
- synchronization of orders and transport.

An important task of the effective management of material flows of fodder production is to create a logistics system. There is a high degree of coordination of input resources in end-to-end managing of material flows in the system.

The logistics system of fodder production – a system organization of end-to-end material flow, related information and financial flows, from the purchase of material and technical resources to fodder marketing, to improve the efficiency of the production and marketing of an agricultural enterprise.

In our opinion, the main tasks of the logistics system of fodder production include the following:

- providing the right animal feed;
- complete, timely, integrated and high-quality providing all the resources needed for fodder production and organization of chain management;
- management of transportation, storage and production of feed;
- management of raw materials and finished feed;
- payment management of purchasing of material and technical resources and ready-made feed supply.

S. Grynenko's studies suggest that any logistics system, consisting of a combination of elements, has some functional links and relations. Intra-system communication is stronger than external communication. Usually, they are cyclical because reflect the sequence of transmission of material and information flows between the links of the corresponding supply chain (Гриненко 2004, pp.140–143.).

We believe that the logistics chain of fodder production – a combination of logistics linkages of logistics system of fodder production, through which the movement of material flows, from a supplier of logistical resources (seeds, fertilizers, fuel, etc.) to a consumer of ready-made feeds, passes.

Logistics chain of fodder production consists of the following linkages: purchase of resources, resources storage, fodder production, fodder storage, fodder distribution. Transportation of feeds and resources is an integrating logistics linkage and operation.

In our opinion, the formation of the logistics system of fodder production consists of the following stages (figure 1).

Firstly, the determination of development strategy for logistics system of fodder production is based on the main objective of logistics system of fodder production and the results of the economic analysis of fodder production. The implementation strategy of the logistics system should not only determine the main objectives of logistics of fodder production, as well as provide logistics system modeling and simulation. It should be noted that the development strategy of the logistics system of fodder production can serve as livestock crisis-proof strategy. The main goal of the logistics system of fodder production is the producing and delivering the right quantity of feeds, right range and assortment, with the right quality at the right time and to the right place with minimal costs.

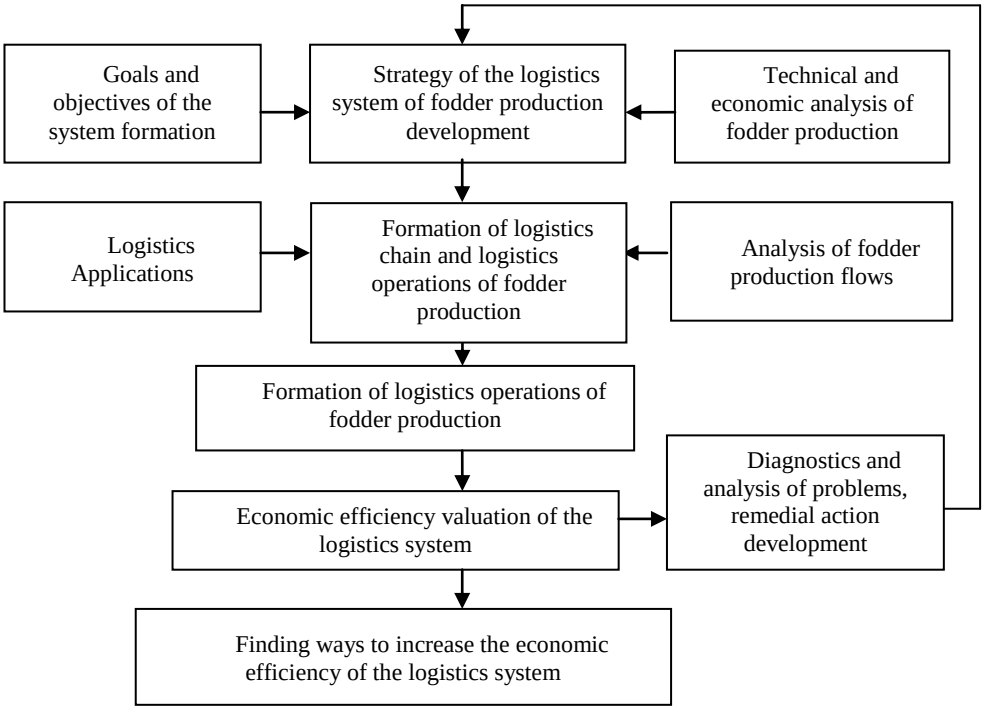

Figure 1. The scheme of formation of logistics operations of fodder production

Source: Author's development.

Secondly, it is the formation of logistics chain of the logistics system of fodder production. For this purpose, you need to determine logistics areas in fodder production and to analyze existing flows. We believe that logistics areas of use are field, meadow and industrial fodder production.

Thirdly, it is the formation of the logistics system as a tool for effective management of material flows within the main stages of fodder production: purchasing, production, warehousing, transportation and distribution.

Fourthly, the evaluation of the efficiency of fodder production of the logistics system is based on the analysis logistics indicators and determination of logistics costs. If the logistics system of fodder production is efficient, then the ways of its

improvement are suggested. If not, the operational problems are detected, then problem solution is developed and the logistics system of fodder production is formed again.

The functioning of actual logistics systems requires using a system approach. M. Kostin notes that a system approach to logistics – is the direction of the methodology of scientific knowledge that is based on the consideration of objects as systems. Such systems allow investigating the quality and relationships between the objects, which are difficult to study. This means that each system is an integrated overall system even in the case of the combination of various subsystems (Костин 2002, pp. 34–35). At the same time, according to M. Oklander, logistics differs from other theories of the business systems that has the approach to optimization of material flow in general. This approach aims to minimize the integral costs of this material flow (Окландер 2000).

O. Laktionova believes that according to a system approach, the formation of logistics systems at any level of economic system begins with macro-level (economy of a country or group of countries) and ends with micro-level (enterprise) (Лактионова 2002, p. 84.). In addition, the study of I. Sidorov suggests that the following principles of a system approach should be taken into account in the process of designing the logistics systems (Сидоров 1999, p. 49):

- the principle of consistent advancement on the creating system stages;
- the principle of coordination of information, resource and other characteristics of designed systems;
- the principle of no conflict between the goals and objectives of individual subsystems of the entire system.

In the light of the facts mentioned above it is believed that the principles of the formation of the logistics systems of fodder production are:

1) the principle of optimality which stipulates that the main criterion of the logistics system of fodder production functioning is the minimum total logistics costs related to fodder production and marketing;
2) the principle of accounting, which is the analysis of total expenditures within the entire supply chain – from procurement of material and technical resources to ready-made feeds marketing;
3) the principle of consistency that involves the integration of all major linkages of the logistics system of fodder production (purchase of resources, fodder production, feeds and resources transportation, fodder and resources storage, fodder distribution) and their interactions. This principle means the consistency of the material, financial and information flows in order to achieve the objective of fodder production – the producing and delivering the right quantity of feeds, right range and assortment, with the right quality at the right time and to the right place with minimal costs.
4) the principle of sustainability and adaptability of logistics system of fodder production which minimizes the deviation from the norm required quantity of fodder production under the influence of the environment, and adapts to changes in the external and internal environment due to the making appropriate management decisions.

Logistics deals with the various flows: material flows, financial flows, energy flows, information flows, human flows. The basis of logistics flows in fodder production is material flows.

Taking into account the studies of V. Dorofieiev and V. Lokhmatov about basic requirements for logistics organization of material flows at an enterprise we may note that in fodder production such requirements must provide (Дорофеев, Лохматов 2002, p. 51):

- rhythmic, coordinated work of all linkages of production according to integrated schedule and the planned output of feeds;
- maximum continuity of production processes (idle-reduction technology);
- maximum reliability of planned payments (careful planning of fodder quantity for existing sex-age groups of animals, based on existing standards) and minimum-plan labor inputs (computerization of production);
- sufficient flexibility in implementation of goals (fodder production of right quality in the right quantity) in the case of various plan deviations;
- continuity of plan management;
- conformity of operational management and processes of fodder production.

The logistics system of fodder production should have sufficient information support, every structural division – experience of its fast and efficient use. This problem is solved at the enterprises by the formation of a complex of automated control systems. It is especially important to improve the information processing system to optimize the levels of material and technical resources, management decision-making, etc. It is necessary to computerize the accounting systems, movement control of material resources in production departments and monitoring the movement of ready-made feeds marketing.

Timely, qualitative information and advanced information technologies form information flows.

We believe that the increasing role of information flow in fodder production is caused by the following reasons:

- for enterprise-consumer the essential element of consumer logistics services is information on the order status, availability of certain type of feeds, delivery terms, shipping documents, and others;
- according to the aspects of inventory management in the logistics chain of fodder production, the availability of complete and accurate information provides the possibility to define the stocks of feeds and raw materials required for the manufacturing;
- information increases the flexibility of the logistics system of fodder production in terms of how, when, and where resources should be used efficiently to achieve the goals of the system.

It is believed that logistics information flows in fodder production have the following features:

1) heterogeneity. Logistics systems information is heterogeneous. It is noteworthy that heterogeneity in linear programming, and in transport problem in fodder production is unlimited ability to transport the feeds from any point to any

destination. Concerning the movement of information flows within the logistics system of fodder production, requirement of heterogeneity also provides unlimited transmission of any document to managerial apparatus in any structural division;

2) difficulty of practical inspection of the direction of the information flows. The circulating information in logistics system of fodder production can have each time different movement direction depending on which the structural division it must be supplied to in a given period of time;
3) the large quantity of information that transmitted during the information flow movement, such as information about the raw material disposition in the company, information about possible suppliers of material and technical resources and availability agreements with them; information about the list of range and assortment of feeds to produce, as well as feeds volumes; information about planned fodder requirement and fodder production terms; information about comparison of actual volumes of fodder production and planned volumes of fodder consumption; information about the volume of consumption of material and technical resources that are required to produce in right quantity and right type of feed, as well as their balance or absence, information about the level prices for material and technical resources;
4) multi-variance of information flows optimization that provides the automation of administrative processes; selection of the complex of computer programs that may meet the present company's hardware and software; the programs ability to ensure all the necessary calculations; the selection of such a program, which would contain a wide range of development tools of basic documents, accounting and financial statements of various standard forms, and forms used in fodder production only for specific enterprise; «hot line» (lines of consultation) of the manufacture for personnel training, assistance to facilitate the program implementation for the enterprise; the price acceptability of the software.

We can define the conditions to be met by the data used to manage the fodder production as:

- ease of interpretation of terms of general economic and livestock categories;
- sufficient information about situation in the industry;
- information accessibility in specific business object (agricultural enterprise, feed factory).

We believe that the basic principles of the organization of information flows in the logistics system of fodder production are:

1) accessibility. It means the simplicity and ease of access to information. Consumers always may receive information on availability of particular type of feeds in store and on process of executing an order;
2) accuracy. Information flows should accurately reflect the current values of logistics indicators (movement of stocks of ready-made feeds and raw materials for the production, the level of these stocks, etc.);

3) timeliness. Timely information is vital for making the most effective decisions. This means regular updating of information in logistics system, which should reflect all the changes in the logistics system (feeds marketing, quantity of consumed feeds and feeds balance, purchase of raw materials, etc. The use of bar coding, scanning and electronic data interchange will facilitate regular and timely updating of information;
4) flexibility. This principle is aimed to meet the information needs of consumers. Information flows should provide data in accordance with the needs of employees in the supply process or transportation;
5) registration of the reported data. This principle provides displaying and starting the print information in the right format.

We are sure that the effective functioning of information flows is due to open information technologies. Just thanks to the possibility of information exchange in on-line mode the system that integrates material, financial and information flows in single information space is developed.

We believe that the main conditions for the successful functioning of modern information technologies at agricultural enterprises are:

1) computer hardware that enables to process information quickly;
2) computer software that enables each expert to solve their problems with the help of a computer (a chief agronomist – to develop fodder production flow sheets; a chief zootechnician – to formulate livestock feed rations, etc.).

In our opinion, the main factors affecting the efficiency of the logistics systems of fodder production include the average inventory index. The factors that characterize the efficiency of fodder production are feeds quality; production cost of feeds; economic return of feeds (cost of feed in the production cost of 100 UAN (Ukrainian hryvnia), the value of the animal products of 1 UAN of used feeds of animal products, value of obtained animal products of 1 USD costs).

It is obligatory to use such indicator as the level of customer satisfaction, which should reflect the level of feeds supply for livestock in comparison with the needs.

It is determined that integrated indicator of evaluating the efficiency of the logistics system of fodder production (E_i) will have the following form (formulas 1.1-1.5):

$$E_i = I_{lc} \times I_p \times I_{sup} \times I_r, \quad (1)$$

where: I_{lc} – index of logistics costs of fodder production;
I_p – index of fodder production;
I_{sup} – feeds supply index;
I_r – return index of animal products.

$$I_{lc} = \frac{LC_0}{LC_1}, \quad (2)$$

where: LC_1 – logistics costs in fodder production over the reporting period, UAH;
LC_0 – logistics costs in fodder production over the base period, UAH.

$$Ip = \frac{VF_1}{VF_0}, \quad (3)$$

where VF_1 та VF_0 – volume of produced fodder in accordance with the reporting and base periods, ratio.

$$I_{avail} = \frac{D_1 / VF_1}{D_0 / VF_0}, \quad (4)$$

where D_1 and D_0 – demand for feeds in accordance with the reporting and base periods, ratio;

$$I_r = \frac{GOAf_1}{GOAf_0}, \quad (5)$$

where $GOAf_1$ and $GOAf_0$ – cost of gross output of animal husbandry, received cost per unit of supplied feeds in accordance with the reporting and base periods, UAN.

Thus, the logistics system of fodder production will be effective when the integrated indicator of its estimation will be more than 1. However, it should be noted that in the calculation of the index of logistics costs we should pay attention to the fact, that on the one hand, its growth dynamics suggests the high use of logistics in a company. But on the other hand, the logistics costs of fodder production are a part of the prime costs, so rising logistics costs are a negative phenomenon.

Therefore, the index of logistics costs is calculated by relations between logistics costs of the logistics base period and logistics costs of the reporting period.

Logistics as a factor of improving the efficiency of fodder production is illustrated in figure 2.

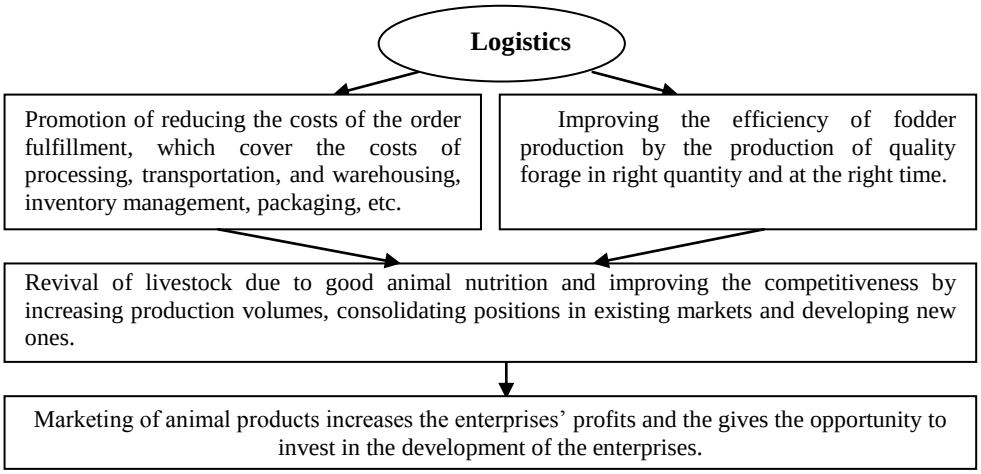

Figure 2. Logistics as a factor of improving the efficiency of fodder production and livestock

Source: Own elaboration.

Thus, the use of logistics in fodder production provides reducing costs of fodder production; producing the right quantity of feeds, in the right feeds quality and at the right time, focusing on the needs of livestock. This, in turn, makes it possible to improve production efficiency, as feeds will be offered to animals, and to increase the volume of livestock production due to this, thereby covering the requirements of population, consolidating the positions in existing markets and developing new ones.

References

1. Kalinichenko A.V., *The methods of utilization and reuse of excess thermal energy in agricultural production*.// Actual Problems of Economics, 2014. – Nr 158 (8), pp. 230-237.
2. Mangan J., Lalwani Ch., Buther T., *Global logistics and supply chain management*. – London: John Wiley & Sons Ltd, 2008, p. 9.
3. Гриненко С. П., *Логістика як інструмент розвитку підприємництва у цукробуряковому під комплексі* // Економіка АПК. – 2004. – № 7, pp.140–143.
4. Дорофеев В. Д., Лохматов В.., *Логистика*: учеб. пособ. – Пенза: ПГУ, 2002, p. 51.
5. Кальченко А. Г., *Логістика*: підруч.. – К.: КНЕУ, 2003, p. 87.
6. Косарева Т. В., *Логістизація економіки АПК* // Економіка АПК. – 2003. – № 12, pp. 23–27.
7. Костин М. Ю., *Основные принципы формирования логистической системы: текст лекцій.* – Иваново: ИГТА, 2002, pp. 34–35.
8. Лактионова О. Е.*, Формирование логистических систем: методология и практика* ; науч. ред. А. И. Амоша. – Донецк: НАН Украины. Институт экономики промышленности, 2002, p. 84.
9. Окландер М. А., *Контуры экономической логистики*. – К.: Наукова думка, 2000. – С. 27.
10. Русалева А. Ю., *Основы логистики*. – Новосибирск, НГАЭУ,1996, pp. 22–23.
11. Сидоров И. И., *Логистическая концепция управления промышленным предприятием*: учеб. пособ.– СПб.: СПбГИЭА, 1999, p. 49.

CECHY TWORZENIA SYSTEMÓW LOGISTYCZNYCH W PRODUKCJI PASZY

Streszczenie: W opracowaniu przedstawiono teoretyczne podejścia do definicji „systemu logistycznego produkcji paszy", wskazując jego główne zadania. Zaproponowano własne podejście do tworzenia systemu logistycznego produkcji paszy. Omówiono zasady tworzenia systemów logistycznych zgodnie z podejściem systemowym. Uzasadniono rolę przepływów informacji w produkcji paszy rozpatrując ich charakterystykę. W opracowaniu przedstawiono podejście metodyczne do oceny skuteczności systemu logistycznego produkcji paszy oparte na rachunku całkowym.

Słowa kluczowe: logistyka, produkcja paszy, system logistyczny, łańcuch logistyczny, wsparcie informacyjne, przepływ informacji, wydajność

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 112–123
dostępne na: http://www.zim.pcz.pl/znwz

THE ROLE OF MARKETING IN SOLVING PROBLEMS OF THE SOCIAL AND THE LABOUR SPHERE OF RURAL AREAS

Tatyana Diadyk, Viktoria Khurdei, Volodymyr Pysarenko, Yanina Tagiltseva
Poltava State Agrarian Academy, Ukraine

Abstract: The article deals with the study of the theoretical essence of "Marketing 3.0", the necessity and the efficiency of its usage for the regulation of a rural employment and unemployment reduction. The economic activity of population according to age groups and residence, the level of registered unemployment in rural areas and cities as well as the dynamics of average monthly earnings on the basic kinds of economic activities in Ukraine have been analysed aiming to estimate the mechanism of labour market performance in rural areas. The main reasons of youth unemployment in rural areas have been identified. The activities of employment agencies have been analysed. It has been proved that marketing 3.0 is a strategic future of the agrarian business in the context of improving the condition in the social and labour sphere.

Keywords: marketing 3.0, marketing research, labour market, social and labour relations, rural areas, employment, unemployment

DOI: 10.17512/znpcz.2016.1.11

The statement of the problem

One of the current problems is undervaluation of the negative impact of challenging economic situation on the solution of social problems. The social and labour sphere of rural areas in Ukraine (which is considered as an agrarian country according to the international division of labour) is of prime importance. However, the sphere has lately obtained a number of negative characteristics that caused a challenge in the labour market, i.e. the aggravation of unemployment, the disinclination of youth to be employed in the agrarian sphere, the problems of women's job placement, the deterioration of working conditions, the violation of core working hours, the cutting of real wages and the guarantee of fair ones, etc.

Problems have always arisen in different societies. Everyone has a certain social status, temper, preferences, tastes, needs as well as a will power. However, to realize a labour ability, to reproduce a labour power, to achieve self-esteem and to be settled in a society is not only the necessity, but the need of every civil human at any time. Labour means not only to receive a financial gain for satisfying needs, but it is a need of any normal healthy organism. Labour as an element of culture and socialization of people depends heavily on the information: concerning profession, the level and rate of wages, working conditions, career development, etc.

Hence, much attention should be paid to both labour resources capacity and social problems of modern labour market performance in rural areas. Taking into account existing informational deficiency in the rural population concerning the dynamics and tendencies of labour market development, one of the important directions in the sphere of monitoring of social and labour relations is the introduction of marketing research.

The analysis of the latest research and publications

The study of theoretical and practical problems of employment, unemployment, personal fulfillment, the problems of advance in the educational level, the professional and territorial mobility of labour resources are considered in the research papers by V. Adamchuk, I. Bahrova, O. Bohutskyi, O. Hrishnova, V. Horbunov, V. Diiesperov, H. Dmytrenko, M. Dolishnii, S. Zlupko, N. Kopach, V. Onikiienko, I. Petrova, T. Tokarskyi and others. However, the problem of labour marketing, particularly in rural areas, hasn't been studied abundantly yet. The theoretical issues of marketing in the labour and employment sphere are considered in the scientific papers by E. Bohdanova, D. Bohynia, V. Hordyn, L. Hnezdylova, S. Lehominova, A. Leonov, O. Kovbasko, M. Tsukhan.

Marketing research of the labour market and the introduction of "Marketing 3.0" (from goods to consumers and then to a human nature) is a new direction in the sector of employment.

Nowadays the problem of employment of the rural population is characterized by its particular significance and a social severity that is intensified by tendencies towards the increasing of a widespread unemployment and the irrational labour service in bisuness and in organizations of different forms of ownership (Онікієнко 2013, p. 456).

Marketing research of the labour market requires not only the fundamental analysis of factors of micro- and macroenvironment in which this market functions, but well-grounded assessments of the development of marketing environment of the labour market, while the introduction of "Marketing 3.0" in the labour market will enable to focus on a human in marketing and to increase marketing contribution to the solution of social and labour problems as well as to support an appropriate balance between job vacancies and redundant workers that is one of the main macroeconomic problems, and that's why it requires timely study of the experience of a successful labour market performance gained by the countries with market economy (Легомінова, Маркетинг ринку праці (методологія досліджень) [електронний ресурс] – Режим доступу: http://www.lib.ua-ru.net/diss/cont/26468.html; Brzozowska, Kalinichenko, Kabus 2015, pp. 10–14).

The present stage of the development of the world society is characterized by remarketing and transition to the marketing that focuses on a human, his/her values and nature. "Marketing 0.3" is a personal involvement and a voluntary wish to help. In the labour sphere "Marketing 0.3" enables an employee to create the labour force, taking into account economic conditions of the labour market and its laws (Котлер, Картаджайя, Сетиаван 2012, p. 240).

Personal marketing can be defined as the formation of a positive image as a highly-qualified, high-toned, hard-working person who is able to work efficiently in a team. It stipulates formation of the labour force in terms of providing of a high level of its quality and competitiveness, distribution of a positive information in the labour market (Ковбаско 2012, pp. 89–90). In the process of personal marketing it is necessary to identify the level of labour market demand of a certain level of quality and the price range. However, a great demand for certain jobs and qualifications doesn't always guarantee a high payment and a successful career. It is necessary to take into consideration possible changes in the labour market influenced by such tendencies as the economic globalization and integration processes in the world, the economic restructuring, the development of certain spheres of business and the decline of others (Грішнова 2007, p.559).

The objective of the research

The article is aimed at estimatng the mechanism of labour market performance in rural areas, particularly the efficiency of "Marketing 0.3' in the social and labour sphere.

The main part of the research

The pressing problems in rural areas of Ukraine are unemployment and poverty, decline of the social sphere, a low level of culture, physical burden as well as withering-away of the rural area. The most part of unemployed population (that is able and unable to work) doesn't make sense or has no the opportunity to improve the economic and social condition of the rural area that, in future, disables an efficient development of rural areas. Today we can state the fact that the social sphere of rural areas which (as any other sphere) is aimed to reproduce human resources lost in the process of production still has been decreasing its status. The enhancement of a social disparity leads to devastating consequences, as the economy of agriculture is unable to function efficiently neither as a production nor as a consumption system. In most cases, the level of profitability of agrarian business activities doesn't guarantee more extensive reproduction.

The aim of marketing research of the social and labour sphere in rural areas should be not only the research of the dynamics of demand and supply of the labour force taking into account perspectives of labour market development in the industry of agribusiness, but monitoring of current characteristics of the product "labour force" in order to satisfy requirements of the customer-entrepreneur who buys it.

Marketing research should be focused on the regular analysis of changes in requirements of employees and employers. The latter ones want to buy a competitive labour force. Job applicants hope for fair wages and comfortable working conditions. The role of personal marketing is underestimated in the labour market. This is because most rural population is not familiar with the essence of this term. Relatively low level of awareness of the rural population concerning the job opportunity stipulates a poor competitiveness of its labour force in comparison

with city dwellers. It should be mentioned that even such a powerful marketing tool as the Internet is rarely used by the rural population that either doesn't have access to it or doesn't have skills in searching necessary information. Of course, a city dweller has more chances to find employment or additional earnings by means of the Internet staying at home or in a café (where in each one there is Wi-Fi zone). From our point of view, the main reason of non-use of the Net by the rural population searching a job is subjective. First of all, it is a psychological distrust of the Net (especially, of the older generation) as well as inability of using it and, as a result, appealing to the lack of time and the absence of necessity in the Internet.

Negative tendencies in the labour market of rural areas are caused by the fact that the rural population size constantly decreases in Ukraine, particularly, on account of the decline in natural growth. Besides, it is connected with migration of the rural population (mostly youth) to cities. According to the data, the size of economically active rural population is almost a third of from urban one and, in absolute terms, comes to 5,85 mln. at the age of 15-70 and 5,48 mln. of working age (table 1).

Table 1. The economic activity of population according to place of residence in Ukraine, 2014

Indicators	Unit of measurement	All population	Urban settlement	Rural area	+,-
Economically active population	thousand of people				
at the age of 15-70		19,920.9	14,070.3	5,850.6	-8,219.7
of working age		19,035.2	13,552.7	5,482.5	-8,070.2
The level of economic activity of population	as % to population of the appropriate age group				
at the age of 15-70		62.4	62.6	61.8	-0.8
of working age		71.4	72.4	69.1	-3.3

Source: Calculated by data *Публікація документів Державної служби статистики України:* [Електронний ресурс]. – Режим доступу: http:// ukrstat.org/uk/ operativ2015.

The level of economic activity in the population of working age came to 65,5% in 2014, in rural areas – 62 %. Accordingly, the unemployment rate in rural areas has reached the critical level – 10.2 %, but the level of economic inactivity is 3,3 percentage points higher than in cities.

There is a positive but uneven dynamics of registered unemployed people according to place of residence. If in 2000 the ratio between the city unemployed and rural was of 3:1 (and it was explained by the corresponding population size), then in 2014 the number of the registered unemployed in cities and rural areas became equal – despite the fact that the number of rural population decreased (figure 1).

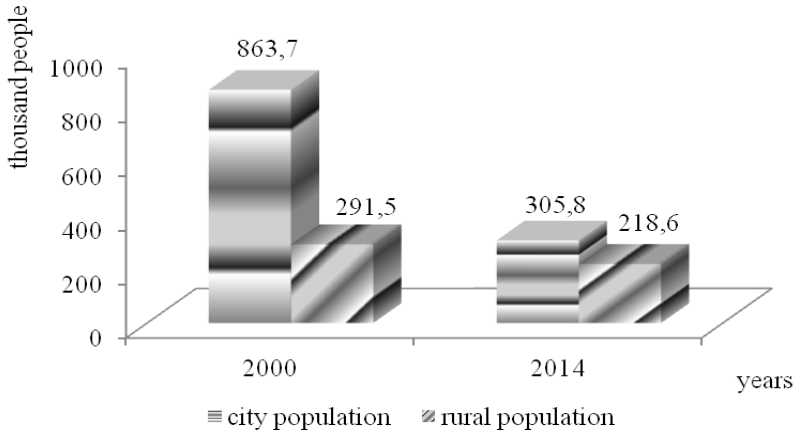

Figure 1. The dynamics of the number of the registered unemployed according to place of residence in Ukraine, 2000-2014, thousand people

Source: Calculated by data *Публікація документів Державної служби статистики України:* [Електронний ресурс]. – Режим доступу: http:// ukrstat.org/uk/ operativ2015.

The given statistics confirm higher competitiveness of the labour force of city dwellers and their possibility of job placement.

In marketing research of the labour market, aiming to provide an agrarian business with highly-qualified personnel with corresponding social and psychological qualities, segmentation of the labour market takes place that will allow to divide the research object in segments. Division of the labour market in closed sectors according to place of residence also points at problems of the rural employment, especially in youth (table 2).

According to the statistical data, the highest level of an economic activity of the urban population is observed at the age of 35-49 – almost 86%, the rural one – 82%. There is a substantial difference between the unemployment rate of the urban and rural youth. If at the age of 25-29 the number of the city unemployed comes to 10.4%, in the rural area 13.1% of the youth of the same age can't find employment.

The youth unemployment has its peculiarities – somebody is looking for a job for the first time after study, somebody doesn't carry a load and becomes unemployed, some part of youth changes views about the gotten profession. A young person chooses a profession at the age of 17-18, and the characteristic criteria in this case are preferences and finances of parents. Understandably, rural men, who know the worth of an agrarian work, want their children to study in cities to get medical, economic or legal education. If not every graduate, then at least a vast majority of them dream about the job that wouldn't be hard and dirty. They want their job to be well-paid and interesting as far as possible. It is not hard to assume that there are much less such positions than those who wish to hold them, particularly in agriculture.

Table 2. The level of economic activity of population of Ukraine by age groups and according to place of residence in 2014

Groups of population	Total	including by age groups, years old							Of working age
		15-24	25-29	30-34	35-39	40-49	50-59	60-70	
The level of economic activity of population, on the average over a period, in % to the total number of population of corresponding age group									
All population	62.4	38.4	80.5	82.6	84.8	84.6	63.2	15.5	71.4
urban settlement	62.6	37.0	82.8	84.3	85.9	85.6	62.5	12.5	72.4
rural area	61.8	41.3	75.0	77.3	82.0	82.4	64.8	22.9	69.1
The level of employment of population, on the average over a period, in % to the total number of population of corresponding age group									
All population	56.6	29.5	71.6	74.9	77.9	78.4	59.4	15.5	64.5
urban settlement	56.9	28.4	74.2	76.6	78.9	79.3	58.6	12.5	65.5
rural area	55.9	31.8	65.2	69.8	75.4	76.6	61.2	22.9	62.0
The level of unemployment of population (by the methodology of ILO), on the average over a period, in % to the total number of population of corresponding age group									
All population	9.3	23.1	11.1	9.3	8.1	7.3	6.0	0.1	9.7
urban settlement	9.2	23.2	10.4	9.1	8.2	7.4	6.2	0.1	9.5
rural area	9.5	23.1	13.1	9.7	8.0	7.1	5.6	0.0	10.2

Source: Calculated by data *Публікація документів Державної служби статистики України:* [Електронний ресурс]. – Режим доступу: http:// ukrstat.org/uk/ operativ2015.

With the aim of functioning of the system of provision of professional information to the public including pupils of general education establishments, The State Employment Centre of the Ministry of Social Policy of Ukraine developed the innovation project "Vocational-oriented terminal" (2008) focused on the provision of availability, mobility, flexibility and attractiveness of vocational-oriented services for youth. The given project has been supported by the Ministry of Education and Science of Ukraine (*Профорієнтаційний термінал державної служби зайнятості:* [Електронний ресурс]. – Режим доступу: http://versii.com/news/238981.).

Schoolchildren learn that there are more professions than only a lawyer and an economist! The terminal helps to understand the diversity of available specialties and identify which of them are demanded in Ukraine today. This device is unequalled in the world. Ukraine became a pioneer suggested this project, the main purpose of which is to approach a school leaver to native production realities.

No doubt, a great problem of labour market performance in our country is the activity of employment agencies, and there are some consulting firms specializing

in recruitment and employment that can be found in the Internet and facilitate planning and career development for a certain payment. However, a rural dweller acts on his own authority in the labour market. That's why the mastery of personal marketing methods is an essential prerequisite of a successful career. The right career choice depends on the objective assessment of professional vocations and the real potential, the proper examination of labour market conditions, real possibilities of getting education, reeducation and skill improvement. Marketing in the labour sphere as in other spheres enables a worker to correct his labour power and sell labour services, taking into account conditions of the labour market and its laws. The application of marketing allows an applicant to identify the product demand, to advertise and distribute goods (to make self-presentation in a way to interest an employer, to get favorable conditions of work and payment) and to satisfy the buyer's needs in the best possible manner (the performance of duties to the best advantage, the consolidation at this job and succeeding in it).

The final objective of marketing research is the development of the corresponding strategy which combines and coordinates actions in the sector of employment. In personal marketing it is important to establish an employment strategy, and the final result of this strategy is optimal working conditions and fair wages.

Profits of rural dwellers, particularly in the form of wages, but not income of their own farming, are generalizing indicators of the standard of their well-being, the social protection in rural areas and the efficiency of state regulation of social and labour relations. The studies show that the level of payment for work of employees of different spheres in our country is not identical – the highest salaries are received in industry, financial institutions as well as a service sector. The lowest salaries are typical for agricultural workers. It only goes to show the fact why youth doesn't want to be employed in agriculture. Obviously, workers are interested in increasing their profits due to both increasing a labour power in the labour market and making greater efforts for receiving higher salaries. In 2014 the highest nominal average monthly salary was received by workers of the financial sphere – 7,020 hrn., in agriculture it was 2,476 hrn. which is 2,8 times lower than in financial institutions and 29% lower than on the national average (table 3).

Maximum wages are not limited now, but the Statute of International Labour Organization requires the equal pay for the equal work. In Ukraine, this principle is much violated. The equal work is paid unequally in branches, enterprises and organizations of all forms of ownership with different financial and economic status. The excessive differentiation of earnings is unjustified by neither requirements of an economic expediency nor an ordinary human justice.

Nowadays Government Employment Services are improving in completely new format – focus has been shifted from regulation of the current situation in the labour market to prevention of unemployment, in particular youth one. In its turn, an agrarian business should be involved in the solution of social and labour problems in rural areas, but not to "shift" overcoming the rural unemployment upon Government Employment Services. Introducing "Marketing 3.0", an agrarian business can influence an intellect, a heart and a soul of rural dwellers, recognize

their anxieties and wishes, improve rural areas, perhaps, even make it an ideal place for living. The sense of marketing 3.0 is to make a strong image of an agrarian business in which it is safe, prestigious and beneficial to work. It can be done by recognizing a unique individual and supporting him or her sincerely.

Table 3. The dynamics of average monthly earnings by main types of economic activities in Ukraine, 2010-2014, hrn.

The type of activity	2010	2011	2012	2013	2014	2014 in % till 2010
Total	2,250	2,648	3,041	3,282	3,480	154.7
Agriculture	1,422	1,786	2,024	2,269	2,476	174.1
Industry	2,578	3,119	3,497	3,774	3,988	154.7
Building	1,777	2,294	2,543	2,727	2,860	160.9
Whole and retail trade	1,898	2,371	2,739	3,049	3,439	181.2
Transport,warehousing, mailing and courier activities	2,648	3,061	3,405	3,582	3,768	142.3
Information and telecommunication	3,185	3,705	4,360	4,659	5,176	162.5
Financial and insurance activities	4,695	5,433	6,077	6,326	7,020	149.5
Government control and defense	2,735	3,049	3,432	3,719	3,817	139.6
Education	1,884	2,077	2,532	2,696	2,745	145.7
Health protection	1,616	1,762	2,186	2,351	2,441	151.1
Art, sport, entertainment, and recreation	2,129	2,394	3,017	3,343	3,626	170.3

Source: Calculated by data *Публікація документів Державної служби статистики України:* [Електронний ресурс]. – Режим доступу: http:// ukrstat.org/uk/ operativ2015.

Marketing 3.0 is also marketing of the sense hidden in corporative missions, vision and values. Having defined the term in such way, we want to give it the role of an important player in developing the strategic future of an agrarian business. Marketing cannot be understood any more as the sale and the use of different tools in order to create a market. Henceforth, marketing should be considered as a high hope of business (an employer) on generating confidence of rural population on basis of: the promise of transformations, convincing stories, the attraction of youth; the cooperation based on values (to be better, different, alter life for the better); the decreasing poverty rate by financial stimulation.

For the agrarian business which is oriented on “Marketing 3.0” any gap between marketing and values is unacceptable (table 4).

Table 4. The comparison of three marketing variants – 1.0, 2.0 i 3.0

Specifications	***Marketing 1.0 – product orientation***	***Marketing 2.0 – consumer orientation***	***Marketing 3.0 – values orientation***
Purpose	To sell products	To satisfy the needs and retain the consumer	To make the world a better place
Mobile power	Industrial revolution	Information technology	Technology of the new wave
How companies consider market	Mass-market customers with physiological needs	Informed customers with their thoughts and emotions	Values
Marketing concepts	Focus on product specifications	Positioning of an enterprise and product	Mission, vision and values of a company
User value	Functional	Functional and emotional	Functional, emotional and spiritual
Interaction with customers	"One with many"	"One with one"	"Cooperation of many with many"

Source: Own elaboration.

There is a close link between marketing 3.0 and millennium goals. "Millennium goals" are eight quantitative objectives that were agreed by 189 world leaders at UN Millenium Summit in September 2000 (Котлер, Картаджайя 2012, p. 240).

1. To end poverty and hunger.
2. To provide primary education.
3. To achieve gender equality.
4. To reduce children's mortality.
5. To improve maternal health.
6. To defeat HIV/AIDS, malaria and other diseases.
7. To introduce an ecological responsibility.
8. To establish a global partnership for development.

Marketing 3.0 concepts in the labour sphere work to achieve "Millenium goals":

- Concept 1: to love workers, customers and respect competitors.
- Concept 2: to be alive to changes and be ready to change.
- Concept 3: to save the name and show your identity clearly.
- Concept 4: always to offer good well-priced products.
- Concept 5: always to be available to customers and spread good news.
- Concept 6: to attract your customers, retain them, promote business development.
- Concept 7: regardless of kind of a business, to consider that you work in services sector.
- Concept 8: constantly to improve a business on criteria of quality, cost effectiveness and promptitude of delivery.
- Concept 9: to gather all significant information, but to make the final decision wisely and carefully.

In order to introduce a good job into a corporate culture of an agrarian business, and forever, it is better to include it in the mission, the vision and values of the business. To begin with the mission is the first lesson that a business can learn in successful noncommercial organizations. A successful business starts planning with not financial returns, but plans of undertaking its mission. And a financial success is the result of such approach (table 5).

Table 5. "Matrix of values"of marketing 3.0

Values		**Person**		
		Intellect	***Heart***	***Soul***
business	*Mission (what for?)*	To provide satisfaction	To realize ambitions	To express sympathy
	Vision (what?)	Profitability	Return	Responsibility
	Values (how?)	To be better	To be different	Alter life for the better

Source: Own elaboration.

Vision can be defined as a picture of the desirable future situation of a business. Vision explains what a business strives for and what wants to achieve. In order to formulate vision, an agrarian business should create the picture of its future on the basis of existing definition of a corporate mission. The mission, the vision and values form the matrix in which mentioned efforts of the business are oriented on an intellect, a heart and a soul of its existing and future employees. Hence, marketing 3.0 is the time of changes! Now we can give the decisive answer – "yes" to the question, 'Can an agrarian business for which the major concern is a person be also profitable?' In fact, it has been found that marketing 3.0 is a personal involvement and a desire to help. Marketing 3.0 is an opportunity to share an emotional warmth, help financially those who need it. Somebody can give bread, somebody – money, somebody – pay attention. Any help is important, and it is hardly possible to identify which is bigger, which is smaller. By the way, concerning charity, a multi-millionaire Pole Hetty said, 'The best kind of charity that I know is the art to find money on wages of employees'. The australian millionaire said, 'The best way to help poor people is not to become one of them (Райс, Траут 2005, p. 160).

Marketing 3.0 is servicing people. By means of Marketing 3.0 an agrarian business can improve the situation on the labour market of rural areas:

1) to reduce unemployment level of rural population;
2) to raise profits of rural dwellers;
3) to minimize urbanism;
4) to decrease the level of a social strain of rural dwellers;
5) to raise the level of a general culture of rural population.

The agrarian business oriented on "Marketing 3.0" can alter life of people for the better also with the help of charity focused on the solution of either its own or public problems.

Conclusions

The studies of labour market conditions, the identification of demand elasticity and labour supply, the level of labour productivity, the analytical and prediction calculations are essential in developing effective programs of employment and unemployment reduction. Marketing research of the social and labour sphere is one of the most important tools of the development of the reasonable state social policy while marketing 3.0 is a strategic future of the agrarian business hidden in a corporate mission, vision and values of improvement in the social and labour sphere.

The development of the strategy concerning the solution of problems in the social and labour sphere in rural areas should be based on the overall assessment of tendencies in labour market formation and the identification of principal directions of marketing 3.0. In our opinion, the main ways of unemployment reduction in rural areas are: adopting the active demographic policy; housing for youth; providing an employment; the development of business activity and farming; the involvement of population in self-employment; arranging wage earning public work; the introduction of flexible working hours; the occupational guidance and psychological support of population, in particular youth; training, retraining and personnel development; motivating labour activity.

It will take plenty of time for "Marketing 3.0" of an agrarian business to show its potential and be used on a par with other tools in the labour market. This is because according to regulations of marketing 3.0 of an agrarian business it is required: to consider the rural population as a strategic base point, to see in it not only workers, but people with their needs and wishes; to inform every employee about your corporate vision, mission and values; to assist in solving global social and labour problems of rural areas (a low standard of living, poverty) and to use in this case your business model focused on a person.

Despite all difficulties, we hope that a number of agrarian enterprises and rural dwellers who will include the Internet marketing in the list of tools in use will be gradually increasing, and Ukrainian rural areas will become an ideal place for living.

References

1. Brzozowska A., Kalinichenko A., Kabus J., *Analyzing the strategies used in media discourse management*, J. Eastern-European Journal of Enterprise Technologies, 2015, Vol 5, No 3(77), pp. 10–14. DOI: http://dx.doi.org/10.15587/1729-4061.2015.51397.
2. Грішнова О.А., *Економіка праці та соціально-трудові відносини*: [підручник]. – [3-тє вид., випр. і доп.] – К.: Т-во «Знання», КОО, 2007, p.559.
3. Ковбаско О.М., *Закордонний досвід підвищення кваліфікації керівників підрозділів служб зайнятості* // Сучасні проблеми маркетингу ринку праці: [матеріали Міжнародної науково-практичної конференції, (Київ, 25 жовтня 2012)] / редкол.: О.Ю. Вілкова, Л.Г. Новаш, М.В.Судаков. – К.: ІПК ДСЗУ, 2012, pp. 89–90.

4. Котлер Ф., Картаджайя Х., Сетиаван И., *3.0: от продуктов к потребителям и далее – к человеческой душе* [перевод с англ. А. Заякина]. – М.: Эксмо, 2012, p. 240.
5. Легомінова С.В., *Маркетинг ринку праці* (методологія досліджень) [електронний ресурс] – Режим доступу: http://www.lib.ua-ru.net/diss/cont/26468.html.
6. Онікієнко В.В., *Ринок праці та соціальний захист населення України: ретроаналіз, проблеми, шляхи вирішення*: [науково-аналітична монографія]. – К.: Ін-т демографії та соціальних досліджень імені М.В. Птухи НАН України, 2013, p. 456.
7. *Профорієнтаційний термінал державної служби зайнятості*: [Електронний ресурс]. – Режим доступу: http://versii.com/news/238981.
8. *Публікація документів Державної служби статистики України*: [Електронний ресурс]. – Режим доступу: http:// ukrstat.org/uk/operativ2015.
9. Райс Э., Траут Д. *22 непреложных закона маркетинга: Нарушайте их на свой страх и риск*! – М: АСТ, 2005, p. 160.

ROLA MARKETINGU W ROZWIĄZYWANIU PROBLEMÓW W SFERZE SPOŁECZNEJ I PRACY NA OBSZARACH WIEJSKICH

Streszczenie: W opracowaniu zbadano istotę teoretyczną "Marketingu 3.0", konieczność i skuteczność wykorzystania go do regulacji zatrudnienia na obszarach wiejskich i zmniejszenia bezrobocia. Dokonano analizy działalności gospodarczej populacji według grup wiekowych i miejsca zamieszkania, oficjalnego wskaźnika bezrobocia na obszarach wiejskich oraz w miastach jak również dynamiki średnich zarobków miesięcznych w podstawowych typach działalności gospodarczej na Ukrainie w celu określenia mechanizmu funkcjonowania rynku pracy na obszarach wiejskich. Zidentyfikowano główne przyczyny bezrobocia wśród młodych na obszarach wiejskich. Dokonano analizy działalności urzędów pracy. Udowodniono, że marketing 3.0 stanowi przyszłość strategiczną działalności rolniczej w kontekście poprawy sytuacji w sferze społecznej i pracy.

Słowa kluczowe: marketing 3.0, badania marketingowe, rynek pracy, stosunki społeczne i pracy, obszary wiejskie, zatrudnienie, bezrobocie

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 124–133
dostępne na: http://www.zim.pcz.pl/znwz

THE CONCEPT OF SHARING GOODS AS A MANIFESTATION OF INFORMATION TECHNOLOGY TRANSFORMATION IN RURAL AREAS

Dariusz Dudek, Robert Sałek
Czestochowa University of Technology, Poland

Abstract: Development of modern information technology and unlimited access to increasingly advanced solutions and mobile tools drives changes in consumer behaviours. Changes have been observed in the traditional consumption model, which has been transformed into cooperation and sharing, with boundaries between consumers and goods manufacturers fading away. The phenomenon of sharing goods is burgeoning with the increasingly popular trend termed sharing economy. The aim of this study is to discuss the role played by involvement of rural inhabitants who follow global trends in the contemporary economy. Furthermore, the survey presented in the study reveals the state of knowledge and awareness of the sharing economy and potential benefits in the form of development of the economy in rural areas.

Keywords: sharing economy, rural gminas, information technology

DOI: 10.17512/znpcz.2016.1.12

Introduction

The increasing globalization and development of modern information technologies have become the drivers of irreversible changes in all aspects of social life. With the development of the information society, the basic principles of competition are now obsolete and outdated (Kulej-Dudek 2014). The objectives and goals of organizational management have changed substantially and led to the emergence of new business models. Access to various products or services is also an important factor. Traditional physical goods are becoming less essential in favour of digital goods. Increasingly wider access to the Internet has caused a substantial increase in the number of products available on demand. Most of the Internet users are willing to use cloud computing and data streaming services. The demand on new competencies in the labour market is also growing and becoming more oriented towards the global economy, with some competencies replaced with others.

The development of education, higher social and economic awareness, changes in work organization and the need for making savings have inspired consumers to search for new solutions adjusted to the demands of the global economy, which affects new attitudes in consumer behaviours. In the 21st century, a major part of society wants to be treated individually, communicate with other users of social networks and choose those with similar interests, tastes or needs. Modern

technologies support modelling of new communication methods and offer two-way interactive information transfer (Nowakowska-Grunt, Wiśniewska-Sałek 2014). New tools and applications are emerging and new communication channels dedicated to direct recipients are being established. New technologies offer tools for building identity in the virtual world and help exchange both digital and physical resources. The modern economy is based not only on capital and human resources, but also on information that enterprises use (Brzozowska, Bubel 2015).

The development of modern information technologies has forced organizations to process huge amounts of data. The data are collected in the form of databases, data warehouses or they are available in the Internet through social media, chats, discussion boards etc. The data often contain a broad and very important knowledge which cannot be acquired directly by means of conventional methods. With the development of modern information society, the dynamically rising amount of data and information requires using suitable tools to help collect, process, transfer, store and utilize these resources (Kulej-Dudek, pp. 94-105). With technological advances, data are processed to the extent that was unattainable before. Nearly 90% of all available data have been collected for the last two years. In 2000, only 25% of the data were digital while others were in the form of written documents, video recordings, vinyl records, compact cassettes etc. But in 2013, the number reached 98% of all the data available all over the world. Facebook collects 10 million pictures per hour while Google processes 24 petabytes of data, which represents a thousand times more data than the content of all printed materials collected in the Library of Congress in the USA (Mayer-Schönberger, Cukier, 2014). The amount of information collected is growing four times faster than the economy.

Modern technology offers new solutions to stimulate innovativeness in almost all possible areas of human life. With these solutions, Polish gminas (gminas are principal units of territorial division in Poland), towns or rural areas do not have to fall behind the bigger and developed metropolises in terms of innovations. Social innovations based on new technologies are also crucial in the development of rural areas. Undoubtedly, the best example of this type of innovations is sharing economy.

The evolution of sharing model

The concept of sharing economy emerged in 1978, when Marcus Felson and Joe L. Spaeth published their book „Community Structure and Collaborative Consumption: A routine activity approach" that started the discussion about sharing goods with other consumers (Felson, Spaeth 1978, pp. 614–624). Sharing economy is based on the human willingness to help each other and share their time and goods, which can be returned in either material on non-material form. This form of collaboration was once limited to the groups of friends, family members or neighbours, but with rapid development of modern technologies, it has grown enormously, with its functions overtaken by organizations that have emerged in the new economy. The sharing economy is mistakenly claimed to be synonymous with

collaborative economy, peer-to-peer economy, mesh and collaborative consumption. Actually, sharing economy is a much narrower concept compared to collaborative economy as it represents only one of its components. The sharing economy is based on the use of platforms that allow users to share their goods. The sharing economy means a socioeconomic system that encompasses the exchange and cooperation in division of human and material resources in all areas of social and economic life. It involves shared creation, production, distribution, commerce and consumption of goods and services by various people or organizations (Matofska, Sharer 2015).

Despite a long history, the concept of the sharing economy began to be used extensively in the early 2000s. It is obvious that the tendency was driven by the development of modern technologies. This popularity of sharing economy was also caused by the transformations in the economic situation, which consequently led to a global crisis in the late 2000s of the 21st century. The idea of social responsibility started to be advocated widely to limit environmental degradation. These phenomena caused a substantial improvement in awareness and sensitivity among citizens. The latter became more willing to be involved in the initiatives aimed at popularization of ecological lifestyles and the idea of recycling. This promoted trust and built social responsibility which, with the development of social media, has gained a new meaning: transparency. Through increasingly advanced technologies, the problems of initial lack of trust were overcome and the mechanisms of building reputation of users and transaction safety have been implemented. These activities cause an exponential increase in the interest in sharing services, which could now be provided for individuals who did not know each other before.

From the economic standpoint, sharing, contrary to possession, is much more legitimate and friendly to both environment and society. Sharing resources offers a solution to a number of problems of social character, which often contradict each other, since, on the one hand, we are seeing the excessive consumerism and, on the other hand, extreme poverty. Therefore, a new trend stimulates the development of social capital while it unites users of sharing economy through building and maintaining strong relationships.

Examples of initiatives in the model of sharing economy

Sharing is a model of consumption which consists in lending, exchange, barter contracts or paid access to goods as opposed to possession (Gansky 2010, p. 56). The concept of sharing emphasizes making resources available through sharing them (focus on product's function) without the necessity of becoming the owner of the resources. For example, if a person needs to read a book, he or she does not have to buy it but it is enough that we they have access to its contents. There are a plethora of similar solutions used in the sharing economy. Exchange of goods may adopt various forms, from usual exchange between neighbours through various types of services such as e.g. bicycle or car rent or more and more popular access to accommodation. Instead of having goods, contemporary consumers are starting to attach more and

more importance to functions and experiences connected with the concrete product and, as soon as they use the product, they make it available to others (Botsman, Rogers, 2012, pp. 15-16). Not only does sharing economy limit individual consumption and buying superfluous things but it also strengthens integration and social ties. The economic and social potential, especially in the smallest regions such as rural gminas in Poland, can be noticed by inhabitants of these areas, who know the best what the local resources are. A good example of large-scale sharing initiatives is Stowarzyszenie na Rzecz Rozwoju Gminy Bałtów „Bałt" (Association for the Development of Gmina Bałtów "Bałt"), where commitment of local inhabitants helped eliminate the unemployment in the gmina (Stowarzyszenie Na Rzecz Rozwoju Gminy Bałtów „BAŁT", http://www.baltow.info, access on 23rd November 2015.). It was inhabitants who should set the objectives for the development using the concept of sharing and develop scenarios for development in rural gminas, improve their value and use their tourist potential. Similar to Airbnb, where accommodation can be made available in the biggest cities and capital cities, the inhabitants of rural areas can use this platform to offer access to their agritourist farms. This may be an opportunity for many families to earn additional incomes and to start a new way of living. Forbes (Geron 2015) described an example of a retired photographer, who offers his house twelve times a month via Airbnb at a price of 100 dollars per night, of which he earns 97 dollars. Furthermore, he turns his private car into a cab four times a week making it available via Lyft, earning another 100 dollars a day. There are many similar examples which demonstrate the enormous potential of the sharing economy. Similar to the retired photographer, who earns 3,000 dollars a month without any additional investments, the inhabitants of rural areas can expect additional incomes.

Moreover, the farmer with specialized agricultural equipment can use the SnapGoods services to make it available whenever they do not use it. Other areas which can develop with the idea of sharing economy include wind farms, photovoltaic farms which allow consumers to purchase electrical energy directly from their producers e.g. farmers with wind turbines, biogas plants, water power plants and photovoltaic panels. One example is Vandebron project, where farmers from the northern part of the Netherlands are both energy producers and customers of the enterprise. They have one wind turbine, with installed capacity sufficient to meet the needs of 600 households. Using Vandebron service, customers can choose from the offers that meet their expectations, both in terms of the source of electricity generation and price. Currently Vandebron collaborates with 31 energy producers from renewable sources, with the total capacity meeting the needs of nearly 60,000 households (https://vandebron.nl, as of 23rd November 2015, there were 58,739 households included in the Vandebron project).

Sharing economy in the practice of rural areas

The issues of the sharing economy are becoming more and more critical to the Polish economy. The main areas where such consumer behaviours are being established are well-developed metropolises, where conscious inhabitants follow

the trends of the contemporary economy. However, the intention of the authors of this study was to evaluate the knowledge and awareness of inhabitants of rural areas in terms of sharing economy and to indicate potential benefits for the specific region. Furthermore, the aim of the study was to compare views of rural inhabitants on sharing economy and to determine the role which they can play in the development of sharing economy.

The study was based on the methodology of direct interviews using a questionnaire survey at the turn of November 2015. Selection of the research sample was made purposively and randomly among rural gminas. Selection of empirical population was based on a publication *„Area and population in the territorial profile in 2015"* prepared by the Central Statistical Office of Poland in Warsaw. Based on this publication, the study group of rural gminas of the Czestochowa powiat (powiats are principal units of territorial division in Poland of the second level) was selected. Selection of the research objects was performed using the methodology of stratified random sampling in order to ensure that various groups that form population are adequately represented. The decision on the size of the research group resulted in the selected gminas from the following assumptions: research sample size of 0.5% of the statistical population for rural gminas with the number of inhabitants ranging from 0 to 1000 and 0.1% for gminas with the number of inhabitants of over 1000. Consequently, a set of homogeneous samples was obtained, allowing greater level of accuracy of parameter evaluation (see table 1).

Table 1. General population and research sample for rural gminas

Rural gminas in the Czestochowa powiat	General population*	Research sample
Dąbrowa Zielona	**3972**	**4**
Janów	**5991**	**6**
Kamienica Polska	**5652**	**6**
Kłomnice	**13705**	**14**
Konopiska	**10750**	**11**
Kruszyna	**4910**	**5**
Lelów	**4965**	**5**
Mstów	**10724**	**11**
Mykanów	**14860**	**15**
Olsztyn	**7649**	**8**
Poczesna	**12782**	**13**
Przyrów	**3869**	**4**
Rędziny	**10055**	**10**
Starcza	**2826**	**3**
Total	**119788**	**122**

Source: Author's own elaboration (* as of from 1st January 2015).

Some 122 inhabitants of the gminas participated in the questionnaire survey. However, 6 participants did not answer all the questions. Therefore, the research sample was reduced to 116 respondents from 14 various rural gminas from the Czestochowa powiat.

Over the half of the research sample were women (57%), with men accounting for 43% (Figure 1).

Since most of dedicated platforms for sharing goods are available in the Internet, which excludes inhabitants of rural areas without access to the Internet, the study also evaluated the level of this access. It was found that over 87% of the respondents from rural areas examined in the study are Internet users, of which almost half (48%) have access to the Web through mobile devices.

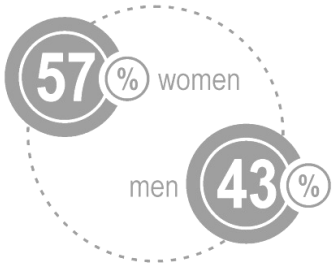

Figure 1. Respondents participating in the survey according to gender

Source: Author's own elaboration.

The main aspect of this study and its aim was to evaluate the level of awareness in terms of sharing economy. Only 18% of respondents gave positive answer to the question of "Are you familiar with the term sharing economy?" Of this group of respondents, only 3% of rural inhabitants used services and products available within sharing economy (Figure 2).

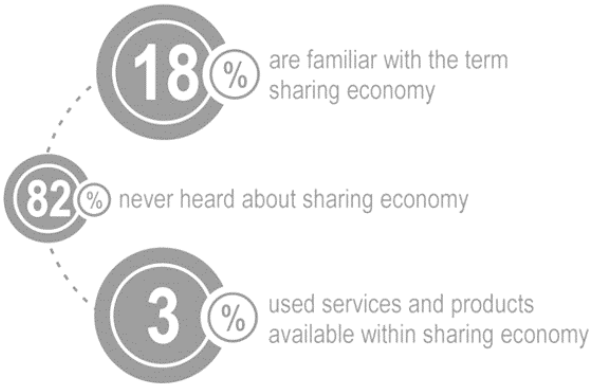

Figure 2. Knowledge of the concept of sharing economy

Source: Author's own elaboration.

After detailed explanation of the meaning of sharing economy, most of the respondents expressed interest in this topic and the vast majority of them declared the willingness to be involved in the initiatives based on sharing goods (Figure 3).

The overwhelming majority of the respondents said that they can share the goods they have, with more willingness to share them with others or to use shared goods of other people expressed by men (72%). The respondents were also asked about the benefits of sharing economy. Almost half of the respondents indicated savings and opportunities to earn additional incomes. Furthermore, it should be noted that inhabitants of rural areas demonstrated awareness of the effect of their consumer behaviours on the natural environment (Figure 4).

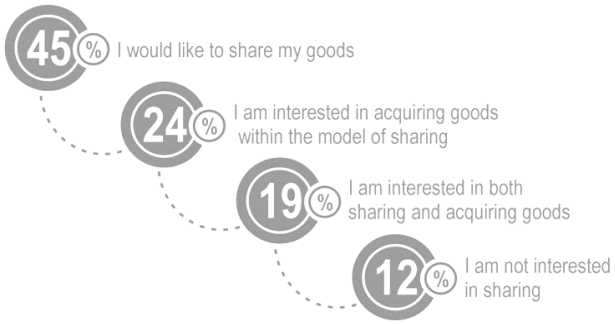

Figure 3. The initiatives based on sharing goods

Source: Author's own elaboration.

Figure 4. The benefits of sharing economy

Source: Author's own elaboration.

The third most important indication of the respondents was reduction of pollution through limitation of consumption. Less important benefits included opportunities for meeting new people and a more extensive use of the goods.

Rural inhabitants also notice real benefits for development of the region, with the main catalyst being the concept of sharing goods (Figure 5).

Figure 5. The benefits for development of the region

Source: Author's own elaboration.

The positive answer was given by over the half of the respondents. The vast majority of rural inhabitants did not mention any arguments either for or against popularization of this concept.

Conclusions

The dynamic development of information technologies has caused a major surge in popularity of sharing economy, a new business model where it is not ownership that counts but rather the opportunities to ensure access to services and goods with no need for being the owner of the goods in order to use them as a consumer or final recipient.

This chapter provided valuable information about the concept of sharing economy, which represents the manifestation of transformation of information technology in rural areas. The findings were used to identify factors that drive development of a new tendency in social economy in the area of the gminas analysed in the study. The sharing economy, viewed by most of the respondents as a beneficial phenomenon (in social, economic and ecological terms), might represent a serious challenge for inhabitants and local leaders in rural areas. The positive features of consumer behaviours that are becoming noticeable in the group analysed in this study reflect the departure from consumerism towards creation of the market space that requires a new strategy for rural areas. An essential challenge for these areas is to adjust to varied expectations and needs of various groups of recipients.

In light of the investigations presented in the study, representatives of individual rural gminas are certain about the future of sharing economy. They are aware and notice real benefits of meeting social and ecological needs. Cooperation of local communities and environmental protection are important values that drive a new

dimension of global economy. From the standpoint of consumers, responsible management of goods can help substantially reduce expenditures. The benefits are also noticeable for the whole region, improving its image among local inhabitants or potential tourists through the emphasis on the advantages of initiatives aimed at promotion of the concept of sharing goods.

This demonstrates that sharing economy is likely to be developing constantly as it offers such benefits as savings, additional incomes and environmental protection. Another essential value of this concept expressed by the respondents is opportunity to help others and a feeling of association with a more responsible and conscious part of global society.

Undoubtedly, the concept of using the sharing economy model within the rural settings represents a remarkably complex problem of the research, which necessitates further exploration in order to further understanding of this model and to identify the broader set of its determinants.

References

1. Botsman R., Rogers R., *What's Mine Is Yours: The Rise of Collaborative Consumption*, Harper Collins, New York 2012, pp. 15-16
2. Brzozowska A., Bubel D., *E-business as a New Trend in the Economy*, Procedia Computer Science, International Conference on Communication, Management and Information Technology (ICCMIT 2015), Vol.65, Praga, Czech Republic 2015, pp.1095-1104. DOI 10.1016/j.procs.2015.09.043.
3. Felson M., Spaeth J., *Community Structure and Collaborative Consumption: A routine activity approach*, American Behavioral Scientist, 1978, 21 (March–April), pp. 614–624. DOI 10.1177/000276427802100411.
4. Gansky L., *The Mesh: Why the Future of Business Is Sharing*, Penguin Books, New York 2010, p. 56.
5. Geron T., *Airbnb And The Unstoppable Rise Of The Share Economy, http://www.forbes.com*, access on 22nd November 2015.
6. https://vandebron.nl, as of 23rd November 2015, there were 58,739 households included in the Vandebron project
7. Kulej-Dudek E., *Managers' Experiences Concerning Knowledge Management in Service Enterprises in the Aspect of Conducted Researches*, [In:] *Human Resources Management and Ergonomics*, Vol.5, nr 1, pp. 94–105.
8. Kulej-Dudek E., *Model etapów wzrostu wiedzy pracowników,* [in:] Polish: Model for stages in the increase in employee knowledge. Przegląd Organizacji, No. 1 (888) 2014.
9. Matofska B., Sharer Ch., *What is the Sharing Economy?* http://www.thepeoplewhoshare.com, access on 25th December 2015.
10. Mayer-Schönberger V., Cukier K., *Big Data. Rewolucja, która zmieni nasze myślenie, pracę i życie,* MT Biznes, Warsaw 2014
11. Nowakowska-Grunt J., Wiśniewska-Sałek A., *Managing the Local Economy on the Example of the Construction Sector Companies*, 6th International Conference on Contemporary Problems of Architecture and Construction, Faculty of Civil Engineering VSB - Technical University of Ostrava, 24th - 27th June, Ostrava, Czech Republic 2014. DOI 10.4028/www.scientific.net/AMR.1020.783.
12. Stowarzyszenie Na Rzecz Rozwoju Gminy Bałtów „BAŁT", *http://www.baltow.info*, access on 23rd November 2015.

KONCEPCJA WSPÓŁDZIELENIA DÓBR JAKO PRZEJAW TRANSFORMACJI TECHNOLOGII INFORMACYJNEJ NA OBSZARACH WIEJSKICH

Streszczenie: Rozwój nowoczesnych technologii informacyjnych, nieograniczony dostęp do coraz bardziej zaawansowanych rozwiązań i narzędzi mobilnych wywiera ogromne zmiany w dotychczasowych zrachowaniach konsumenckich. Zmianie ulega tradycyjny model konsumpcji, przybierając formę współpracy i współdzielenia, gdzie zacierają się granice między konsumentem a producentem dóbr. Zjawisko współdzielenia dóbr przybiera na sile za sprawą coraz bardziej popularnego trendu, tzw. ekonomii współdzielenia. Celem niniejszego rozdziału jest przedstawienie roli, jaką mogą odegrać mieszkańcy obszarów wiejskich, włączając się w globalny trend współczesnej gospodarki. Ponadto zaprezentowane badania obrazują stan wiedzy i świadomości na temat ekonomii współdzielenia i ewentualne korzyści dla rozwoju gospodarki na terenach wiejskich.

Słowa kluczowe: ekonomia współdzielenia, obszary wiejskie, technologia informacyjna

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 134–142
dostępne na: http://www.zim.pcz.pl/znwz

THE ROLE OF FOREIGN ECONOMIC ACTIVITIES IN RURAL DEVELOPMENT

Oleksandr Galych, Elena Sirenko, Julia Vitko
Poltava State Agrarian Academy, Ukraine

Abstract. The economic contents of foreign economic activities, the necessity and importance of their implementation for economic development have been investigated and proved in the article. The features, main factors of influence, and possibilities of intensifying foreign economic activities of rural areas have been defined. The conclusion about the close interrelation between rural development and agriculture has been made. The basic tendencies and problems of foreign economic activities implementation in the agricultural sector have been analyzed. The directions and priorities of rural development by foreign economic activities implementation have been defined and proposed.

Keywords: rural areas, foreign economic activities, agriculture, agricultural sector

DOI: 10.17512/znpcz.2016.1.13

Problem statement

Under the existing conditions of economic crisis and military confrontation, agriculture remains the main stabilizer of economic development and functions as one of the main budget revenue generating sectors of the national economy. At the same time, there are negative trends in rural development, manifested in the decrease of living standards in rural areas, the increase of labor migration to the cities, the existence of a number of demographic and social problems, the reduction of agricultural land area, economic stagnation, and the environmental degradation in rural areas.

The solution of the existing problems requires searching for alternative ways of overcoming the crisis, including the development of rural areas by internsifying foreign economic activities which can be one of the efficient mechanisms for the human potential development and create a highly competitive agricultural sector in the domestic and foreign markets.

The review of the recent research and publications

A wide range of publications is devoted to the problems of rural development in Ukraine. The research results have been widely covered in the works by Ukrainian scholars who pay special attention to different aspects of rural development to ensure a rapid economic growth in Ukraine. A large number of researches are devoted to the international aspect of rural development. Such scholars as V. Borshchevsky (Borshchevsky 2012), M. Gylka (Glyka 2015, pp. 124–129),

A. Klyuchnik, I. Irtyshcheva, O. Shebanina (Klyuchnik, Irtyshcheva, Shebanina, 2013, p. 336) focus on rural development in the system of European integration priorities of Ukraine and in the context of international cooperation, M. Stegney (Stegny 2013, pp. 125–133), O. Nepochatenko (Nepochatenko 2012, pp. 149–153), T. Gogol (Gogol 2012.) lay stress on the problem of sustainable rural development as a part of state regulation of the Ukrainian economy taking into account the experience of the European Union countries (Kalinichenko, Minkova, Sakalo, 2015, pp. 10-14). Despite the impressive number of publications devoted to the international aspect of rural development, it should be noted that they have not sufficiently studied the question of the role of foreign economic activities to provide the effective functioning of rural areas.

The formulation of the tasks

The main goal of this research is to determine the role of foreign economic activities in rural development and especially their implementation at present.

The results

The economic aspect of foreign economic activities (FEA) means that they serve as a way for the integration of every country into the system of the world economy, and hence, into the processes of international division of labor and international cooperation, which is particularly important because of the growing trend towards globalization (the regional and global aspects of FEA) (Shkurupiy, Goncharenko, Artemenko et al. 2012, p. 6) and it is an important and powerful factor of economic growth and development of every country (the national aspect of FEA). Foreign economic activities are a multidimensional integrated system of economic relations between economic subjects of different countries. Covering all the aspects of economic life, they involve such two main subsystems of activities as foreign trade and international production and investment, each of which covers some definite aspects of economic life or its elements (Kozak, Logvinova., Rzhepishevskiy, 2010, p. 6).

The expediency of trade foreign economic activities can be explained as follows:

- the unevenness of developing separate branches stimulates the export of products from the most developed areas and the import of products the production of which in the country is undeveloped or more expensive compared to those bought abroad;
- the striving for production unlimited expansion, that in domestic market is limited by the insufficient demand of the population;
- the purpose of profit maximization by using imported resources with relatively better quality characteristics.

International production and investment activities are related to the implementation of common projects and programs as a result of interaction and rationalization in a single process of uniting material, financial, human, and intellectual resources and factors. This level represents a general trend of social and dynamic process making a defining influence on economic development.

Foreign economic activities activate some aspects of the national economy: they satisfy the existing needs in raw materials, technologies; accelerate and stimulate the effective use of internal resources; provide the comparability of costs on the national and international level; create additional working places; optimize the increase of production. The formation of additional demand helps to overcome the narrowness of domestic market, to expand production by taking the advantages of the scale economy effect, to improve technical and economic level, and the efficiency of production. At the same time, intensive development of the world market is characterized by high competition forcing domestic producers continuously to increase their competitiveness, improve product quality and pay more attention to the problem of compliance with the marketing principles and methods.

Foreign economic activities optimize the economic development, on the one hand, through the opportunities of existing benefits' implementation, and on the other hand, by creating new ones. The multifaceted indirect effect is connected with the creation of numerous enterprises serving the external sector (related and auxiliary productions, suppliers, associate contractors) and helping to overcome inertia which is another component of economic growth (Kozak, Sporek, Molendowski, Gribincea, Lebedeva., Shengelia, Logvinova., Kozak, Prytula, Osipov, Aliabieva, Kochevoy 2015, p. 46). The creation of the subjects of foreign economic activities is the essential direction of improving the existing potential for the implementation of rural development.

The rural areas are characterized as the source of a large number of material and non-material values, which include manufactured products, a large resource base for many sectors of the economy, natural resources, recreational facilities, and other resources that ensure the vital activities for both the local population, and the population in other areas (Klyuchnik, Irtyshcheva, Shebanina 2013, p. 11).

At the same time, the main factors affecting the development of foreign economic activities in rural areas are the existing production relations; the system of management; the degree of economic freedom and exposure of foreign markets; the level of competition and the international competitiveness of domestic products; the level of risk, the experience and scale of foreign economic activities; the level of production costs; technical level and the state of basic assets; the availability of natural, financial, labor, and other resources; geographical conditions; the development of infrastructure, and so on.

From the standpoint of development opportunities of foreign economic activities, the rural areas of Ukraine have a significant production potential. The availability of land resources helps them play a leading role in the factors of production, which creates a kind of foundation for the economic rural development. The main product is created in the agricultural sector, where the majority of rural population is occupied, because of the lack of alternative for employment and the sources of income in these areas. However, a significant proportion of the economically active population is involved in agricultural production with the purpose of satisfying their own needs by participating in market relations only through the selling of surpluses in local markets.

The current orientation of agricultural production for life self-sufficiency of the rural population reduces the functional use of rural areas and requires finding ways to develop the existing productive capacity that far exceeds the domestic demand. Under the existing conditions the activation of foreign economic activities in rural areas through selling agricultural products in the international market is seen as one of the ways to ensure their progressive development and create the conditions for the successful development of other industries.

Small-scale commodity production and land scattering are characteristic of the rural areas which, in case of foreign economic activities, negatively affect the quality and competitiveness of domestic products in the world market. Currently, the similar behavior in performing export operations is proper to Ukrainian agricultural manufacturing enterprises that conduct foreign economic activities, and it is caused by the size of the company, the experience in foreign trade, and the production of identical agricultural products (Cherevko 2012, p. 12). One of the ways to solve this problem could be the development of rental relations between farms and large producers, and promoting the creation of integration associations (clusters, alliances, associations, holdings, etc.) in the field of cooperation, and the relationship of agricultural manufactures with banks. Export potential of large-scale production enterprises that concentrate their activities on processing of products, combine the manufacturing of agricultural products with non-agricultural activities, and use modern marketing strategies (including international) and methods of management, is considerably higher compared to small-scale production farms.

From the standpoint of the close relationship of rural development with agriculture, it is advisable to pay attention to the main trends and problems of intensifying foreign economic activities in the agricultural sector.

The extensive nature of both agriculture and the development of most sectors of the rural economy are observed in Ukraine, like in many developing countries. The agricultural output is far behind the neighboring countries with similar geographical and climatic conditions (Borshchevsky 2012). Taking into account a large number of employed people in agriculture and the essential areas of farmland, the agricultural output and yield capacity are relatively low. All this results in the loss of economic benefits from potential products' selling in the domestic and foreign markets threatening the economic rural development.

Insufficient production output is the primary obstacle to the agricultural export development. However, not only quantitative but also qualitative aspect of production is important for the rural development. Deterioration of basic assets and the use of outdated technologies by agricultural producers lead to low economic efficiency of agricultural enterprises. Most of agricultural enterprises are not able to carry out technical and technological renovation of production because of lack of funds, high prices for material resources, imperfection of credit and financial system, which in its turn leads to inability to produce high-quality products which are competitive in the international market and correspond to international standards of quality and safety. The problem of product quality adaptation to the European Union requirements becomes particularly topical, considering the chosen Western European course of development, which requires a careful study of the future possibilities of the development of foreign economic activities.

The dynamics of agricultural and processed products export in Ukraine reflects the general trends of economic development of Ukraine. Considering the economic and political situation in the country, the data for the period from 2010 do not include the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol city (Figure 1).

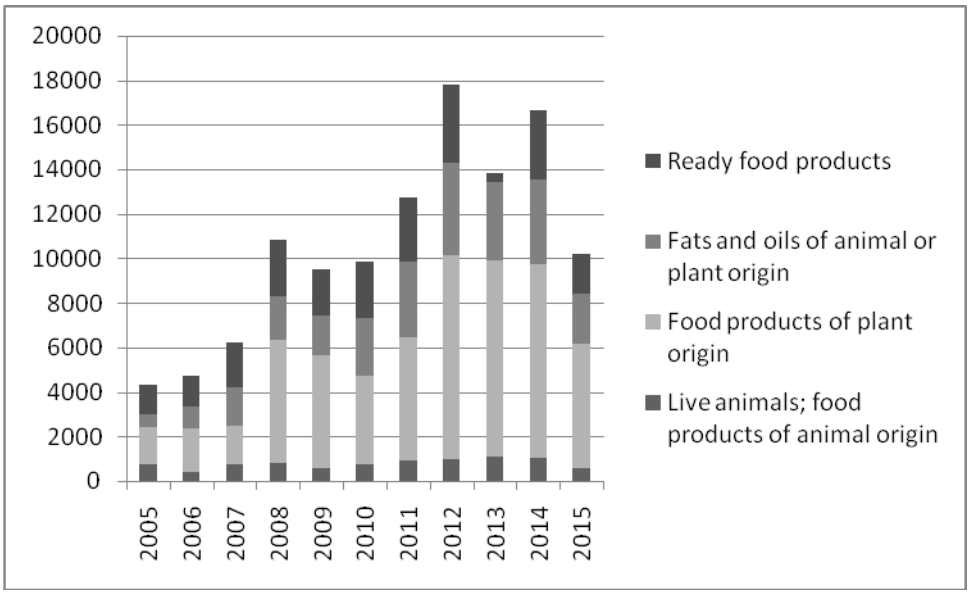

Figure 1. The dynamics and structure of agricultural and processed products export in Ukraine, ths. USD

Source: http://www.ukrstat.gov.ua Data of 2010-2014 is pointed without including temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol city. Data of 2015 is pointed for 9 months without including the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol city and the zone of the antiterrorist operation.

The largest share of agricultural products export during the analyzed period belongs to plant growing products which for 9 months of 2015 amounted to 19,8% of total exports of the country (primarily, these are grain crops, seeds, and oil plant seeds). The export of fats and oils of animal and plant origin was smaller (8,0%), ready food products' export (6,3%) together with live animals and animal products export (2,1%) was equal to 36,2% of the total exports of the country, or 10,2 bln. USD.

The dynamics of food and agricultural products' import is characterized by the decline in recent years, which can be explained by the decrease of purchasing power of the Ukrainian population (Figure 2). The factor of reducing industrial potential of enterprises that operate using imported raw materials is secondary in this case. In the structure of agricultural import in 2015 the largest share belongs to food products' import (4,1% of total imports), vegetable products (3,1%), live

animals and animal products (1,4%), and fats and oils of animal and plant origin (0,5%). Overall, in 2015 the agricultural products were imported in the amount of 2,5 bln. USD, which constitute 9,1% of the total national imports.

The negative phenomenon is that products with a low degree of processing and low added value dominate in the domestic agricultural exports. It is a significant threat for the rural development. The available own raw materials' potential enables the manufacturers of agricultural products' sector to export unprocessed produce receiving sufficient profits without investing additional resources to the increase of production capacities for processing. It has led to the increased raw materials' orientation of production.

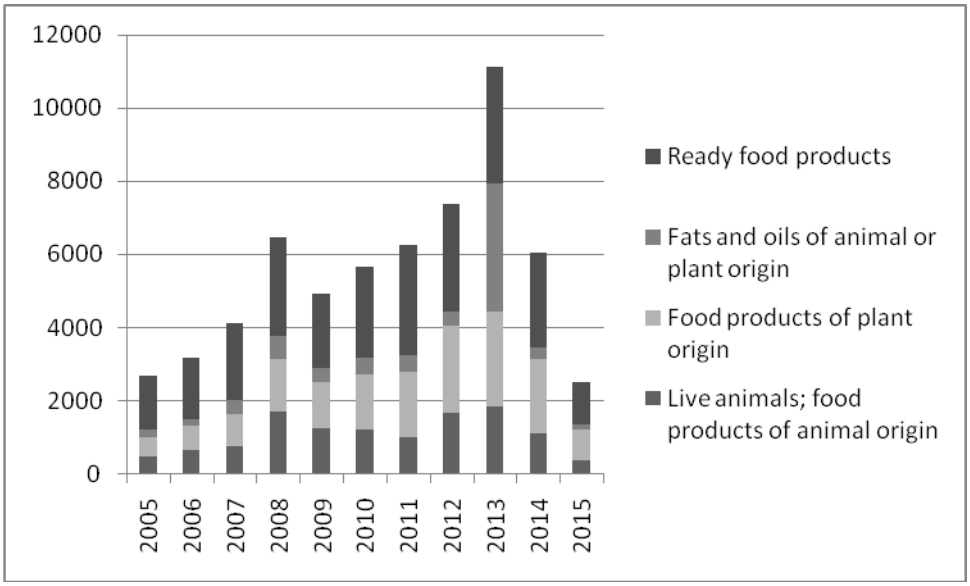

Figure 2. The dynamics and structure of agricultural and processed products import in Ukraine, ths. USD

Source: http://www.ukrstat.gov.ua Data of 2010-2014 is pointed without including temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol city. Data of 2015 is pointed for 9 months without including the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol city and the zone of the antiterrorist operation.

The situation in import revenues is opposite: a large share of agricultural and food products' import belongs to finished products. This also confirms the orientation of agricultural enterprises to the production of raw materials for both internal and external markets. The dominance of the exported agricultural products with a low degree of processing does not conform to the generally accepted foreign trade policies and increases the dependence on foreign technologies and capital. This situation illustrates the problem of raw material orientation of domestic production and exports, and the need of reorientation to the production of finished products which could be potentially exported.

At the same time, we must note that the increase of world prices on manufactured and exported products has a total positive impact on exports and increases profitability. However, on the other hand, in the context of globalization price rising in the world market provokes price rising in the domestic market. Further liberalization of foreign trade creates a threat of internal agricultural market dependence on the world market fluctuations, which will increase uncertainty concerning production costs and natural indicators.

The performed analysis demonstrates the critical problems in the development of foreign economic activities in the agrarian sector. Taking into account the above mentioned risks it is necessary to improve the competitiveness of agricultural enterprises, search for reserves and instruments of foreign economic growth of rural areas. The priority directions of rural development by foreign economic activities' implementation at the present stage can be:

1. The transition from international specialization of agricultural raw materials' export to the manufacturing of high marginal products. The analysis of production structure in developed countries shows that the main factor of successful economic development has become the development of production industries and areas, where the main part of added value is formed. For the enterprises, the benefit of producing goods with high added value means receiving higher profits, the opportunity to enter new markets including those in developed countries, the reducing spending on products' transportation and storage. In general, for rural areas it leads to income growth, productivity improving and raising wages, infrastructure developing, new opportunities for attracting investments, reducing the dependence on the price environment. Perspective model of development could be, on the one hand, the unification of high quality arable farming and plant growing development with the transition from primary processing to raw material processing. And on the other hand, it could be the creation of opportunities for the development of livestock farming and non-agricultural kinds of production.
2. The increase of technical and technological level of production by capacities' re-equipment. Technological modernization and the creation of the mechanism of implementing innovations into production will allow to increase the efficiency of agricultural and other enterprises operating in rural areas, through the production of high-quality and competitive products. This will promote the formation of science-intensive, resource-saving, ecologically safe productions that will be able to satisfy the needs of domestic and foreign markets. Special attention here is payed to increasing the innovation level of agricultural production as the basis for economic modernization of rural areas.
3. The shift of accent to the quality and safety of products manufactured in rural areas, their adaptation to international requirements and standards. Together with innovations and update of products, comprehensive quality management programs for ensuring competitiveness should be implemented at the enterprises. The adaptation to international standards will open up additional opportunities for domestic exporters, create favourable conditions for the promotion of Ukrainian goods into the world market, and increase the efficiency of business entities' functioning in rural areas.

4. The strengthening of export positions in the world market requires solving problems of small-scale production in rural areas. This requires the creation of integration associations (clusters, alliances, associations, holdings, etc.), cooperation of producers with banks, introduction of the most effective forms of cooperation with foreign companies, which will give the opportunity to strengthen the positions in the traditional markets and to develop new ones.

Conclusions

This research indicates at the existing critical problems of rural development that require searching for alternative ways of their solving, one of which may be the development of foreign economic activities. As a result, the priority directions of the implementation of foreign economic activities have been defined. They are primarily oriented at the stimulation of improving the effectiveness and competitiveness of domestic agricultural and other enterprises operating in rural areas. The implementation of the above mentioned measures towards solving the existing problems will enable to create favorable conditions for the further development of the rural areas' potential, to accelerate the modernization of the Ukrainian village, to improve the social and economic situation in rural areas. Further research of this problem may concern the evaluation of the influence of each measure on rural development.

References

1. Borshchevsky V.V., *Rural development in the system of European integration priorities of Ukraine:* monograph, NAS of Ukraine. Institute of Regional Studies. – Lviv, 2012, p. 216.
2. Glyka M.D., *Rural development of Ukraine in the context of European integration, global and national economic problems.* – Issue. 4. – Mykolayiv, 2015, pp. 124–129.
3. Klyuchnik A.V., Irtyshcheva I.A., Shebanina O.V., *Rural development in the context of international cooperation*: monograph. – Mykolayiv: Design and polygraphy, 2013, p.336.
4. Stegny M.I., *Current trends of sustainable rural development: European experience and Ukrainian realities.* // Current problems of Economy: Economic Science magazine. - № 3. – 2013, pp. 125–133.
5. Nepochatenko O.O., *State policy in the rural development sphere, domestic realities and European experience.* // Scholarly works of Poltava State Agrarian Academy. Series: Economics. – Vol. 1 (4). – Issue 3. – 2012, pp. 149–153.
6. Gogol T.V., *Formation of the Common Agricultural Policy of the European Union and the Rural Development Regulation* // State Administration: Theory and Practice: Electronic scientific specialized magazine. - № 1. – 2012.
7. Kalinichenko A., Minkova O., Sakalo V., *Main directions in development of organic industry in Ukraine and experience of innovation implementation: a comprehensive analysis.* // J. Technology audit and production reserves, Nr 5/3(25), 2015, pp. 10-14. DOI: 10.15587/2312-8372.2015.50677
8. Shkurupiy O.V., Goncharenko V.V., Artemenko I.A. et al., *Foreign economic activity of enterprises*: textbook edited by O.V. Shkurupiy. – Kyiv, Center of educational literature, 2012, p. 6.
9. Kozak J.G., Logvinova N.S., Rzhepishevskiy K.I., *Foreign economic activity of enterprises*: credit modular course: Tutorial. – 3rd ed., Revised. and ext. – Kyiv, Center of educational literature, 2010, p. 6.

10. Kozak J.G., Sporek TV, Molendowski E., Gribincea A., Lebedeva S.N., Shengelia T., Logvinova N.S., Kozak A., Prytula N.V., Osipov V.M., Aliabieva D., Kochevoy M.M., *International trade*: textbook. – 5th Edition, revised. and ext. – Kyiv-Katowice-Krakow, Center of educational literature, 2015, p. 46.
11. Klyuchnik A.V., Irtyshcheva I.A., Shebanina O.V., *Rural development in the context of international cooperation: monograph*. – Mykolayiv: Design and polygraphy, 2013, p. 11.
12. Cherevko V.D. *Foreign economic activity of agricultural enterprises in the conditions of globalization*: the dissertation... candidate. econ. science, spec.: 08.00.04 - economy and management of enterprises (by economic activities), Ministry of Agricultural Policy and Food of Ukraine, Kharkiv National Technical University of Agriculture. – Kharkiv, 2012, p. 12.
13. http://www.ukrstat.gov.ua. *Data of 2010-2014 is pointed without including temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol city. Data of 2015 is pointed for 9 months without including the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol city and the zone of the antiterrorist operation.*

ROLA ZAGRANICZNYCH DZIAŁAŃ GOSPODARCZYCH W ROZWOJU OBSZARÓW WIEJSKICH

Streszczenie. W opracowaniu zbadano i wykazano przedmiot ekonomiczny zagranicznych działań gospodarczych oraz konieczność i znaczenie ich wdrożenia dla rozwoju gospodarczego. Określono cechy, główne czynniki wpływu oraz możliwości intensyfikacji zagranicznych działań gospodarczych obszarów wiejskich. Wysunięto wniosek dotyczący ścisłego wzajemnego powiązania między rozwojem obszarów wiejskich a rolnictwem. Dokonano analizy podstawowych tendencji i problemów dotyczących realizacji zagranicznych działań gospodarczych w sektorze rolniczym. Określono i zaproponowano kierunki i priorytety rozwoju obszarów wiejskich poprzez realizację zagranicznych działań gospodarczych.

Słowa kluczowe: obszary wiejskie, zagraniczne działania gospodarcze, rolnictwo, sektor rolniczy

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 143–149
dostępne na: http://www.zim.pcz.pl/znwz

GENETICALLY MODIFIED FOOD SAFETY IN SUPPLY CHAIN

Dominik Kabus
Czestochowa University of Technology, Poland

Abstract: This paper addresses the problem of genetically modified food. In the first part of the article the author attempts to discuss European legislation regulating the issue of Genetically Modified Organisms (GMO). Next, there have been characterized the genetically modified raw materials of plant and animal origin. Particular attention was paid to management of genetically modified food safety in supply chain. In this context, the author describes the situation on the economic market. In the last part of the paper, the author reflects upon the safety and management strategies in the supply chain of genetically modified food.

Keywords: GMO, supply chain management, European legislation

DOI: 10.17512/znpcz.2016.1.14

Introduction

The economic competition of countries, regions and particular producers, forces the biotechnologists to develop new solutions enhancing consumer quality of life. A hundred years ago creation of new species of living organisms was possible only by cross-breeding the existing species. This process, however, was especially laborious, long-lasting and didn't grant success. Presently it is achievable to improve quality and sensory characteristics of food by interfering in genetic code of plants and animals. Last few years have brought development in transgenic plants growing for commercial purposes, and the production volume is systematically growing worldwide.

Nowadays, the main assumption of genetic engineering is modification of plants of high economic importance. These changes are performed by introducing alien genes of plant or animal origin, conditioning emergence of new traits in plants, into natural genetic code of a crop. This way the resistance of plants to pests and herbicides increases. This way the GM plants become simpler and cheaper in cultivation, as compared to their previous forms. Often, modification concerns also the taste characteristics of edible plants or the intensity of colors of fruit and flowering plants. Genetic modification is also performed on animals, in order to improve the quality products created from animal-origin components. Because of the risk connected with genetic modification, or the moral, ethical and religious issues and doubts, it is necessary to properly mark and label the genetically modified products. Moreover, the aspect of storage and transportation of GMO is equally important. There is a risk of GMO products being in the same storage

space as organic crops that are GMO-free. It is crucial to separate these kinds of crops, due to the consumers, who have the right to choose the kind of food they eat. It is especially important in case of GMO opponents. One of the main arguments against consumption of the GM products is that there is lack of reliable research on the influence of GM products consumption on living organisms in the long run, that is, a few decades' period of time. What is also called into question is the influence of GMO application on the previously unmodified natural ecosystem of living organisms. In order to ensure maximum safety in application of GMO, research is being conducted in many scientific centers in the world. Parallel, many countries decided to introduce legal restrictions concerning growing, transport, storage and processing of products containing GMO.

The aim of the study was to gain knowledge on consumer awareness and acceptance of food with GMO, in supply chain management.

Transport and production legislation on GM products

Genetic modifications have been practiced all over the world for many years. Despite that, modern day consumers are distrustful of the GMO food introduced on the market. In order to calm down the citizens and minimize the possible dangers coming from using GMO, the European Union (EU) proposed a series of directives and legislations to ensure better product management, that is, marking and better product detectability, as well as the GM product ingredients. From the moment of joining EU, Poland is obliged to follow all the norms and regulations of the European Community. The food that contains transgenic organisms, or consists of such organisms, is called GM food. The GMOs may be: animals, plants, bacteria which genetic composition has been modified (Sowa, Linkiewicz 2007, p. 66).

Many of today's food businesses consider production for innovation so that they reach market competitiveness (Jelonek 2014, s. 51-52).

The legal regulations on GMO, which are in force in Poland, have their roots in the international, European and Polish law. Among the international legislations, there are the Rio de Janeiro Convention on Biosafety and the Cartagena Protocol. In European law there are regulations that apply in each Member Country and directives implemented into national law (Sowa, Linkiewicz 2007, p. 45). The most important international agreement that regulates the issues of safe use of modern biotechnology achievements is the 1992 Rio de Janeiro Convention on Biodiversity (Wrześniewska-Wal I. 2008, s. 33-38). This agreement aims at protecting biological diversity by balanced use of the existing elements and just division of profits generated as a result of using genetic resources. This agreement ensures adequate access to genetic resources, transfer of technology and financing. The Convention determines that parties are obliged to manage GMO in an optimum way, by providing adequate means enabling recognition and control of dangers that have negative effect on the environment and may cause harm to human life. It also implies an obligation of cooperation, conducting scientific research and education of the society in the area of GM products. The convention determines the European Community as a Party.

Another important element, regulating managements of GM products is the Cartagena Protocol on Biosafety (Council Decision 2002). On the 24th of May, 2000, the Cartagena Protocol on Biosafety was also signed by Poland (total number of countries that signed the protocol: 102). The protocol details many important GMO definitions. It also contains records directly concerning living transgenic organisms meant for use as food, feed or a product intended for processing. The procedure of dealing with such organisms is determined in art. 11 of the protocol, connected with the Biosafety Clearing House (BCH) (Wrześniewska-Wal 2008, p. 33-38). This protocol states: "the Party that issues a final decision on national use, including introduction on the market of living modified organisms that may be subjected to transgenic mixing in order to be directly used as food, feed or for processing, is obliged to inform the Parties, through Biosafety Clearing House, about this decision within the period of fifteen days from the moment of issuing the decision." (Council Decision 2002)

The protocol clearly imposes the duty to inform about using GMO. The Quoted fragment reflects the willingness to ensure transparency of the flow of GMO. It also imposes duty to control this flow, and information transparency gives the possibility of social control over this phenomenon. "Lack of scientific certainty and knowledge on the scope of potential negative influence of living Modified Organism (MO) on the behavior and balanced use of biodiversity, of the import Party, also including dangers for human health, is not an obstacle in issuing a decision by that Party, on import of a given living MO. The import Party may, at any time, in the light of new scientific information on potential negative influence on behavior and balanced use of biodiversity, including dangers for human life, verify and change the decision on the intended transgenic movement (…)" (Council Decision 2002).

It follows from the above that the Cartagena Protocol refers directly to the concerns of GMO opponents. It seems that the decision-makers should tightly cooperate with the world of science in order to ensure maximum environmental and human health protection. However, particular attention is to be paid to the beginning of the quotation. The lack of data on the harmfulness of does not block issuing a decision on transgenic movement of living GMO. It may seem to be loose movement of living GMO. In my opinion, the rule governing here is not to block technological progress, as well as free and equal access to achievements within the scope of biotechnology. I believe that an equally important factor is the freedom of economic activity and potential possibility of blocking the development of some economic sector, while favoring other ones. Attention should also be paid to the possibility of changing decision that enables migration of GMO in any moment after recognizing possible danger to the environment and human health (Popa, Nowak, Nowakowska-Grunt, 2015, p. 2-3).

Animals and genetically modified plants

The modifications performed on animals and plants have aimed at creation of new breeds of animals and plant varieties. At first, the process of creation, and the mechanisms of transferring genetic information were an area outside of human

interference. The modification was performed with the use of classic methods of selection, in favorable conditions for creating this variability. An important step was developing methods of DNA fragments manipulation. Presently, genetic modifications are performed in laboratory conditions[1]. The modifications of plants are currently a lot more popular than of animals, and the process of modification is longer, more complicated and costly (Brown, 2001, s. 87). The first plants to be genetically modified were tobacco and petunia. This took place in the 1980s.

The first product to be modified and introduced on market[2] was the FlavrSavr long-life tomato. In Poland the first experiences with transgenic plants were gained in 1997 and concerned corn, beet, potatoes and rape. Currently research covers: corn, flax and potatoes. Plants of high economic value are modified more often than ornamental plants (Kawa 2015). The primary goals of plant modification are (Szajt, Włodarczyk 2012, s. 146-150):

- Creating resistance to herbicides, that is, chemical substances protecting plants. The modified plant produces enzymes that break down herbicides, becoming resistant to them. This way the following plants were modified: corn, soy, rape, tomatoes and tobacco.
- Creating resistance to diseases caused by bacteria, viruses, fungi. Resistance to root diseases was achieved by introducing transgene that codes enzymes: chitinase, glucanase, destroying their cell walls. Resistance to viral diseases was achieved by introducing into a plant, genes of a given virus as well as enzymes: replicase, protease (Anioł, Pruszyński, Twardowski, 2009, s. 9-10).
- Creating resistance to insects (vermins). Gene Bt responsible for this kind of resistance has been created from soil bacteria *Bacillus thuringensis.* It codes Cry protein, which is toxic only for particular species of insects, not for humans (Bartoszewski, Niemirowicz-Szczytt 1998, pp. 43-63).
- Creating resistance to environmental stress. The modified plants are resistant to frost, drought, high temperature, soil salinization, or environmental pollution. The modified plants are able to accumulate heavy metals and, while drawing them from soil, clean the environment (Bartoszewski 2007, s. 46-49.
- Improvement of qualitative and performance characteristics of the plants. It is, among others, modification causing delay in growing, due to which fruit and vegetables are fresh for longer.

GMO cultivation is constantly growing. At the end of 2015 acreage was around 90 million hectares in 21 countries[3]. The latest report of International Service for the Acquisition of Agri-Biotech Applications (ISAAA) shows that the GMO cultivation numbers increased in 2011 by 8%. Total area of GMO cultivation amounts to 160 million hectares. The United States is still a country of the largest

[1] Part of the organism's DNA is inserted into another organism's DNA. Then it is bred in a traditional way. Thanks to that there are created organisms of changed traits. Then, the bacteria, plants and animals that have been created in this way are called GMO or transgenic organisms.

[2] Modified tomatoes have been introduced on the market in the United States in 1994.

[3] The USA is a leader in transgenic plant growing. Soy, corn, cotton, rape and papaya are grown. Crops in USA constitute around 60% of the area of world's cultivation (Bartkowiak-Broda 2008, p. 22-28].

area of these crops (69 million hectares), in Europe the area is estimated to be 110 thousand hectares ([http://www.forbes.pl/artykuly/sekcje/Wydarzenia/gmo-opanowuje-swiat-juz-160-mln-ha-upraw]). In 2014 the GMO crops were 181.5 million hectares and there is still a growing tendency.

Genetic modification of animals is a process much longer and more complicated than plant modification. Transgenic animals often catch diseases and are impotent. The animals are modified for scientific as well as practical purposes. Genetically modified animals serve as testers for new methods of curing various diseases, i.e. obesity or cancer. Practical application is focused on improvement of production qualities of transgenic animals, or obtaining desired traits such as faster growth. Modified animals are also used for production of substances applied in pharmaceutical industryvc (Wrześniewska-Wal 2008, s. 57-68).

Safety of genetically modified food

Management of large-scale production of plants began in highly developed countries. Each year the Member Countries of the EU import around 40 million tons of soy material. Supply chain of GM plants is controlled by numerous procedures ensuring consumer and product safety. The GM food cannot pose danger to human life and health. The factor of environmental and health safety determines the possibility of application of GMO for commercial purposes. Transgenic food admitted to trading is considered to be safe, just like GMO products in its composition. Still there are no results of numerous and long-term analyses of the influence of GM organisms on natural environment and human health (Anioł, Zimny 2008, s. 3-7).

Management of food safety is in other words a guarantee that the used product is not and will not be harmful for consumers' health (Brzozowska, Grabińska, Dacko, 2015, s. 24-30). In the estimation of safety there are taken into account, most importantly, toxic and allergenic properties of GMO. The best way of safety estimation of a new product is to compare it with a conventional product that is considered to be safe. The chemical composition and phenotypic characters are compared, evaluating component equivalence. If the new food is chemically and nutritionally equivalent to the already existing, it should be subject to the same procedures as the conventional one. The estimation of safety of GMO performed on the basis of comparison of GMO and conventional parental organism covers characteristics and comparative analysis in terms of nutritional values, anti-nutritional and allergenic toxic or endogenic components. It causes that it is possible to verify if within the process of genetic modification there were unwanted changes made.

Each genetically modified product requires permission and safety assessment made by the European Food Safety Authority (EFSA) under EU regulation no 1829/2003 for "genetically modified foods and feed." The permission may be granted only in case of genetically modified food and feed not having negative influence on human, animal health and the environment. This regulation sets forth the safety of GMO products in the whole food supply chain, ensuring consumer

safety. The main element of food safety is the guarantee of identification of origin and product movement back and forth in the product supply chain, ensuring proper hygiene, quality and health level (Bezat-Jarzębowska, Jarzębowski 2013, s. 9-10).

Regulation number 1829/2003 requires placing suitable information of GM products. Consumers need to know that the purchased product is genetically modified. The label has to consist of: content, nutritional qualities, nutritional effects, application, influence on health of particular groups of people and animal species[4]. Each element along the supply chain should be clearly marked, in order to maintain proper flow of information. Monitoring of GMO according to the unified procedures along the whole supply chain creates the existence of proper information about applied technologies, quality and product hygiene for the potential consumer. It is also a warranty of healthy nature of the supplied food (Bezat-Jarzębowska, Jarzębowski 2013, s. 9-1).

Transport is an especially important issue in the GMO safety management (Mesjasz-Lech, Skowon-Grabowska 2014, s. 417-425). During transport of genetically modified organisms there apply several rules of the European law. The whole process of distribution is subject to a file of documents that have to be filled in, in order to concentrate the data on a given product. The conditions of transportation should be individually adjusted to the kind of the transported product. Generally, the GMO are transported in tightly closed containers ensuring optimum safety.

Summary

Marketing of genetically modified food and conducting research on it requires constructing relevant legal apparatus, which in Poland is manifested by the existence of EU directives, national and international legal acts. There exists a precisely defined procedure of introducing GM food onto Polish market. Identification of GMO and ensuring proper conditions in the whole supply chain are the guarantee of health, quality and proper product hygiene. GMO are subject to special legal regulations created for the consumer safety and protection.

References

1. Anioł A., Pruszyński S., Twardowski T., *Zielona Biotechnologia – Korzyści i Obawy*, Broszura: materiały edukacyjne, Polska Federacja Biotechnologii, Łódź 2009.
2. Bartoszewski G., *Genetycznie modyfikowane organizmy – szanse i zagrożenia*, [w:] Hewelke P. (red.), *Zasoby przyrodnicze szansą zrównoważonego rozwoju: materiały szkoleniowe dla pracowników administracji samorządowej*, SGGW, Warszawa 2007.
3. Bartoszewski G., Niemirowicz – Szczytt K., *Transformacja pomidora za pomocą Agrobacterium tumefaciens*, „Biotechnologia" 1998.

[4] According to regulation no 1928/2003 each GM product, or created from modified raw materials should have notice on the label, saying "genetically modified" or "produced from genetically modified, i.e. corn. So, for example, refined edible oil from GM rape seeds requires marking. The present threshold is 0.9%, below which marking is not required.

4. Bezat-Jarzębowska A., Jarzębowski S, Znaczenie żywnościowych łańcuchów dostaw, [w:] Wieś Jutra 4(177), Warszawa 2013.
5. Brown A. T., *Genomy*, PWN, Warszawa 2001.
6. Brzozowska A., Grabińska A., Dacko M., *Evolution of Supply Chain Management and Striving to Achieve Sustainable Development*, [w:] Logistyka nr. 3, Poznań 2015, s. 24-30.
7. Decyzja Rady nr 2002/628 z dnia 25 czerwca 2002 r. *dotycząca zawarcia w imieniu Wspólnoty Europejskiej Protokołu z Kartageny o bezpieczeństwie biologicznym do Konwencji o różnorodności biologicznej*, Dz. Urz. WE L 628, z dnia 31.07.2002r.
8. http://www.forbes.pl/artykuly/sekcje/Wydarzenia/gmo-opanowuje-swiat-juz-160-mln-ha-upraw [dostep:10.12.2015].
9. Jelonek D. , *Innowacje otwarte w budowaniu konkurencyjnej przewagi przedsiębiorstwa*, [w:] *Innowacje i przedsiębiorczość. Teoria i praktyka*, Dąbrowa Górnicza 2014, s. 51-52.
10. Kawa M., *Rośliny transgeniczne GMO – przykłady modyfikacji*, www.biotechnolog.pl/gmo-4.htm, (dostęp: 10.04.2015).
11. Mesjasz-Lech A., Skowron-Grabowska Beata, *Application of Information Technology in Supply Chain Management as Exemplified by Companies in Poland*, [w:] Managing Organizations in Changing Environment. Models - Concepts - Mechanisms, Kraków 2014, s.417-425.
12. Popa D., Nowak C., Nowakowska- Grunt J., *Regional Development Food Channels in Republic of Moldova*, [w:] Logistyka nr 1, Poznań 2015 , s.2-3.
13. Sowa S., Linkiewicz A., *Rośliny genetycznie zmodyfikowane*, [w:] *Organizmy genetycznie zmodyfikowane, PZIiTS Oddział Wielkopolski*, Poznań 2007.
14. Szajt M., Włodarczyk A.(2012) *Konsumencka ocena rynku bioproduktów w Polsce w świetle badań empirycznych*, [w:] Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu, T. 14, z.8 , s. 146-150.
15. Wrześniewska – Wal I., *Żywność genetycznie zmodyfikowana aspekty prawne*, UW, Warszawa 2008.

ZARZĄDZANIE BEZPIECZEŃSTWEM ŻYWNOŚCI GENETYCZNIE MODYFIKOWANEJ W ŁAŃCUCHU DOSTAW

Streszczenie: Niniejsza praca podejmuje problem żywności genetycznie modyfikowanej. W pierwszej części artykułu podjęto próbę omówienia ustawodawstwa europejskiego regulującego kwestie GMO. Następnie scharakteryzowano surowce genetycznie zmodyfikowane pochodzenia roślinnego i zwierzęcego. Szczególną uwagę poświęcono zarządzaniu bezpieczeństwem żywności genetycznie zmodyfikowanej w łańcuchu dostaw.

Słowa kluczowe: GMO, zarządzanie łańcuchem dostaw, prawo europejskie

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 150–158
dostępne na: http://www.zim.pcz.pl/znwz

MANAGING INETEGRATED SYSTEMS OF INFORMATION STREAMS WITHIN AGRARIAN ENTERPRISES

Antonina Kalinichenko
Opole University, Poland
Olha Minkova, Victor Sakalo, Yuliia Vakulenko
Poltava State Agrarian Academy, Ukraine

Abstract: The system of making administrative decisions of agrarian enterprise in terms of its function in the informative space is analyzed. The conditions of system functioninG are formed and the system`s general component stages are grounded. The directions of informative streams are defined and the role of influential factors in the whole system`s effectiveness is determined.

Keywords: administrative decisions, system, information stream, technology, resources

DOI: 10.17512/znpcz.2016.1.15

Formulation of the problem

Under the influence of constant changes in the conditions of the farmer`s ménage, transformations in the decision-making process occur, and the processes of production management are revised. The steady increase of a leader`s responsibility for a given decision, complication of the position in the competitive environment, and the rise of technical progress` level require constant analysis of the technological processes for the purpose of defining the directions of guided influence. In such conditions, the information systems and streams move into the foreground. They can be applied as separate elements of the production system or as the links between system`s elements. In any case, the level of implementation of information systems visibly affects the system`s quality and makes its functions much more stable. That is why the formation and adaptation of the system of managing new information technologies appear to be a guaranty of improvement of agrarian enterprise.

The analysis of the latest observations and publications

In different works of scientists, i.e.: St. Beer, O. Kuzmin, G. Kunets, I. Morris, M. Starr, V. Shorin, M. Chumachenko, it`s pointed out that the theory of decision making consists of mathematical system analysis, imitative modeling, heuristic methods of decisive reasoning, the game theory, the methods of expert evaluation, the algorithm of making decisions, and the management program for goals and results (Kuzmin, Mala, Melnyk, Protsyk., 2008, pp. 38–46; Mala 2007, pp. 20–24; Butynets, Shyhun 2004, pp. 86–94; Кунц, Доннел 1981, pp. 18–26; Бир 1965, pp. 41–54; Старр 1968, pp. 23–31; Чумаченко 2005, pp. 89–91).

Having analyzed the functioning process of complex technological systems, it is possible to draw a conclusion that the main aspect which affects the correctness of a decision appears to be primarily entering information, its authenticity, topicality and fullness (Нагірний, Бендера, Вольвак 2013, pp. 14–25). Considering the conditions for entering information it is expedient to build on requirements which are put on the very administrative decision (Vinogradskiy, Vinogradska, Shkanova 2003, pp. 101–106). Thus, the information must be opportune, which is provided by improving feedback between the object of administration and the governing body; it must have a clearly defined quantitative and qualitative expression, i.e. appropriate for analysis by means of known models and methods (Калініченко., Шмиголь, Шарун 2005, pp. 5–35), combined – to reflect all the changes in the process or a change of administrative object`s state.

Setting task

The goal of the work is to define the directions of transformation of informative systems in the functioning of an administrative decision-making process in agrarian enterprises. The determination of the direction of information streams, external and internal, in relation to the system and environment, are the conditions the factors which are needed to be taken into consideration at different stages of the process of making administrative decisions.

The presentation of the main material of the research

The process of using informative systems in the agrarian sector may be divided into two main directions. The first is technical and technological creation of informative systems, which requires the permanent renovation of means and technologies of gaining and processing information. The second direction concerns methods of information usage.

If the first direction fully depends on scientific technical process and is closely connected with the requirements of technological processes in different fields of agricultural production, then the second direction is associated with human activity and depends on various subjective factors which can influence (positively or negatively) the level of new technologies implementation.

But there is the feature which combines both of directions mentioned below. This is their relation to the general theories of administration and systems. In any case, technological process may be introduced as a particular system. Such a system functions in accordance with structural unification of its elements.

The optimal functioning of machine-tractor unit in the field provides for the achievement of certain results. They are characterized by the optimality criteria (Калініченко 2005, pp. 15–22). For example, during operation of the drill for planting row crops we take into consideration the the following parameters: constancy of adherence to the norms of sowing seeds, uniformity of seed distribution along the row, and the depth of seeds in the soil. The evaluation of these factors and criterion can be the percentage of seeds that fall within the tolerance factor (Сакало 2001). The purpose of the optimal functioning of the

unit is the most accurate fulfillment of the conditions of optimality criteria. This provides a rational relationship between the impact on the environment and use of its natural potential.

The natural conditions of execution of the mechanized technological operations in the field are characterized by the coincidence of factors influencing the course of such operations. For example, during the execution of works on plant protection from pests and diseases, conditions for sedimentation of drops of liquid list of tables pesticides on plants surface change rapidly during the working day. It happens due to the power variation of the convection air flows and temperature modes. Such a change in time of statistical characteristics of factors determines the stationarity conditions of agricultural machinery work.

Therefore, it is necessary to have flow information of technological process. This is a prerequisite for the choice of action to optimize separately technology and operations. So use of computer systems in cars should ensure, as a first step, the control of the relevant optimization parameters.

It is difficult to foresee the behavior of most existing time-dependent factors on agricultural machines. Therefore, the machine operates in conditions of some uncertainty. Development of control actions on dynamic object, which is running in the face of uncertainty, is the basis of the principle of adaptation, and a dynamic object is attached to the state acting factors. Thus, adaptive dynamic objects significantly extend the range of conditions in which they performed the process.

Over the last years we have noticed a considerable progress in the development of information systems, which are designed for supervising the processes of technological system and are applied as an element of this system. As an example, we can take the systems which combine methods of production and technical devices for a control and administration of these devices` operation. It expanded the opportunities of a quick reaction on a change in technological process and improved the operative system administration.

In agrarian administration, the influence of external factors is characterized by fleeting changes of environment and appearance of unpredictable situational tasks, which require momentary reaction. The influence of internal factors may be regarded as a long-term component that is characterized by planned technological and structural transformations.

In these conditions, the head of enterprise cannot rely only on his intuition and approximate calculations. The decision and actions of administrative personnel should be based on accurate calculations, in-depth analysis of a problem, and then be scientifically proven, motivated, and optimized. No organizational, technical or technological action should be taken without defining its expediency.

Making administrative decisions, thereafter, occurs in incertitude, which cannot guarantee making the best choice of process or object`s development.

As a support in making administrative decisions, the principal technologies of analytical modeling are often used, that is: analysis of target function, parametric analysis, optimization analysis and prognostication based on exponential smoothing etc. (Gordienko 2003, pp. 147–151; Балджи, Карпов Ковальов 2014, pp. 84–95; Петруня, Говоруха, Літовченко 2012, pp. 145–168.)

That is why the application of tools as models, which let optimizing parameters of technical means and technological equipment, planned load on technological sections, explaining the conditions for achieving and maintaining the needed intensity of production and, therefore, a necessary number of technical means and technological equipment appears to be an integral part of the decision-making system.

One of the main stages of development and realization of models is formalization of the enterprise`s processes. Regardless of the scope, the way of designing and modeling of a complex system, it`s important to point out the primary stages of its formal description.

1. Making semantic description of an object or process and designing verbal model.
2. Dividing the system into eventual number of elements and forming components.
3. Designing mathematical model of the system and its further algorithmization.

The complexity in formation of a system task in functioning of engineering and technical service is that solving the questions of exploiting the technical means may be studied from different angles. On the one hand, production technologies require optimization processes. On the other hand, the general characteristics of equipment`s usage must remain within the given allowance. It is also important to take into account the parallel usage and required reservation.

Thus, we can conclude that the manager must deal with both analytical and predictive planned activities.

The introduction of energy saving technologies in crop production has significant economic and environmental effects. When growing crops using different kinds of resources: natural (land, water, solar radiation), technical (tractors, agricultural machines and equipment) energy (fuel, electricity), process inputs (seeds, fertilizers, pesticides), labor and financial resources.

To justify a rational set of machines it is important to quantify the resources, using energy equivalent resources and productivity. This allows you to create an engineering task quantitative criteria and implement the principles of the system design technologies (figure 1). For each type of resourc you can use their methods and techniques of optimization entirely subjective to certain methods. Using a mathematical modeling system builds a foundation for decision making in agricultural production. It is impossible to consider separately certain resource problem of optimizing, because the impact of each of them on the final result is quite significant. Therefore, only a combination of the results of optimizing technical resources, financial, technological, based on external (natural) factors lead to loyal strategic decisions in agricultural production (Minkova, Sazonova, Sakalo, 2009, pp. 233–237.).

For example, if you explore the optimum number of employees serving technology for aggregates criterion for optimization of time, cost of labor, and energy consumption, it is necessary to develop a plan the best use of technology to meet all planned activities so that employment, economic or energy were minimal. To do this, the total number of units determine the best option for all jobs in conditions of full implementation of the planned amount of work (restriction

on the area) timely implementation of the scope of work (time limit) use of available technology (limitation on the number of tractors and agricultural machines).

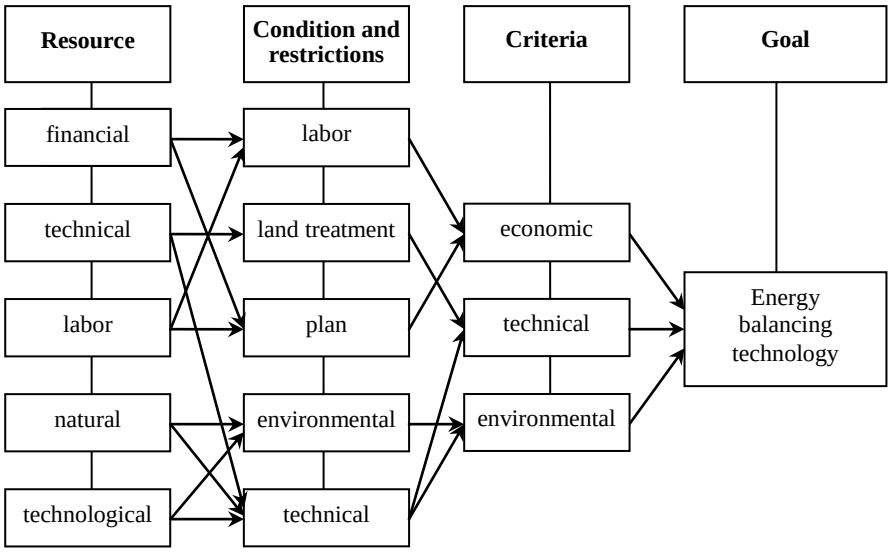

Figure 1. Structural-logical scheme optimization of production processes

Source: Own elaboration.

Given the patterns forming technology production phases can be formed management decisions for agricultural enterprises (figure 2).

The work of the leader cannot be without the analysis of the conditions of operation controlled object, setting goals, building structures monitoring processes flow production system as a whole and its individual components (agricultural machines, complex machines, repair shops, etc.). This requires adjustment feedback – information channels in compliance with all requirements for primary information received.

For this phase – analysis include the study of the resource base, structural and logical system of personnel management and foreign economic ties.

Receiving the initial information defined the operation goals justifying conditions and restrictions provided the real situation of the company, the engineering service manager conducts optimization process using known methods and techniques through simulation or purely intuitive method. The result of this process is clearly formed production model that aims to maximize profits or reduce operating costs, or achieve maximum environmental criteria, depending on the goals.

Besides, no model can be viewed only assuming its operation in ideal conditions. Changing the factors included in the model forms the area of risk changes and scenarios of development, especially their random, unpredictable

variation. The system of making management decisions should include elements of forecasting, formation of various options for the fastest response when changing environment and internal components of the production system.

Considering the above-mentioned, the system of decision-making for agricultural enterprises might be seen as a combination of phases of analysis, optimization and forecasting.

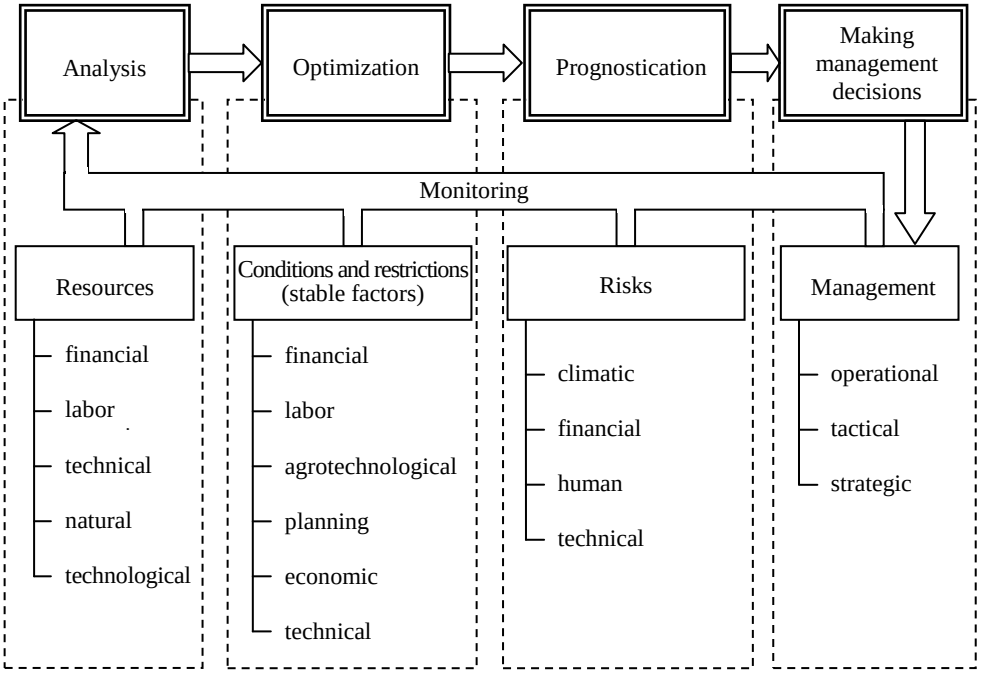

Figure 2. The system of decision-making agricultural enterprises

Source: Own elaboration.

But the usage information systems in this case can only be seen as an element of accumulation and processing of statistical information. Such using of information flows inherent to the low level of development or use of new information technologies. The information flow acts as a basic element or appreciating. It does not apply to the formation of the impact that corrects the course of technological process. Information forms the basis only change the whole system in case of not reaching the common goal of functioning. In other words, information systems are assigned a generalizing role. And essentially these systems are data characterizing the whole class or inherent reciprocal processes and phenomena. Their substance use is a meaningful understanding of the operation and the results compared with other similar processes. Understanding this problem is to change the structure or process elements. Such actions aimed at approaching characteristics of the studied process, to the standard features.

On the other hand, information systems can act as generators during the control action of the system. With the development of scientific thought and technology realization methods of information processing appears the possibility of radical change in the concept of information flow inside the system. More accurate delineation becomes: 1) the operational management, 2) tactical and strategic management by operating technologies. The second is sent to planning of possibilities of enterprise with the aim of achievement of the put task.

Thus the system of acceptance of administrative decisions can be broken up on two subsystems. They are closely related between itself. Moreover, the subsystem of operative management largely forms streams for a tactical and strategic management (figure 3).

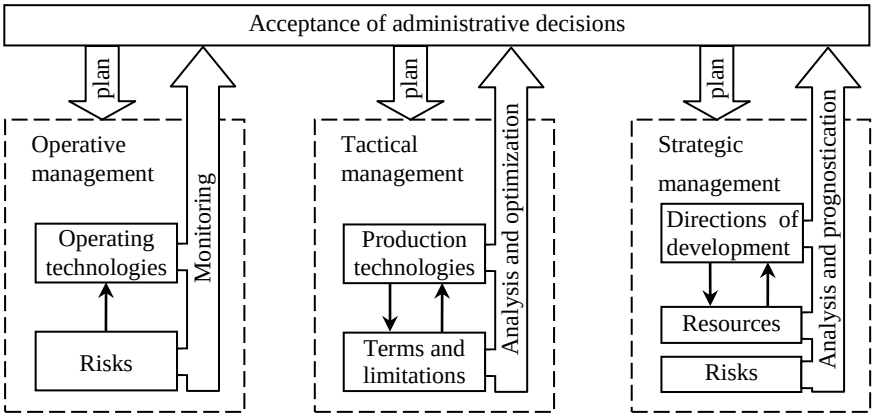

Figure 3. Integrating system of informative streams of agrarian enterprises

Source: Own elaboration.

Functioning of agrarian enterprise is foreseen by the stage-by-stage management of production technologies. At making decision on the stage of development of directions of development of enterprise the analysis of resources and possibilities is conducted. On the stage of tactical management technologies of production are formed. Select technologies are imposed by certain terms and limitation. And an operative management leans against operating technologies. Before, the analysis of implementation of technological operation was conducted at the receipt of result. Possibility to conduct monitoring of implementation of technological operation in the process of flowing of technological process appeared with appearance of new facilities of collection of information. It is also related to the improvement of executive mechanisms. Possibility to vary the parameters of flowing of technological process and began to control his motion by foundation for an operative management. Thus there is a process of accumulation of statistical information. He is used for forming of informative stream which is used for a tactical management. Also most risks are on an operative management. Such risks are related to the change of external operating of the system conditions.

For example, sharp change of climatic terms, refuse of technique, error of the tactical planning, financial pressures, traumas, illnesses and others like that. Sure, part of such risks must be foreseen on more global stages of management. The degree of their impact reduced through redundancy and insurance. But backup cannot be limitless. Also monitoring of flowing of technological operation is included in the tasks of operative management. There is direct collection of the detailed information on this stage. It comes forward a primary informative stream for the system of acceptance of administrative decisions.

Conclusions

For the optimum operation of an enterprise it is necessary to build the dynamic system of acceptance of administrative decisions. Such system must take into account all permanent and variable factors. Acceptance of administrative decisions takes place on all three stages of management. Weight of operative management is considerably increased in a present tense, due to possibility of direct influence on a technological process. On the stage of operative management also there is direct collection of the detailed information. It comes forward a primary informative stream for the system of acceptance of administrative decisions. Present resources and select technologies are imposed by certain terms and limit on the choice of direction of development of enterprise. The proposed system must be adapted and adjusted during operation of a particular sector and be based both on integrated information systems, and the subjective assessments of processes of production.

References

1. Butynets F. F., Shyhun M. M., *Models and methods of decision making in analysis and audit*, Zhytomyr State Technological University, Zhytomyr, 2004, pp. 86–94.
2. Gordienko A. I., *The informative systems and technologies are in a management*, KNEU, Kyiv, 2003, pp. 147–151
3. Kuzmin O., Mala N. T., Melnyk O. G., Protsyk I. S., *Leading Organization*, NU «Lviv Polytechnic», Lviv, 2008, pp. 38–46.
4. Mala N. T., *Administrative decisions: classification and process of acceptance, Announcer of the National university «Lviv politekhnika», Series Management and enterprise in Ukraine: stages of becoming and problem of development*, No. 605, WELL «Lviv politekhnika», Lviv, 2007, pp. 20–24.
5. Minkova O.G., Sazonova N. A., Sakalo I. M., *Criteria of estimation of influence of agricultural production on the state of agroekosistem, Announcer KHNTUSG: Economic sciences*, Vol. 92, KHNTUSG, Kharkiv, 2009, pp. 233–237.
6. Vinogradskiy M. D., Vinogradska A. M., Shkanova O. M., *Organization of labour of manager*, «Condor», Kyiv, 2003, pp. 101–106.
7. Балджи М. Д., Карпов В. А., Ковальов А. І. та ін. *Обґрунтування господарських рішень та оцінка ризиків*, ОНЕУ, Одеса, 2014, pp. 84–95.
8. Бир Ст., *Кибернетика и управление производством*, Наука, Москва, 1965, pp. 41–54.
9. Калініченко А. В., *Оптимальне використання земельних ресурсів – надійний засіб досягнення збалансованості агроекосистем, Агроекологічний журнал*, № 1, 2005, pp. 15–22.

10. Калініченко А. В., Шмиголь Ю. В., Шарун Т. А., *Методи прийняття ефективних рішень у аграрному виробництві*, Київ, 2005, pp. 5–35.
11. Кунц Г., Доннел С., *Управление: системный и ситуационный аналіз управленческих функций*, Прогресс, Москва, 1981, pp. 18–26.
12. Нагірний Ю. П., Бендера І. М., Вольвак С. Ф., *Аналіз технологічних систем і обгрунтування рішень*, ред. Ю. П. Нагірного, ФОП Сисин О. В., Кам'янець-Подільський, 2013,pp. 14–25.
13. Петруня Ю. Є., Говоруха В. Б., Літовченко Б. В. та ін., *Прийняття управлінських рішень*, ред. Ю. Є. Петруні, Центр учбової літератури, Київ, 2012, pp. 145–168.
14. Сакало В. М., *Пристрій для контролю характеристик сільськогосподарських матеріалів*, Патент 40984А України, А01В69/04, Опубліковано 15.08.2001, Бюлетень № 7.
15. Старр М., *Управление производством*, Прогресс, Москва, 1968, pp. 23–31.
16. Чумаченко М., *Економічна думка в розвитку: досягнення і проблеми, Економіка України*, № 5, 2005, pp. 89–91.

PODEJMOWANIE DECYZJI ADMINISTRACYJNYCH JAKO SYSTEM INTEGRACYJNY STRUMIENI INFORMACYJNYCH PRZEDSIĘBIORSTW ROLNYCH

Streszczenie: W opracowaniu przeanalizowano system podejmowania decyzji administracyjnych przedsiębiorstwa rolnego pod względem jego funkcjonowania w przestrzeni informacyjnej. Sformułowano warunki funkcjonowania systemu i wyjaśniono ogólne etapy składowe systemu. Zdefiniowano kierunki strumieni informacyjnych i określono rolę czynników wpływających na skuteczność całego systemu.

Słowa kluczowe: decyzje administracyjne, system, strumień informacyjny, technologia, zasoby

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 159–169
dostępne na: http://www.zim.pcz.pl/znwz

TRANSFER OF INFORMATION, KNOWLEDGE AND INNOVATIONS IN RURAL AREAS

Edyta Kulej-Dudek, Anna Wiśniewska-Sałek
Czestochowa University of Technology, Poland

Abstract: This article discusses the concept and role of information, knowledge and innovations in the aspect of the economic growth. The main types of innovation were emphasized. The activities aimed at implementation of the strategy of intelligent and sustainable development were specified. The challenges and priorities of common development policies for regions were discussed, with particular focus on rural areas. Furthermore, the chapter presents author's own survey on diffusion, transfer and absorption of information, knowledge and innovations in rural areas.

Keywords: information, knowledge, innovations, transfer, diffusion, rural areas

DOI: 10.17512/znpcz.2016.1.16

Introduction

Nowadays, widespread globalization, the increase in the amount of information and knowledge and processes of economic transformations lead to the intensive development of modern civilization through fast rate of changes in the business environment of enterprises. Continuous increase in information and knowledge drives the need for processing information and use it for current activities of each enterprise that has to face new challenges. Globalization and technological changes stimulate development of knowledge-based economy, where knowledge and information are becoming the most important factors in progress, development and competitiveness. In current economy, characterized by dynamic environment and greater amount of new products, industrial competition has yielded to information competition.

Scientific discoveries and technological innovations contributed to the emergence of a new paradigm in information and technology. Its specific nature consists in that information represents both the primary material and a final product for the process of creating innovation. The sectors of modern technologies are focused on processing information. Therefore, information is the most basic primary material, whereas technological innovation concern in particular the methods (Evans 2005, p. 22)]. Methods used to take actions relate directly to human activity while information and knowledge are becoming a basic source of economic value and competitive advantage. Previous economy was based on condensation of resources, i.e. integration of a large amount of primary products and materials by means of little knowledge while the new economy is based on

condensation of knowledge (Davenport, Prusak 1998, p. 17). Knowledge represents the source of constant competitive advantage under condition that, contrary to other resources, it extends through utilization.

According to Davenport and Prusak, „ideas give birth to other ideas and, sharing knowledge, we do not consume it but rather help enrich others" (Davenport, Prusak 1998, p. 17). The advantage of enterprises is ensured by concentration on knowledge extension and continuous development of competencies. A competitive advantage is formed only when the enterprise can generate new knowledge through creation of a climate that is conducive to learning. In order to become competitive, the enterprise has to ensure high quality of services, innovativeness and market-oriented adjustment to varied expectations. These activities should be supported by utilization of modern IT tools, technologies and systems that allow for collection, storage, transfer and utilization of huge amounts of data and information from a number of internal and external sources.

Transitions observed in recent years have brought a fast and virtually unlimited flow of information and knowledge, flow of employees in the labour market and popularization of new concepts of enterprise management. These changes are connected with a new type of the economy, where production, distribution and utilization of knowledge is the main driving force for growth, creation of wealth and employment across various industries. Knowledge-based economy is based on resources and utilization of knowledge potential, which represent the strategic factors of its development [Skrzypek 2004, p. 14]. In knowledge-based economy, people without competencies, those who are unable to learn new competencies and skills and those who do not invest in continuous improvement may be considered as less valuable employees. Knowledge-based economy forces enterprises to implement changes connected with employing highly-qualified staffs, care for knowledge quality and continuous extending and deepening the knowledge (Kulej-Dudek 2012, p. 94-111).

Therefore, the aim of this chapter is to present the role of information, knowledge and innovation as components that affect both economic growth and competitiveness. It is also important to identify challenges and prospects for development in rural areas and indicate the actions that can be taken to support inhabitants in these areas.

Information, knowledge and innovations as factors of development and competitiveness

Under conditions of new economies, the sources of innovativeness include organizational knowledge, tacit knowledge and employees' competencies (Lis, Brzozowska, Korombel 2013, p. 262-267). The constant process of economic transformations affects searching and implementation of innovations and methods of management that improve enterprise's capability of faster and comprehensive adaptation to changes in the environment. Searching for sources of competitive advantage of enterprises involves non-physical resources in the form of employee competencies, knowledge and skills (Kaczmarek, 2007, p. 15).

Prof. Grudzewski and Prof. Hejduk argues that information should be understood to mean organized data which are created through categorization and classification of data and giving them a specific context in order to utilize them (Grudzewski, Hejduk 2004, p. 75-76). Furthermore, "knowledge means the use of information in practice" (Grudzewski, Hejduk 2002, p. 16.). Therefore, knowledge represents a full utilization of information and data connected with potential of human skills, abilities, ideas, commitment and motivation (Grudzewski, Hejduk 2004, p. 75-76). Prof. Kisielnicki defines knowledge as non-physical organizational resources connected with human activity while using them may become the basis for competitive advantage in the organization. It is connected with resources in the form of data, information, procedures, experience and education (Kisielnicki 2003, p. 17). G. Probst et al., consider knowledge as a set of pieces of information and skills used by the entity to solve problems. It includes both theoretical and practical components, general principles and specific guidelines. Knowledge is always related to a specific person. It is generated by individuals and represents their beliefs concerning cause-and-effect relationships (Probst, Raub, Romhardt 2002, p. 35).

Knowledge is regarded as a particularly valuable commodity, contained not only in the products manufactured but also in the tacit knowledge of highly-qualified employees. This knowledge is usually "hidden" in the minds of individual persons and can be shared with other people through codification, conversations, stories, working together or documented consciously in other manner. The process of knowledge externalization is an essential component of management of this resource. Finding the most efficient and effective methods to utilize and share knowledge represents a key task in achievement of enterprise's goals.

Efficient actions in terms of information and knowledge transfer between different entities (employees, enterprises, institutions) should focus on such processes as: creation of a new knowledge, identification of internal and external sources of knowledge, using available knowledge and incorporating the knowledge into processes, products, services, innovations, documents, databases and software, stimulating knowledge development through support for sharing knowledge.

In the era of globalization, the importance of technology and innovations is increasing while they are becoming major factors that determine competitiveness of regions (Sałek 2013, p. 90-101). The term innovativeness is one of the most frequent terms used in the context of development, competitiveness and economic growth. Innovativeness is particularly important for building competitive advantage and determination of business processes.

Innovations are new ideas which allow for gaining competitive advantage in the market through changes in management and production processes. Four major types of innovations are (*Zasady gromadzenia i interpretacji danych dotyczących innowacji*. Podręcznik Oslo, 2008, p. 49-53):

– product innovations - launching products or services which are new or substantially improved in terms of their characteristics and application e.g. considerable improvements in terms of technical specifications, components and materials, software, user-friendliness or other functional features,

- process innovations - innovations in the area of process mean implementation of a new or substantially improved method of production and supply e.g. substantial changes in terms of technology, devices and/or software,
- marketing innovation - implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- organizational innovation - implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.

Social innovations also seem to be important. They are defined as social initiatives aimed at improvement of quality of living of people, communities, nations, enterprises, environments and social groups (Budinich, Serneels 2012). Social innovations concern innovative activities in the area of social problems and the process of creation of innovative solutions for social utilization (Stanowisko Ogólnopolskiej Federacji Organizacji Pozarządowych w sprawie innowacji społecznych 2012, p. 1). They are connected with open access to resources, the use of modern technologies, modern forms of collaboration and creativity. Their overriding goal is to implement social changes and popularize these changes in the form of good practices.

Challenges and prospects for developmental changes contained in strategic documents

One of the main strategic documents that emphasize the role of information, knowledge and innovation is *Strategy for intelligent and sustainable development*, with one of the priorities to be implemented by 2020 being intelligent development i.e. development of the economy based on knowledge and innovation. Intelligent development is considered as increasing the role of knowledge and innovations as a driving force for future development. This requires improving the quality of education, improving the results of research activities, supporting innovation transfer and knowledge, full utilization of information and communication technologies and ensuring that innovative ideas are transformed into new products and services which contribute to the increased growth, creation of new workplaces and solving social (Europa 2020, 2010, p. 11-13) problems.

Another document that points to similar problems is *the National Regional Development Strategy for 2010-2020*. The strategic objective of regional policy defined in this strategy is efficient utilization of specific regional and territorial potential for development to achieve goals of national development: growth, employment and cohesion in long-term horizon. Specific goals also emphasize supporting the growth of competitiveness in regions and building territorial cohesion while preventing marginalization in problem-generating areas (Krajowa Strategia Rozwoju Regionalnego 2010-2020, 2010, p. 5).

The program for development of rural areas for 2014–2020 (*Program rozwoju obszarów wiejskich na lata 2014-2020*) defined six priorities of common policy of development in rural areas, where the focus was on facilitation of transfer of knowledge and innovations, promotion of innovative technologies and economic growth in rural areas (Program rozwoju obszarów wiejskich na lata 2014–2020, p. 79, 81, 156).

The problems presented in the chapter were a stimulus for starting the research in this area. The target group of enterprises was analysed using a survey questionnaire and individual interviews with representatives of enterprises with adequate level of knowledge about the research problem. The study focused on eighty four SME enterprises in the Czestochowa region of Poland from various industries.

Respondents were asked to express their opinions about the problems observed by them in rural areas (see figure 1). The highest percentage of respondents indicated the poor access to specialized medical, banking and educational services (79%), and limited opportunities for improving education, continuous learning and vocational training (75%). Other indications included insufficient number of competent and well-qualified employees (67%) and insufficient information and knowledge in terms of entrepreneurship, innovativeness and competitiveness (63%).

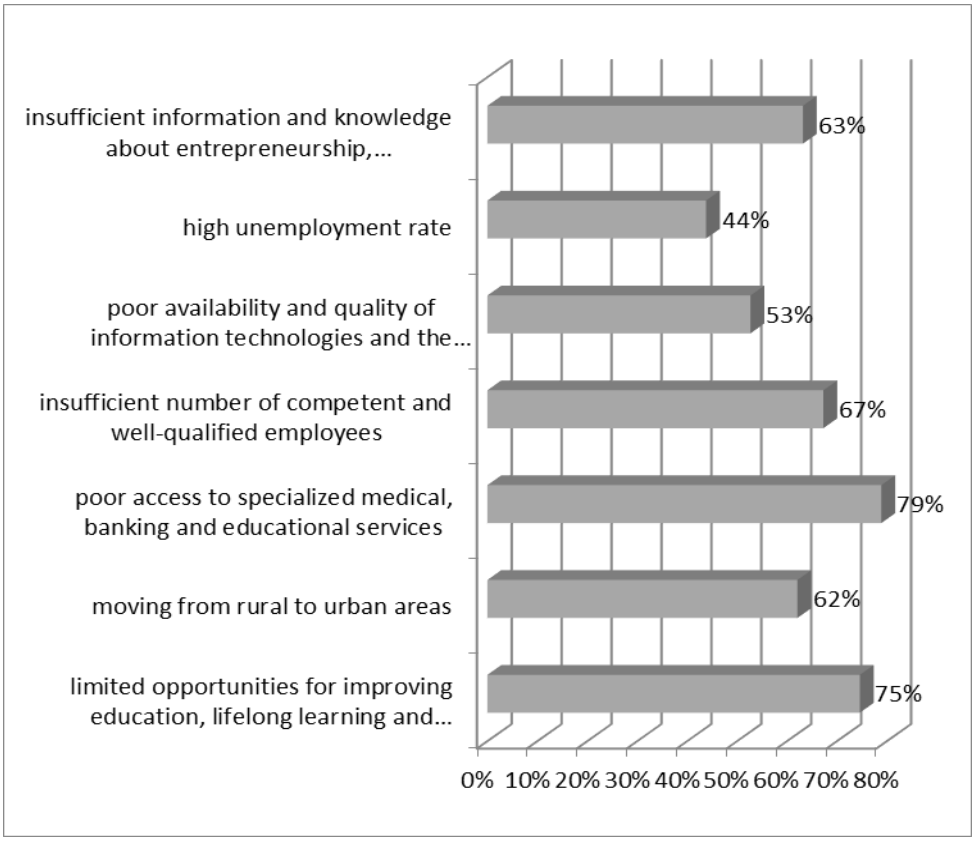

Figure 1. Noticeable problems in rural areas

Source: Author's own elaboration.

One of the challenges that relate to spatially-oriented problems is to increase developmental opportunities in rural areas characterized by the worst socio-economic indices and the lowest level of access to services and goods that determine development opportunities. The adverse indices that determine developmental opportunities include: very high level of employment in agriculture, low entrepreneurship, high employment rate among people with low level of education and low professional competencies, underinvestment and low level of infrastructural facilities. The phenomenon of outflow of people at the working age (with particular focus on women and young people) from rural areas should also be emphasized. Poor or difficult access of rural inhabitants to public goods and services represents a substantial obstacle in development of these areas. Insufficient quality of educational infrastructure and low level of education causes a decline in quality of human capital and substantially reduces chances of students from these areas to study at attractive and modern university majors that help being competitive in the labour market (Dudek 2015, p.80-88). Furthermore, people that start learning expect personalized curricula, close cooperation and relationships between formal and informal learning, which is largely possible through learning using ICT technologies (Dudek 2015, p.80-88). Therefore, ensuring access to public goods and services and improving their quality drives development in rural areas, especially those located remotely.

The author's own survey in the Czestochowa macroregion indicated that a substantial problem is to implement lifelong learning and professional training in rural areas. A number of young people migrate from rural areas to cities in order to improve their quality of living, which leads to a reduction in population in the country and affects the profitability in local businesses. Respondents also indicated the poor access to specialized medical, banking and educational services. Furthermore, insufficient number of competent and well-qualified employees is also observed in rural areas, which represents a threat to proper function of local enterprises in the highly-competitive market. The change in this situation requires commitment and cooperation between enterprises and local schools and institutions since opportunities for continuous learning and vocational training is of essential importance for running and developing businesses, especially in the sectors typical of rural areas, such as agriculture, forestry and fishing. Therefore, the support for lifelong learning and elimination of educational barriers in rural areas is one of the most important factors of their development. These initiatives will promote quality and effectiveness of the educational system.

The change in this state is possible through simultaneous influence on social and economic areas. One of the challenges is to take actions in rural areas with the poorest development prospects which cause a reduction in differentiation of the level of access to educational services, culture, business consulting and basic goods that determine inclusion of these areas in developmental processes. An important direction of activities is development of human resources and social capital in the locations with the lowest level and dynamics of socio-economic development. These activities should support rural inhabitants and be focused on:

- development of social capital: support for local social initiatives,
- preventing social exclusion and social integration,
- supporting development of entrepreneurship (counselling, financial support, training),
- vocational activation of people without work (improving educational level, employment agencies, trainings, retraining schemes, improvement in quality and availability of education),
- improvement of skills and qualifications of employees (transfer of information and knowledge, exchange of experience between enterprises, cooperation, research and development),
- improved access and quality of education (development and popularization of information and knowledge, different levels of education, development of lifelong learning for adults, support for changing professions, promotion of modern methods of learning, e.g. e-learning, formal and informal learning),
- improved access to information and communication technologies, access to broadband Internet services, development of public e-services, educational initiatives (coaching) concerning social groups with lowest indices of using computers and the Internet,
- increased vocational and spacial mobility.

Therefore, in the aspect of nearest years, the development policy should consist in improving competitiveness of the economy through support for transfer of information and knowledge, absorption and creation of innovations and stimulation of development of social capital.

Diffusion, transfer and absorption of information, knowledge and innovation in rural areas

Under conditions of changing economic reality, more and more focus is on a model of open innovations, especially from the standpoint of access to knowledge and information and knowledge diffusion process. They represent one of the most important trends in contemporary economy. The main assumption of the idea of open innovation is that the enterprises can utilize not only internal research and experiences but also the solutions proposed by other entities. Instead of control over the process of innovation and closing this process, the organization derives benefits from open access to ideas through purchasing solutions from other entities through cooperation, openness and sharing.

Innovation diffusion can have a positive effect on poorly developed areas, driving changes in specialization of the regions based on traditional factors of competitiveness into innovative factors. The increase in importance of innovations as a factor of competitiveness, also in rural areas, causes that an essential component of their development is to ensure high and stable level of innovations and conditions for absorption of innovations. It is of key importance for efficiency of these activities to implement regional policies that stimulate creation, diffusion and absorption of innovations.

In the present study, respondents were asked about the methods of transfer and diffusion of information, knowledge and innovations. In the area of the enterprise, the most frequent factors indicated by the respondents were experience and knowledge of other employees and conversations with employees (73%). Other helpful items included reports on business activity, previous projects and initiatives implemented in the past (58%). The employees did not use expert systems (15%) and few of them find information from blogs or RSS channels, which was indicated by only 21% of the respondents (see figure 2).

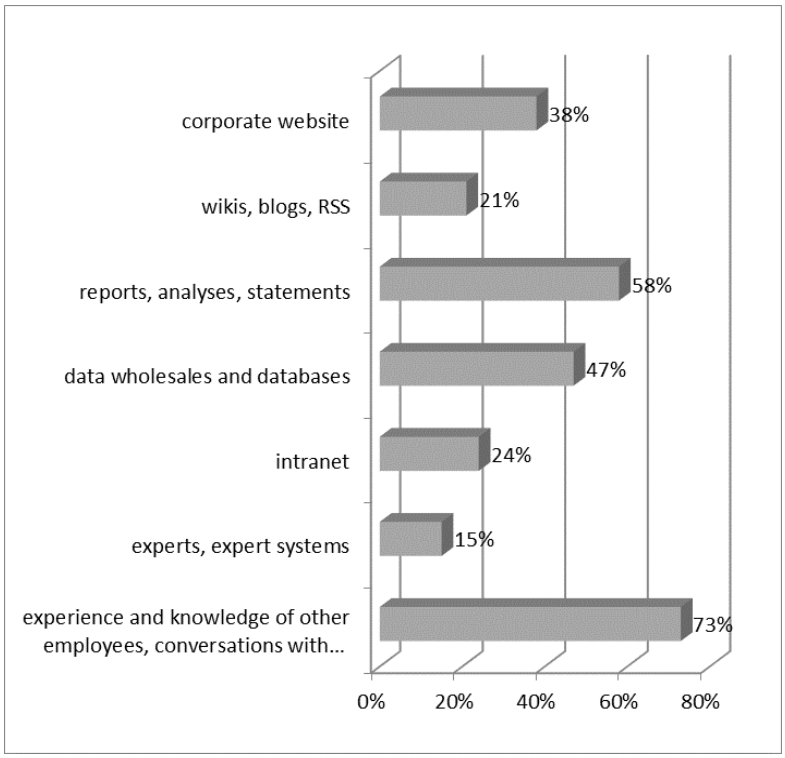

Figure 2. Methods used to ensure transfer and diffusion of information, knowledge and innovations in enterprises in rural areas

Source: Author's own elaboration.

Among the methods used to ensure transfer between the enterprise and other entities in the market, the most frequent were cyclic conversations with customers and suppliers (87%, see figure 3). The most of the respondents use for this purpose various open sources, such as the Internet, social media, message boards (73%), trainings and courses (72%) and acts and specialized and sector-oriented journals (69%). Entrepreneurs rarely use patents, licences and utility models, which was indicated by 8% of the respondents. External experts and consultants are also not often employed (14%). They rarely cooperate with scientists, counsellors and research and development centres (23%).

The degree of creation, diffusion and implementation of knowledge depends mainly on the quality and strength of social capital in a specific area. The stronger the social and economic relations, the greater willingness to share various resources, including knowledge. In this context, rural areas have a substantial potential that results from tradition and strong local ties. Polish country participates more and more actively in a global flow of information and is affected by global tendencies, including those in the context of knowledge transfer and educational changes. Rural young people have more and more ambitious educational and material aspirations and accept contemporary challenges of the labour market concerning vocational and spatial mobility (Klemens 2015, p.7).

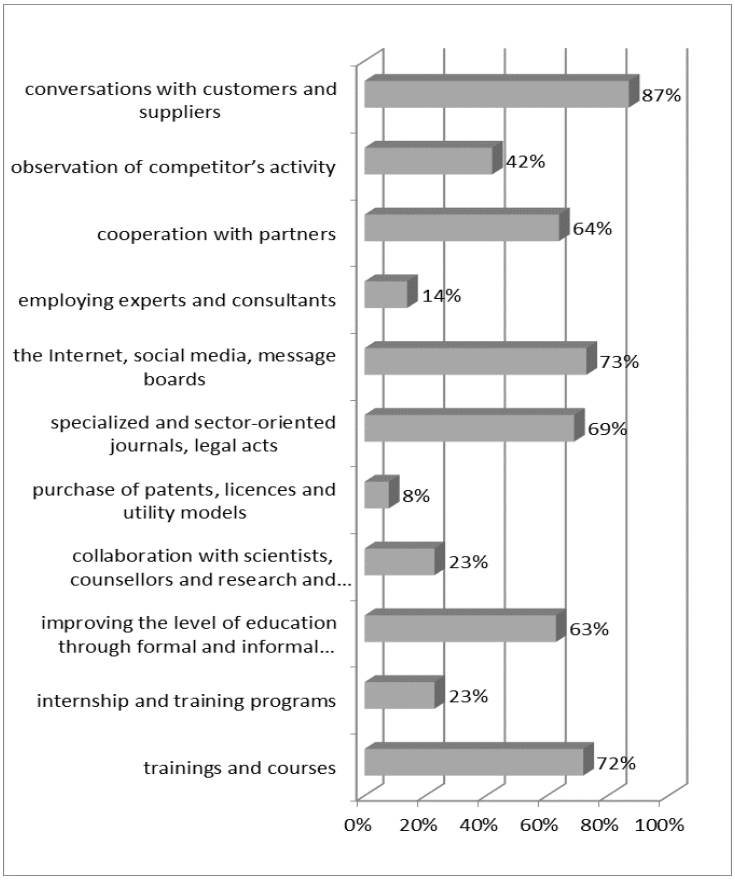

Figure 3. Methods used to ensure transfer and diffusion of information, knowledge and innovations between enterprises in rural areas

Source: Author's own elaboration.

Nowadays, processes of innovation diffusion are limited by low willingness to cooperate and low synergy of activities. However, it should be noted that popularization of innovations affects the process of learning and improving knowledge in both employees and the whole enterprise, thus strengthening the

process of innovation diffusion. Improving diffusion effectiveness can occur through implementation of new techniques and methods to transfer information and knowledge and through improved cooperation between various entities in the market.

Conclusion

Sustainable development of rural areas largely depends on abilities to absorb innovation, acquire knowledge and skilful management of development processes. The initiatives in this area have to focus on improving the effectiveness of education, social activity, availability and mobility and systematic improvement in quality of labour resources and education, especially in rural areas since infrastructure of higher education has indicated a noticeable concentration in urban areas. It is necessary for intensification of knowledge transfer to strengthen cooperation between schools/universities and entrepreneurs and social partners and continuous emphasis on the role of knowledge and innovations, their transfer and better education in rural areas, approaching them as opportunities for improving quality of living and level of entrepreneurship. Contemporary business entities are more and more often using information technologies to support their business activities. Combination of modern technologies with conventional teaching affects the development of the learning process and opens up new opportunities which have been unavailable to potential participants before, especially those from rural areas. Therefore, it is becoming necessary to regularly promote initiatives in different areas towards improving dynamics of collaboration within development of open and active society, stimulating innovative activities in the economy, mobilization for searching for new solutions affecting socio-economic development and contributing to transfer of knowledge and innovations between enterprises.

References

1. Budinich V., Serneels S., *HVC, czyli rynek, zysk i innowacje społeczne*, (in:) *Odpowiedzialny biznes. Sojusz na rzecz potrzebnych zmian*, HBRP nr 5 2012.
2. Davenport T.H., Prusak L., *Working knowledge. How Organizations Manage What They Know*. Harvard Business School Press, 1998, p. 17.
3. Dudek D., Perspektywy rozwoju otwartych kursów masowych w obliczu rewolucji cyfrowej w edukacji. [In:] Kiełtyka L., Jędrzejczyk W. (ed.), *Wykorzystanie potencjału współczesnych technologii informacyjnych w zarządzaniu organizacjami*, Wydawnictwo Politechniki Częstochowskiej, Częstochowa 2015, p.80-88.
4. *EUROPA 2020. Strategia na rzecz inteligentnego i zrównoważonego rozwoju sprzyjającego włączeniu społecznemu*. Komunikat Komisji Europejskiej. Bruksela, 2010, p. 11-13
5. Evans Ch., *Zarządzanie wiedzą*. PWE, Warsaw 2005, p. 22.
6. Grudzewski W.M., Hejduk I.K., *Kreowanie systemów zarządzania wiedzą podstawą osiągania przewagi konkurencyjnej współczesnych przedsiębiorstw* [in:] Grudzewski W.M., Hejduk I.K. (red.), *Przedsiębiorstwo przyszłości – wizja strategiczna*. Difin, Warsaw 2002, p. 16.
7. Grudzewski W.M., Hejduk I.K., *Zarządzanie wiedzą w przedsiębiorstwach*. Difin, Warsaw 2004, p. 75-76.

8. Kaczmarek B., *Koncepcje klasyfikacji i zarządzania kapitałem intelektualnym przedsiębiorstwa*. [in:] Czerwińska M. (ed.): Zarządzanie kapitałem intelektualnym. Istota, pomiar i instrumenty wdrażania. Fundacja rozwoju Uniwersytetu Gdańskiego, Gdansk 2007, p. 15.
9. Kisielnicki J., *System pozyskiwania i zarządzania wiedza we współczesnych organizacjach*. [in:] *Zarządzanie wiedzą we współczesnych organizacjach*. Ed. Kisielnicki J., WSHiP im. R. Łazarskiego, Warsaw 2003, p. 17.
10. Klemens B., Znaczenie transferu wiedzy i edukacji dla rozwoju obszarów wiejskich, Acta Universitatis Lodziensis, Folia Geographica Socio-Oeconomica 20, 2015, 5–23, p. 7.
11. *Krajowa Strategia Rozwoju Regionalnego 2010-2020: Regiony, Miasta, Obszary Wiejskie Ministerstwo Rozwoju Regionalnego*, Warsaw, 2010, p. 5.
12. Kulej-Dudek E., *Rola informacji, wiedzy oraz technologii informacyjnej w zarządzaniu małym i średnim przedsiębiorstwem.* [in:] Kościelniak H. (ed.), *Przedsiębiorczość szanse i wyzwania* Wyd. WZ Politechniki Częstochowskiej, Czestochowa 2012, p. 94-111.
13. Lis T., Brzozowska A., Korombel A., *Knowledge Management in an Enterprise as a Response to Contemporary Customers ' Needs*, Department of Computers and Informatics, FEEI TU of Kosice, Kosice 2013, p. 262-267.
14. Probst G., Raub S., Romhardt K., *Zarządzanie wiedzą w organizacji*. Oficyna Ekonomiczna, Krakow 2002, p. 35.
15. *Program rozwoju obszarów wiejskich na lata 2014–2020,* Ministerstwo Rolnictwa i Rozwoju Wsi, Warsaw, p. 79, 81, 156.
16. Sałek R., *Istota oraz znaczenie zagadnienia innowacji w rozwoju przedsiębiorstw* [in:] *Współczesne problemy zarządzania przedsiębiorstwami. Teoria i praktyka,* Wyd. WZ Politechniki Częstochowskiej, Czestochowa 2013, p. 90-101.
17. Skrzypek E., *Wycena wiedzy i kapitału intelektualnego i ich wpływ na efektywność organizacji*. [in:] Z. Szyjewski, Nowak J., Grabara J. (ed.): *Strategie informatyzacji i zarządzanie wiedzą*. WNT, Warsaw 2004, p. 14.
18. Stanowisko Ogólnopolskiej Federacji Organizacji Pozarządowych w sprawie innowacji społecznych w przyszłym okresie programowania funduszy europejskich 2014-2020, Warsaw 2012, p. 1.
19. *Zasady gromadzenia i interpretacji danych dotyczących innowacji*. Podręcznik Oslo, Publikacja OECD I Eurostatu, Warsaw 2008, p. 49-53.

TRANSFER INFORMACJI, WIEDZY I INNOWACJI NA OBSZARACH WIEJSKICH

Streszczenie: W rozdziale zaprezentowano pojęcie i rolę informacji, wiedzy i innowacji w aspekcie rozwoju gospodarczego. Wyróżniono główne rodzaje innowacji. Określono działania na rzecz realizacji strategii w zakresie inteligentnego i zrównoważonego rozwoju. Opisano wyzwania i priorytety wspólnej polityki rozwoju regionów ze szczególnym uwzględnieniem obszarów wiejskich. Wskazano także na badania własne w zakresie dyfuzji, transferu i absorpcji informacji, wiedzy i innowacji na obszarach wiejskich.

Słowa kluczowe: informacja, wiedza, innowacje, transfer, dyfuzja, obszary wiejskie

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 170–178
dostępne na: http://www.zim.pcz.pl/znwz

INFORMATION MANAGEMENT MODEL IN THE MANUFACTURING COMPANY

Małgorzata Łęgowik-Małolepsza
Czestochowa University of Technology, Poland

Abstract: The paper is to explore the possibilities of applying the modern information management model in the manufacturing company. In the theoretical part of the paper, there has been discussed the problem associated with the essence of information management in the enterprise. In the subsequent part of the paper, there has been discussed the cycle of information management and there has been presented information management in the perspective of static and dynamic approach, paying attention to the goals of information management in the enterprise. In the empirical part of the paper, using descriptive analysis, there has been presented the case study of the application of the ASTEX model for restructuring of the organization of administrative and office work in the surveyed manufacturing company. There has been indicated the impact of the application of the modern information management tool in the company on the efficiency of the organization of administrative and office work.

Keywords: information management, cycle of information management, basic levels of information management

DOI: 10.17512/znpcz.2016.1.17

Introduction

The development of information management is closely related to changing conditions in which enterprises operate. On account of the complexity of the environment, it is necessary to currently adapt to new conditions. The strategic importance of the role of information in the implementation of the assumed economic processes is the reason for an increase in the significance of information management in the enterprise. The aim of the paper is to explore the possibilities of the application of the modern information management model in the manufacturing company.

The essence of information management

Information is of the key importance in the process of making a decision and monitoring its implementation. Taking into account the reduction in uncertainty of an operation, entrepreneurs use opportunities to rapidly and easily gather, process and transfer information. The integrated information as a non-material labor tool reduces the risk (Skowron-Grabowska 2006, pp. 142–149; 2014, pp. 35–39) associated with the activity of the enterprise on the market. The functioning of enterprises in the complex information environment, characterized by dynamic

development of technologies and information processes, requires the creation of appropriate structures, systems and procedures of information management. R. Zygała states that "information management is conscious behavior of people aimed at optimizing the role of information while achieving goals of the organization" (Zygała 2007, pp. 46–56). The author mentioned above presents the approaches to information management of the authors such as: T. Davenport, C. W. Choo or J. Kirk, who perceive information management as the process consisting of the following stages, creating the cycle of information management (Zygała 2007, pp. 46–56; Choo 1998):

- identification of information needs – information management cycle begins with adaptive behavior when, in the enterprise or its environment, something new is happening. As a result of this event, there occurs a new need for information to satisfy, necessary to take decisions relevant for the existing situation.
- acquisition of information – this stage consists in planning sources and acquiring information from these sources in response to arising information needs,
- organization and storage of information – at this stage there takes place systemizing and gathering of useful information applied in the framework of the specific enterprise,
- development of information products and services –products and services can develop through acquiring new information, which takes place due to an increase in the quality of information and its adjustment to users' requirements,
- distribution of information – distribution is aimed at sharing information between users who need it,
- use of information – information is used in the situation of creating and using knowledge, interpretation of information, problem solving and decision-making.

The presented cycle of information management is graphically shown in figure 1.

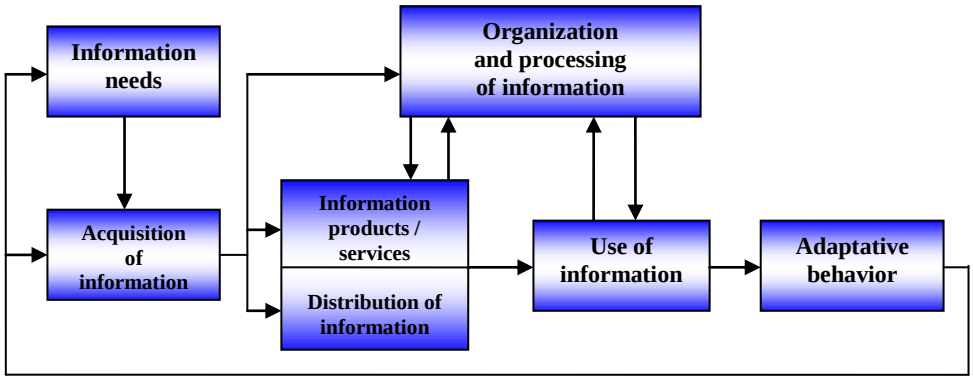

Figure 1. Information management cycle

Source: Zygała 2007, pp. 46–56; Choo 1998.

Actually, the cycle does not need to include all the listed elements since they may interlink, cumulate or isolate completely new elements. The discussed process constitutes a general view on the functioning of the cycle of information management in the enterprise.

According to L. Kiełtyka, "information management must be considered as the process which is to guarantee confidentiality, integrity, accountability and credibility of the processed information" (Kiełtyka 2001, pp. 204–205). The author believes that the system of information management should comply with the model of the general management and operation of the enterprise, with its strategic goals and internal organization. Moreover, it should be adjusted to the size of the enterprise, its maintenance ought not to be complicated, it should currently update databases and use the source which business intelligence is. It is important for the system of information management to be adjusted to the needs of all its users, simultaneously securing data against their use by unauthorized people. The model of information management, taking into account the general model of management has been developed by L. Kiełtyka (see figure 2). In the figure, there are included the exemplary systems of information management.

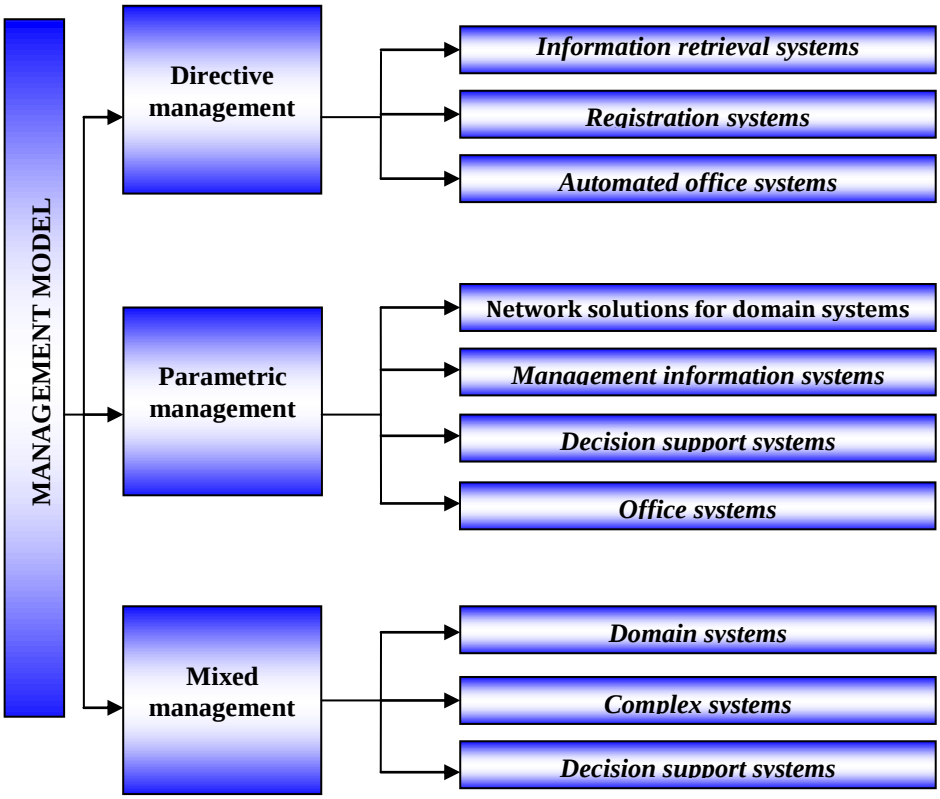

Figure 2. Information management model according to step 2 of the circuit topology

Source: Zygała 2007, pp. 46–56; Choo 1998.

On the basis of the available subject literature, there are identified: operational, tactical and strategic levels of management. At each of these levels, there are the issues associated with information management that may be considered both in the perspective of static and dynamic approach.

The static approach to information management refers to the management of information resources (Kościelniak 2010, pp. 91–98; Kościelniak 2014, pp. 65–72) and "is associated with the issues of information policy, the required level of the quality of information in the context of information technologies" (Egeman 2002, pp. 146–148). In the perspective of this approach, management refers only to information itself. In the perspective of the dynamic approach, information management consists in management of information processes and "is associated with (…) planning, organizing and supervising and monitoring the actual implementation of sequences of actions contributing to information processes and technologies used in them" (Egeman 2002, pp. 146–148).

Similarly to three basic levels of management mentioned above, also information management is considered from the perspective of the same three levels (Egeman 2002, pp. 146–148):

- strategic management of information – consists in determining what the resources, processes and information technologies of the enterprise are to be like within 2-3 years. It is also planned how to use information to improve the market position of the enterprise and achieve competitive advantage.
- tactical management of information – including management of technologies, processes and information resources in the period of up to one year. In the framework of this management the following are significant: responding to changes in the environment, medium-term supervision of the flows of streams of information and the functioning of information system.
- operational management of information – consists in current planning, organizing, developing and monitoring the functioning of the information system, access to information and using it in everyday work.

While discussing the issues associated with the essence of information management (Łęgowik-Świącik 2014, pp. 308–31), the attention should be drawn to the goals of information management in the enterprise, which are considered with reference to the following three areas: enterprise resources, functions and management problems (Zygała 2007, pp. 46–56).

In the area of enterprise resources, information management ought to support the processes associated with the management of all enterprise resources, thus, human resources, beginning with recruitment, through motivation, and ending with dismissal. Another resource is finance management, among others, including supporting the flows of financial streams. Subsequently, information management is to support the processes associated with the management of fixed and current assets, their purchase and use, and involvement in the production process. Finally, information management is aimed at supporting and facilitating information flows and, consequently, powering the enterprise and its employees with knowledge. Therefore, information management is to support knowledge and information management in the whole chain of creating the enterprise value, by supplying information in the right amount and quality.

From the point of view of enterprise functions, information management refers to functional areas which occur in the enterprise. It is to support the processes, among others, associated with the area of supply management. It is to improve the flow of information on suppliers, supplies, times of deliveries etc. Another functional area is production management where appropriate information management is to facilitate the planning and monitoring of the production process. Providing information in the right amount and quality is also essential for the functioning of other areas, e.g. management of distribution and marketing. To achieve the company goals, the up-to-date information referring to the research on markets, tastes and preferences of current and possible customers, promotion and advertising, is necessary.

Management problems are the area in which information management is to serve the current monitoring of performance management. It is to supply information for calculating performance indicators and, in the case of obtaining improper levels of these indicators, to indicate the areas bringing about distortion. Similarly to performance management, information management is to serve quality management. It is to currently control the level of quality in all possible areas and justify the reasons for shortages in the quality if such cases occur.

The presented part of the paper describing the essence of information management in the enterprise indicates that information management, through its presence in the activity of the enterprise and the achievement of own goals, is to help solve decision-making problems. Taking decisions in the turbulent environment requires the most complete information about the environment. In the absence of access to information, managers must analyze markets, competitors and their own companies (Otola 2013, p. 143.). The pace of decision-making is determined by the rapidity of collecting information and the time of its processing to define the decision-making problem and to evaluate its results (Urbanowska-Sojkin 2011, p. 19; Kowalska S., 2012, p. 83; Stępień 2012, p. 359). This means that information is a set of processed data which are generated in the specific form and passed for a particular purpose. The task of information management is knowledge management in the enterprise and also the improvement of information processes. To depict the essence of information management, in the subsequent part of the paper, there has been presented the case study depicting the ASTEX model as the method of improving information processes in the manufacturing company

The verification of the ASTEX model in the management of the manufacturing company – the case study

One of the methods of information management is the ASTEX model, which is used to improve information processes. It was developed on the basis of the research carried out in the years of 1982-1986 at the BMW concern in Munich. The objective of the ASTEX model is the analysis of the barriers to labor efficiency resulting from the existing division of labor and the level of employees' education. ASTEX is the model used for restructuring of the organization of

administrative and office work, and its full name means: "the method of forming the structure of work in the development and processing of textual information and the associated control areas in the industrial company" (Potocki 1998, p. 141). The ASTEX model was used in the surveyed company to systematize the organization of administrative and office work.

The empirical studies were conducted on the basis of the descriptive analysis of the information obtained from the company engaged in production activity. In the analyzed company, the ASTEX model was applied as the method of information management. The basis for the use of the model was information processes.

The implementation of the ASTEX model in the surveyed company took place in five stages. The first stage was determining the ranges and factors of organizational, staff and technical changes – this stage consisted in conducting the general analysis of the functioning of the enterprise organizational cells with reference to three main areas, such as: functions, qualifications, technology. The aim of this activity was to indicate the areas, cells and human resources in which it is essential to make relevant changes and eliminate shortages in the field of instrumentalization. The second stage was registering the previous condition – the stage began with the development of the function tree recording the implementation of current functions, tasks, qualifications and technical equipment of each organizational cell. At the subsequent stage of this process, there were considered in detail individual positions in the indicated cells, taking into account basic courses of work (all procedures, processes) performed at these positions, support activities and communication links between them. For the combined listing of the listed properties there was used the synoptic table in the framework of which there was included the percentage share of independent, auxiliary and support work.

The third stage was the assessment of the existing condition and recognizing the possibility of the participation of auxiliary workers in the participatory model – with reference to the performed functions, there was made the division of the current division of labor, employment structure and employees' qualifications. The second part of the third stage was exploring the possibilities of the participation of auxiliary workers in the participatory model, the basis of which was the total score of the analyses of the existing condition. There were determined two options of restructuring: division of labor and qualifications of employees. The restructuring of the division of labor was analyzed from the perspective of two approaches. Firstly, efficiency-based approach to restructuring of work – there were identified unnecessary tasks and activities and they were eliminated while aiming at cost reduction. Secondly, humanization-based approach – implemented by diversifying and enriching the work of mainly auxiliary workers. The restructuring of employees' qualifications referred to an increase in qualifications, skills and education of employees. The general idea of restructuring consisted in the fact that there were analyzed the suggestions for transferring some of duties and tasks performed by independent employees to auxiliary workers in the course of developing the existing or acquiring new broadly understood qualifications of auxiliary workers. To assess the options of

restructuring there was used the decision table comparing advantages and disadvantages of the existing work organization in relation to the suggestions resulting from the participatory model.

The fourth stage was designing a new organization based on the participatory model – at the fourth stage there was the division of labor into tasks which were to be performed under the specific organizational cell in the participatory model, with their division into independent, auxiliary and participatory workers. On the basis of new work organization, there was determined the specific consequence of the implementation of the work process by individual employees. During the stage IV, in the course of designing the options of new work organization, there were assessed the costs of the implementation of the specific solution. This constituted one of the bases for the selection of the optimal option, which the discussed stage ended with. Another stage was preparing employees for work in the participatory model – contrary to appearances, the analyzed stage was particularly important and complex, since there took place the transfer of all assumptions of the method to employees and the success of the whole project was dependent on understanding and subjecting to the new structure of work by them. Therefore, the idea of this stage was to familiarize workers with new work organization through organizing training of different proficiency levels and dependent on the occupied position. The people performing the function of participatory workers were subjected to the specific training serving the identification of the point of interlinking of tasks or determining the limits of powers related to positions.

At the last stage, there was the implementation of new work organization – the participation of employees in thorough training was followed by the implementation of new work organization. The involvement of employees and motivating them was very important. The implemented solution was assessed from the point of view of functionality and with reference to the basic solution. The attention was drawn to the humanization of work and the needs which had not been satisfied previously (Czekaj 1993, pp. 45–48).

The ASTEX model is a modern and detailed method serving restructuring of the division of labor, employees' qualifications and technology. The advantage of the model is the fact that it combines three areas. It refers to organizational and administrative progress, improves qualifications and brings about development of employees and is based on modern technological solutions. Additionally, it contributes to humanization of the division of labor, brings about a greater sense of self-development to employees. The model focuses on the identification of the areas designed for improvement and the modes of its implementation. The introduction of the participatory model of work organization is an interesting solution which brings about a lot of opportunities for development of employees.

Conclusions

The aim of the paper has been to explore the possibilities of the application of the modern information management model in the manufacturing company. In the paper, using descriptive analysis, there has been presented the case study of the

application of the ASTEX model, which was used for restructuring of the organization of administrative and office work in the surveyed manufacturing company. The basis for the model application was information processes which take place in the surveyed company. The use of the ASTEX model in the analyzed company indicates high usability of the tool as the information management method in the enterprise.

References

1. Choo C. W., *Information Management for the Intelligent Organization*: *The Art of Scanning the Environment*, ASIS, Medford, 1998.
2. Czekaj J., *Metoda ASTEX*, [in:] *Nowoczesne metody usprawniania procesów informacyjnych w organizacjach gospodarczych i administracyjnych*, *collective work*, ed. Z. Martyniak, Akademia Ekonomiczna w Krakowie, Kraków, 1993, pp. 45–48.
3. Egeman H., *Istota zarządzania informacją,* [in:] *Wstęp do informatyki gospodarczej*, collective work, ed. A. Rokicka-Broniatowska, Wydanie drugie zmienione, Szkoła Główna Handlowa [in:] Warszawie, Oficyna Wydawnicza, Warszawa, 2002, pp. 146–148.
4. Kiełtyka L., *Model strategii zarządzania informacją w organizacji*, [in:] *Zarządzanie zasobami informacji w przedsiębiorstwie. Ku przedsiębiorstwu przyszłości*, *collective work*, eds. R. Borowiecki, M. Kwieciński, Wydawnictwa Naukowo-Techniczne, Warszawa, 2001, pp. 204–205.
5. Kościelniak H., *An Improvement of Information Processes in Enterprises - the Analysis of Sales Profitability in the Manufacturing Company Using ERP Systems*, Polish Journal of Management Studies, 2014, Vol.10, pp. 65–72.
6. Kościelniak H., *Information Resources for Financial Monitoring in Enterprises*, [in:] Economic Analysis, Vol. 43, 2010, pp. 91–98.
7. Kowalska S., *Rola informacji i jej bezpieczeństwo w zarządzaniu przedsiębiorstwem*, [in:] *Zarządzanie informacją i komunikacją w organizacjach gospodarczych i instytucjach sektora publicznego*, eds. R. Borowiecki, J. Czekaj, TNOiK, Warszawa 2012, p. 83.
8. Łęgowik-Świącik S., Decision-Making in Enterprises from the Perspective of Information Technology, [in:] Current Problems of Maintenance of Electrical Equipment and Management, Technicka Univerzita v Kosiciach, Kosice 2014, pp. 308–31.
9. Otola I., *Procesy zarządzania przedsiębiorstwami a konkurencyjność w warunkach zarażonego rynku*. Wyd. PCz, Czestochowa 2013, p. 143.
10. Potocki A., *Metoda ASTEX*, [in:] *Nowe metody organizacji i zarządzania*, ed. Z. Martyniak, Wydawnictwo Akademii Ekonomicznej w Krakowie, Kraków, 1998, p. 141.
11. Skowron-Grabowska B., *Business Models in Transport Services*. Przegląd Organizacji, 2014, nr 1, pp. 35–39.
12. Skowron-Grabowska B., *Ryzyko i uwarunkowania działalności innowacyjnej w przedsiębiorstwach*, [in:] *Zarządzanie ryzykiem w działalności gospodarczej*, ed. E. Sitek, Cz. II, 2006, pp. 142–149.
13. Stępień M., *Klasyfikacja i pomiar wybranych kategorii ekonomicznych w aspekcie prawa bilansowego i podatkowego*, Prace Naukowe UE we Wrocławiu, Wrocław 2012, p. 359.
14. Urbanowska-Sojkin E., *Podstawy wyborów strategicznych w przedsiębiorstwie.* PWE, Warszawa 2011, p. 19.
15. Zygała R., *Podstawy zarządzania informacją w przedsiębiorstwie*, Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław, 2007, pp. 46–56.

MODEL ZARZĄDZANIA INFORMACJĄ W PRZEDSIĘBIORSTWIE PRODUKCYJNYM

Streszczenie: Referat ma na celu poznanie możliwości zastosowania nowoczesnego modelu zarządzania informacją w przedsiębiorstwie produkcyjnym. W części teoretycznej referatu przybliżono tematykę związaną z istotą zarządzania informacją w przedsiębiorstwie. W dalszej części referatu omówiono cykl zarządzania informacją oraz przedstawiono zarządzanie informacją w ujęciu statycznym i dynamicznym, zwracając uwaga na cele zarządzania informacją w przedsiębiorstwie. W części empirycznej referatu, za pomocą analizy opisowej, zaprezentowano studium przypadku zastosowania modelu ASTEX do restrukturyzacji organizacji prac administracyjno-biurowych w badanym przedsiębiorstwie produkcyjnym. Wykazano wpływ zastosowania nowoczesnego narzędzia zarządzania informacjami w przedsiębiorstwie na efektywność organizacji prac administracyjno-biurowych.

Słowa kluczowe: zarządzanie informacją, cykl zarządzania informacją, podstawowe poziomy zarządzania informacją

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 179–188
dostępne na: http://www.zim.pcz.pl/znwz

THE USE OF PRICE WATERFALL MODEL (PWM) IN LOGISTICS

Krzysztof Senczyna
Vendavo / Czestochowa University of Technolog, Poland

Abstract: The purpose of the work is to present the capabilities achievable by implementing the Price Waterfall model (PWm) for logistic enterprises. An Innovative Logistic Company (ILC) should, as far as possible, exploit the potential of information technologies delivering data for further processing. The data managed by a Logistic Information System may be used to streamline a pricing process in the sector of logistic services. The PWm was chosen because its linear structure coincides with the linear form of equations of logistic costs' structure. The transaction data processed by a Decision Support System (DSS) based on the PWm allows to make an optimum price decision in a negotiation process considering the parameters of the current price strategy.

Keywords: innovative logistics, pricing model, Price Waterfall Model, Pricing Process, Pocket Margin, Pricing Leakage

DOI: 10.17512/znpcz.2016.1.18

Innovative Logistic Company (ILC)

The market of logistic services is a derivative of the market and of the economics of the environment, i.e. a dynamic environment of events in constant movement, full of new models of services and solutions in a constant effort to seek new optimisation and innovation solutions. Having a capacity, in such a variable environment, targeted at launching new solutions, is a prerequisite to be able to generate an added value for the client. This allows to make the client believe that cooperation with a given company is favourable for both parties and, most importantly, beneficial in a long-term perspective. This enables to create new innovative projects and enhance the existing solutions in the positive ambiance of a win – win strategy.

By referring to the materials from *Logistyka 2008* conference (Pfohl 2008), such a significant added value for a client, allowing to improve one's position in negotiation processes, can be introduced for a client by developing and promoting innovativeness in logistics. Those ILCs having logistic systems and networks have the highest potential to apply and model such changes. A company's business indicators can be improved by implementing such changes, as confirmed by Pfohl in the work (Pfohl 2008), and EBIT may rise by several per cents. One should keep in mind obviously that such an implementation innovative process may not necessarily bring convincing outcomes in the initial phase. As in each project, common sense and patience are the best advisors.

In particular, the studies undertaken by *The Economist* (Agent of change 2012, s. 30–33.) confirm the significance of implementing innovations. Managers in established world-class enterprises expressing their opinions in such surveys have identified the following factors as crucial new processes in the recent years:

- outsourcing
- digitalizing of the services – data streams
- virtualized office services

The far-fetched and considerable influence of IT solutions and of implementation of data processing technologies is therefore confirmed. It can be concluded when analysing the results of the surveys that the key directions can be defined for the following areas:

- business solutions e.g. outsourcing,
- hardware - electronics, M2M, RFID and many others (Sumorek 2014),
- information technologies, data flow and processing.

In the work [4], the term *innovative logistics* attaches special importance to one of significant areas, namely Integrated Information Systems. Depending on the company size, capital capacity and other economic and technical factors, gradation can be started here from the most expensive system such as ERP, SAP (aiding the most complex technical and logistic solutions (Szkoda 2013; 2015.)) to less complex systems accommodated to a given company and its turnover.

Integrated Information Systems create data streams which can be used in innovative projects in an ILC. Such an active approach to data stream management and full process control in logistic processes are the key attributes of companies having the ILC brand.

On the other hand, the deployment of new innovative projects in the area of data stream management may lead to undesired consequences for a company. The *i2*-Nike fallout story, i.e. a case of *i2* system implementation at Nike, proves how hard and costly such phenomena can be. Nike has suffered losses of around USD 100 million due to the lack of full synchronisation and consistency between the integrator's companies and Nike (Bozarth, Handfield, 2007 s. 670–672; Murphy, Wood 2011). Chaos was seen in the company's business structure by deploying the *i2* system, especially in the procurement and logistic area. The implementation process was probably not prepared correctly and tested. The implementation initially disrupted the flow of old documentation, but has not been replaced swiftly enough with new habits and personnel training. The overall project cost is estimated at USD 400 million, which to some extent made the client confident that the whole project will not slow down corporate logistics, but quite the opposite, should expedite the order lead time.

Information technology in logistics

Information technology in logistics has become a pre-condition for carrying out more and more complex tasks imposed by the changing market. It allows to deploy new concepts of system solutions becoming the inherent part of logistics

(Gołembska 2010 p.167). IT systems play various roles in logistics, hence multiple new opportunities emerge formed by a stream of data describing the parameters of the phenomena occurring in logistic processes.

A chart in Fig. 1 shows a Computer Integrated Logistic System (CIL).

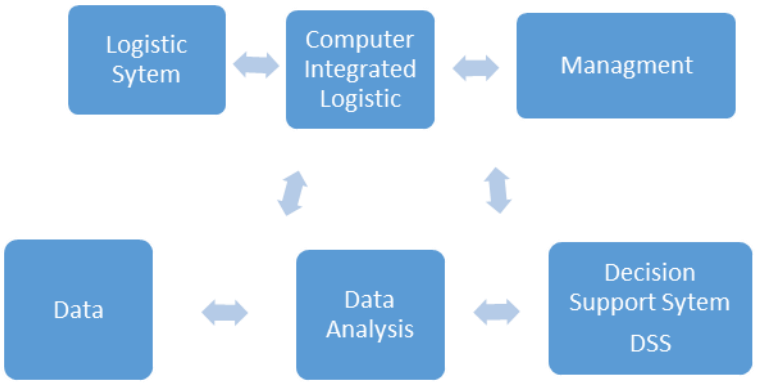

Figure 1. Computer Integrated Logistic system CIL

Source: Own work.

Data is a raw material in the system for many specialised applications and system. The Decision Support System is one of the subsystems. The data assembled in the DSS is analysed with various data models with view of streamlining the decision-making process. A product pricing process is one of the key processes essentially impacting a company's operations. If feasible, it should be subject to a separate decision-making process using the Data Subsystems, i.e. Data Collection, Assembly and Appraisal. Data analysis management

Cost equation structure in logistics

The following is the definition of basic equations in the domain of logistics Total Logistic Cost – *TLC.*

$$TLC = K_t + K_m + K_z + K_r + K_o + K_u$$

K_t - transport costs
K_m - warehousing (warehouse maintenance) costs,
K_z - inventory storage costs,
K_r - order execution costs,
K_o - packaging costs,
K_u - lost profit costs.

Particular components are summed up in the equation in order to calculate total logistic process costs. To calculate logistic costs, the indirect cost calculation method is proposed to be employed from the DPP (Gołembska 2010 p. 51) procedure where logistic costs are grouped into the following cost groups:

– storage costs
– transport costs
– internal costs

Each of the points below creates a series of components, for instance DPC (Direct Product Cost) is calculated after summing up:

– product unit acquisition costs
– product unit movement costs
– ordered product preparation costs
– product loading costs
– storage costs
– inventory costs

References provide that such analysis by sub-components enables to associate real logistic costs with a given product. A prerequisite for introducing a price model is to realistically estimate logistic costs associated with a given product, and such a price model furnishes current DPC (Gołembska 2010 p. 52) – logistic information during negotiations. An additive linear form in the cost method is indicative and points out that a price model in the field of logistic costs should be characterised by the structure equations' linearity, see also (Blaik 2010 p. 377).

Pricing Power

Warren Buffet said '*The single most important decision in evaluating a business is pricing power* '.

Logistic companies concentrate the majority of their resources and energy to construct logistic chains correctly and optimally. It is the most natural direction of actions. By focussing fully on implementing their basic company activity, no due regard is given to the product pricing process, and most of all to the Pricing Policy (http://www.mckinsey.com/insights/marketing_sales/the_power_of_pricing) coordination process, i.e. an enterprise's price policy. Many publications concerning a price policy (Stiving 2011; Kocialski 2014) highlight in the beginning that it is quite a common phenomenon in the behaviour of companies from different industries. Such a phenomenon of '*underdeveloped pricing process*' is a very serious shortcoming, though. The company's Pricing Power is being destroyed as a result.

In order to positively finalise the entire service provision process, i.e. to sell a logistic product, all the costs charged have to be covered and profit has to be achieved. Any deviations from such assumptions destroy a company' business foundations.

Current knowledge in the domain of Pricing Policy is a field of usable knowledge evolving dynamically in the recent years. It comprises a number of models estimating an attempt to answer such questions as:

- How can a company's financial result be changed by adjusting the Pricing Policy appropriately?
- If and how Pricing Policy assumptions can be realigned to utilise the market and company potential as effectively as possible?

The market these days is usually a consumer-driven market. A client is the most sought "commodity", their choices and behaviours are determining the market situation. Pricing Policies emerge with a highly dynamic product price change process due to such consumer-oriented market patterns. An example of such a situation is a chart in Fig. 2. As seen, the most active Pricing Policy is run by Amazon, which is changing product price 9 times over 12 hours, while other suppliers once in 12 hours or leaving it as it is. A new problem arises from a client's point of view. How to choose an optimum time of placing an order when a product price is so variable over time. Possibly this type of a hyperactive Pricing Policy is a strategy developed based on client and market behaviours, but only Amazon has such knowledge. It is an example of a pricing strategy typical for B2C – Business to Customer market solutions.

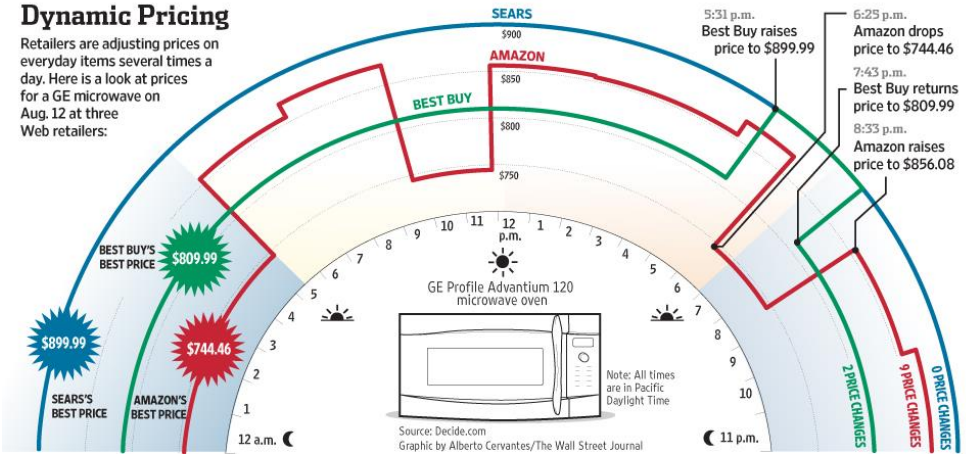

Figure 2. Product price adjustment patterns over 12 hrs for 3 suppliers

Source: Own elaboration.

Successive, new solutions are being created in the price strategy database as proven by the term *Visionary Pricing* introduced in one of distinguished publications in the recent years (Smith 2012). The new concepts cropping up of market image and enterprise environment put increased pressure on capturing dynamic fluctuations in changes not only at the current moment, but also attempt to anticipate directions of changes in the future. Such tools as a pricing mode are required for a pricing policy model. A price of a company's given product, steered by the parameters of the Pricing Policy selected at the specific stage, is established directly with such a tool.

The Price Waterfall model (PWm)

Cost equations in a logistic process are simple linear dependencies as presented in item 3. This allows to formulate an assumption that a price model should be based on linear dependencies. A linear model is defined in the field of pricing models, whose

structure is presented by a classical model referred to as the Price Waterfall model (PWm). Its graphical representation, so-called Mario chart, is in Fig. 2. The name adopted may be misleading with the term Waterfall (WF) often used in information technology. The WF (https://en.wikipedia.org/wiki/Waterfall_model) describes software development process management. This is a model of rather historical importance right now, which has been intensively replaced by an iterative stricture, so-called Agile model (Bereza 2014 s.27).

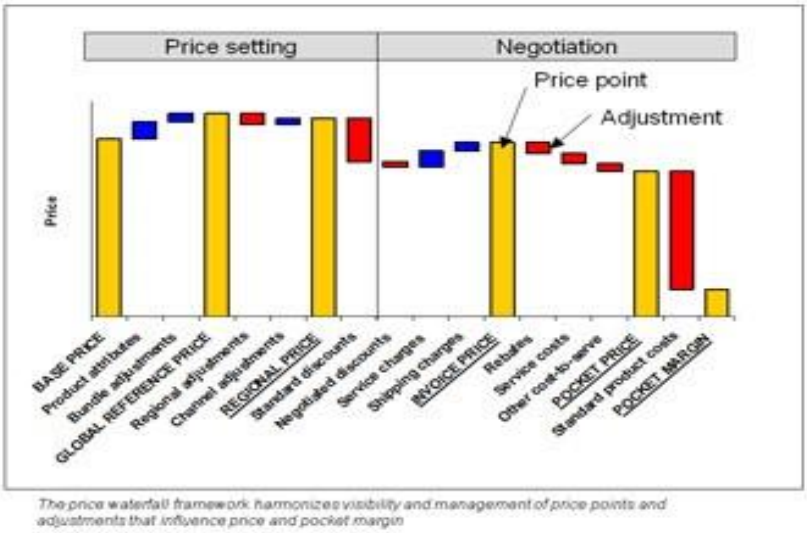

Figure 3. Cascade pricing model – The Price Waterfall model

Source: Own elaboration.

The PWm structure in Fig. 2 is a cascade-like structure. The Base Price is the starting point of the cascade. The cascade elements in Fig. 2 marked yellow are Price Points (PP). These are nodal points of the cascade, i.e. price thresholds. A specific value of a given price threshold is identified in a particular PP.

Adjustments are introduced between particular PPs defined by the master Pricing Policy effective at the time. Adjustments may either be positive (blue in Fig. 3), i.e. increase the PP price threshold value or negative (red in Fig. 3), thus decreasing the PP price threshold value after a given adjustment.

The next Price Points (k = 1...n) are calculated according to the dependency saying that they sum up the value of the preceding Price Point (k-1) and the Adjustments between particular PPs: PP(k) and PP (k-1). This definition equation is as follows:

$$Price\ Point\ (k) = Price\ Point\ (k\text{-}1) + \sum (Adjustments\ between\ PP)$$

The equations meet the criterion of model linearity. The PPs to be defined mandatorily for each PWm model:

- Base Price – begin, start point
- Invoice Price – the value charged to the customer
- Pocket Price – the gross value
- Pocket Margin – final value, result 'profit or loss'

A PP closing the PWm structure is a PP defined as the Pocket Margin (PM). A desired condition of a transaction is profitability, i.e. PM > 0, for PM = 0 or PM < 0 transaction is not profitable.

The chart in the figure is split into two parts:

- Price settings
- Negotiation settings

The Price settings part includes Adjustments linked directly to a company pricing strategy. In such a strategy, a client from a given region is awarded specifically defined discounts or is charged with additional fees. Some examples of adjustments from the Fig 3. include e.g. *Product Attribute, Bundle adjustments*.

The Negotiation settings part defines a price of a given transaction taking into account all client and product data including adjustments in this part of the WF, i.e. direct transaction parameters – logistic costs and others associated with a transaction. The PWm serves, most of all, to control the Pocket Margin value on an on-going basis when finalising the transaction. All adjustments are defined in the PWm model during negotiations with the client. The discount awarded to the client is solely negotiated. The current profit from the transaction, i.e. a PM value, is determined at each stage of a discussion with a client.

Each transaction has a full set of data and attributes allowing to create a uniform database of all transactions. A formatting process for each transaction in the PWm model enables to use tools for analysing transaction data. The aim of the analysis is to seek such data areas where phenomena occur called a Pricing leakage in the literature. Transactions may happen where PM < 0, and where too high discounts are awarded, and where adjustments at a given stage have not been made correctly. Such an on-going transaction analysis allows to find data entered erroneously for discounts, for instance a product was sold in several transactions and the PM values were largely different, the reasons of such a phenomenon should therefore be identified.

The WF cascade structure should be unique for each firm as it reflects its internal structure and the structure of the surrounding market. One can say that a PWm is sort of DNA of a company's costs and its market structure. PWm development is quite a complex process with corporate management being engaged mainly in it and a person with Pricing Analyst profile from a supplier. The more effectively and accurately the process is carried out, the operational result of PWm will be more pronounced.

Fig. 4 shows an example of how can the PWm be defined in practice. Some of the adjustments are hidden, highlighted with grey squares only underneath the cascade chart.

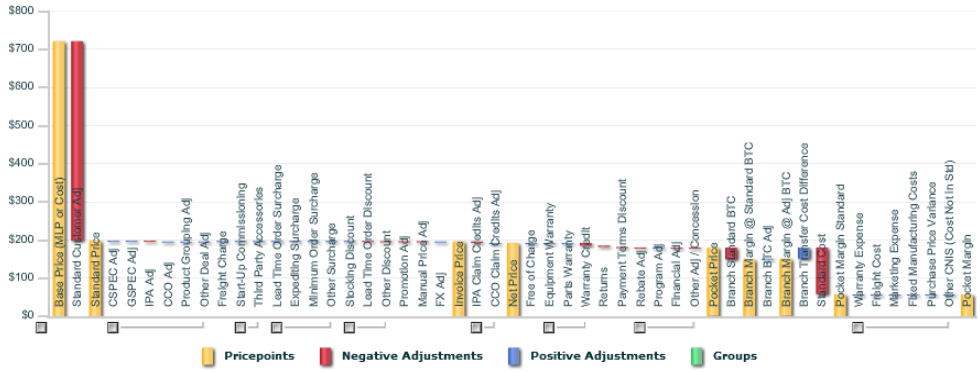

Figure 4. Example of PWm cascade – Vendavo tool

Source: Own elaboration.

The following is possible by introducing the PWm:
- multidimensional transaction data analysis;
- control of cost elements in a given pricing process
- control price leakage, finding the places
- strengthening the costs control and identifying the drivers generating high unit costs
- appraisal of sales and consequences of the conducted pricing strategy

The market position of Innovative Logistic Companies having Logistic information systems can be markedly supported by implementing the PWm model. The results achieved through implementation of such solutions are estimated by profit growth of 2-3 % of the margin in the first year, McKinsey (http://www.mckinsey.com/insights/marketing_sales/the_power_of_pricing). Such a result is described for companies whose annual transactions account for thousands of records. For those with lower turnover, considerable outcomes should be attained by defining a homogenous cost structure within the company. Price leakage locations should be identified at this stage, i.e. transactions with wrong financial parameters. If transaction data unified with a single PWm model is assembled, this provides an excellent opportunity for creating versatile analyses. This effect, if used appropriately, reinforces a company's market position.

Vendavo's PWm model

A proposal from Vendavo addressed to SAP system users is an example of such solutions in the field of PWm. This solution is merging the Pricing Strategy and the PWm model combined into a single data flow. An example of exploiting the capabilities of this software package is only presented in this item.Fig. 5 shows one of examples of identifying the places where Profit/Pricing Leakage exists. A classical Tree Map chart is used (https://en.wikipedia.org/wiki/Treemapping).

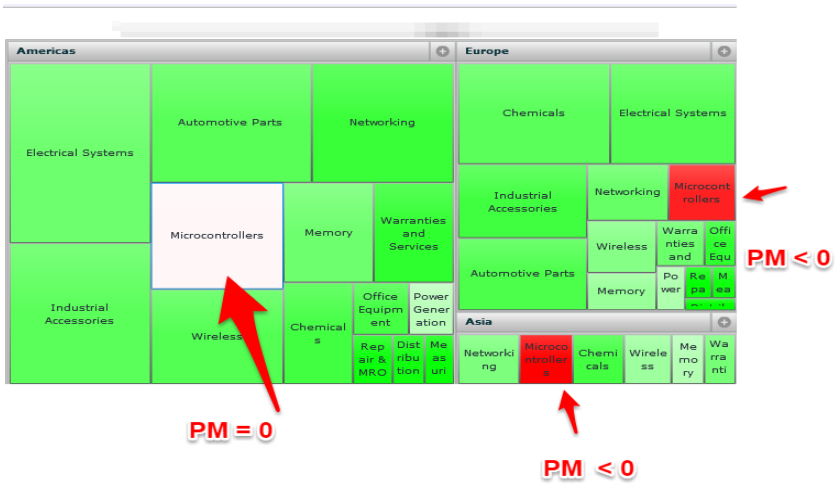

Figure 5. Tree map chart. Vendavo

Source: Own elaboration.

The red areas are the spots generating PM < 0 deficit. The successive, more thorough data appraisal with the package of tools should take place now.

Another example of PWm data analysis is in Fig. 6

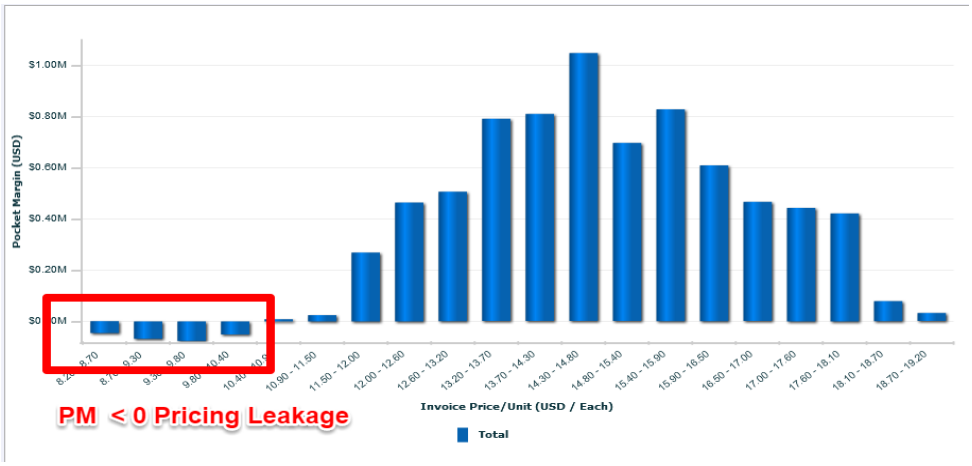

Figure 6. Bar chart with PM <0 spots. Vendavo

Source: Own elaboration.

Price ranges are defined for this analysis, over which transactions bring deficits and further analysis of deficit spots should be carried out following this result.

The two charts are only a small sample of capabilities provided by Vendavo's tool. It is beyond the framework of this article to discuss the capabilities of this package.

Logistic companies should utilise informational data they possess. This offers a possibility of building a better and stronger position in which they can build up their market advantage. Such possibilities can be achieved for instance by introducing a PWm model for setting a product and logistic service price.

References

1. *Agent of change, The future of technology distrubtion in business,* The Economist, Economist Intelligence Unit, 2012, s. 30–33.
2. Bereza B., Agile Szansa na skokowy wzrost produktywności. Wiedza i Praktyka Warszawa 2014 s.27.
3. Blaik P., Logistyka. PWE Warszawa 2010 p. 377.
4. Bozarth C., Handfield R., *Wprowadzenie do zarządzania operacjami i łańcuchem dostaw* OnePress/Helion 2007 s. 670–672.
5. Gołembska E., Kompendium wiedzy o logistyce PWN Warszawa 2010 pp. 51-52, 167.
6. http://www.mckinsey.com/insights/marketing_sales/the_power_of_pricing.
7. http://www.mckinsey.com/insights/marketing_sales/the_power_of_pricing.
8. https://en.wikipedia.org/wiki/Treemapping.
9. https://en.wikipedia.org/wiki/Waterfall_model.
10. Jacyna M., *Innowacyjna logistyka*, Logistyka 5/2011.
11. Kocialski C., *Perfect Pricing*. ISBN-10:0692313591, 2014.
12. Murphy P., Wood D., *Nowoczesna Logistyka* Wydanie X Wydawnictwo Helion 2011.
13. Pfohl H.Ch., *Innowacyjność w logistyce, tworzenie wartości poprzez innowacje*, Polski Kongres Logistyczny Logistics 2008.
14. Skowronek Cz., Sarjusz-Wolski Z., *Logistyka w przedsiębiorstwie*, PWE, Warszawa 1995
15. Smith G. E., *Visionary. Pricing: Reflections and Advances in Honor of Dan Nimer (Advances in Business Marketing and Purchasing) by Gerald E Smith* (2012) Emerald Books.
16. Stiving M., *Impact Pricing*. Entrepreneur Press 2011.
17. Sumorek A., *Komunikacja M2M,* Logistyka 3/2014.
18. Szkoda M., *Realizacja procesów logistyki dystrybucji z zastosowaniem systemu SAP ERP* Logistyka 5/2013.
19. Szkoda M., *Zastosowanie systemu SAP ERP do obsługi dostaw Just-in-Time oraz Just-in-Sequence w branży motoryzacyjnej* Logistyka 3/2015.

MODELOWANIE CEN W LOGISTYCE PRZY UŻYCIU PRICE WATERFALL MODEL

Streszczenie: Celem tego artykułu jest zaprezentowanie kaskadowego modelu cenowego – Price Waterfall model do wykorzystania w domenie wiedzy logistycznej. Innowacyjna logistyka powinna się opierać o wykorzystanie w jak największym stopniu możliwości, jakie tworzą technologie informatyczne dostarczające dane do dalszego przetwarzania. W tym wypadku dane generowane prze systemy SAP, CRM mogą zostać użyte do optymalnego modelowania procesu wyznaczania uzasadnionej ekonomicznie ceny. Price Waterfall model został zaproponowany, ponieważ jego struktura odpowiada addytywnej strukturze kosztów logistycznych. Model powinien zebrać informacje dotyczące kosztów z wszystkich możliwych centr kosztów min: marketing, koszty płatności i inne związane ze sprzedażą do klienta. Powinno to stworzyć pełny obraz firmy w domenie kosztów i weryfikować czy dany kontrakt jest korzystny czy też nie.

Słowa kluczowe: innowacyjna logistyka, model cenowy, Price Waterfall Analysis, Pricing Process, Pocket Margin, Pricing Leakage

Zeszyty Naukowe Politechniki Częstochowskiej
Zarządzanie Nr 21 (2016) s. 189–200
dostępne na: http://www.zim.pcz.pl/znwz

ECOLOGICAL PRACTICES AS AN ELEMENT OF THE ENVIRONMENTAL MANAGEMENT OF POLISH SMES

Aleksandra Koszarek-Cyra
Czestochowa University of Technology
Faculty of Management

Abstract: The article is an attempt to present environmentally-friendly actions of Polish small and medium-sized business sector as an element of environmental management in business entities. In the first part the essence and genesis of environmental management have been characterized, in the second one trends, barriers and determinants of pro-environmental actions of the SMEs in Poland have been indicated. The analysis has been based on statistical data obtained in the survey 'Flash Eurobarometer 426. SMEs, resource efficiency and green markets', which was carried out on behalf of the European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs in September 2015.

Keywords: environmental management, SMEs, ecological activities

DOI: 10.17512/znpcz.2016.1.19

Introduction

The conflict between the condition of the environment and human activity has always existed, but it began to be especially noticeable with the development of industrial enterprises (Poskrobko2007, p. 256). In the fifties of the 20th century the awareness of the adverse impact of the human activity on the environment began to be an issue widely discussed on the international forum. The public began to pay increasing attention to the growth of air pollution, soil degradation or the problem of depletion of natural resources. This growing concern about the state of the environment caused a revolution in the approach to the issues of its protection and contributed to an increase in the number of ecological practices in organizations. (Leonidou et al. 2013) As the years passed pro-environmental strategies began to be not only a domain of international corporations or large enterprises but also became a part of the management of smaller organizations such as SMEs.

Genesis of environmental management – chronological approach

For the past half-century the approach of enterprises to environmental issues has changed radically. The evolution proceeded from the state of total absence of taking into account environmental protection in the activity of business entities, by gradually increasing the commitment, to the implementation of environmental management in overall enterprise management system.

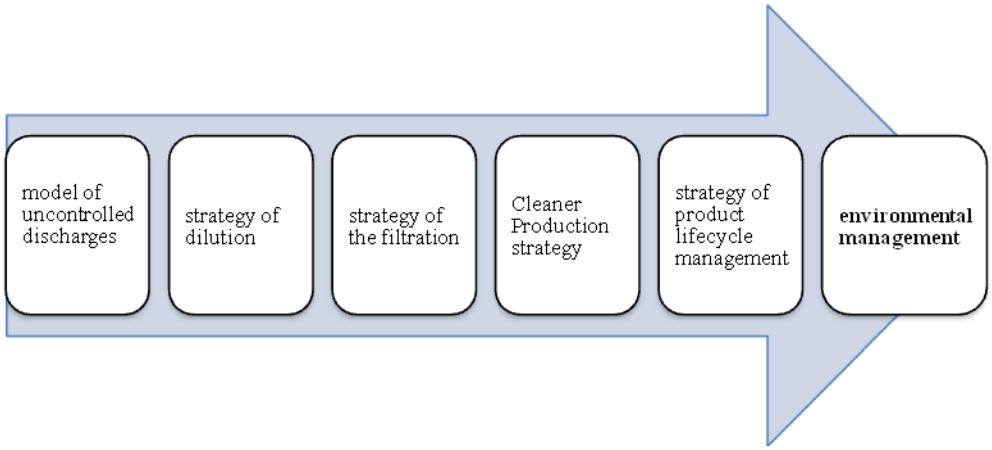

Figure 1. Genesis of environmental management

Source: Own elaboration based on Wiśniewska, 2004.

In the nineteenth and the first decades of the twentieth century, there was no attention paid to influence of the industry on the state of the natural environment. During this period enterprises carried out the model of the wasteful exploitation of natural resources and uncontrolled discharge of waste, which resulted in pollution of groundwater, soil and the formation of illegal waste dumps.

In the fifties of the twentieth century, when enterprises began to attach importance to environmental protection, companies began to apply the strategy of dilution, as a way to reduce anthropopression. The essence of this idea was the decrease in pollution by dilution of the sewage, which was produced in technological processes, so that the environment could absorb contaminants. This strategy was inefficient because ecosystems were not able to assimilate such an amount of waste.

The next step in the development of green initiatives was starting to use a various type of filters so-called end-of-pipe technologies (strategy of filtration), which was intended to reduce the amount of pollutants. However, this strategy also did not bring the expected results, and also generated the problem of utilization and neutralization of waste separated in filters (Gajdzik, Wyciślik 2010, pp. 81-82).

In the eighties of the twentieth century, it was concluded that the reduction of waste at the production stage is a more environmentally favorable approach than its minimization at the "end of pipe". Cleaner Production Strategy (CP) was introduced, its main idea was to prevent waste at the source - in the production process.

The nineties of the twentieth century brought a revolutionary change in the approach to environmental protection by enterprises. A new concept, called the strategy of product lifecycle management, assumed that the reduction of emissions of pollutants and amount of waste is not only associated with the production process, but also with its sale, consumption or exploitation and using post-consumer waste (Wiśniewska 2004, pp. 91–98).

In 1992, during the United Nations Conference on Sustainable Development (UNCSD) in Rio de Janeiro, a document was signed by 1,200 companies, which contained 25 principles of responsible business. Sixteen of them were directly related to the impact of business activities on the environment. It was the base document for the later standards and procedures of the environmental management.

In the same year the International Organization for Standardization (ISO) joined the work on a worldwide environmental management procedure. It led to appearance, in 1996, of the norm ISO 14 001 - an environmental management system (Poskrobko 2007, p. 255)

From that moment on environmental management slowly began to be implemented in integral management systems.

Today, as Brzozowska and Starostka-Patyk (2008) indicate combination of management science and environmental protection with the practice of business operation in order to use and protect enviroment more reasonably become more and more popular.

Environmental management of enterprises

Nowadays, when the idea of Sustainable Development, defined in the report of the World Commission on Environment and Development (1987) as the economic and social development, which will satisfy the needs of the contemporary generation without the risk that future generations will not be able to satisfy their needs, is considered as a leading concept, increasing pressure is being exerted on enterprises to limit their negative impact on the environment. This pressure comes from various sources, on the one hand, it is conditioned by the law regulations on the other hand is the result of requirements of increasingly environmentally sensitive customers and business partners. The principles of corporate social responsibility, stakeholders` requirements and the increasing demand for green products and services are the cause of growing interest in the subject of sustainability of organizations among the managers and entrepreneurs (Zorpas 2010). As a result of it, environmental management is increasingly treated as an integral part of the process of creating the organization's strategy (Berrone, Gomez-Mejia 2009).

According to the definition B. and T. Poskrobko (2012, p. 16), environmental management is managing the processes of the use, protection and forming of the environment. It includes organizational structure, planning, procedures, processes and resources for implementing and operating management in a way which takes into account environmental problems.

Implementation of environmental management functions include: planning, conducting and monitoring the effects of ecological actions in enterprises. Such actions are initiatives associated with the use of preventing and controlling pollution technology, optimizing production and distribution processes towards reducing resource and energy consumption, environmental training for employees and implementation of environmental management systems (EnMS).

The level of actions intensity depends on the degree of environmental involvement of organizations. Entrepreneurs represent two attitudes towards environmental management. The first one, chosen by less involved companies, characterized by low pro-ecological activity, consisting almost exclusively in meeting legal obligations; the second one - presented by environmentally engaged companies, involves an active pro-ecological approach, in which activities extend far beyond the legal obligation and include, for example: the creation of departments responsible for environmental activities, implementation of environmental objectives in the policy of the organization, obtaining environmental certificates and awards etc. (Nath, Ramanathan 2016). The first type of organization Henriques and Sadorsky (1999) call entities reactive (reactive), the other proactive, Hunt and Auster (1990) use the nomenclature "begginers" (type 1) and "proactivist" (type 2).

In the literature, 4 types of market strategies, chosen by the companies in the field of environmental management, can be found. Their essence presents the diagram below.

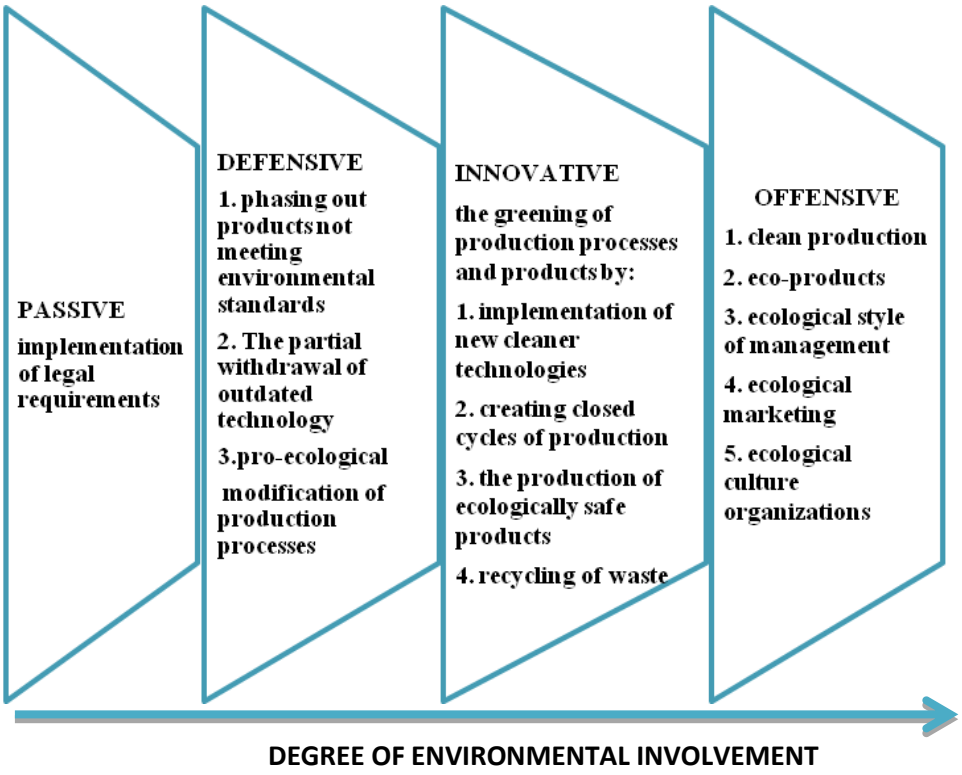

Figure 2. Market environmental strategies depending on the degree of involvement of the organization

Source: Own elaboration based on Gajdzik,Wyciślik, 2010.

Environmental management of the SMEs sector

According to the Commission Regulation (EC) No 800/2008 of 6 August 2008 the category of micro, small and medium-sized enterprises ('SMEs') is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million. An additional criterion taken into account, for example, in the User guide to the SME definition (2015) is dependence of the company on other organizations. It is assumed that the share of other entities may not exceed 25% (contribution of shares, the right to participate in the profits, votes at the general meeting of shareholders).

The SME sector is the basis - "backbone" of the European and Polish economy.

In 2014 Poland there were 1.8 million of non-financial companies belonging to the SMEs sector. Similarly to previous years, this sector had most of the domestic economy - SMEs represented 99, 8% of all companies. (GUS 2015) Analyzing the impact of a single SME organization on the environment, it is usually minimal, but taking into account the cumulative environmental impact of the whole sector, it must be emphasized that it is crucial. Therefore, it is important to implement environmental management to small organizations rather than to treat it as the domain of only large enterprises. It should be emphasized that these actions in the SMEs sector cannot be synonymous with the activities of large companies or corporations. This is primarily due to differences in the structure and culture of the organization, but also to the availability of resources. (Bos-Brouwers 2010; Sinha, Akoorie 2010)

It should be remembered that carrying out environmental activities frequently requires financial resources, small entities often do not have own resources to support these initiatives, especially for those which go beyond legal requirements and are often perceived by management as unnecessary, not-bringing measurable benefits (Mir, Feitelson 2007).

The problem, especially for microenterprises, in which environmental issues are the responsibility of the owner/managing director, could be the lack of time for ecological activities. It may result from a multitude of other duties, as well as lack of knowledge and the perception of environmental initiatives as economically insignificant (Zorpas 2010).

Environmental activities of Polish SMEs sector

In this subsection the author will attempt to present environmental activities of Polish SME sector. The analysis is based on statistical data obtained in the survey conducted on behalf of the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, European Commission, in 28 EU countries and Albania, Macedonia, Montenegro, Serbia, Turkey, Iceland, Moldova, Norway and USA, by TNS Political & Social network in September 2015 (Flash Eurobarometer 426 database Poland 2015).

In Poland, the study was conducted by TNS OBOP and included 500 SMEs (440 microenterprises, 51 small and 9 medium-sized enterprises). Data from 2015 was compared with information obtained in the analogous study, which was conducted in September 2013. (Flash Eurobarometer 381 database Poland, 2013).

As the most frequently undertaken pro-environmental initiatives, respondents mentioned the initiatives related to saving materials and reduction of energy consumption. These two types of activities entrepreneurs also indicated most often in 2013. Compared to the previous survey, the number of activities in the field of waste minimization has increased. It is disturbing, that almost 1/5 of companies do not undertake any ecological actions, and the percentage of enterprises introducing changes decreased by 10% within two years (Fig. 3).

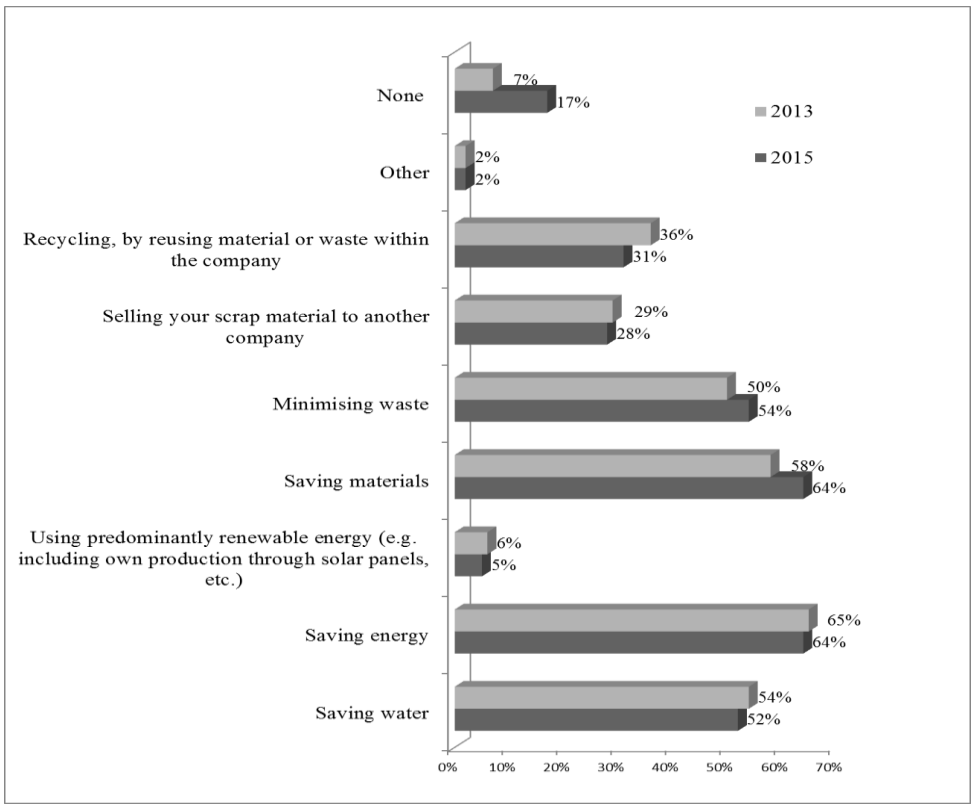

Figure 3. Pro-environmental actions taken by the SME sector in 2011-2015

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database.

Analyzing the sector, it may be noted, that while the implementation of actions by microenterprises remained at a similar level as in 2013, and in the case of material savings this percentage even increased by 9 percentage points, the medium-sized companies significantly reduced the frequency of implementing changes. Particularly noticeable is the decrease in the number of investments in energy and materials saving, but also in other types of activity the number of initiatives significantly decreased.

Table 1. Ecological activities according to size of enterprises

	Micro-enterprises			**Small enterprises**			**Medium enterprises**		
Action	2015	2013	The change compared to the 2013	2015	2013	The change compared to the 2013	2015	2013	The change compared to the 2013
Saving water	52%	54%	-2%	51%	50%	1%	42%	66%	-24%
Saving energy	65%	63%	2%	55%	68%	-13%	48%	88%	-40%
Using predominantly renewable energy (e.g. including own production through solar panels, etc.)	5%	5%	0%	3%	14%	-11%	8%	12%	-4%
Saving materials	64%	55%	9%	60%	64%	-4%	49%	86%	-37%
Minimising waste	54%	48%	6%	50%	56%	-6%	48%	60%	-12%
Selling scrap material to another company	27%	25%	2%	28%	42%	-14%	40%	53%	-13%
Recycling, by reusing material or waste within the company	32%	36%	-4%	22%	33%	-11%	28%	45%	-17%
Other	2%	1%	1%	1%	3%	-2%	-	-	
None	17%	8%	9%	18%	4%	14%	45%	-	

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database.

The study shows that the majority of entities do not invest large funds in environmental activities. 30% the organizations declared that, during 2013-2015, they allocated no financial outlays for pro-ecological activity, while almost 60% of respondents indicated, that they dedicated to it less than 10% of annual turnover. Comparing the data with this obtained in 2013, it can be concluded that the activities carried out by entrepreneurs belong to the low-cost sector.

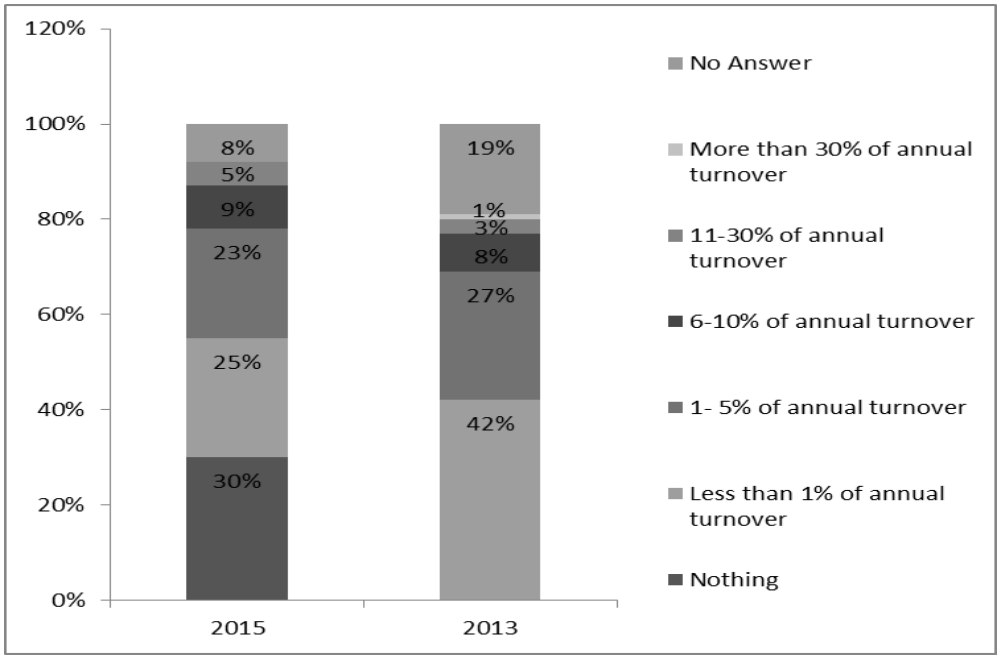

Figure 4 The amount of funds for pro-environmental actions in SMEs

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database.

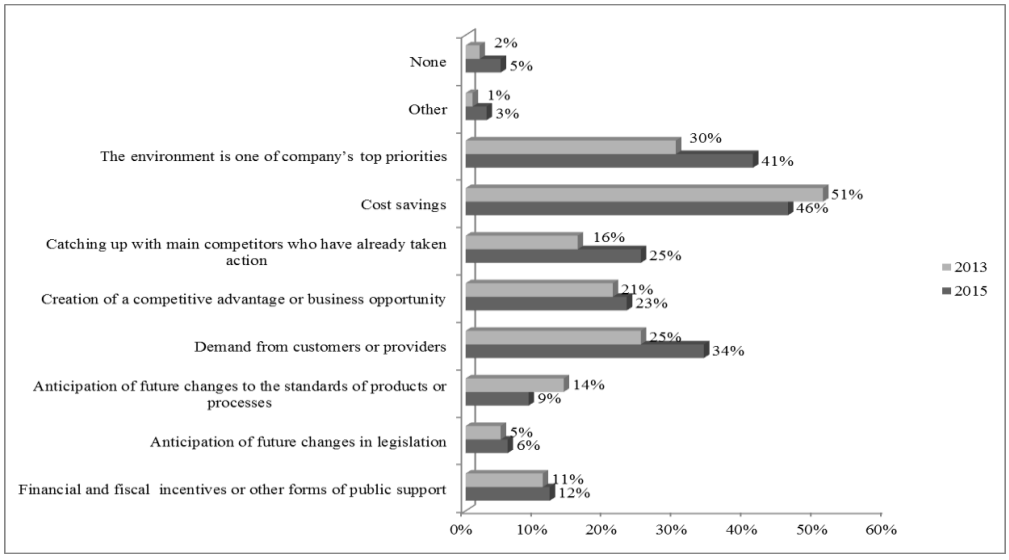

Figure 5. Reasons for taking environmental actions

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database

As two years earlier, as the main reason for taking actions, respondents indicated a reduction of operating costs. More often than before, condition of the environment was recognized as one of the main priorities in the organization. Entrepreneurs attached greater importance to ecological requirements of customers and business partners, as well as to the necessity of catching up with the competition, which had already introduced changes.

Table 2. Reasons for taking environmental actions according to size of enterprises

Reasons	Micro-enterprises	Small enterprises	Medium enterprises
Financial and fiscal incentives or other forms of public support	12%	10%	27%
Anticipation of future changes in legislation	5%	6%	13%
Anticipation of future changes to the standards of products or processes	8%	13%	16%
Demand from customers or providers	34%	29%	52%
Creation of a competitive advantage or business opportunity	21%	30%	**47%**
Catching up with main competitors who have already taken action	24%	39%	21%
Cost savings	46%	42%	53%
The environment is one of company's top priorities	**42%**	38%	29%
Other	3%	6%	-
None	6%	1%	-

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database

Within the sector, the possibility of creating a competitive advantage was more often pointed out as a motivator for medium-sized companies (almost half of them indicates that reason), while smaller organizations demonstrated greater concern for environmental protection.

Research has shown that entrepreneurs more often encountered obstacles in the implementation of pro-environmental actions than in previous years. The percentage of respondents declaring problems was higher in all groups of analyzed barriers

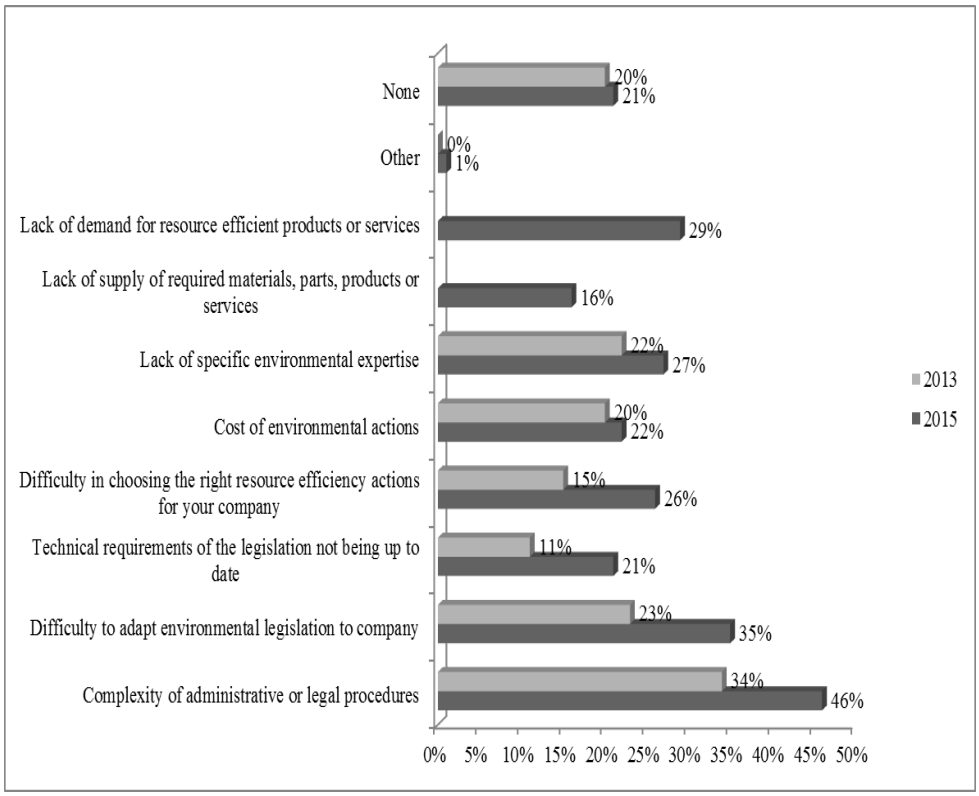

Figure 6. Difficulties in the implementation of pro-environmental actions

Source: Own elaboration based on Flash Eurobarometer 426 - POLAND database

Particularly disturbing was the increase in the number of respondents indicating problems connected with the complexity of administrative or legal procedures and the difficulties of adapting environmental legislation to their companies. In both cases, the percentage of respondents increased by 12 points. An interesting fact is that 30% of entities observed the lack of interest in green services and products among customers or business partners, which may indicate low ecological awareness of the organization surrounding.

Summary

Global concerns about the exhaustion of natural resources, climate change, and the possibility of biodiversity loss are becoming increasingly important in business reality. There is no doubt that current legal regulations, applicable principles of corporate social responsibility and the stakeholders demands require that environmental management is an integral part of the development strategy of the organization.

However, it should be remembered that SMEs are not smaller versions of large organizations and they may require different ways of dealing with environmental problems.

On that basis of the above analysis, it can be concluded that the implementation of an environmental management in general management system of Polish small companies is still in an initial phase. Furthermore, in the last two years, there was a regression in this process, because entrepreneurs more rarely undertook pro-environmental initiatives than before. It may have been caused by an increase in the number of encountered barriers, in particular the complexity of administrative and legal procedures.

It should be considered that whether the reason for taking actions is not an ecological motive but the possibility of cost reduction (even if they have a positive impact on the environment), they should be still treated as an element of environmental management.

References

1. Berrone P., Gomez-Mejia L. R., 2009. Environmental performance and executive compensation: an integrated agency-institutional perspective. *Acad. Manag. J.* 52 (1), pp. 103–126, DOI: 10.5465/AMJ.2009.36461950
2. Bos-Brouwers H. 2010. Corporate sustainability and innovation in SMEs: evidence of themes and activities in practice. *Business Strategy and the Environment* 19(7), pp. 417-435. DOI: 10.1002/bse.652
3. Brzozowska and Starostka-Patyk 2008. Environmental Management and Reverse Logistics. [In] *Advanced Logistic Systems. Theory and Practice*. VOL.2 pp. 89-95. ISSN: 1789-2198
4. Commission Regulation (EC) No 800/2008 of 6 August 2008 declaring certain categories of aid compatible with the common market in application of Articles 87 and 88 of the Treaty, (General block exemption Regulation) Annex I
5. European Union, 2015,*User guide to the SME definition*, Luxembourg: Publications Office of the European Union, DOI: 10.2873/620234
6. Flash Eurobarometer 381 database, 2013. Available at: https://open-data.europa.eu/pl/data/dataset/S1086_381 [30.03.2016]
7. Flash Eurobarometer 426 database 2015, Available at: https://open-data.europa.eu/pl/data/dataset/S2088_426_ENG [30.03.2016]
8. Gajdzik B., Wyciślik A. 2010, *Wybrane aspekty ochrony środowiska i zarządzania środowiskowego*, Gliwice: Wydawnictwo Politechniki Śląskiej ISBN: 978-83-7335-716-7
9. GUS, 2015. *Działalność przedsiębiorstw niefinansowych w 2014 roku*, Warszawa ISSN 1895 – 698X Available at: http://stat.gov.pl/obszary-tematyczne/podmioty-gospodarcze-wyniki-finansowe/przedsiebiorstwa-niefinansowe [30.03.2016]
10. Henriques I., Sadorsky P. 1999. The relationship between environmental commitment and managerial perceptions of stakeholder importance. *Acad. Manag. J.* 42(1), pp. 87–99. DOI: 10.2307/256876
11. Hunt C. B., Auster E. R. 1990. Proactive environmental management: Avoiding the toxic trap. *Sloan Manag. Rev*. 31(2), pp.7–18.
12. Leonidou C. N., Leonidou L. C., Fotiadis T. A., Zeriti A. 2013. Resources and Capabilities as Drivers of Hotel Environmental Marketing Strategy: Implications for Competitive Advantage and Performance. *Tourism Management* 35, pp. 94–110. DOI: 10.1016/j.tourman.2012.06.003

13. Mir D, Feitelson E. 2007. Factors affecting environmental behaviour in micro-enterprises: laundry and motor vehicle repair firms in Jerusalem. *International Small Business Journal* 25(4): 383-415. DOI: 10.1177/0266242607078583
14. Nath P., Ramanathan R., Environmental management practices, environmental technology portfolio, and environmental commitment: A content analytic approach for UK manufacturing firms. *Int. J. Production Economics* 171 (2016) pp. 427–437 DOI: 10.1016/j.ijpe.2015.09.040
15. Poskrobko B. 2007 *Zarządzanie środowiskiem*, Warszawa: PWE ISBN:978-83-208-1713-3
16. Poskrobko B., Poskrobko T. 2012 *Zarządzanie środowiskiem w Polsce*. Warszawa: PWE ISBN: 978-83-208-2011-9
17. Report of the World Commission on Environment and Development: *Our Common Future.* Available at:. http://www.un-documents.net/our-common-future.pdf [30.03.2016]
18. Sinha P, Akoorie M. 2010. Sustainable environmental practices in the New Zealand wine industry: an analysis of perceived institutional pressures and the role of exports. *Journal of Asia-Pacific Business* 11(1): 50-74. DOI: 10.1080/10599230903520186
19. Wiśniewska A. 2004 *Strategie proekologiczne w zarządzaniu przedsiębiorstwem*. [In] M. Kistowski (ed..), *Studia ekologiczno-krajobrazowe w programowaniu rozwoju zrównoważonego. Przegląd polskich doświadczeń u progu integracji z Unią Europejską*, Gdańsk: Bogucki Wydawnictwo Naukowe, pp. 91–98. ISBN 83-89290-32-4
20. Zorpas A. 2010. Environmental management systems as sustainable tools in the way of life for the SMEs and VSMEs. *Bioresource Technology* 101 (2010) pp. 1544–1557 DOI:10.1016/j.biortech.2009.10.022

DZIAŁANIA PROEKOLOGICZNE JAKO ELEMENT ZARZĄDZANIA ŚRODOWISKOWEGO W PRZEDSIĘBIORSTWACH POLSKIEGO SEKTORA MSP

Streszczenie: W niniejszym artykule podjęta została próba przedstawienia działań proekologicznych polskiego sektora MSP jako elementów zarządzania środowiskowego w podmiotach gospodarczych. Scharakteryzowano istotę i genezę zarządzania środowiskowego, jak również na podstawie danych statystycznych publikowanych przez Komisję Europejską wskazano trendy, bariery i determinanty działań prośrodowiskowych organizacji sektora MSP w Polsce

Słowa kluczowe: zarządzanie środowiskowe, MSP, działania proekologiczne