

**SOCIAL SIDE OF AGRICULTURAL CO-OPERATIVES.
THE CASE OF AGRICULTURAL PRODUCTION
CO-OPERATIVES IN THE OPOLE VOIVODESHIP***

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Abstract. The aim of the article is to describe the social side of agricultural co-operatives and also to analyse what factors can in- or decrease this part of activity of agricultural production co-operatives (APCs). In the introduction to the article a definition of the aim of the paper, is provided, as well as a short explanation what the APCs really are. Next, the article describes the social side of activity of agricultural co-operatives. Then it presents how to measure it using the rate of social activity (RSA) proposed by the author. The last part of the article is the analysis, based on the data collected from the 28 APCs that operate in the Opole voivodeship shows the influence of selected factors on social activity in co-operatives. The findings show what and how strongly can increase the social activity in agricultural cooperatives.

Key words: agricultural co-operatives, social activity, Opole region, correlation analysis

INTRODUCTION

Farming co-operatives are present in all countries where agriculture operates in a market economy, regardless of the level of development of the country and its location [Mierzwa 2005]. A special role in the cooperative management of agriculture is played by agricultural production co-operatives (hereinafter abbreviated as “APCs”). These entities provide an opportunity for individual farmers to strengthen their market position and eliminate the negative effects of the globalizing economy [Domagalski 2006].

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But APCs do not only perform the productive and economic functions. An important element of their functioning is also conducting social activities for members and the local community. This is because APCs, in fact, are organisations which concern about the interests of their members and their environment more than about the profit and other economic results. They independently determine their objectives, programs, activities and organisational structures and adopt internal rules for business, which is based on work of members and their families. The social side of APCs activity, in this way of thinking, fits well with the idea of non-profit organisations.

The aim of this article is to describe the social side of agricultural co-operatives and also to analyse what can in- or decrease this part of APCs' activity. The several economic and social factors, mainly internal ones, were selected to the analysis based on the own research conducted in 28 APCs located in Opole region. Moreover, the author's way of measuring social activity of APCs is presented.

SOCIAL IMPORTANCE OF APCS

The social activity is the result of a specific social policy of local governments in APCs, preferences and the disposal of a social fund. It is an expression of aspirations in achieving equality and social justice, and socially desirable attitudes, patterns, norms and rules of conduct. At the same time it contributes to the development of interpersonal relationships, influencing the course of business activity of agricultural production co-operatives [Pudełkiewicz 1990].

The social side of the APCs was particularly developed in times when, on the one hand, the state power supported their operation, and on the other hand, there was a real need for this form of activity. Then, APCs undertook a number of projects aimed at improving the living conditions of both members and the local community. It included for example [Markuszewski and Olubiński 1988]: agricultural assistance for members, housing (construction, repairs, loans, allocation of building land, supply of materials), organising holiday, medical assistance, child care and providing entertainment for members and local community (popularization of literature and reading, dancing evenings, organisation of amateur folk dance, drama groups, orchestras, choirs).

Over the years the social activity of APCs has significantly decreased. They still try to reach their social purposes but within a smaller range. Nowadays, APCs provide financial and non-financial support to rural institutions such as schools, sports clubs and rural housewives circle [Matyja 2012]. Besides, they are trying to assist in building and maintaining rural infrastructure (roads, fields, etc.). They offer their members assistance in agricultural household maintenance, organise trips and holidays, and sponsor occasional bonuses (such as vouchers for the holidays). Although in the case of the APCs the integration of local community lost its importance with the advent of a new political and economic climate of the country, cooperatives continue trying, to a certain extent, to participate in village life. Many of them declare their willingness to help individuals or institutions that need it, and usually they meet these commitments.

THE MEASUREMENT OF SOCIAL ACTIVITY IN APCS

As it was said above, in addition to economic activity, APCS have the right to pursue social, cultural and educational activities for their members and their local environment. Therefore, for measuring the social performance of APCS, the degree of their involvement in social activity for members and local community should be taken into account. The rate of social activities (RSA) proposed by the author has the following structure:

$$RSA = RSAM + RSALS$$

wherein:

- the rate of social activities for members (RSAM):
 - RSAM = $A_{ha} + A_{aa} + A_{sa} + A_{sca}$ (sum of the rates of social activities), where:
 - A_{ha} – activity on housing assistance in terms of number of different types of actions taken in this regard (1 point for every sign of activity),
 - A_{aa} – activity on agricultural assistance in terms of number of different types of actions taken in this regard (1 point for every sign of activity),
 - A_{sa} – activity on social assistance in terms of number of different types of actions taken in this regard (1 point for every sign of activity),
 - A_{sca} – social and cultural activity in terms of the number of available social and cultural facilities (1 point for every sign of activity),
- the rate of social activities for local society (RSALS),
 - RSALS = $I_{ri} + I_{rinfr} + I_w + I_{pe} + I_{ci} + I_{oa}$ (sum of the rates of social involvement),
 - I_{ri} – involvement in supporting rural institutions (0 point – no, 1 point – yes),
 - I_{rinfr} – involvement in the construction and renovation of rural social infrastructure (0 point – no, 1 point – yes),
 - I_w – employment of hired workers (0 point – no, 1 point – yes),
 - I_{pe} – employment of people at risk of social exclusion (0 point – no, 1 point – yes),
 - I_{ci} – involvement in local community initiatives (0 point – no, 1 point – yes),
 - I_{oa} – involvement in other activities of a social nature (0 point – no, 1 point – yes).

The higher is the value of RSA the more developed is social activity in APCS. There are some factors that can increase or decrease this rate. Their impact is going to be analysed on the basis of the conducted research.

CHOICE OF FACTORS TO THE ANALYSIS

In view of the fact that the agricultural co-operatives in the Opole voivodeship operate in similar environmental conditions, some factors, especially external (e.g. EU and national aid, situation and shape of the agricultural market, demographics of the region, etc.), are objectively the same for all analysed co-operative. They may however differ in the use of opportunities and avoid threats from the environment. This may be the success of each APCS.

Moreover, some internal factors (e.g. age of members, managerial skills, competitive position, image issues, the history and traditions, the level of diversification, in-

vestments) take a similar shape for all of the units. But co-operatives reach the different degrees of success. The other factors, that differ between each individual ACP, can have a real impact on the agricultural production co-operatives.

On the basis of the author's research and observations to analyse the strength (and direction) of the impact of economic and social factors of agricultural production co-operatives in the Opole voivodeship there were selected as follows:

- size of the property – the average value of assets (PLN),
- size of cultivated area – the average agricultural area (ha),
- average number of members,
- the average size of co-operative's total debt (PLN),
- type of activity – crop production with or without livestock,
- members' interest in the work performed,
- members' interest in the development of co-operative,
- having a clearly formulated mission and business strategy,
- the use of European subsidies by a co-operative,
- belonging to the group of agricultural producers,
- occurrence of excess of employment (mainly members' employment),
- type of organizational culture (long-or short-term, collective or individual, orderly or chaotic).

METHODOLOGICAL BASICS OF ANALYSIS

The analysis is based on data collected by survey method from 28 ACPs operating in the Opole voivodeship. The research, which covered the years 2008-2010, included all the operating cooperatives (about 100). However, the return surveys were obtained only from the 33 APCs, from which additionally 5 was eliminated due to incompleteness of data. All surveyed ACPs conduct crop production, especially the cultivation of wheat, canola, barley and corn. More than half of them in the analysed period also led livestock production, mainly pigs. The basic characteristics of the research sample is presented in Table 1.

Table 1. Basic characteristics of the research sample (average of years 2008-2010)
Tabela 1. Podstawowa charakterystyka próby badawczej (średnia z lat 2008-2010)

Item Wyszczególnienie	Total income (PLN) Dochód ogólny (zł)	Assets (PLN) Aktywa (zł)	Agricultural land (ha) Użytki rolne (ha)	Number of members Liczba członków	Number of employees Liczba pracowników
Min	201 650	1 142 333	98	5	6
Average Średnia	824 141	5 231 605	616	19	20
Max	4 068 963	24 075 093	3 500	65	72

Source: own study based on the research results.
Źródło: opracowanie własne na podstawie wyników badań.

The analysis should bring the answer to the question of how the above factors influence social activity (or more precisely – RSA) in APCs. The used method was a correlation analysis that shows the degree to which two variables are related [Stanisz 2006]. The following formula of hypotheses was adopted:

- null hypothesis H0: no relation between variables,
- alternative hypothesis H1: the occurrence of the relation between variables.

The process of verifying hypotheses was to reject the null hypothesis in favor of the adoption of the alternative hypothesis, taking into account the level of significance $\alpha = 0.05$, which is 5% probability of committing an error of the first kind (rejecting the null hypothesis, even though it is true). Analysis of relationship was based mainly on the calculation of the values of the selected coefficients listed in Table 2 and their interpretation [Statystyczne... 1999].

Table 2. Selected coefficients used in the correlation analysis
Tabela 2. Wybrane współczynniki stosowane w analizie korelacji

Name of coefficient Nazwa współczynnika	Application Zastosowanie	Accepted values Przyjmowane wartości
1	2	3
Pearson's r linear correlation coefficient Współczynnik korelacji liniowej r Pearsona	determining the linear correlation between variables for two quantitative characteristics określanie zależności prostopadkowej między zmiennymi w przypadku dwóch cech ilościowych	[-1,1]
Spearman's rank R correlation coefficient Współczynnik korelacji rangowej R Spearmana	determining the correlation between the variables in the case of: qualitative characteristics measured by an ordinal scale and quantitative characteristics for a small number of observations (the number of pairs is less than 30) określanie zależności między zmiennymi w przypadku: cech jakościowych mierzonych według skali porządkowej oraz cech ilościowych dla niewielkiej liczby obserwacji (gdy liczba par jest mniejsza od 30)	
Kendall's τ coefficient Współczynnik τ -Kendalla	determining the correlation between the variables in the characteristics measured by at least an ordinal scale określanie zależności między zmiennymi w przypadku cech mierzonych według skali co najmniej porządkowej	
Sommer's d coefficient Współczynnik d-Sommera		
Gamma coefficient* Współczynnik Gamma*		
Tetrachoric correlation coefficient Współczynnik korelacji tetrachorycznej	determining the correlation between the variables in the case of quantitative characteristics in which the variables are continuous, normal distribution, the correlation between them is linear and is (artificially) divided into two categories określanie zależności między zmiennymi w przypadku cech ilościowych, przy czym zmienne te są ciągłe, mają rozkład normalny, zależność między nimi jest liniowa i są (sztucznie) rozdzielone na dwie kategorie	
Statistics χ^2 Statystyka χ^2	determining the presence or absence correlations between variables in the case of qualitative characteristics określanie istnienia lub braku zależności między zmiennymi w przypadku cech jakościowych	different różne

Table 2 – cont. / Tabela 2 – cd.

1	2	3
Yule's Φ coefficient Współczynnik Φ Yule'a	determining the correlation between variables in the case of qualitative characteristics określanie zależności między zmiennymi w przypadku cech jakościowych	[0,1]**
Cramer's V coefficient Współczynnik V Cramera		
Convergence, point biserial Dwuseryjny punktowy współczynnik zbieżności dwóch cech	determining the correlation between the two variables, when one of them expresses a dichotomous characteristic (mostly qualitative), and the other on – a measurable characteristic with a normal distribution określanie zależności między dwiema zmiennymi w przypadku, gdy jedna z nich wyraża cechę dychotomiczną (najczęściej jakościową), a druga – mierzalną i posiada rozkład normalny	
C contingency coefficient Współczynnik kontyngencji C	determining the strength of the correlation between the quality characteristics określanie siły zależności między cechami jakościowymi	[0, C_{max}]

*Gamma coefficient is also applicable to data associated with multiple observations (representing the same variant of characteristic).

**Yule's Φ coefficient can take values from the interval $[-1,1]$, depending on the arrangement of the data.

Source: own study based on Guilford [1964], Statystyczne... [1999], Luszniwicz i Słaby [2001], Mynarski [2003], Stanisz [2006].

*Współczynnik Gamma znajduje zastosowanie również dla danych zawierających wiele obserwacji powiązanych (reprezentujących ten sam wariant cechy).

**Współczynnik zbieżności Φ Yule'a może przyjmować wartości z przedziału $[-1,1]$ w zależności od sposobu uporządkowania danych.

Źródło: opracowanie własne na podstawie: Guilford [1964], Statystyczne... [1999], Luszniwicz i Słaby [2001], Mynarski [2003], Stanisz [2006].

All of these coefficients (except statistics χ^2) are used to determine the strength of the correlation between variables. Their interpretation depends on the value they adopt. To assess the strength of association between variables based on them (with a small exception of the contingency coefficient C) there were adopted the following scale:

- correlation coefficient = 0 – variables are not correlated,
- 0 < correlation coefficient < |0.1| – negligible correlation,
- |0.1| correlation coefficient < |0.3| – weak correlation,
- |0.3| correlation coefficient < |0.5| – average correlation,
- |0.5| correlation coefficient < |0.7| – high correlation,
- |0.7| correlation coefficient < |0.9| – very high correlation,
- |0.9| correlation coefficient < |1| – almost full correlation.

Some of the coefficients required the division of the analyzed units into two groups that differ from each other in view of the level of development of social activity (or more precisely – the value of RSA). The formula of the division was the following:

- Group A – units with the value of RSA below or equal to the median, namely ACPs with poorly developed social activity,
- Group B – units with the value of RSA above the median, namely ACPs with well-developed social activity.

THE RESULTS OF ANALYSIS

The results of the analysis of impact of studied factors on the level of the rate of social activities in agricultural production co-operatives in the Opole region is presented in Table 3 and in Table 4. The conclusions of this analysis are as follows:

- there is a high positive linear correlation between the value of assets and total debt and the level of RSA, as measured by Pearson's r linear correlation coefficient and indicated at correlation scatter diagrams,
- the impact of all other examined factors, both internal and external, on the level of RSA is rather weak or average; therefore, they cannot be considered as determinants of social activities of APCs.

However, by analysing the impact of examined factors on RSA by means of correlation coefficients and the quantity interaction diagrams, one can notice some regularities. Higher values of rate of social activities (co-operatives of Group B) are obtained by those APCs that:

- have clearly formulated and communicated mission and business strategy,
- are characterized by collective organisational culture with an ordered set of values and long-term time horizon,
- maintain excess of employment,
- benefit from the financial support of the European Union,
- belong to a group of agricultural producers.

The above factors seem to increase the level of the rate of social activities in agricultural co-operatives. In other words, it is good to use them to develop the social side of co-operatives performance.

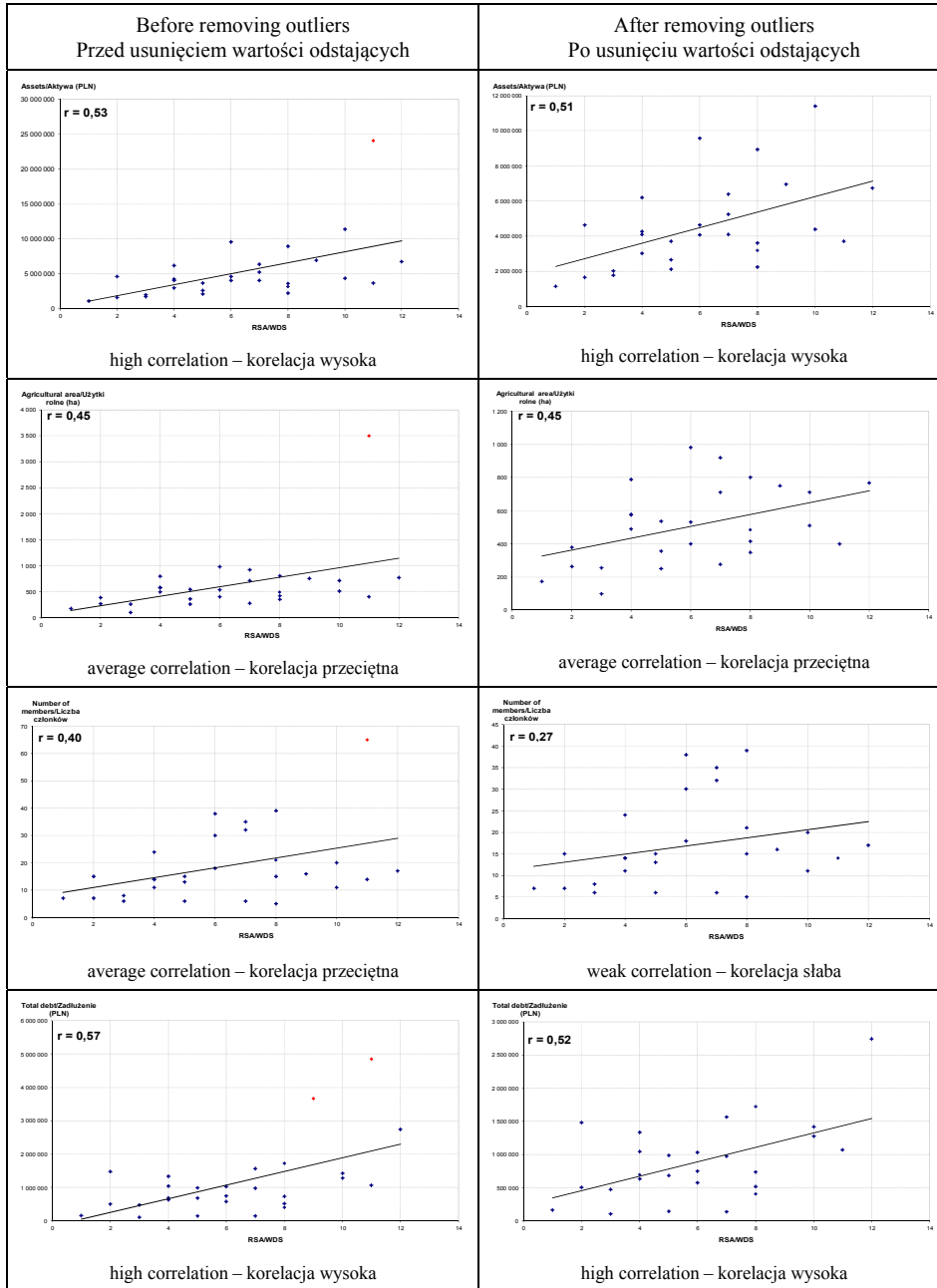
CONCLUSION

In the theory there are no barriers for agricultural co-operatives to function as a center for meeting social needs of members and the local community. This option should involve prioritizing these needs. It is quite idealistic assumption, based on a scenario, where the co-operative provides social and living facilities, as well as cultural and educational services. Recommendations for its application will mainly include:

- determining the social, rather than economic objectives of the activity,
- creating jobs, even at the expense of maintaining excess employment,
- attention to organizational culture centered around common values, beliefs and collective action,
- seeking opportunities to raise capital for social purposes, eg. through EU funding.

In practice however, APCs prefer rather to function as a profitable enterprise with long-term aspirations of developed income and only then its division between the members and shareholders or as a place of employment and income achieved by individual members, with the short-term action plans, focused more on the duration than on development. These two options of functioning are dominating. But the assumption to developing also social activity may constitute a certain supplement for these options. This combination becomes possible, and from the point of view of the nature of co-operatives also justified, and even desirable.

Table 3. Correlation scatterplots for RSA of ACPs with the interpretation of the linear correlation
 Tabela 3. Korelacyjne wykresy rozrzutu dla WDS RSP wraz z interpretacją zależności liniowej



Source: own study based on the research results.
 Źródło: opracowanie własne na podstawie wyników badań.

Table 4. Correlation coefficients for RSA of ACPs with the interpretation of correlation
Tabela 4. Współczynniki zależności dla WDS RSP wraz z interpretacją zależności

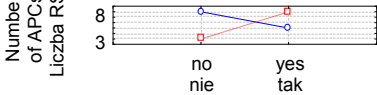
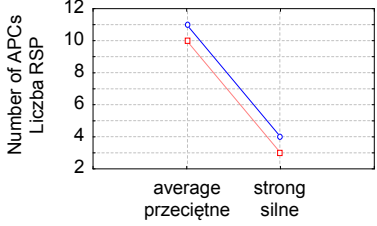
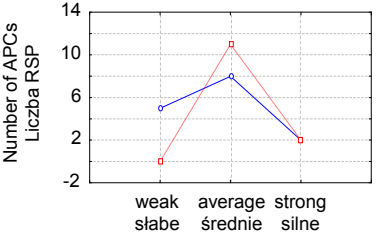
Factor Czynnik	Correlation coefficient Współczynnik korelacji		Correlation Korelacja	Graphical interpretation of correlation between the factor and RSA Interpretacja graficzna zależności czynnika względem WDS
	Name Nazwa	Value Wartość		
1	2	3	4	5
Crop production with livestock Produkcja roślinna i zwierzęca	statistics χ^2 statystyka χ^2	1,36; p = 0,24	none brak	 <p>Number of APCs Liczba RSP</p> <p>no yes nie tak</p> <p>Crop production with livestock Produkcja roślinna i zwierzęca</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
	Yule's Φ Φ Yule'a	0,29	weak słaba	
	C contingency kontyngencji C	0,28	weak słaba	
	convergence zbieżności	0,45	average przeciętna	
Members' interest in the work per- formed Zaangażowanie członków w wykonywaną pracę	statistics χ^2 statystyka χ^2	0,05; p = 0,83	none brak	 <p>Number of APCs Liczba RSP</p> <p>average strong przeciętne silne</p> <p>Members' involvement in the performed work Zaangażowanie członków w wykonywaną pracę</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
	Yule's Φ Φ Yule'a	-0,04	negligible nikła	
	C contingency kontyngencji C	0,04	negligible nikła	
	Kendall's τ τ -Kendalla	τ -b = -0,04	negligible nikła	
	Sommer's d d-Sommerera	-0,05	negligible nikła	
	Gamma Gamma	-0,10	weak słaba	
	Spearman's R R Spearmana	-0,04	negligible nikła	
	convergence zbieżności	0,00	negligible nikła	
Members' interest in the develop- ment of co- operative Zaangażowanie członków w rozwój	statistics χ^2 statystyka χ^2	5,36; p = 0,07	none brak	 <p>Number of APCs Liczba RSP</p> <p>weak average strong słabe średnie silne</p> <p>Members' involvement in development of co-operative Zaangażowanie członków w wykonywaną pracę</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
	Yule's Φ Φ Yule'a	0,44	average przeciętna	
	C contingency kontyngencji C	0,40	average przeciętna	
	Kendall's τ τ -Kendalla	0,44	average przeciętna	
	Sommer's d d-Sommerera	τ -c = 0,30	average przeciętna	
	Gamma Gamma	X Y = 0,31	average przeciętna	
	Spearman's R R Spearmana	0,57	high wysoka	
	convergence zbieżności	0,32	average przeciętna	

Table 4 – cont. / Tabela 4 – cd.

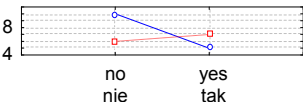
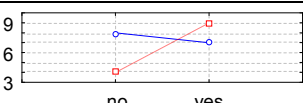
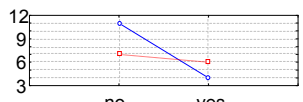
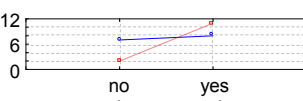
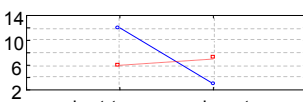
1	2	3	4	5
Clearly formulated mission and strategy Wyraźnie sformułowana misja i strategia	statistics χ^2 statystyka χ^2 Yule's Φ Φ Yule'a C contingency kontyngencji C convergence zbieżności	0,51; p = 0,48 0,21 0,20 0,06	none brak weak słaba weak słaba negligible nikła	Number of APCs Liczba RSP  <p>no yes nie tak</p> <p>Clear mission and strategy Jasna misja i strategia</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
The use of EU subsidies Korzystanie z dotacji unijnych	statistics χ^2 statystyka χ^2 Yule's Φ Φ Yule'a C contingency kontyngencji C convergence zbieżności	0,67; p = 0,41 0,23 0,22 0,40	none brak weak słaba weak słaba average przeciętna	Number of APCs Liczba RSP  <p>no yes nie tak</p> <p>Use of EU subsidies Korzystanie z dotacji unijnych</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
Belonging to the group of agricultural producers Przynależność do grup producentów rolnych	statistics χ^2 statystyka χ^2 Yule's Φ Φ Yule'a C contingency kontyngencji C convergence zbieżności	0,46; p = 0,50 0,20 0,20 0,36	none brak weak słaba weak słaba average przeciętna	Number of APCs Liczba RSP  <p>no yes nie tak</p> <p>Belonging to the group of agricultural producers Przynależność do grup producentów rolnych</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
Excess of employment Nadwyżka zatrudnienia	statistics χ^2 statystyka χ^2 Yule's Φ Φ Yule'a C contingency kontyngencji C convergence zbieżności	1,85; p = 0,17 0,33 0,32 0,31	none brak average przeciętna average przeciętna average przeciętna	Number of APCs Liczba RSP  <p>no yes nie tak</p> <p>Overemployment Nadwyżka zatrudnienia</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>
Org. culture due to the time horizon Kultura org. według horyzontu czasu	statistics χ^2 statystyka χ^2 Yule's Φ Φ Yule'a C contingency kontyngencji C convergence zbieżności	2,16; p = 0,14 0,35 0,33 0,43	none brak average przeciętna average przeciętna average przeciętna	Number of APCs Liczba RSP  <p>short-term long-term krótkookresowa długookresowa</p> <p>Org. culture Kultura org.</p> <p>—○— Group A – Grupa A —□— Group B – Grupa B</p>

Table 4 – cont. / Tabela 4 – cd.

1	2	3	4	5
Org. culture due to the level of group identification Kultura org. według stopnia identyfikacji grupowej	statistics χ^2 statystyka χ^2	1,04; p = 0,32	none brak	<p>Number of APCs Liczbą RSP</p> <p>collective individual kolektywna indywidualna</p> <p>Org. culture Kultura org.</p> <p>Group A – Grupa A Group B – Grupa B</p>
	Yule's Φ Φ Yule'a	-0,27	weak słaba	
	C contingency kontyngencji C	0,26	weak słaba	
	convergence zbieżności	0,14	weak słaba	
Org. culture due to the value system Kultura org. według systemu wartości	statistics χ^2 statystyka χ^2	1,17; p = 0,28	none brak	<p>Number of APCs Liczbą RSP</p> <p>chaotic orderly chaotyczna uporządkowana</p> <p>Org. culture Kultura org.</p> <p>Group A – Grupa A Group B – Grupa B</p>
	Yule's Φ Φ Yule'a	0,28	weak słaba	
	C contingency kontyngencji C	0,27	weak słaba	
	convergence zbieżności	0,14	weak słaba	

Source: own study based on the research results.
Źródło: opracowanie własne na podstawie wyników badań.

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SPOŁECZNA STRONA SPÓŁDZIELNI ROLNICZYCH. PRZYPADK ROLNICZYCH SPÓŁDZIELNI PRODUKCYJNYCH NA OPOLSZCZYŹNIE

Streszczenie. Celem artykułu jest opisanie społecznej strony spółdzielni rolniczych oraz przeanalizowanie, jakie czynniki mogą zwiększać lub zmniejszać tę część działalności w przypadku rolniczych spółdzielni produkcyjnych (RSP). We wstępie sformułowano cel opracowania oraz umieszczono krótkie wyjaśnienie, czym są RSP. Następnie w artykule zaprezentowano społeczną stronę działalności spółdzielni rolniczych. W kolejnej części przedstawiono, w jaki sposób można ją mierzyć, wykorzystując wskaźnik działalności społecznej (WDS) zaproponowany przez autorkę. W ostatniej części artykułu, na podstawie danych zebranych z 28 RSP działających na Opolszczyźnie, dokonano analizy wpływu wybranych czynników na działalność społeczną spółdzielni. Wyniki pokazują, co i z jaką siłą wpływa na działalność społeczną spółdzielni rolniczych.

Słowa kluczowe: spółdzielnie rolnicze, działalność społeczna, Opolszczyzna, analiza korelacji

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