

HUMAN CAPITAL IN THE ASPECT OF RAISING INNOVATIVENESS IN RURAL AREAS

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Abstract

The aim of this article is to show the importance and necessity of improving the quality of human capital in the aspect of increasing the level of innovation in rural areas. The key problem is, first of all, waste of human capital and difficulties in shaping awareness and desirable attitudes among residents of rural areas. The desk research method was used for the analysis. Human capital and innovations form a network of interrelationships and dependencies, and the conducted research and analyses aimed at better recognition of said dependencies allow to formulate and direct further research. The development of human capital and care for its quality as well as the associated increase in innovation of rural areas is the primary goal of EU member states' policies. This can be seen in various newer and newer solutions and implemented projects as well as the number of institutions participating in

their implementation. More and more attention is paid to the needs and problems of various social groups in rural areas, e.g. senior farmers, where effective use of the potential of this group is becoming a challenge in the face of an aging population. As part of improving the quality of human capital and the innovativeness of rural areas, not only financial assistance but also widely-developed advice is available. There is a need to deepen research in order to clarify the correlation between the quality of human capital and the innovativeness of rural areas, including the search for new support instruments.

Keywords: *human capital, innovations, innovativeness, rural areas, support instruments*

JEL classification: *J24, O15*

1 Introduction

The contemporary image of agriculture and rural areas is constantly changing. These changes depend on the farming model, which requires farmers to possess comprehensive knowledge and practical skills that enable a reduction in the negative impact of agriculture on the natural environment, while maintaining a high standard of living in the countryside, producing high quality food and implementing innovation (Roman, Roman, Roman, 2018).

Human capital and innovations can be considered as strategic factors in the development of a knowledge-based economy, including rural areas. In a globalized world, levelling the disparities between the country and the city is a big challenge. The key problem is the waste of human capital and difficulties in shaping awareness and desirable attitudes among rural populations. This situation has significantly improved after Poland's accession to the European Union in connection with the implementation of the objectives resulting from the Cohesion Strategy, the use of funds for the development of human capital and the implementation of innovations, particularly in rural areas.

The aim of this article is to show the importance and necessity of improving the quality of human capital in the perspective of increasing the innovation of rural areas. It is thanks to people, their knowledge, skills, competences and attitudes that it is possible to implement innovations, and thus improve the quality of life of people in rural areas as well as the services or products that they produce. This article focuses on examples of implementing innovations in the rural areas of Poland and on available instruments supporting the development of human capital and influencing the growth of innovativeness of particular regions.

2 Material and methodology

The desk research method was used for the analysis. The choice of methods determined the availability of source materials (including literature on human capital, rural areas, innovation, documents, reports, Cohesion Strategy), which allowed to establish facts, verify data and present the results obtained. The study allowed to identify areas that require in-depth research, i.e. showing the correlation between the quality of human capital and increasing the innovativeness of rural areas. An attempt was made to verify a hypothesis: human capital and innovations can be considered as strategic factors in the development of a knowledge-based economy, including rural areas. It should be noted that the development of human capital and increasing the innovation of rural areas is the focus of attention for many organizations, both local governments and non-governmental institutions or foundations (financing, consulting, developed strategies, etc.). More and more attention is being paid to the determinants of this development in the context of diverse needs and capabilities of particular social groups. Human capital and innovations form a network of interrelationships and dependencies, and conducted research and analyzes aimed at better recognition allow to formulate and direct further research, which is also the essence of this article.

3 Quality of human capital in rural areas

Concepts of human capital have evolved over the years, partly as a result of globalization processes taking place, which is why one can find its definitional diversity in literature. Definitions of human capital usually include elements of personality, traits or human abilities (intellectual dexterity, mental efficiency, intelligence, energy, mental receptivity, ability to analyze and synthesize, reason) (Król, 2016).

According to the OECD definition, human capital is the knowledge, skills, abilities and other appropriate attributes that facilitate the creation of personal, social and economic well-being. In this context, human capital should be considered in terms of its creation, maintenance and use (Kacprzak & Król, 2015).

Undoubtedly, it is human capital that forms a strategic factor for the development of a knowledge-based economy in a globalized world (Kacprzak, Król, Wielewska, 2017). The impact of human capital on the development of regions through the increase of their innovativeness also began to be increasingly recognized. Thus, the higher the level of human capital and its quality is, the more visible its impact will be on the growth of innovation of particular regions of the country or areas of the economy. However, the quality of human capital can vary significantly between particular areas. The key challenges in improving the

quality of human capital in rural areas include facilitating access to knowledge, information using new technologies, development of competences (education system) and technical (e.g. communication) infrastructure and social (improving the standard and quality of life of the rural populations), increasing activity on the job market, undertaking actions for sustainable development (care for the natural environment) and promoting pro-innovation attitudes (Strategy for responsible development by 2020, 2017).

The knowledge possessed and the ability to develop and use it constitute the basis for managing each organization, also in the agricultural sector. These are one of the main factors affecting the effective management of an agricultural holding. An important problem is overcoming barriers that appear in knowledge management processes in rural areas, and taking into account the functions that these areas have for the community (Kielbasa, 2016). Rural areas are becoming more and more multifunctional (agricultural, non-agricultural, semi-agricultural), therefore the quality of human capital will determine the degree of innovation implemented in particular areas of activity, and this will be reflected in the level of development of individual regions of the country. Efforts should be made to make the most of any and all available funds for rural development. Investing in human capital in rural areas is possible thanks to the possibility of using a range of available instruments from both the EU and the national rural development policy, which significantly affects the quality of human capital. Poland is one of the few EU countries that allocates a relatively large amount of funds to investments in human capital in these areas. The determinants of this state of affairs are primarily large disparities in the structure of human capital in farmers and other rural residents, the educational gap between rural and urban populations and a relatively small percentage of Polish farmers characterized by pro-innovation thinking and attitudes as well as anxiety of professional mobility. It is true that there is a change in parents' attitudes towards their children living in rural areas, noticeable primarily in reducing their share of work on the farms and creating favourable conditions for study and development; there is even a change in organizing various forms of recreation. This is now reflected in the increase in educational ambitions of youths from rural areas, the number of young people with a college degree increases, which in turn causes migrations of the youths to seek employment in cities, while relatively few of them decide to undertake non-agricultural activities in rural areas. However, young people are undoubtedly more marked by pro-innovative attitudes than older people. Therefore, the level of education, health status and environmental protection can be considered as key indicators of the quality of human capital.

As Kwiatkowski (2000) suggests, it is innovativeness, the capability and manner of learning as well as certain features that, apart from formally owned knowledge and skills, determine the economic success of the individual.

The CSO (Central Statistical Office) prognosis until 2030 indicates a tendency of a population decrease by about 8%, along with the aging of the population, which for Poland would mean a reduction in the percentage of rural population of the Poles to around 35.9% in 2030 (Kozera, 2011).

4 Human capital of senior farmers

One of the contemporary challenges to be faced is the problem of an aging population. Older people also constitute untapped capital, primarily in rural areas. In Poland, only recently (2016-2017) was an attempt made to solve this problem. The Ministry of Agriculture and Rural Development prepared two projects under the Strategy for Responsible Development, i.e. a 'caring household' and 'active and healthy senior farmer'. The essence of caring farms boils down to combining agricultural activity with care for elderly people in need of support. Funds for the implementation of those projects will come from the National Rural Network under the Operational Plan 2018-2019, the Regional Operational Program or POWER, to name but a few. The main implementer of the project is the Agricultural Advisory Centre in Brwinów, Branch in Kraków. The project "Caring farms – building a cooperation network" (network for innovation in agriculture and in rural areas) has already been launched. The Kujawsko-Pomorski Agricultural Advisory Centre is currently implementing the project "Green care – caring farms in Kujawsko-Pomorskie Province" (OP 2014-2020, priority axis 9, Solidarity Society, Action 9.3 Development of health and social services of the Poles, Subchapter 9.3.2 Development of social services). As part of the project, 15 care farms were created from the following districts: Brodnica, Mogilno, Świecie, Tuchola and Wąbrzeźno (consultancy, individual classes, training workshops, trips to get to learn about good practices in other farms, a pilot project for 225 people). The Agricultural Social Insurance Fund implements the project "Active and healthy senior farmer", whose aim is to develop a comprehensive system of care and rehabilitation of elderly people from rural areas (a pilot project). It is part of the larger project "Healthier society – human and social capital in the Strategy for Responsible Development (agronews.com.pl).

5 Innovations in rural areas

The notion of innovation is derived from the Latin word *innovatio*, which means renewal. Literature reveals a multitude of definitions of innovation. The concept was introduced into economic sciences by J. Schumpeter. In his opinion, innovations consist in:

- introducing new products into production or improving existing products,
- introducing a new or improved production method,
- opening a new market,
- applying a new method of sale or purchase,
- using new raw materials or semi-finished goods,
- introducing a new production organization (Bujak, 2011).

Innovation is also understood as "the entire management process, including various activities leading to the creation, development and introduction of new values in products or new combinations of resources and resources that are a novelty to the entity creating or introducing them" (Bujak, 2011).

The primary goal of innovation are changes leading to the increase in modernity and competitiveness, which means high activity in acquiring resources and skills necessary to participate in these processes (Wielewska, 2017).

For the purposes of this study, the authors adopted a definition that reads: "Innovation is every change made to a farm that improves something, gives a new quality or allows to create a new product (or service). Innovation may be the introduction of a new production method, the opening of a new market, or the acquisition of a new source of raw materials, as well as the introduction of a new way of organizing work" (Tabaka, 2015).

As A. Tabaka (2015) suggests, the Warmińsko-Mazurski Agricultural Advisory Centre in Olsztyn has developed several model examples of innovations together with their practical application in farms. They were based on four key types of innovations, i.e.:

- economic,
- social,
- organizational,
- technological.

Examples of economic innovations include activities related to the creation of new sales or distribution channels, e.g. by opening online stores or on farms. The assumed effect of such an innovation is to become independent of intermediaries. Another example concerns improvements in the field of marketing, through: joint promotion of products by a group of farmers, making of a new logo, distribution

of leaflets and other promotional campaigns (stands at festivals, fairs, etc.). The assumed effect of such an innovation will be increasing direct sales and obtaining higher prices of sold products. The third example of economic innovation boils down to the creation of the so-called purchasing groups and, as a result, increasing negotiating possibilities and shortening the food chain. Yet another example is the possibility of using renewable energy sources in joint heating of farms. The assumed effect of implementing such innovations is the reduction of energy costs on farms and energy independence on the one hand, and on the other, the protection of the natural environment. This is also confirmed by research, including I. Wielewska (2016), D.K. Zuzek (2007), D. K. Zuzek and B. Mickiewicz (2014), A. Ostrowska, W. Sobczyk and M. Pawul (2013) and W. Sobczyk, P. Pelc, B. Kowal, R. Ranoz (2017).

The second group of innovations is social innovations. An example of this is the creation of a network of links not only between producers, but also between producers and consumers, which is to result in shortening the food chain and increasing sales opportunities. Another social innovation could, for example, include actions aimed at increasing consumer awareness about healthy eating habits and selling high-quality products. Another example could be encouraging farmers to take on the role of energy producers as a source of additional income and to achieve energy independence.

As for organizational innovations, an example could be the implementation of new ways of production or sale management, which should result in increased profit, lower production costs or maximum use of sales opportunities, and modification of work organization - saving time and costs. This is confirmed by the works of experts from the project "Food and Nutrition in the 21st Century - a vision of the development of the Polish food sector in the field - Nutrition and human health. A list was created of recommended technologies, which, due to the high scientific and research potential and intellectual capital, have a chance of implementation and development. The European program emphasizes cooperation with the contemporary consumer in the development of new innovative foods (Koziołkiewicz M., Nebesny E., Krysiak W., Rosicka-Kaczmarek J., Budryn G., Gałązka-Czarnecka I., Libudzisz Z., 2011). Aerni P. (2009) draws attention to similar problems and points out that due to climatic and economic reasons, a significant part of food in the 21st century will not only come from the EU and Poland, but also from outside. This has an impact on the use of innovative production and quality assurance of manufactured products.

The last group of innovations, the so-called technological innovations, can refer to: activities related to the use of new products, changes in the structure of crops or agricultural technology in order to increase income and efficiency

of production, or use of new technologies based on biomass on farms, or energy production as conscious actions for environmental protection (Tabaka, 2015, Wielewska, 2015).

A farmer from Lubraniec who came up with an idea of using solar energy for drying herbs and fruits on his farm seems to be a good realization of the above examples of implementing innovations in rural areas. First, he visited an advisory centre for farmers, then applied for funding from the Rural Area Development Program and received funds for investment. The farmer currently has 100 solar collectors in a 21-hectare farm, working between June and October. As a result of the implementation of this innovative solution, the farm currently uses 40% less coal dust, which in turn translates into the profitability of the agricultural enterprise and has a positive impact on the natural environment (www.enrd.ec.europa.eu, 2013, p. 25).

Another example can be introduction of SPA services within the framework of agritourism activities, or promotion and implementation of a new form of tourism in rural areas – apitourism (educational tourism, sustainable tourism, attractions and leisure in a beekeeping farm). As part of innovative solutions, an offer is being prepared that is related to beekeeping, honey and bee products; cooperation is established with the beekeeping union, local self-government and agricultural advisory centre, and as a result of the steps, the beneficiary obtains financial resources for creating a branded product or service certified with a common high quality mark (Woś, 2015).

Innovations in apitourism can be, for example, creating a new specific product (e.g. honey with bee pollen and propolis), innovative services (e.g. relaxation massage using a specific type of honey), anti-depression session in the honey-inhalatorium, culinary workshops (e.g. baking honey cake), introducing new packagings, e.g. in the shape of a drop of honey (Woś, 2015). An example of such farms is the "Ulik" apiary in the village of Mokrelipie in Roztocze run by the Śliczniak family, in which there is an educational farm, and the innovative product is bean honey (www.pasieka24.pl).

Now that innovations have been explained, it is worth describing the notion of innovativeness. Also in the case of innovativeness, there is a multitude of definitions as well as different aspects of addressing this issue. Innovativeness is expressed in the ability of economies and enterprises to create, implement and absorb innovations (Wielewska 2017). Often, innovativeness is identified with the implementation of new solutions in a given environment, which in turn should be considered in a narrower and wider context (Król, 2017).

Another definition states that innovativeness is the realization of creativity in organizational processes, products or technologies, (Szczepańska-Woszczyzna,

2014) and how the particular individual acts when implementing novelties (Zakrzewska, Puchalska, Morchat, Mroczkowska, 2010).

As M. Struś and J. Kalinowski rightly point out, the state of innovativeness in rural areas is a resultant of mutual influence and relations between the public sector, entrepreneurs, consumers and farmers. When deciding on the selection and implementation of innovative solutions, farmers must first decide what their priority is: their own interest or the welfare of the public, and likewise: increase in productivity or sustainable development (Struś & Kalinowski, 2015).

In addition to the aforementioned dilemmas, there are also a number of barriers that inhibit the growth of innovativeness in rural areas. First of all, it is an anxiety of change, novelty and the unknown and a relatively small percentage of people with pro-innovative attitudes. Secondly, an aging population and a lower percentage of rural residents with college education, as compared to cities. Thirdly, the key barriers to innovativeness include the underdeveloped national health care and rehabilitation system. The rather poorly developed infrastructure in rural areas is also of significance.

To sum up, the population living in rural areas undoubtedly needs various forms of incentives, training and financial support, so that they can actively engage in innovation implementation processes.

6 Instruments of rural area development with particular emphasis on innovation support

When mentioning rural development instruments, the authors will refer to key strategies, initiatives, programs and agricultural policies, under which various forms of support for increasing the innovation of individual regions are offered. For example, the "Innovation Union" should be mentioned – an initiative implemented under the Europe 2020 Strategy (a strategy for intelligent, sustainable and inclusive development adopted in 2010 by the European Commission to stimulate the development of a knowledge-based economy in the EU,) the Lisbon Strategy) (www.stat.gov.pl). The "Innovation Union" focuses on the implementation of four key objectives:

1. Strengthening the knowledge base in Europe (improving the quality of education, developing competences, promoting the European Institute of Innovation and Technology).
2. Implementation of ideas for innovative products (co-financing for companies, creating a common innovation market).

3. Eliminating social and economic disproportions (intelligent specialization of regions, higher social benefits, social innovations and an increase in the role of the public sector).
4. Accumulating resources for groundbreaking projects or the European Innovation Partnership.

The key instrument in the implementation of the "Innovation Union" initiative is the "Horizon 2020" program offering support and funds for research and investment. It focuses on the implementation of three priorities – creating a perfect scientific base (access to world-class scientific research, development of intellectual capital and research infrastructure), improving the attractiveness of Europe as a place for investment in research and innovation, with particular emphasis on eco-innovation and innovation growth in SMEs (a leading position in industry) as well as facing social challenges. The superior objective of the Horizon 2020 program is sustainable development, which is to help meet the challenges in such areas as: food security, sustainable agriculture, marine research, ecological economy for climate or effective management of raw materials (Nowakowska, 2014).

The future Common Agricultural Policy (CAP) (Castellano, 2017) also deals with issues that are particularly important from the point of view of rural development. Its main aim is to increase the competitiveness of agricultural households and sustainable development, while innovation is seen here rather as an element that ensures cohesion of these two areas. Under the CAP, a number of instruments are used, such as direct payments (financial assistance for small farms and young farmers related to production), greening (support of practices that are beneficial for the climate and the environment – diversification of crops, permanent grasslands, ecological areas) (Nowakowska, 2014).

Support for rural development by the European Agricultural Fund for Rural Development (EAFRD) in the second pillar of the CAP focuses mainly on measures aimed at restructuring, investments and modernization of agriculture, by offering support for small farms and the development of organic farming. (Nowakowska, 2014).

The Rural Development Program for 2014-2020 focuses on supporting the implementation of six priorities in the aspect of increasing innovativeness:

1. Facilitation of knowledge transfer and innovation in agriculture, forestry and in rural areas.
2. Improving the competitiveness of all agricultural sectors and increasing the profitability of agricultural households.
3. Improving the organization of the food chain and promoting risk management in agriculture.

4. Restoring, protecting and strengthening ecosystems dependent on agriculture and forestry.
5. Supporting the efficient management of resources and the transition to a low-carbon and climate change-resilient economy in the agricultural, food and forestry sectors.
6. Increasing social inclusion, reducing poverty and promoting economic development in rural areas.

Some of the activities of RDP 2014-2020 ought to be mentioned here, in which there are preferences for innovativeness when considering applications. These activities include, among others, help for young farmers in establishing a business, development of small farms, modernization of farms, processing and marketing of agricultural products, creation of producer groups and organizations in agriculture and forestry.

Under the RDP 2014-2020, the "Cooperation" action is implemented, the beneficiaries of which are operational groups – groups of farmers, businesses established under the SIR (National Network for Innovation in Agriculture and Rural Areas), whose goal is to implement projects in the field of new products, practices, processes, technologies, methods of organization or marketing in the agricultural, food and forestry sectors (Tabaka, 2015).

An important role in the intermediation and participation in the creation of these operational groups (merging of partners) is played by new entities, the so-called innovation brokers (agricultural advisors). Therefore, their key tasks include providing and facilitating the flow of information and establishing cooperation in the field of innovation between the agricultural-food sector, science-research sector and advisory (Nowakowska, 2014).

7 Conclusion

In conclusion, the development of human capital and care for its quality as well as the related increase in innovativeness in rural areas is the primary goal of EU member states' policies, but not only. It can be seen in various types of newer and newer solutions and implemented projects as well as in the number of institutions participating in their implementation. The development of human capital and increasing the innovativeness of rural areas is in the center of attention of both local governments, as well as non-governmental institutions and foundations. More and more attention is paid to the needs and problems of various social groups in rural areas, such as senior farmers. In the face of an aging population, the effective use of the potential also becomes a big challenge within this group.

As part of improving the quality of human capital and the innovativeness of rural areas, not only financial assistance but also widely developed advisory are available. In the course of recent years, a certain increase in the innovativeness of the country can be seen. The amounts of money spent every year from the EU and other funds as well as the changing image of the Polish countryside confirm a certain extent of success in the area of human capital development.

In a globalized world, in a knowledge-based economy, it is difficult to imagine not using human capital or not implementing innovative solutions in any branch of the economy.

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