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DARIUSZ KUSZ[1]

Rzeszow University of Technology, Poland

MOTIVES AND BARRIERS TO INNOVATIONS IMPLEMENTATION IN CATTLE FARMS

Key words: agriculture, cattle farms, innovation, motives, barriers

ABSTRACT. The implementation of innovations into agricultural practice depends on many factors. These include, among others, farmers' individual predispositions, especially the internal processes occurring in the human psyche, including predispositions, creative activity, willingness to take risks and motivations. The aim of the research is to determine the motives and barriers to introduce innovations in farms engaged in cattle breeding. The study was conducted from November 2022 to February 2023. Purposeful selection of the sample was used, and the farms engaged in cattle production, both milk and meat production, were selected for the study. The research was carried out in the Podkarpackie Voivodeship. The auditorium survey method was used in the research. The sample of 329 respondents was analysed. The research found that the youngest, best-educated farmers and those running large farms were more motivated to introduce innovations than others. Farmers' motives to implement innovative solutions were mainly related to the desire to improve management efficiency, the quality of production, the conditions in which production takes place, and reduce the negative impact on the natural environment.

[1] Corresponding author: dkusz@prz.edu.pl

INTRODUCTION

The process of implementing innovations into business practice depends on many factors, and the literature on the subject emphasizes that one of them is the ability to innovate [Neely et al. 2001]. The ability to introduce innovations is a multi-faceted construct [Saunila 2016], difficult to analyze due to the diversity of innovations. The practical concerns and needs related to innovation expressed by managers often motivate research on the processes of innovation diffusion and adoption.

Agriculture in Poland is dominated by small family farms [Kusz et al. 2022], which do not have adequate resources and opportunities to introduce innovative but expensive solutions. However, despite these limitations, innovations in agriculture are necessary. This is due to the need to meet the most important problems facing agriculture today [Józwiak et al. 2012]. There are two types of factors that influence the implementation of innovations on farms. The first one includes psychological and social factors. They are related to the openness of farmers to new solutions, the values they profess, their expectations regarding the standard of living, the tendency to take risky actions, the level of knowledge and skills in searching for necessary information, having a successor, etc. Economic and financial situation are the second factors that influence the implementation of innovations [Mirkowska 2010, Józwiak et al. 2012].

The success of innovation in agriculture depends on the efficient functioning of the institutional system in agriculture, but also on farmers" openness to new solutions. Therefore, identification of the motives and barriers to implement innovations by farmers is of great importance to improve the agricultural innovation system. For this reason, the aim of the research is to determine the motives and barriers to implement innovations in farms engaged in cattle breeding.

MATERIAL AND METHODS

The following research was based on a quantitative approach. The auditorium survey method was used. The study was conducted from November 2022 to February 2023. Purposeful selection of the sample was used. The farms engaged in cattle production, both milk and meat production, were selected for the study. The research was carried out in the Podkarpackie Voivodeship. Before the main study, a pilot study was conducted among 30 farmers, which allowed us to assess the comprehensiveness, clarity and accuracy of the questions asked to the respondents. After this stage, modifications were made to some of the questions. A total of 360 completed questionnaires were obtained. However, after removing incomplete questionnaires, a sample of 329 respondents was included in the analysis. The survey included closed and open questions about the characteristics of the surveyed farms and farmers, the type of innovations implemented on the farms and the

motives and barriers of the innovative activity. The analysis was carried out for the farms divided according to utilised agricultural area (UAA), and age and education of farmers. In order to divide the farms into groups according to UAA, one of the cluster analysis methods was used: *k*-means clustering, which is a non-hierarchical method. Three groups of farms were distinguished according to UAA: 1 – with the largest area of UAA (146.0-324.0 ha), 2 – the medium (45.0-122.1 ha) and 3 – the lowest (3.5-44.6 ha). In the case of farmers' age, three groups of farms were also distinguished: 1) up to 40 years old, 2) 41-60 years old, and 3) over 60 years old. Four groups of farmers were distinguished according to education: 1) primary, 2) vocational, 3) secondary, 4) higher education.

Farmers assessed the motives and barriers to introduce innovation on a 5-point ordinal scale: 1 – not important, 5 – very important. The non-parametric Kruskal-Wallis test of variance [Van Hecke 2012] was used to assess the diversity of the analyzed variables in the groups of analyzed farms. This test allows the verification of the significance of differences between $a \geq 2$ independent random samples (factor levels). The decision to reject the null hypothesis was made based on the value of the test statistic H and the associated test probability value p.

Table 1. Characteristics of the researched farms

Specification	Total	Farm groups by									
		UAA*			age*			education*			
		1	2	3	1	2	3	1	2	3	4
Structure of farms [%]											
	100.0	4.2	28.3	67.5	27.6	58.4	14.0	9.4	27.4	45.6	17.6
UAA [ha]											
Mean	41.2	196.0	71.0	19.0	38.5	43.5	37.1	32.9	29.4	43.5	58.3
Median	25.0	193.0	65.0	16.6	25.0	27.1	23.0	18.5	18.3	28.0	45.8
Min	3.5	146.0	45.0	3.5	4.2	3.5	4.6	3.5	5.7	4.2	5.1
Max	324.0	324.0	122.1	44.6	250.0	324.0	210.2	154.0	210.2	324.0	250.0
Vs [%]	105.4	24.7	29.5	51.7	110.8	101.5	113.8	101.9	115.4	104.8	85.4
Age of farmers [years]											
Mean	47.52	49.79	47.03	47.58	33.51	50.03	64.76	53.45	52.18	46.18	40.59
Median	48.00	47.50	46.00	49.00	34.00	50.00	64.50	53.00	54.00	46.50	41.00
Min	21.00	35.00	29.00	21.00	21.00	41.00	61.00	30.00	26.00	21.00	26.00
Max	75.00	67.00	66.00	75.00	40.00	60.00	75.00	73.00	75.00	69.00	60.00
Vs [%]	23.8	22.8	18.2	25.8	14.4	11.5	5.7	23.0	19.6	24.3	18.0

* Explanations in the Material and methods chapter

Source: own study based on a research survey

Table 1 shows the main characteristics of the researched farms and farmers. These are the farms with a much greater production potential in Poland and Podkarpackie Voivodeship, their average agricultural area is 41.2 ha, compared to 11.3 ha in Poland in 2022 and 5.1 ha in the Podkarpackie Voivodeship. The average age was 47.5 years, the predominant age group was 41-60 years. There was a small percentage of young farmers under 40 years of age (27.6%). The dominant education was secondary education.

RESULTS AND DISCUSSION

The innovative activity of enterprises is stimulated by various types of determinants which may be endogenous (related to the farm of a sociological, psychological, historical. organizational or economic nature) and exogenous (located in the farm's environment). Internal determinants largely determine an innovative activity [Górka, Runowski 2017]. The internal factors mentioned in the literature include: internal processes occurring in the human psyche, including predispositions, creative activity, willingness to take risks and motivations [Janasz, Kozioł 2007].

When analyzing the reasons for innovations implementation in the researched farms it was found that the most important were the increase of farm income, the improvement of production quality, the reduction of production costs, making work easier, more effective use of farm resources, the improvement of safety and working conditions, the improvement of animal welfare, the increase in the scale of production, the improvement of sanitary and hygienic conditions, and the reduction of the negative impact on the natural environment. These motives indicate that farmers are guided by the desire to improve the efficiency of their activity, they want to improve the quality of production, the conditions in which production takes place, and reduce the negative impact on the natural environment. Less important motivations for farmers were those related to vertical and horizontal integration and the possibility of processing products on the farm (Table 2).

When analyzing the dependence of the area of utilised agricultural land of the researched farms on the assessment of the importance of individual motives (Table 2), it was found that the level of test probability allows the rejection of the null hypothesis ($p < 0.05$) in the case of the following motives: improvement of the quality of products, the increase of the scale of production, reduction of costs production, employment reduction, the increase in farm income, more efficient use of farm resources, willingness to cooperate with the processing industry, legal requirements, requirements to improve animal welfare keeping up with technical progress implementation of automation and mechanization of work, improvement of safety and working conditions, making work easier and lighter, the possibility of obtaining investment subsidies. The average rating values indicate that the importance of all the above-mentioned motives was rated highest

Table 2. Dependence of the assessment of the importance of the motives to implement innovations and the utilised agricultural area (UAA) of the researched farms (Kruskal-Wallis test results)

Motives	Total	Group of farms (UUA)[a)]			*p*
		1	2	3	
		average score			
Improvement of product quality	3.91	4.79	3.97	3.83	0.006*
Increase in the scale of production	3.52	4.29	3.88	3.32	0.000*
Reduction of production costs	3.80	4.64	4.15	3.59	0.001*
Employment reduction	2.39	4.07	2.54	2.22	0.000*
Increase in farm income	3.93	4.79	4.20	3.77	0.001*
More efficient use of farm resources	3.63	4.86	3.84	3.46	0.000*
Adjusting the production profile to market requirements	3.20	3.86	3.03	3.23	0.388
Possibility of milk processing on the farm	2.50	2.79	2.27	2.57	0.250
Improving relationships with contractors	2.86	3.64	2.90	2.79	0.157
Willingness to cooperate with the processing industry	2.66	3.71	2.83	2.52	0.006*
Willingness to cooperate with other farmers	2.71	3.50	2.53	2.73	0.994
Legal requirements	2.70	3.64	2.97	2.53	0.001*
Requirement to improve animal welfare	3.61	4.29	3.68	3.55	0.029*
Reduction of the negative impact on the environment	3.46	3.93	3.55	3.40	0.130
Improvement of sanitary and hygienic conditions	3.57	3.93	3.57	3.55	0.224
Keeping up with technical progress	3.25	4.29	3.34	3.14	0.038*
Increased farmer prestige	3.00	3.71	3.03	2.94	0.484
High level of wear and tear of fixed assets	3.11	3.71	3.11	3.07	0.551
Significant failure rate of machines and devices	3.04	3.79	2.87	3.06	0.148
Automation and mechanization of work	3.03	4.43	3.16	2.88	0.000*
Imitating other farmers	2.72	3.14	2.56	2.76	0.814
Improvement of safety and working conditions	3.61	4.36	3.78	3.50	0.000*
Making work easier and lighter	3.70	4.57	3.81	3.59	0.001*
Possibility of obtaining investment subsidies	3.44	4.14	3.63	3.32	0.005*

a) Explanations in the Material and methods chapter

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)

Source: own study based on a research survey

Table 3. Dependence of the assessment of the importance of motives to implement innovations on the age of farmers (Kruskal-Wallis test results)

Motives	Group of farms (age)			*p*
	≤ 40 years	41-60 years	> 60 years	
	average score			
Improvement of product quality	4.21	3.84	3.61	0.037*
Increase in the scale of production	3.88	3.41	3.26	0.040*
Reduction of production costs	3.93	3.71	3.87	0.312
Employment reduction	2.53	2.33	2.35	0.748
Increase in farm income	4.10	3.79	4.20	0.103
More efficient use of farm resources	3.80	3.60	3.39	0.320
Adjusting the production profile to market requirements	3.60	3.11	2.80	0.006*
Possibility of milk processing on the farm	2.60	2.40	2.70	0.457
Improving relationships with contractors	3.00	2.79	2.87	0.549
Willingness to cooperate with the processing industry	2.88	2.63	2.33	0.127
Willingness to cooperate with other farmers	2.77	2.75	2.41	0.339
Legal requirements	2.74	2.66	2.78	0.794
Requirement to improve animal welfare	3.62	3.65	3.48	0.749
Reduction of the negative impact on the environment	3.51	3.46	3.39	0.986
Improvement of sanitary and hygienic conditions	3.74	3.53	3.41	0.491
Keeping up with technical progress	3.66	3.19	2.65	0.001*
Increased farmer prestige	3.43	2.91	2.50	0.001*
High level of wear and tear of fixed assets	3.42	3.03	2.80	0.074
Significant failure rate of machines and devices	3.40	2.96	2.65	0.015*
Automation and mechanization of work	3.42	2.95	2.59	0.007*
Imitating other farmers	2.99	2.68	2.33	0.032*
Improvement of safety and working conditions	3.81	3.60	3.26	0.154
Making work easier and lighter	4.08	3.61	3.28	0.005*
Possibility of obtaining investment subsidies	3.95	3.41	2.57	0.000*

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)
Source: own study based on a research survey

by group 1 with the largest area of UAA, and group 3 with the lowest area of UAA rated the lowest. This indicates that a larger production scale motivates farmers to implement innovations more. This may be related to internal conditions affecting farmers' ability to introduce innovations. This ability results from the greater resources of these farms which determine the ability to finance the required investments [Wicki 2014]. Still, these farms may also be more attractive to traders who visit them more often and offer modern solutions. Moreover, larger farmers are able to accept higher risk and can afford the costs of experimenting with new solutions [Barrett et al. 2010]. For this reason. they have easier access to information about innovations.

In the case of the analysis of farmers' age to assess the significance of individual motives to implement innovations (Table 3), it was found that the level of test probability allowed the rejection of the null hypothesis ($p < 0.05$) in the case of the following motives: improvement of product quality, the increase in the scale of production adjustment of the production profile to market requirements keeping up with technical progress increasing the farmer's prestige the significant failure rate of machines and devices, introducing automation and mechanization of work imitating of other farmers making work easier and lighter and the possibility of obtaining investment subsidies. The average ratings indicate that the importance of all the above motives was rated highest by the youngest farmers, and lowest by the oldest farmers. This indicates that younger farmers are more motivated to take modern solutions to farms. Along with the age farmers become more cautious and less willing to take risks [Kusz 2018].

The literature on the subject emphasizes the importance of farmers' education in the process of modernization and restructuring of farms. The level of farmers' knowledge, not only specialized but also general allows them to meet the requirements of the modern economy and society. The role of the human factor in agriculture increases with the general economic development because its importance and impact on the results are expressed primarily in the ability to constantly adapt to changing conditions [Kołoszko-Chomentowska 2008]. Younger and better-educated farmers are more open to adopt innovations to their farms [Bórawski 2010].

In the case of the analysis of farmers' education to assess the significance of individual motives for to implement innovations (Table 4) it was found that the level of test probability allows the rejection of the null hypothesis ($p < 0.05$) on the assumption of the following motives: the increase of the production scale, reduction of production costs, reduction of employment, improvement of relationships with contractors keeping up with technical progress high level of wear and tear of fixed asset. adopting automation and mechanization of work and the possibility of obtaining investment subsidies. The average ratings indicate that the importance of the above-mentioned motives was greatest in farms run by farmers with higher education. These data indicate that education plays an important role in the perception of the need to implement innovations.

Table 4. Dependence of the assessment of the importance of motives to implement innovations by farmers' education (Kruskal-Wallis test results)

Motives	Group of farmers' education				*p*
	primary	vocational	secondary	higher	
	average score				
Improvement of product quality	4.00	3.76	3.85	4.24	0.125
Increase in the scale of production	3.58	3.10	3.46	4.29	0.000*
Reduction of production costs	3.58	3.54	3.79	4.33	0.013*
Employment reduction	2.19	2.37	2.11	3.26	0.000*
Increase in farm income	3.97	3.92	3.78	4.33	0.071
More efficient use of farm resources	3.45	3.71	3.45	4.03	0.072
Adjusting the production profile to market requirements	3.35	3.24	3.00	3.59	0.123
Possibility of milk processing on the farm	2.90	2.37	2.35	2.86	0.101
Improvement of relationships with contractors	3.19	2.83	2.61	3.36	0.009*
Willingness to cooperate with the processing industry	2.61	2.58	2.53	3.14	0.071
Willingness to cooperate with other farmers	3.00	2.72	2.61	2.79	0.508
Legal requirements	3.03	2.70	2.53	2.97	0.106
Requirement to improve animal welfare	3.71	3.50	3.55	3.91	0.165
Reduction of the negative impact on the environment	3.48	3.43	3.35	3.78	0.380
Improvement of sanitary and hygienic conditions	3.58	3.47	3.54	3.81	0.336
Keeping up with technical progress	3.13	3.04	3.16	3.84	0.002*
Increased farmer prestige	2.94	3.04	2.83	3.40	0.090
High level of wear and tear of fixed assets	3.10	3.19	2.87	3.60	0.013*
Significant failure rate of machines and devices	3.10	3.00	2.90	3.41	0.208
Automation and mechanization of work	3.19	2.72	2.99	3.52	0.021*
Imitating other farmers	2.90	2.74	2.63	2.79	0.754
Improvement of safety and working conditions	3.71	3.48	3.53	3.98	0.055
Making work easier and lighter	3.68	3.68	3.55	4.12	0.062
Possibility of obtaining investment subsidies	3.52	3.20	3.31	4.10	0.003*

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)

Source: own study based on a research survey

The implementation of innovations on farms may be disrupted or not achieved as a result of barriers (restrictions) in this respect. Farmers considered the most important barriers hindering the implementation of agricultural innovations to be: low profitability of production, lack of necessary resources, complicated procedures for obtaining EU funds, and uncertainty regarding agricultural policy and the inability to purchase and lease land. In turn, the least important barriers are: lack of a successor, lack of recognition of market needs, lack of knowledge, lack of advice and practical examples, and unsatisfactory information system (Table 5).

Table 5. Dependence of the assessment of the importance of the barriers to implement innovations and the UAA of the researched farms (Kruskal-Wallis test results)

Barriers	Total	Group of farms (UUA)[a)]			*p*
		1	2	3	
		average score			
Lack of knowledge	2.97	3.50	3.00	2.93	0.494
Lack of necessary resources	3.99	4.21	4.04	3.95	0.405
Low production profitability	4.02	4.29	4.29	3.90	0.161
Uncertainty about agricultural policy	3.83	4.36	3.98	3.74	0.081
Complicated procedures for obtaining EU funds	3.90	4.21	4.09	3.80	0.432
High interest rates on loans	3.53	3.43	3.37	3.60	0.425
Lengthy procedures for obtaining investment consent	3.64	3.86	3.82	3.56	0.157
Legal requirements	3.36	3.79	3.41	3.32	0.664
Construction and environmental requirements	3.47	3.79	3.57	3.41	0.437
Animal welfare requirements	3.43	4.07	3.61	3.32	0.006*
Veterinary requirements	3.49	3.64	3.63	3.42	0.364
Difficulties in obtaining loans	3.17	3.21	3.00	3.24	0.740
Unsatisfactory information system	3.15	3.29	3.05	3.18	0.929
Lack of recognition of market needs	2.91	2.86	2.86	2.94	0.623
Too much risk of innovation	3.59	4.36	3.67	3.51	0.156
Lack of advice and practical examples	3.06	3.79	2.95	3.06	0.596
No possibility of purchasing or leasing land	3.82	3.79	4.17	3.67	0.006*
No successor	2.86	2.64	2.44	3.05	0.001*
No people to work	3.34	3.86	3.32	3.32	0.784

a) Explanations in the Material and methods chapter

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)

Source: own study based on a research survey

When analyzing the dependence of the area of UAA of the surveyed farms on the assessment of the significance of individual barriers (Table 5), it was found that the level of test probability allowed the rejection of the null hypothesis ($p < 0.05$) in the case of the following barriers: animal welfare requirements, and inability to purchase or land lease and lack of a successor. The average rating values indicate the importance of the barriers: animal welfare requirements were rated highest in group 1 of farms with the largest UAA, and lowest in group 3 with the lowest utilised agricultural area. In turn,

Table 6. Dependence of the assessment of the importance of barriers to implement innovations on the age of farmers (Kruskal-Wallis test results)

Barriers	Group of farms (age)			*p*
	≤ 40 years	41-60 years	> 60 years	
	average score			
Lack of knowledge	3.01	2.91	3.15	0.662
Lack of necessary resources	4.22	3.83	4.20	0.031*
Low production profitability	4.04	3.97	4.22	0.392
Uncertainty about agricultural policy	3.91	3.83	3.70	0.740
Complicated procedures for obtaining EU funds	3.88	3.90	3.96	0.814
High interest rates on loans	3.81	3.44	3.33	0.195
Lengthy procedures for obtaining investment consent	3.91	3.64	3.13	0.025*
Legal requirements	3.57	3.32	3.11	0.286
Construction and environmental requirements	3.58	3.50	3.11	0.244
Animal welfare requirements	3.56	3.40	3.30	0.496
Veterinary requirements	3.64	3.47	3.30	0.370
Difficulties in obtaining loans	3.43	3.05	3.15	0.251
Unsatisfactory information system	3.26	3.13	3.04	0.764
Lack of recognition of market needs	3.16	2.79	2.93	0.254
Too much risk of innovation	3.67	3.57	3.52	0.994
Lack of advice and practical examples	3.16	3.03	2.98	0.723
No possibility of purchasing or leasing land	4.09	3.82	3.26	0.023*
No successor	2.37	2.85	3.83	0.000*
No people to work	3.47	3.18	3.74	0.194

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)
Source: own study based on a research survey

the lack of possibility to purchase and lease land was rated highest on farms with an average size of UAA and lowest on farms with the smallest UAA. In the case of assessing the importance of the lack of a successor motive, farmers from groups of 3 farms with the smallest UAA gave the highest scores.

The impact of farmers' age on the differentiation of the assessment of the importance of innovation implementation barriers is presented in Table 6. The level of test probability allows the rejection of the null hypothesis ($p < 0.05$) in the case of the following barriers:

Table 7. Dependence of the assessment of the importance of barriers to implement innovations by farmers' education (Kruskal-Wallis test results)

Barriers	Group of farmers' education				*p*
	primary	vocational	secondary	higher	
	average score				
Lack of knowledge	3.19	2.92	2.91	3.10	0.574
Lack of necessary resources	3.84	3.81	4.01	4.29	0.146
Low production profitability	3.71	3.80	4.13	4.26	0.031*
Uncertainty about agricultural policy	3.42	3.60	3.91	4.22	0.017*
Complicated procedures for obtaining EU funds	3.77	3.62	3.95	4.26	0.029*
High interest rates on loans	3.71	3.53	3.53	3.43	0.755
Lengthy procedures for obtaining investment consent	3.19	3.46	3.64	4.19	0.003*
Legal requirements	3.16	3.23	3.26	3.93	0.003*
Construction and environmental requirements	3.39	3.37	3.41	3.81	0.182
Animal welfare requirements	3.58	3.47	3.34	3.53	0.708
Veterinary requirements	3.48	3.58	3.41	3.57	0.870
Difficulties in obtaining loans	3.06	3.30	3.11	3.17	0.887
Unsatisfactory information system	2.97	3.14	3.19	3.16	0.787
Lack of recognition of market needs	2.81	3.04	2.81	3.05	0.523
Too much risk of innovation	3.39	3.61	3.49	3.91	0.394
Lack of advice and practical examples	2.61	3.09	3.05	3.29	0.231
No possibility of purchasing or leasing land	3.65	3.81	3.73	4.14	0.128
No successor	3.32	3.06	2.77	2.52	0.069
No people to work	3.68	3.11	3.30	3.62	0.210

* Means that the null hypothesis should be rejected ($\alpha \leq 0.05$)
Source: own study based on a research survey

lack of necessary resources, long procedures for obtaining investment consent, inability to purchase and land lease, and no successor. The average rating values indicate that the importance of the barrier of lack of necessary resources was rated highest in the group of the youngest farmers, and lowest in the group of farmers aged 41-60. In turn, barriers: long procedures for obtaining consent for investments and the inability to purchase and lease land were rated highest on farms run by the youngest farmers, and lowest on farms run by the oldest farmers. In the case of assessing the importance of the lack of a successor motive, the oldest farmers gave the highest marks.

The impact of farmers' education on the differentiation of the assessment of the importance of barriers to innovations implementation is presented in Table 7. The level of test probability allows the rejection of the null hypothesis ($p < 0.05$) in the case of the following barriers: low profitability of production, uncertainty regarding agricultural policy, complicated procedures for obtaining EU funds, lengthy procedures for obtaining investment consent. The average rating values indicate that the significance of the above-mentioned barriers was felt most strongly on the farms run by farmers with higher education.

CONCLUSIONS

The risk related to the development and implementation of innovations in agriculture is quite high. Both the diffusion and adoption of innovations are accompanied by various motives and a number of barriers. Recognition of these motives and barriers determines the success of their effective and economically justified application. Moreover, they allow solutions to be tailored to the needs reported by farmers.

Farmers' motives in implementing innovative solutions were mainly related to the desire to improve management efficiency, improve the quality of production, conditions in which production takes place, and to reduce the negative impact on the natural environment. This indicates the importance of solutions in the field of technical innovations and the need to support them within agricultural policy tools. Farmers are also sensible to the need to reduce the negative impact of agricultural production on the natural environment. This awareness of farmers indicates that the approach is more suited to the realities of implementing environmentally friendly innovations and the new agricultural paradigm moving away from increasing productivity towards sustainable development. Less important motivations were those related to vertical and horizontal integration. These results indicate a lack of incentives within the agricultural policy that favour cooperation between various actors in agricultural innovation systems. More attention should be paid to cooperation with actors outside agriculture, especially agri-food processing.

Research also shows that the youngest, best-educated farmers and those running large farms are more motivated to implement innovations than others.

Farmers considered the following components as the most important barriers: economic factors related to the low profitability of agricultural production, internal constraints related to the lack of appropriate resources, the inability to increase the farm area, factors related to uncertainty regarding agricultural policy in the longer term, and complicated procedures for obtaining EU funds. This indicates that innovation is associated with high risk, which increases the required rate of return on such investments to cover the higher level of risk. This risk can be reduced by providing more certainty to the development of agricultural policy options on the way forward. Also within the framework of agricultural policy the restrictions on the flow of land between farmers should be reduced. The implementation of innovations may often require an increase in the scale of production in order to ensure adequate economic efficiency. In turn, the least important barriers are: lack of a successor, lack of recognition of market needs, lack of knowledge, lack of advice and practical examples, and unsatisfactory information systems. This indicates that farmers do not experience problems related to poorly functioning organizations disseminating new technologies within agricultural knowledge and information systems. However, the lack of a successor is felt more strongly in the group of the oldest farmers.

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MOTYWY I BARIERY WDRAŻANIA INNOWACJI W GOSPODARSTWACH ROLNICZYCH ZAJMUJĄCYCH SIĘ CHOWEM BYDŁA

Słowa kluczowe: rolnictwo, chów bydła, innowacja, motywy, bariery

ABSTRAKT. Wdrażanie innowacji do praktyki rolniczej jest uzależnione od wielu czynników. Zaliczamy do nich m.in. indywidualne predyspozycje rolników, a zwłaszcza wewnętrzne procesy zachodzące w psychice człowieka, obejmujące predyspozycje, twórczą aktywność, gotowość do podjęcia ryzyka i motywacje. Celem pracy jest określenie motywów i barier wdrażania innowacji w gospodarstwach rolniczych zajmujących się chowem bydła. Badania przeprowadzono od listopada 2022 do lutego 2023 roku. Dobór próby badawczej był celowy. Do badań wybrano gospodarstwa z terenu województwa podkarpackiego, zajmujące się chowem bydła, zarówno mlecznego, jak i mięsnego. W badaniach zastosowano metodę ankiety audytoryjnej. Analizę wyników przeprowadzono dla 329 respondentów. W badaniach stwierdzono, że rolnicy najmłodsi, najlepiej wykształceni oraz prowadzący duże gospodarstwa są bardziej zmotywowani do wprowadzania innowacji niż pozostałe badane osoby. Motywy, którymi kierowali się rolnicy we wdrażaniu rozwiązań innowacyjnych związane były głównie z chęcią poprawy efektywności gospodarowania, poprawy jakości uzyskiwanej produkcji i warunków w jakich odbywa się produkcja oraz z ograniczeniem negatywnego wpływu na środowisko naturalne.

AUTHOR

DARIUSZ KUSZ. DR HAB. PROF. RUT
ORCID: 0000-0002-5643-5404
Rzeszow University of Technology
The Faculty of Management
e-mail: dkusz@prz.edu.pl

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