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## FUTURE DRIVERS OF RURAL PROSPERITY IN KNOWLEDGE AGE: LITHUANIAN CASE

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### ABSTRACT

The knowledge age greatly shaped society's understanding of what goes beyond the agribusiness and sharply raised the question of farmers' responsibilities on the way they do farming in relation to the payments they receive as public support. Therefore the new rural prosperity drivers in knowledge age calls for the new principles of European Union support distribution for agriculture and rural development. The aim of this research is to explore future drivers of rural prosperity based on knowledge society measures. It is argued, that the upcoming European Union rural prosperity is guided by knowledge philosophy encompassing the nexus among 'innovating', 'networking' and 'giving back' to society. Original empirical data, collected in Lithuanian in 2017, explores farmers' attitudes towards listed knowledge society measures in relation to farm size and other relevant characteristics. Research findings suggest more promising directions for agriculture and rural development that contributes better for rural prosperity in knowledge age.

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### Introduction

EU support principles for agriculture and rural development had been recently controversially debated by broad society. The new rural development paradigm faces new challenges due to the greatly changed overall development in the world. Overall development in rural areas performed numbers of transformations due to the establishment of the Treaty of Rome and Common Agricultural Policy (CAP). Industrialization due to mechanization, farm electrification, installation of irrigation and

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amelioration systems, chemical production technologies, including artificial fertilizers, herbicides, insecticides, fungicides, etc. greatly affected work processes, and composed grassroots for side effects later to arrive. The so-called progress in these processes is lately exponentially accelerated by growing application of various knowledge and new technology-based soft (non-technical) and hard (technical) innovations in agricultural processes and production. The reformed CAP in 2014–2020 was a strong response from the EU to the biggest challenges of today, such as food safety, climate change, sustainable growth and job creation in rural areas. There was an aim to support in this period a market-oriented agriculture where farmers can obtain stronger position within the food production chain. The CAP is seen as an important driver for jobs, smart, sustainable and inclusive growth.

For 50 years, the CAP has been a genuinely European policy of strategic importance. As it is a true Community policy, more than 70 percent of agricultural funding in Europe today comes from the EU and no longer from national or regional coffers. Its share in the Multiannual Financial Framework (MFF) for 2014–2020 is considerably large: 312.7 billion euros or 29 percent for market-related expenditure and direct aids (Pillar 1); and 95.6 billion or 9 percent for rural development (Pillar 2) (The European Commission, 2017). In total for CAP it is 38 percent of total MFF budget for 2014–2020.

Significant changes arrived alongside these transformations both to rural landscapes and everyday life in the countryside. Recent scientific discussions addressed this as a shift in rural paradigm (e.g., Murdoch, 2000; Mather, Hill, & Nijnik, 2006; Horlings & Marsden, 2014; Vidickiene & Melnikiene, 2014, etc.). The activity and wellbeing of farmers and rural residents had been strongly shaped due to the established agricultural policy and support schemes, since farmers are responsible for the provision of public goods on more than half of the territory of the EU (European Commission, 2018). Thus responsibilities, which arise alongside the farming activity, keep shaping the industrial meaning of agriculture as public goods' provider. And therefore future rural prosperity highly depend on transformations-sensitive political drive with precisely defined new directions, taking into account described dramatic shift of rural development paradigm (Murdoch, 2000; Mather, Hill, & Nijnik, 2006; Horlings & Marsden, 2014).

The discussions about future values for rural prosperity in knowledge society, demanded by rural residents had been raised due to the changed society's understanding about the quality of life in rural areas. Several studies (e.g. Fink, Lang & Richter, 2017; Jentsch, 2017; Liu and Li, 2017; Lavesson, 2017; Whitby and Willis, 2017, etc.) argue that educated and skilled people in countryside communities with innovative success baggage, filled-in with abilities to network, innovate and share acquired advancements with local residents by 'giving back' to society hold potential to accelerate the development of rural areas. However, there is still lack of scientific discussions in literature related to future rural prosperity drivers regarding the combination of new success factors, i.e. networking, innovating and 'giving back' to society.

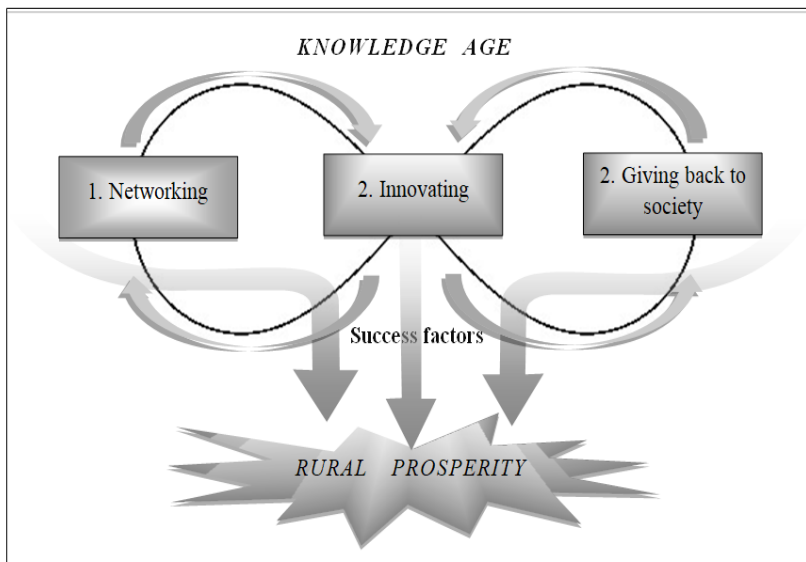
The main aim of this research is to explore the major factors that are promising to moderate rural prosperity in on-going knowledge age. To reach the aim, theoretical assumptions made through scientific literature analysis are proved with representative empirical evidence, collected using survey method in Lithuanian farms in 2017.

### Theoretical background

The increasing role of knowledge and its empowerment in recent research is often addressed to a shift from industrial to post-industrial phase of development and supported with systemic explanation of transformations in social, cultural and economic systems (Murdoch, 2000; Mather, Hill, & Nijnik, 2006; Horlings & Marsden, 2014; Vidickiene and Melnikiene 2014; Fink, Lang & Richter, 2017; Lavesson, 2017). Thus rural development paradigm had performed significant changes that composed new set of elements for success in knowledge age. The three major factors that call for rural prosperity under modern conditions might be summarized using three knowledge society measures: networking, innovating and 'giving back' to society. Nowadays increase number of artificial intelligence use cases by industry with high job impact, global merger-and-acquisition activity related and and cognitive technology-driven automation leads to economic growth (Vochozka et al., 2018; Hardingham et al., 2018; Neary et al., 2018; Nica et al., 2018).

Thus future drivers of rural prosperity in knowledge age might be explored using continuous moving throughout the infinite pathway of networking, innovating and 'giving back' to society (see Figure 1).

Figure 1. Continuously interacting factors for rural prosperity in knowledge age



Source: Composed by authors

*Networking* is emphasized as an important strategic tool in attaining innovation. It is beneficial to capture ideas, reduce distance with policy makers, prevent them from insulation, know the right people and places to obtain information (Lambrecht et al., 2015; Madureira et al., 2015; Jentsch, 2017). At the same time, networks give access to complementary resources, skills, capabilities, and knowledge that are not internally available (Pittaway et al., 2004; Vacaro et al., 2012; Whitby and Willis, 2017). Some scholars (e.g., Liu and Li, 2017; Sumane et al., 2017) stress the compulsory existence of knowledge networking and multi-actor knowledge networks that facilitate knowledge exchanges, joint learning and the generation of new, more integrated solutions, aiming to achieve sustainable and resilient agriculture.

*Innovativeness* most is often is defined as the major success factor in modern society (Chrisman et al., 2015; Dunne et al., 2016; Kusano, Wright & Conger, 2016). In knowledge age success is found when focusing on innovation as a core farming business value (Madureira et al., 2015; Reimers-Hild & Dye, 2015a; Reimers-Hild & Dye, 2015b; Neumeier, 2017; etc.). There is a lot of evidence, how innovative rural communities create better quality of life (Pittaway et al., 2004; Vaccaro et al., 2012; Esparcia, 2014; Salemink, Strijker & Bosworth, 2017). Normally, due to particular reasons a lot of innovative initiatives fail (von den Eichen, Freiling & Matzler, 2015). Innovations itself hold a necessity to compose appropriate network, that might serve as a platform to exchange most important information among relevant stakeholders of the issue. Network might be elaborated from personal, informal and formal contacts, taking into account actors in the field from both close and remote environment. Researchers suggest (Pittaway et al., 2004; Vacaro et al., 2012; Lambrecht et al., 2015; Madureira et al, 2015; Sumane et al., 2017) that networks should cover variety of stakeholders: colleagues, input industries, traders, researchers, extensionists, government officials, civil society organizations, etc.

Among different scholars innovating in the field of rural development is recognized as quite specific. Modern networks in all their forms perfectly serve for ensuring the sufficient flow of information regarding innovative products and services proposed by farmers and rural communities to the customers (Vacaro et al., 2012; Lambrecht et al., 2015). Thus they become vitally important for the quick spread of innovative knowledge concerning rural issues. But the most important factor to accelerate the spread of innovative knowledge is to put together actors from different spheres into one network and organizes knowledge sharing among them. There is no need for any specific infrastructure (e.g. electronic devices, software etc.) to get involved in innovative rural networks. Ordinary software applications for modern communication equipment, various popular applications compose successful joint local community and farmers' contact system (Madureira et al, 2015; Salemink et al, 2017). Exceptional skills are not on demand to make a platform for innovating together, as it can be successfully moderated by community leader, who hold obvious software skills in knowledge age.

In knowledge age, more inclusive and flexible modes of governing the generation, integration and sharing of knowledge are on demand. A current challenge of agriculture,

and the many roles it is being asked to fulfil is tightly related to dynamic contexts, complexity and the local specificity (Pittaway et al, 2004). In knowledge age it is vitally important to recognize all stakeholders, including farmers as equal co-authors of knowledge generation (Sumane et al., 2017). At the same time both formal and informal knowledge need to be brought together in innovation processes.

Willingness to *'give back' to society* in a form of shared knowledge and experiences through networks is one more essential factor, which should exist aiming to accelerate rural community and farmers to perceive prosperity. The initial idea of *'giving back'* to society arrives from business literature of the mid-fifties of the 20<sup>th</sup> century (Bowen 1953) after the theory of corporate social responsibility (CSR). The main idea of the theory is that every operating unit hold responsibility for the society at a large or locally in its operating area (Boyd et al, 2017; Lee-Davies, 2017; Schwartz, 2017; Carroll & Brown, 2018). CSR theory says that the way of running an activity beyond the law is equally important to the aim of earning profits and increasing productivity. Most often CSR is explained as a three-fold responsibility of any operating unit, including economic environmental and social responsibility (Carroll & Brown, 2018). In agricultural literature CSR appeared in a first decade of the 21<sup>st</sup> century and is referred as a toolbox which might help implement the sustainable development goals (Mazur-Wierzbicka, 2015). *'Giving back'* to society is tightly related to the so-called *'openness'* of innovation, or responsible innovation which conditionally determines the willingness to innovate together in close and remote environments. It overwhelms the spread of the affected area thus giving evidence on both internal and external effects of innovation for local community implementation, especially with regard to distanced social systems in regions with the help of networks. This sometimes also refers to *'responsible innovation'*, as it is intended to make a positive change for society in the region. Therefore, it becomes evident how important is innovating together - spreading the externally acquired knowledge to local community members when raising its potential to innovate (Duh & Kos, 2016; Specht, Zoll & Siebert, 2016). Local farmers may become a networked driving force for burning and sharing innovations with local community, thus making a tremendous contribution to the development of rural regions and local communities itself. In this research openness for local rural community and willingness to share acquired knowledge and skills is called *'giving back'* to society.

Summarized scientific literature in the field of interest of this research highlight the existing lack of scientific discussions regarding the impact of infinite networked collaboration for innovation in agriculture and its spread thus *'giving back'* to society. It has never been defined before in such continuous relation and interaction. It is suggested by authors to use the proposed theoretical model (see Figure 1) to define future drivers of rural prosperity in knowledge age as a combination of new success factors, i.e. networking, innovating and *'giving back'* to society, by sharing gained advancements with local residents. It should be stated here, that various knowledge society measures had been proposed in many scientific studies before, but they had been never analysed in such combination as drivers for rural prosperity in knowledge

age. Further research results and discussion on empirical findings help validate the proposed theoretical model as relevant for further developments in the field.

### Research approach and methods

Positivist methodology approach was used as a basis for this research. Conceptual framework was built using scientific literature review, systematization and theoretical modelling methods. Focused review of scientific literature in the field of issue-specific innovations, networking theories and conception of social responsibility as 'giving back' to society helped identify relevant themes and appropriate factors as drivers for rural prosperity in knowledge age. In this research stage it was identified that future drivers of rural prosperity in knowledge age seems to be greatly shaped by networked collaboration for innovation and 'giving back' to society between rural communities and farmers. Systematization method was applied aiming to build a theoretical construct for the research. Theoretical modelling served for the reduction of actual topics and factors to be measured when building the research framework.

Reliability of primary theoretical findings was done with help of two-stage expert evaluation. Nonprobability criterion sampling procedure was applied when attracting voluntary international experts, who proved the suitability of theories and selected factors to be employed in the agrarian discourse. The first stage of expert evaluation consisted of rating the theoretically selected approaches towards rural prosperity from most suitable to least suitable concerning innovations, networking and social responsibility theories in the agrarian discourse. The second stage was devoted to test the probability of theoretically selected most relevant factors in this discourse. Sufficiency on the agreement among expert opinions was assessed using Kendall's coefficient of concordance  $W$  which was found close to 1. Therefore, aggregated expert evaluation results approved theoretical findings.

The research question was formulated as follows: "what are the future drivers of rural prosperity in knowledge age?". The three main themes theoretically approved for further empirical investigation as future drivers of rural prosperity research were 'networking', 'innovating' and 'giving back' to society:

- '*Networking*' theme was encompassed in relation to innovations (networking with universities) and 'giving back' to society (sharing acquired knowledge with local community), as well as channels used to sell products (5 options of both ordinary and networked channels and open position for listing other).
- '*Innovating*' theme was disclosed by questioning farmers, how often (i.e., less than 1 time per year, 1 time per year or more than 1 time per year) they buy new and upgrade the existing technical infrastructure as well as processes in their farms.
- '*Giving back to society*' theme was disclosed by asking whether farmers consider their self as local community members who may contribute to its

development using polar (yes or no) question and list of more concrete 10 activities (1 to 5 Likert scaling) to be performed in the name of 'giving back' to society.

Scientists' team performed pilot face-to-face interviews with 100 Lithuanian farmers. After insignificant corrections original representative empirical data was collected by experienced subcontractor. General population of Lithuanian farmers equals to =138.9 thousand (Agriculture and food sector in Lithuania, 2016, p.36). Calculated representative population under statistical conditions of 3 percent error ( $\epsilon=0,05$ ) and 95 percent ( $p=0,5$ ) confidence level is  $n=1059$  (Schwarze, 1993). Respondents were selected using systemic sampling of research subcontractors' database. Data were collected using telephone interviews of Lithuanian farmers in January-February 2017. Potential respondents had been telephoned 3211 times, 1491 times without response, 612 farmers rejected the suggestion to take part in the interview. Finally 1108 interviews were acknowledged suitable for further investigations which satisfy defined statistical conditions.

The obtained data was processed with descriptive statistical analysis. The percentage distribution of respondents' answers was calculated, comparing data between the groups by using  $\chi^2$  test (significance level  $p<0,05$ ). The sample size of the study allows ensuring that the statistical error of the results does not exceed 3.1 percent. Statistical analysis of data was performed using the SPSS 22.0 program. A two-stage variable  $\chi^2$  independence test was performed to determine whether the respondent's characteristics (sex, age, etc.) affect the distribution of answers to questions. Only those answers are used as evidence, in which the test showed that the distribution of answers depends on the respondents' characteristics.

The interviewed Lithuanian farmers represent all the municipalities of the country, different natural areas; reflect various farming conditions and the corresponding characteristics of farmers and farms: the gender, age, education of the farmer; size of farm, duration of farming activity, and type of farming (Agriculture and food sector in Lithuania, 2015).

The study involved 57.7 percent men and 42.3 percent women. The majority of surveyed farmers (38.3 percent) were respondents aged from 55 to 64; the second age group (27.6 percent) were farmers aged between 45 and 54, respondents of 65 years and older composed 23.9 percent. The smallest group of respondents is represented by youngest farmers: 1.1 percent is up to 35 years and 9.1 percent aged between 35 and 44. The majority of respondents (34.5 percent) had acquired professional education; farmers with acquired upper and secondary education composed respectively 23.7 percent and 21.4 percent. The smallest group of respondents according to their education consists of respondents with lower secondary (4.6 percent) and primary education (1.6 percent). The majority (88.4 percent) of the surveyed farmers acquired education before 1990 (or in the Soviet period), 10 percent - before the Lithuania's accession to the EU (i.e. in the period of 1990-2004) and 1.6 percent in 2005 or later, i.e. after Lithuania's accession to the EU.

Less than half of the surveyed farmers (40.2 percent) have a farm of economic size (turnover in euros per month) up to 4,000 euros and, according to this criterion, falls into the smallest group of farms. 22.3 percent of respondents' farms has the turnover from 4 001 to 8 000 euros; 16.3 percent - from 8 001 to 15 000 euros, 8.8 percent - from 15 001 to 25 000 euros, 6.3 percent - from 25 001 to 50 000 euros. The smallest group of respondents consists of the farms with largest turnover. The turnover of the surveyed companies ranges as following: 3.4 percent - from 50 001 to 100 000 euros, 1.9 percent - from 100 001 to 250 000 euros and 0,8 percent - more than 250 001 euros. The majority of respondents (44.8 percent) are farmers whose farm size is up to 20 hectares (ha); 32.1 percent - from 20.1 to 50 ha; 13.7 percent - from 50,1 to 100 ha. The smallest part of the respondents are farmers with farms of 100.1 to 500 ha (9.2 percent) and more than 500.1 ha (0.2 percent).

According to the criterion of the duration of the activity, almost half of the surveyed farmers (46.6 percent) started their farming activities 21 year ago or even earlier, a similar proportion of respondents (43.1 percent) – from 11 to 20 years ago, and the youngest farms with experience 10 and less years of farming composed 10.3 percent. More than half of the respondents (54.1 percent) have mixed (both crop and livestock) farms, 21.5 percent are crop farmers, and livestock farmers compose 13.3 percent. By summarizing the general characteristics of survey respondents, it can be stated that the survey data is representative.

### **Results and discussions**

Research results approved significant role of all three theoretically explained counterparts of rural prosperity in knowledge age, including infinite flow of knowledge, creating innovations through networks and bringing it back to society.

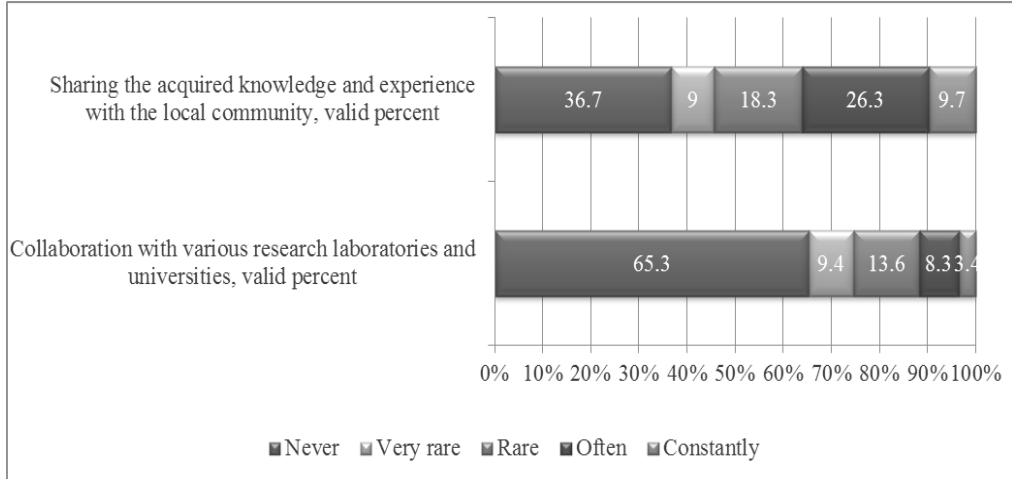
Lithuanian farmers' willingness *to network* was firstly approved by the size of farms. During the research it became evident, that almost half of Lithuanian farmers (48.1 percent) hold less than 5 hectares of land (ha) and are too small to compete in the market equally in gaining knowledge and innovating with those big farms with great resources to innovation. 21.8 percent of Lithuanian farms hold from 5.1 to 10 ha, 13.5 percent of farms hold 10.1-20 ha, 8.9 percent holds 20.1-50 ha. And only the rest 7.7 percent of farmers hold 50 ha and bigger farms that have enough resources and potential to act in knowledge market and innovation process their self, without advantages assured through networking.

'Networking' theme was also encompassed in relation to innovations as networking with universities – acquisition of innovative knowledge through direct knowledge creators and providers. Research suggests that Lithuanian farmers quite rarely consider universities as networking and innovation partners, since they are very passive in collaboration with universities (see Figure 2). Only 3.4 percent of farmers continuously collaborate with universities and research laboratories, 8.3 percent stated they do this often. Rare collaboration was stated by 13.6 percent, very rare by 9.4 percent or



Lithuanian farmers. 65.3 percent of farmers responded, they had never collaborated with any university or research laboratory.

**Figure 2.** Frequency of farmers' intent to acquire new knowledge for innovation and share it with local community



*Source: authors' calculations*

Related part of networking was encompassed parallel with modern knowledge society measure under 'giving back' to society. It helped to disclose openness of acquired knowledge as innovation through networks. Sharing acquired knowledge with local community was defined as 'never performed' by 36.7 percent, 'very rare' - by 9.0 percent and 'rare' by 18.3 percent of Lithuanian farmers. 9.7 percent farmers constantly share their knowledge with local community, and 26.3 percent do this quite often.

Everyday networking activity, implemented by Lithuanian farmers was also investigated using more practical aspect - channels used by farmers to sell their products. Most of Lithuanian farmers sell their products via cooperatives (44.0 percent) and directly from farms (43.7 percent). Small farmers' markets are acceptable for 10.5 percent farmers. Among the other product distribution network possibilities (18.5 percent) most often mentioned co-operators were found processors of agricultural raw materials. It might be summarized, that all researched types of networking is most actively performed by farmer's who hold 20,1-50 ha farms, has turnover of up to 4000 Eur, are aged between 40-64 years and hold professional or higher education, acquired before 1990.

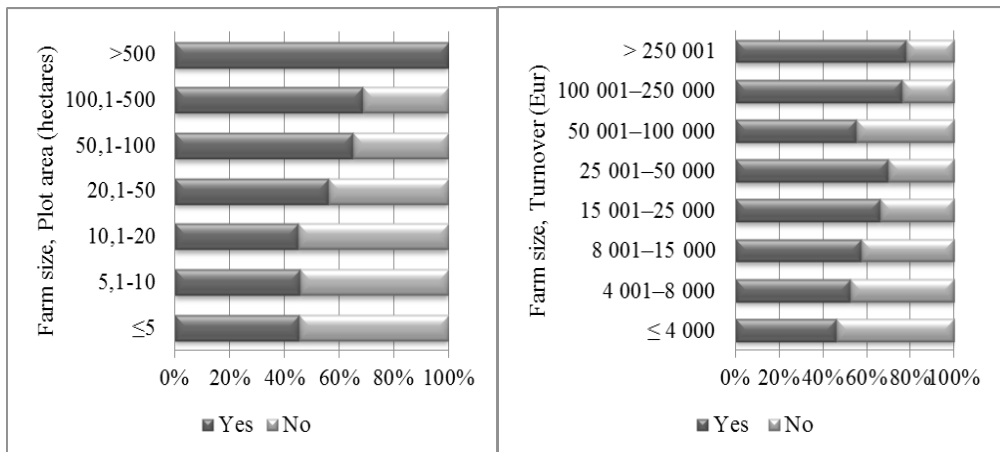
'Innovating' counterpart helped disclose, that most of Lithuanian farmers are passive innovators due to the upgrading organizational processes and technical equipment. In upgrading the existing production facilities dominant position, represented by 76.1 percent of farmers, is less than once a year. Organizational processes are also very rarely upgraded - 85.2 percent of interviewed farmers said they do this less than once a year. The question concerning the purchasing of modern production facilities

was mentioned as performed rarer than once a year by 90.2 percent of respondents. Installing innovative organizational processes less than once a year is done by 84.3 percent of Lithuanian farmers.

Deeper descriptive analysis of research results reveal, that experienced farmers who hold the farm for 11 and more years are those farmers who responded that they perform listed innovative activities 1 time per year and more than 1 time a year. Innovations are more acceptable to install and apply in mixed farms (56.77 percent), than in crop farming (25.54 percent) and livestock farms (17.69 percent). It was unexpected finding that the bigger the farm is due to its annual turnover, the less it is active in upgrading equipment and organizational processes. Similar situation was found with purchasing new equipment and installing innovative organizational processes. It became evident from this point of view that most active innovators both from technical to organizational innovations are farms with turnover up to 50 000 euros. Research results demonstrate that most active innovators are between 45 and 65 years old.

‘Giving back’ to society counterpart results were diverse. The first part of findings demonstrates farmer’s intent to ‘give back’ to society from farm size (economic units and plot area in hectares), farmer’s gender, age and education perspectives. Research results reveal that the bigger the farm in its size is (both in economic and plot area aspects), the greater farmer’s consideration to contribute to local community development is (see Figure 3).

**Figure 3.** The relation among farm size and farmer’s self-consideration as contributor to its local community development by ‘giving back’ to society.



Source: Composed by authors

It was disclosed almost equal half-by-half share of farmers who consider their self as local community development contributors (53.8 percent) or non-contributors (46.2 percent). In depth descriptive analysis reveals that male farmers consider their self as

community developers more often (57.0 percent) than women (49.5 percent). It was found that age acted as a significant factor for 'giving back' to society. The younger the farmer was, the greater intent to contribute to local community development he/she held: positive answers were received from 83.3 percent of respondents under 35 years old. Education was also found among significant factors: the higher farmer's education was, the stronger his consideration to contribute to local community development rose. Significant finding was made with regard to the relation between period of time when first higher education was acquired (i.e., before Lithuanian regained independence in 1990s; before Lithuania's acquisition the EU 1990-2004; after Lithuania's acquisition to the EU - 2005 and later) and farmer's intent to contribute to local community development. It was found much greater intent to contribute to local community development from farmers, who acquired their first higher education in 2005 and later.

The second part of results helped rate the activities performed by Lithuanian farmers for local community development in the name of 'giving back' to society. Among proposed 10 options of possible activities top three positions (according to Likert scale accumulated results of 'permanently' and 'often') were: first, supporting transparency and keeping public-interest-protecting position in relations with local government representatives (47.2 percent); second, taking into account the interest of local indigenous people when developing a farm (42.0 percent); third, taking active role in local in the community events and traditional festivals (39.8 percent). 36.0 percent or questioned farmers constantly and often share acquired knowledge and experiences with local community. However, giving the fact that Lithuanian farmers pay the least attention to cooperation with various research laboratories and universities (the last position: 'never', 'very rarely' and 'seldom' - 88.3 percent of farmers), it can be argued that so far Lithuania farmers are more likely to share their practical experiences with community members than innovative knowledge acquired through seminars and other educational events organized by universities and research laboratories as knowledge dissemination activities.

This study fulfilled previously collected evidence regarding future values of rural prosperity e.g. Fink, Lang & Richter, 2017; Jentsch, 2017; Liu and Li, 2017; Lavesson, 2017; Whitby and Willis, 2017, etc.), that knowledge come through the channels of young entrepreneurs, which propose different acting schemes for rural communities and thus start playing crucial role in modern rural development, especially in case of raising social innovations and transformations made by people in a countryside.

## **Conclusions**

1. The ongoing scientific discussion highlights the changing understanding of the main function of rural regions as places with dominant agricultural activity as food and fiber providers. Due to the radical shift from agriculture to services, rural regions perform crucial transformation in knowledge society, which promise to change significantly rural prosperity success factors in nearest future. And this will happen in a continuous interflow of knowledge through networks which will provide 'giving back' to society.

2. Rural prosperity in knowledge age calls for collective, innovative and responsive actions via networking which might help accelerate the access and acquisition to brand new knowledge as well as spreading these ideas for community in the region, which in total would lead to opening the innovation. Rural prosperity in knowledge age might come into action in case of existence of the three main factors: first, accelerated networking - the size of farms and rural enterprises due to the limited number of employees; second, the shift from technical to organizational innovations; third, the shift from individual sectorial to responsive territorial rural development strategies, enabled through the spread of acquired and shared knowledge.
3. The dominance of small farms in Lithuania calls for the necessity to collaborate and network. Only bigger farms have enough resources and potential to act in knowledge market and innovation process their self, without advantages assured through networking. Passive farmers' collaboration with universities demonstrates low networking level and low ability of farmers to acquire new knowledge for innovating and thus compose barriers for rural prosperity in future. Alongside, inability of Lithuanian farmers to act actively in knowledge market due to limited networking and innovating practices creates significant difficulties for the existence of the third measure – 'giving back' to society, since there is nothing to share once nothing was acquired through networks and innovation channels.
4. Research findings demonstrate that, in Lithuanian case, the EU support does not fulfil the major goals of sustainability. It still increases productivity, instead of putting all actors in fair responsibility for future generations. Thus future drivers for rural prosperity based on knowledge society measures, that encompass the upcoming rural prosperity in European Union should be changed. They should be necessarily guided by knowledge philosophy focusing at least the nexus among 'innovating', 'networking' and 'giving back' to society.

### **Conflict of interests**

The authors declare no conflict of interest.

### **References**

1. Agriculture and Food sector in Lithuania in 2015 (2016). Lithuanian Institute of Agrarian Economics. Vilnius, 2016.
2. Agriculture and Food sector in Lithuania in 2016 (2017). Lithuanian Institute of Agrarian Economics. Vilnius, 2017.
3. Boyd, B., Henning, N., Reyna, E., Wang, D., Welch, M., & Hoffman, A. J. (2017). *Hybrid organizations: New business models for environmental leadership*. Routledge.
4. Carroll, A. B., & Brown, J. A. (2018). Corporate Social Responsibility: A Review of Current Concepts, Research, and Issues. In *Corporate Social Responsibility* (pp. 39-69). Emerald Publishing Limited.

5. Chrisman, J. J., Chua, J. H., De Massis, A., Frattini, F., & Wright, M. (2015). The ability and willingness paradox in family firm innovation. *Journal of Product Innovation Management*, 32(3), 310-318.
6. Duh, E. S., & Kos, A. (2016, October). Fablabs as drivers for open innovation and co-creation to foster rural development. In *Identification, Information and Knowledge in the Internet of Things (IIKI), 2016 International Conference on* (pp. 214-216). IEEE.
7. Dunne, T. C., Aaron, J. R., McDowell, W. C., Urban, D. J., & Geho, P. R. (2016). The impact of leadership on small business innovativeness. *Journal of Business Research*, 69(11), 4876-4881.
8. Esparcia, J. (2014). Innovation and networks in rural areas. An analysis from European innovative projects. *Journal of Rural Studies*, 34, 1-14.
9. Ethical CSR Leadership: Passion or Fashion. *International Journal of Sustainable Entrepreneurship and Corporate Social Responsibility (IJSECSR)*, 2(2), 1-22.
10. European Commission (2017). MFF 2014-2020. [http://europa.eu/rapid/press-release\\_IP-13-1096\\_en.htm](http://europa.eu/rapid/press-release_IP-13-1096_en.htm).
11. European Commission (2018). CAP Expenditure and CAP Reform Path. [https://ec.europa.eu/agriculture/sites/agriculture/files/cap-funding/pdf/cap-spending-09-2018\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/cap-funding/pdf/cap-spending-09-2018_en.pdf).
12. Fink, M., Lang, R., & Richter, R. (2017). Social entrepreneurship in marginalised rural Europe: towards evidence-based policy for enhanced social innovation. *Regions Magazine*, 306(1), 6-10.
13. Friedrich von den Eichen, S., Freiling, J., & Matzler, K. (2015). Why business model innovations fail. *Journal of Business Strategy*, 36(6), 29-38.
14. Hardingham, Eileen, Jaromír Vrbka, Tomas Kliestik, and Jana Kliestikova (2018). Will Cognitive Technology-Driven Automation Lead to Economic Growth?. *Journal of Self-Governance and Management Economics*, 6(4): 13–18.
15. Horlings, L. G., & Marsden, T. K. (2014). Exploring the ‘New Rural Paradigm’ in Europe: Eco-economic strategies as a counterforce to the global competitiveness agenda. *European Urban and Regional Studies*, 21(1), 4-20.
16. Jentsch, B. (2017). Young people in rural areas of Europe. Taylor & Francis.
17. Kusano, S., Wright, M., & Conger, A. (2016). Development and assessment of self-agency, and the ability to innovate and take risks. *Center for Research on Learning and Teaching Occasional Paper*, 34.
18. Lambrecht, E., Taragola, N., Kühne, B., Crivits, M., & Gellynck, X. (2015). Networking and innovation within the ornamental plant sector. *Agricultural and Food Economics*, 3(1), 10.
19. Lavesson, N. (2017). When and how does commuting to cities influence rural employment growth?. *Journal of Regional Science*, 57(4), 631-654.

20. Liu, Y., & Li, Y. (2017). Revitalize the world's countryside. *Nature News*, 548(7667), 275.
21. Madureira, H., Nunes, F., Oliveira, J. V., Cormier, L., & Madureira, T. (2015). Urban residents' beliefs concerning green space benefits in four cities in France and Portugal. *Urban Forestry & Urban Greening*, 14(1), 56-64.
22. Mather, A. S., Hill, G., & Nijnik, M. (2006). Post-productivism and rural land use: cul de sac or challenge for theorization? *Journal of Rural Studies*, 22(4), 441-455.
23. Mazur-Wierzbicka, E. (2015). The application of corporate social responsibility in European agriculture. *Miscellanea Geographica*. Vol. 19. No. 1: 19–23.
24. Murdoch, J. (2000). Networks—a new paradigm of rural development?. *Journal of rural studies*, 16(4), 407-419.
25. Neary, B., Horák, J., Kovacova, M., & Valaskova, K. (2018). The Future of Work: Disruptive Business Practices, Technology-Driven Economic Growth, and Computer-Induced Job Displacement, *Journal of Self-Governance and Management Economics* 6(4): 19–24.
26. Nica, E., Manole, C., & Stan, C. I. (2018). A Laborless Society? How Highly Automated Environments and Breakthroughs in Artificial Intelligence Bring About Innovative Kinds of Skills and Employment Disruptions, Altering the Nature of Business Process and Affecting the Path of Economic Growth. *Journal of Self-Governance and Management Economics*, 6(4): 25–30.
27. Neumeier, S. (2017). Social innovation in rural development: identifying the key factors of success. *The geographical journal*, 183(1), 34-46.
28. Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A. (2004). Networking and innovation: a systematic review of the evidence. *International journal of management reviews*, 5(3-4), 137-168.
29. Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A. (2004). Networking and innovation: a systematic review of the evidence. *International journal of management reviews*, 5(3-4), 137-168.
30. Reimers-Hild, C. I., & Dye, A. (2015). How to Grow Your Rural Business with Purpose and Meaning.
31. Reimers-Hild, C., & Dye, A. (2015). Become a Future-Focused Leader: Use Three Megatrends to Grow Your Rural Business.
32. Salemin, K., Strijker, D., & Bosworth, G. (2017). Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas. *Journal of Rural Studies*, 54, 360-371.
33. Schwartz, M. S. (2017). *Corporate social responsibility*. Routledge.
34. Specht, K., Zoll, F., & Siebert, R. (2016). Application and evaluation of a participatory “open innovation” approach (ROIR): The case of introducing zero-acreage farming in Berlin. *Landscape and Urban Planning*, 151, 45-54.

35. Sumane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., Des, I., ... & Ashkenazy, A. (2017). Local and farmers' knowledge matters! How integrating informal and formal knowledge enhances sustainable and resilient agriculture. *J. Rural Stud.* *In press*, 1-10. Lee-Davies, L. (2017).
36. Vaccaro, I. G., Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2012). Management innovation and leadership: The moderating role of organizational size. *Journal of Management Studies*, 49(1), 28-51.
37. Vidickiene, D., Melnikiene, R. (2014). Evolution of rural policy: monograph. – Vilnius: Lithuanian Institute of Agrarian Economics. 272 p. ISBN 978-9955-481-44-7.
38. Vochozka, M., Kliestik, T., Kliestikova, J., & Sion, G. (2018). Participating in a highly automated society: how artificial intelligence disrupts the job market. *Economics, Management, and Financial Markets*, 13(4): 57–62.
39. Whitby, M. C., & Willis, K. G. (2017). Rural resource development: an economic approach. Routledge.