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## THE SYSTEM OF INTERORGANIZATIONAL LINKAGES ON THE AGRI MARKETS

Key words: network approach, business network, farms, relations, food markets

### INTRODUCTION AND PURPOSE

Agri markets are the key component of agribusiness sector, which is defined as an umbrella term encompassing all agricultural operations, supplying farms with input products, trade, as well as storage and processing of agricultural products (Davis and Goldberg, 1957). Spread of the agribusiness concept is connected with gradual changes in agriculture in general. It boils down to the inclusion of agriculture into the wider complex of industrial entities dealing with the supply, trade and processing of agricultural output. Agriculture is becoming a part of non-agricultural sectors, which results in the establishment of an agribusiness (Tomczak, 2004). Thus, it leads to the disappearance of farmers' independence and transforms them into enterprises operating within the network of market dependencies and interconnections with other entities. This phenomenon creates a new perspective for analyzing agri markets, and the network approach is becoming a relevant theoretical framework for the scientific research.

However, in many cases, the farm management is still affected by the family budget (Kool, 1994), as farms (and farmers) become more professional, their market behavior can be considered as industrial-like (Batt, 2000). Therefore, each farm as a market entity creates specific links to other members of the business network. In addition, the core functions, such as selling the goods and purchasing the input products, provide farmers with information, transfer the risk, create an innovative potential and more. Larger production on the farm level makes it a more attractive business partner for the other network members, which may imply competition among suppliers and buyers. The number of sales channels used by the individual farms may reflect their market power and the intensity of market connections. A number of researchers have discussed the agribusiness sector using the network approach as a theoretical frame (Arcese et al., 2014; Belaya and Hanf, 2014; Lucas and Chhajed, 2004; Nuhoff-Isakhanyan et al., 2016; Tepic et al., 2012), however, little is still known about the manner in which farms manage their connections with the market.

This paper contributes to the existing literature by focusing on the farms' sales strategies and their position on the market. The purpose of the paper is to identify the relation between the number of sales channels used by the farm and its market potential.

### METHODOLOGICAL APPROACH

The scope of this paper are the business network connections of farms and their market position. A larger scale of production induces a higher demand for the input products and may create higher needs in relation to the sales of commodities (positive factors). However, a

more complicated system of market linkages may enhance the transaction cost (negative factors). Based on these two contradictory forces, it can be hypothesized that:

H1: there is a positive relationship between the farm's market position (power) and the number of its connections to the business network.

H2: after exceeding a certain (threshold) level of the farm's market power, the number of its connections to the business network remains the same.

Two main dimensions have been analyzed:

- The farm's market power is reflected by its sales power, calculated as a standard output based on the methodology developed by Community Committee for the Farm Accountancy Data Network (FADN, 2009).
- The farm's connections (linkages) to the business network was determined based on the declared number of types of sales channels used by the investigated farm.

The data for this study were collected through individual personal interviews with the farmers (main decision makers) who are responsible for managing their farms. The overall number of farming households in Poland is estimated at 1.3 million. The final sample reached 1143 entities selected randomly by regions and size categories.

#### FROM AGRI MARKETS TO AGRI NETWORKS

The transactional perspective, often applied for the purpose of analyzing the agribusiness, leads to a significant simplification of conditions in which companies operate, thus failing to represent the specific nature of such markets. Most businesses operating in the institutionalized markets cooperate with a group of clients and suppliers, relatively low in number in comparison to consumer markets. The strength of the connection between the entities is usually substantial, which results, among others, from the volume of turnover within a single entity. In such a situation, the position of a given entity will develop from the repeating interactions between the entities and their quality. This justifies the development of the interaction approach, where researchers focus on repeating transactions between enterprises which give rise to relation systems. The network approach was developed by expanding the perspective and focusing attention on numerous enterprises. The analyses in the network approach are performed for a larger group of entities and the network is viewed as a whole (Mattsson, 1997). Farms and agricultural enterprises should be perceived as the elements the agri markets are built with. They purchase the input and sell the agricultural products (both raw materials and consumer products). Therefore, they perform a double role – a final element of marketing channels for production agents as well as the initial part of marketing channels for agri-food products. The classic agri-market approaches include the following entities: farms, entities responsible for the primary purchase and processors. Such an approach implies that agri-markets were considered mainly as a chain. While the environmental regulations impact the food sector significantly, the food economy may lose its market-like nature where product demand and supply is shaped without restrictions. In this situation, the network approach is a theoretical construct that enables the analysis of agribusiness and food system from both static and dynamic perspectives. On the structural level, agri markets begin to simplify. This is caused, among others, by the progressive concentration, which is currently happening (Fairclough, 2018) and is expected to continue (Gazdecki, 2014). The functions of agri-markets shall be maintained, however, and will be

provided by larger market entities, yet in lower numbers. The consequence of the described processes is the growing strength of connections between the market players.

The emergence of agribusiness was a natural consequence of the economic transformation, especially the process of industrialization, which took place on a number of markets Davis and Goldberg (1957). The diversity of functions related to the production of food (including both raw materials and finished products) caused the formation of specialized entities, which participate in the process of providing consumers with foodstuffs, within the food economy. In the analysis of food markets, the emphasis is often placed on the physical movement of the products. For this reason, an important theoretical concept which enabled the food markets to be analyzed was the theory of supply chains.

This concept was substantiated by the fact that, due to the assortment of products on the market, there are specialized entities (adapted to a certain group of products) participating in the process of providing goods to consumers. The final assembly of the product offer takes place on the retail level, which creates value for consumers by enabling them to make diversified purchases. With this in mind, the supply chain management concepts have been quickly adapted to the requirements of analyzing food markets, especially from the perspective of logistic procedures and the logistics management. In this context, the supply chain is defined by Christopher (2011) as “planning and coordinating the materials’ flow from source to user as an integrated system”. Therefore “the goal is to link the marketplace, the distribution network, the manufacturing process and the procurement activity in such a way that customers are serviced at higher levels and yet at lower cost”. However, as Christopher (2011) pointed out, the function of creating value for end users should be treated as superior to the analysis of the goods’ flow processes. The theoretical approaches of supply chains were systematized in the late 1990s by Bechtel and Jayaram (1997), who identified the so-called chain’s functional awareness school, a logistical school based on the analysis of interconnections between the entities, an informational school and a process school (Delfmann and Albers, 2000).

The suitability of the chain management theory for the purpose of analyzing food markets results mostly from the fact that the integration of the entities comprising this chain is possible thanks to a product. The respective entities cooperate with each other, thus enabling the flow of goods and the stream of information, risk, property and money transfers. Yet, the concept of supply chains barely takes into account the fact that individual entities existing within the chain interact with the entities outside the chain, creating arrangements of cooperative or competitive character.

One of the first release analyzing the food market in the context of the network theory were published in the early 2000s (Farina and Zylbersztajn, 2003; Harland, 1999). Interestingly enough, the interactive and network approaches had been developed already in the 1980s, mainly in relation to the work done by the researchers associated with the IMP Group (Håkansson, 1982; Håkansson and Snehota, 1995). This means that for many years the network approach has been less popular in the analysis of food markets.

The concept of supply chains and the network approach shall be treated as complementary to each other (Wiśniewska-Paluszak and Paluszak, 2018). For instance, it is emphasized that supply chain systems are characterized mainly by vertical integration, whereas the horizontal connections are weaker. In food chains, a dominant unit to coordinate other products may occur more frequently. However, the network patterns have a wider meaning and are created by all the entities present in the given sector. These networks include both horizontal and vertical connections. For this reason, the notion of network shall be accepted as more general (Farina and Zylbersztajn, 2003). Some researchers suggest that supply chains are in fact a specific form of network, within which connections with the entities moving up and down the chain are dual in their nature (Harland, 1999).

Farina and Zylbersztajn (2003) indicate that the Supply Chain Systems (SCS) are considered as specific elements of business networks. According to these researchers, what distinguishes the two approaches, is the management perspective. In networks, the respective entities remain more autonomous, whereas the supply chains bring a more prominent coordinative function. The intermingling of network and chain perspectives in case of food markets is also visible in the notion of the food supply chain network proposed by van der Vorst, Beulens, de Wit and van Beek (1998). It assumes the existence of a number of companies which collaborate strategically in one or more areas while preserving their own identity and autonomy. A similar approach is demonstrated by Stern and co-authors (2006) who consider the marketing channels as system networks.

By referring to the concept of agribusiness presented by Davis and Goldberg (1957), this sector can be pictured as a structure built with various types of entities. The structure's first building block is the supply of production materials and farming itself, which is responsible for the productions of raw materials for the production of foodstuffs. The second component are the entities responsible for the processing of raw materials and the production of finished food products. The last link in the chain is the retail sector, the basic function of which is the delivery of food products to consumers. The network systems can occur between the entities sitting on any level of agribusiness, both as part of horizontal or vertical connections.

The main focus of this article is the first segment of agribusiness and the analysis of the connections created by farming households with the purpose of selling their produce. This level of the food sector is the most numerous one (in comparison to the remaining segments) and is characterized by a relatively low market strength (Hingley et al., 2015; Höhler and Köhl, 2014). The number of farming households in Poland is estimated at approximately 1.4 million, whereas globally it is close to 570 million (Lowder et al., 2016). Along with the development of agribusiness, a gradual disappearance of independence of farms can be observed. They are becoming more dependent on other entities, which may bring two different sets of consequences. On one hand, a greater number of relations increases the market independence of farming households. On the other hand, however, it could produce additional transaction costs, which would prove unfavorable in a long term.

#### POWER AND NETWORK CONNECTIONS

The term power is a complex one and has a number of interpretations (Blois and Lacoste, 2009). It can be considered on the ground of psychology, sociology, politics as well as economy and management (Lukes, 2004). Power is related to the coercion, influence, authority, force and manipulation (Bachrach and Baratz, 1962). As Lukes (2004) suggested power should be distinct from a influence and coercion which have a common part but are not tantamount. Power is a concept with a significant importance in the business to business marketing literature (Kumar, 2005; Siemieniako and Mitreǵa, 2018). There are many of work discussed power in from two perspective, i.e. as a positive and negative factor (Belaya and Hanf, 2009). For instance some authors rise the negative relation between power and the trust (Mysen et al., 2012; Naude and Buttle, 2000). As for the positive side of power authors argue that power may contribute purpose and direction to the relationship (Belaya and Hanf, 2014; Kumar, 2005). In a more specific way, the term power in B2B settings is considered as a bargaining power i.e. as the ability of one party to a contract to be able to influence the terms and conditions of that contract or subsequent contracts in its own favor (Argyres and Porter Liebskind, 1999). However, there are a different source of a company's power on the maker, number of economic literature discuss relation between market power and the company market share (Cameron and Glick, 1996; Hashmi and Van Biesebroeck, 2016; Rhoades, 1985). In an economic sense the dominant (powerful) company is that can profitably raise

price above competitive levels because output expansion by 'competitive fringe' firms is not sufficient to make the price increase unprofitable (Cameron and Glick, 1996). Farms, as a market entities considered in this paper, are not able to control the market prices as agri markets are organized as a oligopsony. However, in our paper the main focus is on relative market power one farm may have in comparison to another one.

Companies market connections is phenomena could be discussed from two viewpoints (Öberg, 2014). In the strategic management attention is paid for instance on the external resources, how the company could be adjustable (Teece, 1992). Other parties are perceived as an external circumstances impact the company (Sharma and Henriques, 2005). In the network approach the main focus is on a network considered as a set of market entities and how the company behave in the network (Håkansson et al., 2009; Johanson and Mattsson, 1987). Those two perspectives meet in the concept of strategic network – where one market entity takes a predominant position in the network (Gulati et al., 2000; Möller and Rajala, 2007).

Farms can create both vertical and horizontal linkages with other actors. However, their market potential is mainly revealed to the vertical links. And their market power (translated to the attractiveness for business partners) is determined by their economic size (value of production - "Standard output"). Higher standard output translates to the greater market power which can be considered both absolute or relative way (relation to other farms) and may allow to reach a better access to the market what was investigated by Höhler & Kühl (2014). The presented considerations refer to the first and second research hypothesis formulated in this article.

## RESULTS

The presented data show what types of sales channels are employed by the farming households, therefore it may reflect the activity of farmers in terms of the diversification of sales strategies (Table 1). The three most popular sales channels include: selling directly to food processing plants, selling to trade agents and selling on wholesale marketplace. Another channel consists in selling produce within the farm, which may suggest both minor transactions with individual consumers and larger transactions in which the products are collected by the buyer directly from the farm.

Table 1. Sales channels used by farming households\*

Type of channel	[%]
Selling directly to the food processing plant	55%
Selling to the purchasing center (trade agent)	49%
Wholesale marketplace	27%
Selling within the farm	23%
Selling to another farmer	17%
Retail marketplace	12%
Other channels	7%
Selling to food outlets, e.g. canteens, pubs, restaurants etc.	6%

\* N = 1143, multiple answers, values do not constitute 100% when summed up

Source: own research

The average number of sales channels used by the farming households included in the analysis amounts to 2.07. Table 2 presents the average diversification of the analyzed feature (i.e. the number of sales channels types used) in groups of farms selected based on the

standard output, the production type and the average t-test results, with the assumption of identical variations.

Table 2. The number of types of sales channels in various groups of the surveyed households

	The number of sales channels (mean)	$p$ ( <i>t-test</i> ) (if $p < \alpha$ , $H_0$ is rejected); $\alpha = 0,05$
Standard output farm categories ES9		
$2\ 000 \leq \text{€} < 15\ 000$	2.05	0.437
$15\ 000 \leq \text{€} < 25\ 000$	2.22	0.141
$25\ 000 \leq \text{€} < 50\ 000$	2.18	0.367
$50\ 000 \leq \text{€} < 100\ 000$	2.30	0.003
$100\ 000 \leq \text{€} < 250\ 000$	2.01	0.254
$250\ 000 \leq \text{€} < 500\ 000$	1.86	0.013
$500\ 000 \leq \text{€} < 1\ 000\ 000$	1.85	0.071
$\text{€} \geq 1\ 000\ 000$	1.78	0.061
Standard output farm categories (grouped)		
$2\ 000 \leq \text{€} < 250\ 000$	2.16	0.070
$\text{€} \geq 250\ 000$	1.85	0.002
Production type of the surveyed farms		
Crop production	2.19	0.024
Animal production	1.68	0.042
Mixed production	1.87	0.003

Source: own research

Table 3. Pearson test results for economic size and the number of used sales channels

	Economic size	Number of sales channels
Economic size	1	
Number of sales channels	-0.098341237	1

Source: own research

A slight variance of the examined variable can be observed when the entities are grouped according to ES9 economic size groups. It is, however, possible to indicate the threshold value of the economic size (250,000 €), after exceeding which the number of types of sales channels shows significant differences. The production type of the surveyed entities has also significant impact on the differentiation of sales channels. The existence of a weak, negative relation between the number of the used sales channels and the farming households' economic power is also confirmed by Pearson's statistics value.

## DISCUSSION

It should be noted that this paper analyses the differentiation of sales channels (i.e. types of sales channels) used by the surveyed entities, but not the absolute number of these channels. The differentiation of sales channels may be the explanation behind the farming households' sales strategy. The higher number of sales channels may mean a proactive approach to sales, but may be also related to higher costs. This is why the connection between the sales strategy and the household's market position, determined by the standard output, may be interesting.

As evidenced by the results, the differentiation of sales channels at the level of a single entity is low, around two channels. It is also interesting that the number of sales channels is determined, to a higher degree, by organizational aspects, namely the household's production type, than its economic size. The obtained results also show that the increase of the farming household's bargaining power (reflected by the standard output) will also foster the simplification of sales strategies. Distinguishing two groups of surveyed entities, based on the standard output, which are significantly different in terms of the number of sales channels suggests the existence of a threshold level of market power that changes market behaviours and relations to the market manifested in the number of business partners and the intensity of relations. The simplification of a sales strategy may result both from activities performed by the supplier and the buyers. The supplier (a farming household, in this case) may take conscious steps to reduce the cost of sales, or its resources are a factor limiting the strength of market relations. On the other hand, the buyer (a buying entity or a processing company), aiming to reduce their own transaction costs, will be searching for suppliers who can deliver goods in high volume. This allows a hypothesis that in the case of smaller farming households, the differentiation of sales channels and market relations is determined, to a larger degree, by the entity's activity. However, in the case of entities with more market power, it may result from the buyers' activities - in such a situation, the farming households will benefit from the activity of other market participants. Still, this hypothesis would have to be verified in separate research.

The variety of sales channels will affect the nature of interaction with other entities in supply chains - a higher differentiation constitutes a potential for higher variety of interactions. However, the number of interactions may be highly related to the accumulated value of transactions performed by a single channel type. Therefore, the results presented in this article may be a basis for the expansion of work on relationships in agri market. It has been proven that crossing a certain economic value level is related to the reduction of the variety of sales channels. The intensity of relations may be increased by the higher value of transactions that flow through the given channel. According to the ARA model (Håkansson et al., 2009), entities participating in such an arrangement adjust the mutually performed activities and internal resources, while establishing interpersonal links between individuals representing these entities. This mechanism means that stronger reactions impact the reduction of sales transaction costs.

The obtained results show that the first research hypothesis should be rejected. The farming household's market position does not increase the variety of sales channels. Even more so, the results indicate the existence of a weak, negative relation between these variables. The second research hypothesis may be accepted, because, as proven, the variety of sales channels, measured with the average number of types, is reduced once the economic size of 250,000 € is exceeded.

#### CONCLUDING REMARKS

Due to the nature of the links that exist between actors on the agricultural markets, a network approach is very useful for their analysis and has been rarely used so far. The objective of the paper was to identify the connection between the sales channels used by farming households and the market position of these entities. A conclusion can be made that the analyzed entities use weakly differentiated sales strategies. Moreover, the increased market position and bargaining power of households will foster the simplification of these strategies, although the relation between the analysed variables is weak. As for the further studies it may

suggest to that growing market power of farms leads to the simplification of sales strategies but in the same time enhance relation between market entities.

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