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Virtual Organizations: A Case Study of the Polish Agricultural Sector

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Wojciech Pizło[1], Andrzej Parzonko[2], Anna Mazurkiewicz-Pizło[3], Anna Parzonko[4], Irena Jędrzejczyk[5], Piotr Bórawski[6]

Abstract:

Purpose: *The aim of this study is to diagnose the activity of virtual organizations in Polish agriculture and to determine the importance of trust in their formation and development.*
Design/Approach/Methodology: *An approach based on Gioia methodology was applied. Five organizations created by farmers to sell their products directly to consumers were deliberately selected. In each case, the farmers collaborated to build the foundations of a virtual organization. The study involved the method of a diagnostic survey and an interview questionnaire as a research instrument.*
Findings: *Modern information and communications technologies allow for the effective shortening of the distance between organizations potentially interested in cooperation. The empirical research involving Polish organizations of farmers operating in the virtual space shows that the crucial element determining their success is building consumer trust through providing high-quality products and delivering them on time.*
Practical Implications: *It has been found that for buyers of food products quality is the highest value. Confidence in the quality of products resulting from the previous experience or the experience of friends was a decisive motive for placing orders.*
Originality/Value: *Identification of the factors determining the functioning of virtual organizations in the agribusiness sector in Poland.*

Keywords: *Virtual organizations, trust, agribusiness.*

JEL classification: *D22, D24, O13, Q12, Q13.*

Paper Type: *Research study.*

[1]*Corresponding author, Professor, Warsaw University of Life Sciences-SGGW, Institute of Management, Poland, wojciech_pizlo@sggw.edu.pl;*
[2]*Professor, Warsaw University of Life Sciences-SGGW, Institute of Economics and Finance, Department of Economics and Organization of Enterprises, andrzej_parzonko@sggw.edu.pl;*
[3]*PhD, Józef Piłsudski University of Physical Education in Warsaw, Department of Management, Organization and Economics, anna.mazurkiewiczpizlo@awf.edu.pl;*
[4]*PhD, the same as in 2, anna_parzonko@sggw.edu.pl;*
[5]*Full Professor, University of Bielsko-Biała, Department of Management and Transport, ijedrzejczyk@ath.bielsko.pl;*
[6]*University of Warmia and Mazury in Olsztyn, Department of Agrotechnology and Agribusiness, Faculty of Agriculture and Forestry, pboraw@uwm.edu.pl;*

1. Introduction

From the social and economic point of view, the agribusiness sector in the EU countries, including Poland, is an important area of economy. Favorable natural conditions, know-how, and processing potential encourage the development of agricultural production, food processing, and above all, increase exports (Kowalczyk and Kwasek, 2020). In 2020, the value of exports of agri-food products from Poland amounted to EUR 34 billion and was higher than in 2010 by as much as EUR 20.5 billion, and by the end of 2005 this growth amounted to EUR 26.9 billion. At the same time, there was also an increase in imports, but it was disproportionately lower than exports (Pozytywne tendencje w polskim eksporcie..., 2021). This data proves the increasingly better use of the existing potential and an appropriate response to the needs of consumers. The enterprises operating internationally similarly to enterprises and farms targeting the domestic market are now recognizing consumer needs better and better and can react quickly to opportunities that arise. This progress has been facilitated by a faster flow of more exhaustive information and pooling the resources of individual entities to meet the needs of the modern market (fast delivery of a relatively standardized product in the required quantity).

Increasingly often, agribusiness sector organizations operate in virtual space where formal and informal virtual organizations are being formed. In the literature, the term virtual organization is most often understood as a temporary coalition of independent economic entities, the structure of which is subject to constant reorganization and the scope and purpose of its operations is subordinated to taking advantage of the emerging market opportunities (Dzidowski, 2011; Pizło and Parzonko 2021). They differ from other organizations as they are relatively temporary, sometimes the entities constituting the organizations are geographically dispersed, and the coordination of their activities is achieved through advanced information and communication systems. A typical virtual structure consists of a process-oriented, flexible network of enterprises, whose skills and resources are used ad hoc, depending on the current needs.

A characteristic feature of the Polish agri-food sector is a relatively large number of small-scale farms (low concentration of production). This situation results, inter alia, from historical and ideological conditions, especially existing in the period of centrally planned economy, when the development of private businesses was stigmatized, and the development of public enterprises was promoted. However, social resistance in Poland was strong. Only in Poland and Yugoslavia, farmers did not succumb to collectivization and private farms survived (Bukraba-Rylska, 2008). The result is their low economic strength, which is low labor efficiency, low profitability of production and lower rate of return on capital employed. Therefore, there is a natural need to collaborate and create various formal and informal groups, including those bearing the features of virtual organizations.

The aim of this paper is to diagnose the activity of virtual organizations in agribusiness, present the conditions for their creation and success, as well as to investigate the role played by trust in operations of this form of organization in Poland.

2. Materials and Methods

The implementation of the main goal allowed for the identification of a research gap concerning virtual organizations and virtual teams operating under them in the agricultural sector described in the literature as conservative, distrustful (Spychalski, 2013) and bringing a lower rate of return on capital employed (Satola *et al*., 2018). The conducted literature review followed the methodological recommendations of Craswell (2009) and the following keywords were selected, virtual organizations, virtual teams, efficiency and trust. The reviewed publications came from Elsevier, Springer Links and Research gate portal. Part of this study uses the methodology of a qualitative research (Eisenhardt, 1989), focusing on small populations, using the Eisenhardt approach (Hung *et al*., 2020) and the Gioia methodology (Gioia *et al*., 2012), which encourages the use of different research methods and techniques and emphasizes that a case study can serve as both a testing and a theory-building method. This study aims to address the following research questions:

1. What is the specificity of virtual organizations in the agricultural sector and what are the directions for research on their functioning?
2. What is the significance of trust in the activities of members of virtual organizations from agricultural sector in Poland and how do consumers purchasing food products from farms grouped in virtual organizations perceive the phenomenon of trust?

The paper uses a reporting approach assuming that the purpose of research is recognition of individual facts and their description, as well as an explanatory approach, the essence of which was the study of scientific facts. This approach allows for insight into social and managerial regularities, taking the humanistic perspective as a reference point. Five organizations from Poland set up by farmers to sell products directly to consumers were intentionally selected for empirical research. Farmers collaborated in a virtual space, exchanging information, and organizing deliveries. The surveyed organizations differed in the number of cooperating farmers, product range and method of product distribution. A survey was conducted among the leaders of the selected organizations regarding the motives for starting cooperation and factors ensuring the organization success. Additionally, a survey regarding trust was carried out among 85 buyers of products from the organization marked No. 4.

3. The Role of Virtual Organizations in Modern Economy: Theoretical Study

The dissemination of information technologies has brought revolutionary changes in the social and business environment and contributed to the modification of relations

between individual actors such as consumers, suppliers, and employees. Enterprises are looking for effective methods of management using modern IT systems collecting information that can be processed quickly and efficiently. The issue of virtual organizations was introduced into the scientific circulation in the 1990s (Davidow and Malone, 1992) and then was developed by many authors (Byrne *et al.*, 1993 and Snow *et al*., 1999). The main research areas covered, among others, forms of cooperation, leadership, and directions of the evolution of organizational structures adapting to changing market characteristics. One of the first areas studied was the issue of virtual teams (Lipnack and Stamps, 1997), exploring the impact of a variety of factors on people working in a virtual environment. In the business approach, a virtual organization model is based on cooperation derived from trust and positive personal and social experiences (Chamoso *et al*., 2018). A functioning virtual organization creates a network of connections and uses community resources (Rodriguez *et al*., 2011), which ensure the possibility of surviving on the market and achieving the intended goals.

The characteristic features of joint activities of virtual organizations include minimizing risk and pooling financial, material, and intangible resources like skills and knowledge. Virtual organizations are defined as a proactive response to the global competitive situation (Hirsch and Tilebein, 2015). Nowadays, their creation is often associated with the activity of small and medium-sized enterprises looking for development opportunities and better use of their own resources within a virtual organization. Virtual organizations are created by traditional enterprises when they pool scattered resources and minimize financial risk. Also, they make it possible to create products supported by hybrid services (Hirsch and Tilebein, 2015). However, their ability to create depends not only on the complementarity of the resources they have, but on the willingness to cooperate personified by the level of trust.

Virtual organizations are a network of independent organizations that pool their skills and organizational resources to achieve goals and use IT technologies to coordinate joint operations without merging (Pizło, 2009). The creation of virtual organizations facilitated by the available digitizing tools is based on cooperation built around a common goal and trust. The core of a virtual organization is a community that creates flexible and secure IT solutions that enable the control of the entirety of the constructed system while maintaining the autonomy of individual entities. The virtual organization system consists of (Hirsch and Tilebein, 2015):

- IT system including an "algorithm" for managing the resources of partners;
- Knowledge base on tangible and intangible resources, including knowledge about the market and the rules of its use by partners;
- Algorithm of settlements between entities active in creating the added value.

The development of virtual organizations results from the availability of specialized IT tools enabling knowledge management (Le-Nguyen *et al*., 2018) They include, document management systems (Sun *et al.*, 2020), the Web 2.0 system (Orenga-Roglá

and Chalmeta, 2019) supporting the development of innovation (Schmidt and Oelsnitz, 2020), group work and decision support systems.

The main goal of creating virtual networks is to increase the adaptability and flexibility of the organizations that design them. The key emphasis is on empowerment of employees, as they are expected to make creative decisions (Malhorta, 1997). The creation of a virtual organization is driven by the vision of benefits that can be obtained by individual entities, (that is, the expected market niches and the expected business advantages). The functioning of a virtual organization can also be perceived as a network of entities co-creating the value added delivered to the market. One of the methods of increasing effectiveness is sharing resources, which involves standardization and digitalization of the resources made available to the partners and their consistent and open network-based management (Rehm *et al*., 2010). The advantages of digitization and sharing resources include the reduction in total costs, and in particular, the time spent on organizing distributed service processes (Hirsch and Tilebein, 2015).

4. The Role of Virtual Organizations in Agribusiness in Poland: Empirical Study

Virtual organizations are created at various levels of the food distribution chain and their goal is to integrate food producers, which can bring tangible economic effects. A virtual organization grouping farmers who are the first and fundamental link in the food distribution chain seems particularly interesting. The most common purpose for establishing such organizations is the horizontal integration of producers and shortening the food distribution chain. Horizontal integration enables farmers to make various agricultural products directly available to consumers and thus shorten the distribution chain, which allows for taking over the processing and trading margin.

One of the first organizations to adopt a virtual character in Polish agriculture was Odrolnika.pl. Its beginnings date back to 2010 and it was an initiative of a group of farmers from the Małopolskie and Podkarpacie provinces. Originally, the organization was set up by three farmers and successively others joined in. Odrolnika.pl is has been created and run entirely by farmers, and its main goal is "to support Polish farmers in sale of their produce and create a new Polish brand of organic food" (https://www.odrolnika.pl/o-projekcie). It should be noted that farms operating jointly under this project are not new entities. They have been on the market for at least several years and their market position is well-established. When the founders of this organization were asked about the reasons for its creation, they pointed to the alternative possibility of selling seasonal surplus products and relatively small production volume (lack of large batches of products, which otherwise could be sold to wholesale buyers).

However, the most frequently mentioned reason was the intention to build loyal customer base who perceive the farmers as trusted suppliers and producers (a reliable source of high-quality food products) (Czekaj, 2013).

Organizations of farmers bearing the features of virtual organizations are being gradually established in Poland. Legal conditions and financial support through European and national public funds encourage such efforts. In 2016, legal regulations were introduced in Poland to facilitate direct sales and small processing on a farm (Act of November 16, 2016, Journal of Laws of 2016, item 1961)[7]. As part of the introduced legal changes, it is not required to set up a business for the processing of agricultural products if at least 50% of raw materials for processing come from the farm selling products directly to consumers.

In addition, when carrying out this type of activity, farmers are exempt from the obligation to pay income tax up to the amount of PLN 40,000 (about EUR 10,000) per year, and after this amount is exceeded, the farmer is obliged to pay a tax of 2% of the sales value. In 2019, the number of farms conducting this type of activity increased from 2,667 to 6,584 (almost 2.5 times), while at the end of 2020 there were more than 10,200 (over 3,600 entities more). A significant number of farms engaged in this type of activity decided to cooperate with one another to meet the growing demand on the market. On the one hand, collaboration of farmers makes it possible to meet the needs of a wider group of buyers (the availability of products increases). On the other hand, it carries the risk of attracting 'gate-crashers' – farmers who join the group to sell lower quality products.

The conducted research shows that one of the main arguments for purchasing food products straight from the farm (group of farms) is that they are perceived by consumers as high-quality goods. Betraying this trust could cause a lot of damage. Therefore, functioning in a group of cooperating entities who join their efforts to serve the consumer in a virtual space is largely based on trust. Trust must exist between the cooperating entities creating some form of virtual organization, as well as between consumers (buyers of food products) and the group of cooperating entities creating some form of organization.

5. The Role of Trust and the Effectiveness of Virtual Organizations in Agribusiness

The literature points to the differences in perception and definition of the concept of trust in various scientific disciplines. The differences between social psychology and economic sciences are significant (Paliszkiewicz, 2011). The diversity may result from the ontological differences in defining reality by individual disciplines. Thus, when identifying trust, one can indicate the interdependence between individual and

[7] *Journal of Laws 2016 item 1961, Act of November 16, 2016, amending preceding acts to facilitate the sale of food by farmers.*

collective (social and organizational) trust. In the case of emerging organizations, collective trust is not a simple sum of individual trusts. Building organizational trust requires positive behavior, consistent with socially accepted norms, confirming the purity of intentions and the tendency to act as declared. Trust can change over time and is one of the basic social characteristics of a human being. It is often contrasted with distrust. An important feature of trust or distrust is the level of its grounding in the society (Sztompka, 2002). People who have trust in another person or an institution become more spontaneous and innovative.

Consequently, trust generates the features that employers are looking for. By putting trust in someone, we offer them a certain "credit" of trustworthiness and, consequently, we liberate ourselves from the need to verify the intentions of the other party, thus incurring lower external costs. Trust is defined as the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party" (Mayer *et al.*, 1995). In this approach, the definition of trust refers to positive expectations and willingness to take risk in social relationships. In the classic Mayer *et al.'s* model (1995), the trustworthiness is the trustor's perception of trustee's qualities such as *ability*, *benevolence*, and *integrity*. *Abilities*, in this model, are understood as "a group of skills, competencies, and characteristics that enable a party to have influence within some specific domain". In turn, *benevolence* is understood as "the extent to which a trustee is believed to want to do good for the trustor", so, benevolence represents a special attachment to the person for whom we act. *Integrity*, on the other hand, is "the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable". However, if the trustee does not comply with the principles, which we consider a minimum requirement, they will not be seen as an honest person and, in consequence, we will lose trust in them.

A survey exploring the issue of trust was carried out among five virtual organizations of farmers. The main factor integrating individual farmers was the intention to sell products directly from farms. The organizations varied in terms of the number of cooperating farms, the type and form of product sale and time in business (Table 1).

The survey conducted among the leaders of the studied virtual organizations confirmed the crucial role of trust in the very process of creating the organization as well as during their operations. In all organizations, before the actual joint venture was launched, farmers had had the opportunity to get to know each other as they had operated independently in nearby villages, most often within one commune (gmina) or poviat, and had met both as business partners and socially. Only in the organization marked No. 4, the social ties between farmers were weaker. This organization adopted a strategy of gradual increase in the range of offered products, which entailed the gradual increase in the number of cooperating farmers. Finally, in this organization, the geographical dispersion of farmers covers one province (voivodeship).

Table 1. *Characteristics ofthe studied virtual organizations*

Specification	Organization No. 1	Organization No. 2	Organization No. 3	Organization No. 4	Organization No. 5
Number of collaborating farms	8	3	40	10	15
Time in business (in years)	2	3	4	2	1
Type of produced and sold goods	Fruit, vegetables, honey	Fruit, vegetables	Fruit, vegetables, cold meats, 'koryciński' cheese, homemade liqueurs	Fruit, vegetables, honey	Fruit, vegetables, cold meats, cheese
Sales channels	Website, marketplace	Marketplace	Website, marketplace	Website, marketplace	Website, marketplace

Source: *Own research.*

The leaders of the studied virtual organizations were asked to rate the factors determining the success of the created organizations. They assigned the highest ratings to, product quality and trust between partners enabling quick reaction to opportunities or unexpected situations, and (Table 2).

Table 2. *Leaders' rating of factors determining the success of an organization (rated on a scale from 1 to 10 (where 10=most important)*

Specification	Organization No. 1	Organization No. 2	Organization No. 3	Organization No. 4	Organization No. 5
Product quality	10	10	10	10	10
Trust between members of organization	10	10	9	8	10
Relatively low price of offered products	4	5	4	3	3
Fast delivery	7	8	8	8	8
Wide range of products	6	7	6	10	8
Product packaging	5	4	6	4	7

Source: *Own research.*

Another surveyed group involved a sample of 85 people purchasing food products from the studied organization marked No. 4. The survey questions concerned the purchasing motives and trust placed in farmers offering food products for sale. The surveyed consumers declared that the main motive behind their purchase decisions was the intention to buy products manufactured using natural farming methods, without artificial fertilizers, chemical pesticides, growth hormones or genetically modified organisms. The consumers said they place trust in farmers regarding the quality of the products they offer. Their trust was not based on "hard data" (certificates), but rather on the belief that the product came "straight from the farm", and this meant, in the understanding of consumers, that the food was "of good quality".

An important argument for making purchasing decisions were the opinions of friends and positive users' opinions shared online.

6. Summary and Conclusions

Modern information technologies allow for the effective shortening of the distance between individual people potentially interested in cooperation or entire organizations. It is emphasized in the literature that virtual organizations create more and more complex networks of connections between entities, share resources using them more effectively and, above all, minimize the risk related to conducting business activity. The cooperation may be long-term or ad hoc and only focus on one-off projects. The effect of such cooperation may be, among others, the interception of the trade margin from the market, which in the "pre-digital" era was most often taken by companies (groups of people) acting as intermediaries between the producer and the final consumer. This phenomenon is increasingly often observed in Polish agribusiness (agriculture). Legal conditions and information and communications technologies create opportunities which encourage cooperation between farmers running various types of farms.

The conducted in-depth review of the literature shows that the pro-effective feature of the virtual team is the ability of the team to collect and share knowledge about the resources of all partners. This tendency results from the intrinsic motivation and speed with which team members gain trust in each other. The tendency to share knowledge depends on the individual characteristics of the team members, their age, gender, personality, but also cultural openness. Sharing knowledge and experience has two dimensions: the organizational dimension, which consists in combining different resources of the organization, and the socio-cultural dimension, where not only the resources of the organization are shared, but also the individual experience, skills, and personalities of team members. The factors determining the success of virtual teams include, effective leadership, clear procedures and standards, transparent organizational structure, efficient communication supported by modern technological solutions, as well as trust. Numerous publications on management in virtual teams indicate the important role of the leader and management maintaining the cohesion of the virtual team and facilitating trust building between individual team members.

The empirical research conducted among five Polish organizations of farmers operating in virtual space shows that the most important element determining their sales success is product quality. It is very important not to betray the consumers' trust in high quality of the products offered for sale. To keep high standards and prevent the supply of products of inadequate quality the farmers creating a virtual organization must have trust in one another. Therefore, nearly all the surveyed farmers who later created virtual organizations had previously cooperated with each other and proved to be responsible partners.

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