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New Assessment of Development Status among the People Living in Rural Areas: an Alternative Approach for Rural Vitality

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Abstract

In the process of development, the rural areas meet a wide range of economic, environmental and social challenges. This study theoretically discusses the concept of rural development and attempts to evaluate the development status among the people living in rural areas. In this scope, we propose the personal rural development index (PRDI), which is composed to, on one hand, an individual dimension and, on the other hand, a community one, related to different aspects of rural vitality. In this regard, three socio-economic components, namely economy, education – including a sub-dimension regarding culture, and health – with an environment sub-dimension were considered. These dimensions are influenced by the rural activities, especially the agricultural ones, that generates, nearby the economic results, as main objective for the individual or economic agent, also a set of economic, social or environmental externalities, from the category of public goods and of which both the stable and transitional residents of the area benefit. So, the complexity of the personal rural development index is high, aiming to put into light both individual and public components. The data used was obtained through a survey applied in seven rural communities from the North-East Region of Romania.

Keywords: rural communities; socio-economic dimensions; rural vitality; personal rural development index.

JEL classification: O15; I15; I25; D63.

1. INTRODUCTION

As the literature indicates, modern and postmodern societies have also influenced the rural area, producing significant transformation of it (Halfacree, 1993; Marsden, 2003), with

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different causes from outside and within rural communities (Cikic and Petrovic, 2015, p. 36). For example, the end of (relative) self-sufficiency of traditional rural societies made rural area less homogeneous, becoming not only a space of extraction, but also a space of consumption (Cikic and Petrovic, 2015, p. 36). In other words, some specific disturbances of the rural were registered along the latest periods of time and these caused a kind of reconfiguration of the rural space and, in the same time, of the emotional, psychological and behavioural background of the average rural person. Cikic and Petrovic (2015, p. 36) discuss even about a new identity of rural, with a cultural and economic restructuring, including changes in partners' relations, gender and generation relations, as well as changes in rural families' and households' functions. Its pillage in terms of traditional values was not initially a very obvious fact because it represented a complex and salient process, made step by step, and more or less forced and direct determined by the changes within the modern world. Losing the old values that once characterized the rural space such as the attachment to the land, the sense of belonging to the community, the beliefs in and practice of diverse traditions and customs, including the spiritual and especially religious ones, with all their rules and rigor, the people changed them with some new ones, not necessarily appropriate for the concrete specificities of the rural areas. This happened because tending to modernity with all its aspects, including comfort, centring on own self, openness to and aiming at leisure activities, facts not very commonly met until our days to Romanian rural residents, exists close related to a reality characterized by lack of development, poverty, lack of opportunities regarding the accessibility to labour market, and, in this way, lack of possibilities of enhancing their ability to help themselves. Nearby these negative aspects, the lack of education and, also, of cultural and traditional values constitute great pillars for the lack of development, properly un-adequate to the tendencies imposed by the modern values that have become guiding marks also for the people from rural areas. This state of fact gives birth to frustration, to complacency because of the lack of alternatives for helping themselves, and to the lack of sufficient attention offered to the old principle of productive labour between the rural residents. Besides the individual aspects, the local characteristics related to environment, educational, cultural and medical facilities have to be taken into consideration in a discussion on rural development. These dimensions at personal and community levels are complementary and reflect on the development status of the people living in rural areas. Although the private interest of rural individuals and economic agents is concreted especially in private goods and services, it provides, voluntarily or not, some public goods through their activities that contribute to defining the development level of both the community and the individuals. Rural vitality is one of the main public goods, being able to increase the welfare of rural population. A higher level of this indicator leads to more economic and social advantages. Intensification of agricultural and non-agricultural activities, investments in rural infrastructure, higher income levels and improvement of life conditions implies the rising of rural vitality. But these general remarks have to be verified through concrete studies on the ground that have to attempt the proper evaluation of the state of being of individuals from punctual communities regarding the most important dimensions of self-development. Furthermore, using one of the poorest regions in Europe for assessing the level of development could have the potentiality to highlight the importance of these components.

Starting from the assumption that the rural development is related to five dimensions regarding economy, education, health, environment and culture (Kim and Yang, 2016), in this paper, a personal development index based on the same dimensions is proposed,

intending to evaluate the development status of the individual living in the rural area. We consider that it is useful to also have this kind of approach because it facilitates a more punctual, deeper and more concrete investigation at the personal level of the rural residents, contributing to a higher understanding of their main problems and obstacles in the process of individual development. Punch (1994, p. 83) suggested that the individualistic approach is the object of study of psychology and, so, economy should focus on the macro level, *i.e.* local, regional, national or global. In this context, we have to specify that it is not our intention to investigate each respondent from our analysis, but to try to understand the homogenous categories of rural individuals characterized by specific economic, educational, health, environmental and cultural particularities in order to differentially conclude on their main weaknesses and to possibly identify main causes of their development status for proposing some possible solutions for its improvement. So, this endeavour favours a segmentation of people from the same community in order to discover general differences between its residents and to punctually observe each of the obtained groups with their particularities of analysed dimensions.

In the same way, Vujicic *et al.* (2013, p. 110) emphasizes the fact that "recognition and evaluation of human resources at the local level, as the key factors of development, contribute to the diversification of the rural economy and increase the welfare of rural communities". Having this statement in mind and, also, following the development model which focuses on the strengthening of the self-help capacity of local actors (Murray and Dunn, 1995) and sustaining a "bottom-up" approach (Mannion, 1996), our study attends to better understand the level of development of rural area not especially as a local, regional or national result, but at a deeper level, with focus on the individual, putting in the centre the rural resident with his particular characteristics related to economic, educational, health components and including, within these dimensions, the environment and cultural ones in order to obtain homogenous sub-groups in terms of development status for some more concrete conclusions regarding it.

The paper is structured as follows. Section 2 reviews some approaches on rural development concept and measuring. Section 3 is dedicated to the methodology used in order to compose the personal rural development index and to measure it within seven rural communities from the North-East Region of Romania. Section 4 illustrates and discusses the main empirical results. The study ends with a series of concluding remarks and references in Section 5.

2. THEORETICAL APPROACHES REGARDING RURAL DEVELOPMENT MEASUREMENT: AN INNOVATIVE CHALLENGE

Development is presented as a multi-dimensional concept (Todaro and Smith, 2011, p. 16). It is fundamentally different from economic growth because it provides a comprehensive view on progress that includes, besides the traditional interpretation of growth (Iyer *et al.*, 2005, p. 1016; McManus *et al.*, 2016, p. 102), other dimensions regarding social and health aspects, adding, lately, also the environment and cultural ones (Kim and Yang, 2016; Bubbico and Dijkstra, 2011; Vujicic *et al.*, 2013; McManus *et al.*, 2016; Song *et al.*, 2012; Lee and Park, 2002). Better understanding of the principle determinants of rural development remains one of the main policy issues even our days. This is because it seems that the rural areas suffer of lack of development comparing to the urban ones. For this understanding, there is also pursued the aim to learn about the importance of individual factors fostering the overall growth (Michalek and Zarnekov, 2012, p. 9).

Starting from the concept and theory of development, a series of other concepts and theories appeared, attempting to better emphasize its level. In this way, indices like human development index, nearby rural vitality, regional development, and rural development, unified through the background of sustainability, were conceptualized and composed for offering a correct and according to reality perspective regarding the development status at national, regional, or local levels. The Human Development Index (HDI) first calculated by the United Nations Development Programme (UNDP) in 1990 and included in its Human Development Report, measures the average achievements in three basic dimensions related to economic, education and health aspects (Bubbico and Dijkstra, 2011; Alkire *et al.*, 2011; Rusali, 2013; Malik, 2014; Bravo, 2014; Jāhāna, 2016; Rubery *et al.*, 2017). Successively, each other index takes into consideration different dimensions closely related to development and capable for evaluating its level. For example, rural vitality has also three dimensions related to economic, social and cultural aspects (Van Rij and Koomen, 2010; Turcanu and Koomen, 2012; Vujicic *et al.*, 2013); regional development focuses on the economic, social, cultural and environmental ones (Bubbico and Dijkstra, 2011; Vujicic *et al.*, 2013; McManus *et al.*, 2016; Song *et al.*, 2012; Kim and Yang, 2016; Lee and Park, 2002); rural development includes economic, education, health, environment, and culture dimensions (Kim and Yang, 2016). The HDI still remains the most representative index for measuring development.

Thus, all these indices evaluate development at a more general level and put the accent on the sustainable aspect, but none of them attempt to intercept the individual level for a deeper understanding of personal particularities in terms of development and for finding relevant conclusions not only for the entire community, but also for the homogenous categories of individuals from these communities. Also, obtaining such information regarding personal rural development, the process of finding causes for a certain level of development becomes more centred on the people's needs and not only on the community's needs although they sometimes may coincide. As the sustainable development analyses the three interconnected dimensions (economic, social, environmental) as a whole, in the same manner, in the evaluation of personal rural development, starting from the HDI and taking into consideration that it is evaluated in a particular area, *i.e.* rural one, the including of other two dimensions regarding cultural and environmental aspects was considered as being required. These two additional components are important determinants for the development status of the rural residents especially because, on one hand, the main source of income in the rural areas is agriculture, a sector principally based on environmental characteristics, and, on the other hand, rural cultural activities differ from the urban ones and seem to play a greater role in the life of rural. In this way, environmental aspects with major impact on the main source of rural income and, also, specific cultural aspects concreted into customs, traditions, and different other activities of leisure represent pillars for the rural life patterns. Their analytical importance even rose with the prevalence of the neo-endogenous concept of rural development (Shucksmith, 2009; Cloke *et al.*, 2006; Ray, 1999) and emphasis on the role of rural human capital (Cikic and Petrovic, 2015, p. 37).

Analysing the personal rural development with these main components, we contribute at making a basic framework for understanding the rural way of life, with its social and economic disparities, highly contributing to the level of attractiveness of rural areas (Cikic and Petrovic, 2015, p. 35). This is also important because rural area confronts with common problems related to depopulation (McManus *et al.*, 2016, p. 20), influenced by two major

factors: migration and decrease of rural fertility in the context of population ageing (Cikic and Petrovic, 2015, p. 37). Taking into considerations these aspects, nearby the fact that our analysed communities were especially selected between the most disadvantaged ones from the North-East Region of Romania, our attempt to investigate the personal development status of their rural residents and to find out the main causes of the obtained levels of development is very useful. It helps us to better understand the capacity of the people from these places to actively participate to the improvement process of the level of local and regional development. Moreover, it is important for concluding, in the case of obtaining very low and low levels of personal development, that these people opt to remain in poor and undeveloped areas especially because they do not have certain abilities and power of initiative, being blocked in the state of complacency possibly induced both by the personal characteristics and, in the same time, by the ones of the belonging local community. In this way, we observe here a bidirectional influence: personal levels of development impacts on the level of local and regional development; in the opposite way, the local and regional development status contributes to the level of development of the individuals that belong to a certain community. This relation is intercepted in our proposed Personal Rural Development Index (PRDI) by including in its composition both personal and community aspects for each of its three dimensions, *i.e.* economy, health and education.

3. METHODOLOGY OF CONSTRUCTING THE PERSONAL RURAL DEVELOPMENT INDEX

As stated by Michalek and Zarnekov (2012) from a methodological point of view, the work on the Rural Development Index (RDI) is rooted in the studies on development indices (Nordhaus and Tobin, 1972; Sen, 1987) as well as in the research focused on linking the measurement of a quality of life (Douglas and Wall, 2000; Deller *et al.*, 2001; Rudzitis, 1999; Nord and Cromartie, 1997) with welfare- and rural indicators (Midgley *et al.*, 2003; Hagerty *et al.*, 2001; Noll, 2002; Bryden, 2002). Given growing demand for composite development indicators in applied policy analysis (e.g. in evaluation of rural development/structural programmes), potential gains from having a multi-dimensional PRDI are straightforward. As a composite index, the proposed PRDI can be applied to analysis of the main determinants of rural individuals' development.

Having the previous observations in mind, we proceed to the conceptualisation and composition of this index and its measuring in seven rural communities from the North-East Region of Romania, based on the HDI (Malik, 2013, 2014; Jāhāna, 2016), but also taking into consideration other indexes that intended to evaluate the level of development in different context, such as the RDI proposed by Kim and Yang (2016), the one of Michalek and Zarnekov (2012), the Human Poverty Index (HPI) of Bubbico and Dijkstra (2011). Moreover, as representative for the assessment of the community development, the Rural Vitality Index (RVI) was included, describing how liveable an area is through concrete measures of economic performance and access to education, medical and cultural facilities (Turcanu and Koomen, 2012, p. 4). In this regard, we will take into account the variables considered to be as result ones regarding the three dimensions of the index: economy, health, education (Figure no. 1), but integrating in these dimensions other two meant as being essential for the level of personal development, *i.e.* environment and culture. We intend to offer a wider perspective of the rural individual state of fact, trying to keep into analysis the most important and decisive

elements for personal development, also including characteristics of the rural vitality at the community level (Van Rij and Koomen, 2010; Turcanu and Koomen, 2012; Vujicic *et al.*, 2013) as decisive for individual opportunities to develop.

Following this assumption, we consider that the level of local development in terms of number of firms and of employees, of natural environment and number of medical facilities or issues regarding cultural aspects, as important pubic goods of a community have great importance for the development of its residents, contributing to their advancement on the economic, health and educational development pillars. This point of view is supported by the findings of Malik (2014, p. 57), synthetized in a graph that shows how the extern facts, like community opportunities in terms of health, education or economic aspects, influence the path of development at the individual level, offering the base for stating the fact that "when investments in life capabilities occur earlier, future prospects are better" Malik (2014, p. 57). In other words, when the local and family context is a favourable one, the individuals have much more opportunities to achieve a higher level of personal development. These investments refer especially to: (1) employment - and we included in our economy dimension the number of firms and of employees in the community as being representative for the opportunities that individuals have in their community regarding this aspect; (2) health care - and we took into consideration, in the health dimension, the number of medical facilities available in the community and, also, (3) education and culture - and the percent of active readers in the community, nearby the presence of creative industries like craft products, visual arts, performing arts and literature, books and publications including museums and libraries as representative both for the education dimension (because it summarises the presence of culture in the area), but also, being a source of job creation were kept into our index at the dimension referring to education and culture.

Differently by Kim and Yang (2016), we do not opt for having an index compound by two parts, *i.e.* result index and cause index, but only a result one. Then we intend to test the cause factors in order to see if there are significant influences between our personal rural development index and the variables that seem to represent possible causes of the levels of personal development (Figure no. 1).

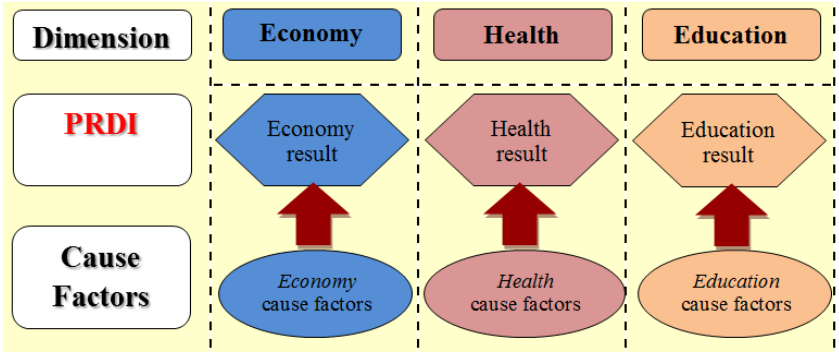

Figure no. 1 – Personal Rural Development Index (PRDI)

Following the technical notes of the last Human Development Report (Malik, 2013), each of the three dimensions, *i.e.* economy, health, education, is represented by a specific sub-index (I_{dim}) computed as:

$$I_{dim} = \frac{X - min}{max - min} x\ 100,$$

where X is the observed value for a given rural community, maxima represent the highest registered values and minima represent the lowest ones for different characteristics of a Romanian commune intended to be measured, taking 2016 as reference year as our questionnaire survey was also applied in the same period of time.

Finding these values (minimum and maximum of each needed aspect) was possible having as source the NIS online database (http://statistici.insse.ro). Minimum and maximum values ("goalposts") are set in order to transform the indicators expressed in different units into indices on a scale of 0 to 100. These goalposts act as the "natural zeros" and "aspirational targets," respectively, from which component indicators are standardized (Jāhāna, 2016). The area of application is the national one, the goalposts being identified from the entire list of the Romanian communes, and, in this way, having as basis of comparison the lowest and the highest developed communities in terms of analysed characteristics. It is important to specify that, depending on the research goals, the area of application is possible to be enlarged or, contrary, restricted to a more limited geographical zone.

The index is the geometric mean of the normalised dimension sub-indices, *i.e.* economy, education, health, being calculated in the same way as the UNDP's HDI:

$$Personal\ Rural\ Development\ Index\ (PRDI) = \\ = \sqrt[3]{I_{Economy}\ x\ I_{Healt\ h} x\ I_{Education}}\ .$$

Since all three dimension indices fall by construction between 0 and 1, the HDI is limited in the same interval with greater values indicating higher development levels. Our option was to have an interval between 0 and 100 because of some very low results obtained for some community characteristics (for example, the percentage of land covered with waters and ponds from the total surface of the community or the one of land covered with forest and other forest vegetation from the total commune's surface), where our seven rural communes are much less developed than other Romanian ones. Using the same method of measuring as the one of HDI, values close to 0 indicate lack of development, while values close to 100 indicate very high levels of development.

In this way, our PRDI represents, like HDI (Jāhāna, 2016), a summary measure of achievements in three key dimensions of development, being a 17-item instrument representative for the state of fact of the individual from rural area, composed by three dimensions, each of them with personal, but also community components.

3.1 The profiles of the communities taken into analysis and the process of obtaining data

A high heterogeneity in the development trajectories of rural regions may be identified, as leading or lagging rural areas, periurban and commuting areas linked to urban centres or even remote areas, rural areas still having agriculture as main source of income or rural areas with an economy more oriented especially towards services, but, also, in some cases, to industry (European Commission, 2008, p. 5). Despite these differences among rural areas, it has been shown that the average living standard is generally lower in rural than in urban areas, the existence of a possible disadvantage of the rural context in comparison with the urban one being mentioned in the literature and called "poverty of rural areas" (European Commission, 2008, p. 7).

In order to respond to our objective to evaluate the development status among people in the rural area, we opted for choosing seven communities from the North-East Region of Romania where the residents seemed to be disadvantaged than the statistics may reveal. Our argument was to emphasize the fact that, although the regional rates show medium to low levels of development, the situation is even much worse for some communities that could be representative for a large part of the rural space from this region. These differences may reveal the inequalities that exist, on one hand, between the rural and urban spaces, and, on the other hand, even between rural communities.

Starting from these assumptions, the selected communities in order to be deeply investigated are: Rauseni Commune, Botosani County; a disadvantaged area from Dancu Village, Holboca Commune, Iasi County; Horlesti Commune, Iasi County; Slobozia Village, Voinesti Commune, Iasi County; Halaucesti Commune, Iasi County; Andrieseni Commune, Iasi County; Vladeni Commune, Iasi County and a questionnaire survey was applied to 852 residents of these communities, as random samples. The survey questions were taken over from a series of papers that investigated the problem of development and of its measuring (Sen, 1987; Kim and Yang, 2016; Bubbico and Dijkstra, 2011; Vujicic *et al.*, 2013; McManus *et al.*, 2016; Song *et al.*, 2012; Lee and Park, 2002).

The profile of these seven communities taken into analysis is synthetized in the Tables no.1, no. 2 and no. 3 on the three investigated dimensions. Between our communes: (1) one is periurban (nearby Iasi county) and with a high resident population (14886 permanent residents at January 1st 2016), *i.e.* Holboca; (2) two are close to an urban centre (Horlesti and Voinesti) and among the two, one has a low level of resident population (Horlesti, with 3117 permanent residents at January 1st 2016) and one, a medium level (Voinesti, with 8096 residents) and (3) four remote communities, characterised by territorial segregation especially because of the high distance between them and the nearest urban centres (Andrieseni, Halaucesti, Vladeni communes, Iasi county, and Rauseni commune, Botosani county) and medium to low resident population (between 2750 and 5856 permanent residents at January 1st 2016).

In terms of economic characteristics, we took into analysis as being representative for the personal development of the belonging members of these rural areas the following characteristics: (1) the number of firms and (2) the average number of employees from the commune level (Table no. 1). In this respect, comparing with the communes registering the highest levels of these economic features, it can be observed that our communities are very low developed. The commune with the best results from the seven ones is the periurban one, *i.e.* Holboca, with 121 firms and 482 employees, but still being very low positioned comparing

to the superior limit identified in a Romanian commune. It is obvious the fact that the residents from our rural communities are disadvantaged from this point of view.

Table no. 1 – Community economic characteristics

Community/Economy	Resident population	No. of firms	No. of employees
Minimum[1]	122[a]	2[c]	1[e]
Andrieseni	4418	15	108
Halaucesti	5856	45	147
Holboca	14886	121	482
Horlesti	3117	46	110
Rauseni	2750	15	73
Vladeni	4432	38	363
Voinesti	8096	29	197
Maximum[2]	28163[b]	1033[d]	7195[f]

Notes: [1]Minumum value of a commune from the total number of Romanian communes; [2]Maximum value of a commune from the total number of Romanian communes; [a]Batrina commune, Hunedoara county; [b]Floresti commune, Cluj county; [c]Dimacheni commune, Botosani county; [d]Afumati commune, Ilfov county; [e]Batrana commune, Hunedoara county; [f]Chiajna commune, Ilfov county.

Source: Authors' computations based on INSSE data, 2016

Regarding the communities' environmental characteristics, the analyzed elements were: (1) if the community is isolated or not from the nearest urban centers; (2) if it is disadvantaged by natural conditions or not; (3) the percentage of land covered with water and ponds; (4) the percentage of land covered with forest and other forest vegetation and, also, (5) the percentage of degraded and unproductive land from the total surface of the commune (Table no. 2), but, also, (6) the main local sources of pollution and (7) the number of available medical facilities (Table no. 3). Among the seven communes, four are isolated from urban centres in terms of distance measured in kilometres (Andrieseni, Halaucesti, Rauseni and Vladeni), while the others are not (Holboca, Horlesti and Voinesti). The ones that are isolated proved to be also disadvantaged by natural conditions (Andrieseni, Rauseni and Vladeni), exception being made by Halaucesti that is not on the list on the disadvantaged communities from this point of view. All the communities are not rich in land covered with water and ponds, while two of them register high percentages of land covered with forest and other forest vegetation (Horlesti and Voinesti, with more than 30% of their surface being covered with forests) and all of them have low levels of degraded and unproductive land.

Table no. 2 – Community environmental characteristics

Community/ Natural environment	Isolated/ Non-isolated community from urban centres	Disadvantaged/Non-disadvantaged area by natural conditions	% land covered with waters and ponds	% land covered with forest and other forest vegetation	% degraded and unproductive land
Minimum*	-	-	0.01[a]	0.01[c]	0.02[e]
Andrieseni	Isolated	Disadvantaged	2.05	4.34	3.68
Halaucesti	Isolated	Non-disadvantaged	1.05	5.56	7.24
Holboca	Non-isolated	Non-disadvantaged	1.21	3.19	6.71
Horlesti	Non-isolated	Non-disadvantaged	0.65	34.67	2.89

Community/ Natural environment	Isolated/ Non-isolated community from urban centres	Disadvantaged/Non-disadvantaged area by natural conditions	% land covered with waters and ponds	% land covered with forest and other forest vegetation	% degraded and unproductive land
Rauseni	Isolated	Disadvantaged	1.57	2.84	5.22
Vladeni	Isolated	Disadvantaged	7.74	5.7	3.22
Voinesti	Non-isolated	Non-disadvantaged	0.06	41.21	3.54
Maximum**	-	-	90.02[b]	92.76[d]	41.9[f]

*Note: *Minimum value of a commune from the total number of Romanian communes; **Maximum value of a commune from the total number of Romanian communes; [a] Lunca Ilviei commune, Bistrita Nasaud county; [b] Crisan commune, Tulcea county; [c] Lenauheim commune, Timis county; [d] Nadrag commune, Timis county; [e]CA Rosetti commune, Buzau county commune, Alexandru Odobescu commune, Calarasi county, Eftimie Murgu commune,, Caras Severin county, Mihail Kogalniceanu commune, Ialomita county; [f]Matasari commune, Gorj county*

Source: Authors' computations based on data from National Institute of Statistics (2016), Ministry of Agriculture and Rural Development (2016), "Finding distances between localities" 2018)

Regarding the main sources of pollution, the most common identified are: the lack of waste recycling, the irrational land exploitation and the lack of sewage, having negative impact on the three main environmental dimensions: air, water and land.

Table no. 3 – Main sources of community pollution and medical facilities

Commune	Main sources of pollution	No. of medical facilities
Minimum*	-	2
Andrieseni	lack of waste recycling irrational land exploitation lack of sewage	4
Halaucesti	lack of waste recycling irrational land exploitation lack of sewage	9
Holboca	waste water cleaning station in Dancu village steam power station CET II in Holboca waste recycling station in Tutura	15
Horlesti	lack of waste recycling irrational land exploitation lack of sewage	6
Rauseni	lack of waste recycling irrational land exploitation lack of sewage	2
Vladeni	lack of waste recycling irrational land exploitation lack of sewage animal breeding	8
Voinesti	lack of waste recycling irrational land exploitation lack of sewage	8
Maximum**	-	56

*Notes: *Minimum value of a commune from the total number of Romanian communes; **Maximum value of a commune from the total number of Romanian communes*

Source: Authors' computations based on official documents available on the web pages of communes' halls

The analysed communities prove to be incondite on the medical facilities level, their availability being between 2 and 15, in the context in which the minimum number of disposable medical infrastructure like hospitals, specialized ambulatories, polyclinics, dispensaries, pharmacies, medical labs, dental technique lab and other medical centres that help people to take care of their health is equal to 2 and the maximum is equal to 56.

Culture is the last component analysed at the community level and the data reveal the fact that our communities are situated near the minimum level of the ratio between the active readers and the number of commune's residents, but better to the number of activities that may be part of the so called creative industries (especially Holboca, but also Andrieseni, Rauseni, Voinesti and Vladeni), with their main domains of activities: craft products (accessories/clothing, decorations, furniture elements, gifts, toys); visual arts (arts, painting, sculpture, photo, design), performing arts (dances, live music, theatre, circus, street performance, sports), and also literature, books and publications including museums and libraries.

Table no. 4 – Community cultural characteristics

Community/ Culture	Active readers/ residents	No. of activities from creative industries
Minimum*	0[a]	1[c]
Andrieseni	0.19	9
Halaucesti	0.17	5
Holboca	0.08	15
Horlesti	0.24	4
Rauseni	0.18	9
Vladeni	0.06	7
Voinesti	0.1	9
Maximum**	1.75[b]	25[d]

*Notes: *Minimum value of a commune from the total number of Romanian communes; **Maximum value of a commune from the total number of Romanian communes; [a] Branisca commune, Hunedoara county; [b] Pietrari commune, Valcea county; [c] The number of the main creative industries specific to a rural community; [d] The minimum number of the main creative industries possible to be met in a rural commune (it has to have at least winter traditions, commonly met in every rural area).*

Source: Authors' computations based on data from National Institute of Statistics (2016)

3.2 Composition of the Personal Rural Development Index

3.2.1 Economy dimension

The first dimension regarding the economic aspects (Figure no. 2) is composed by the level of monthly income of the respondents – as a personal characteristic and, also, by the number of firms and the average number of employees from each community. In this way, we also intercept the impact of the local economic context on the level of personal economic development. Taking into consideration the approaches of World Bank Group regarding the construction of poverty maps, that mention the fact that disposable household income is function of individual household and community characteristics, in the same way, we consider that the economic dimension of development is function of personal measure of welfare, *i.e.* monthly income (Simler, 2016, p. 6), and, also, of opportunities offered by the community in terms of number of existent firms and employees in the area.

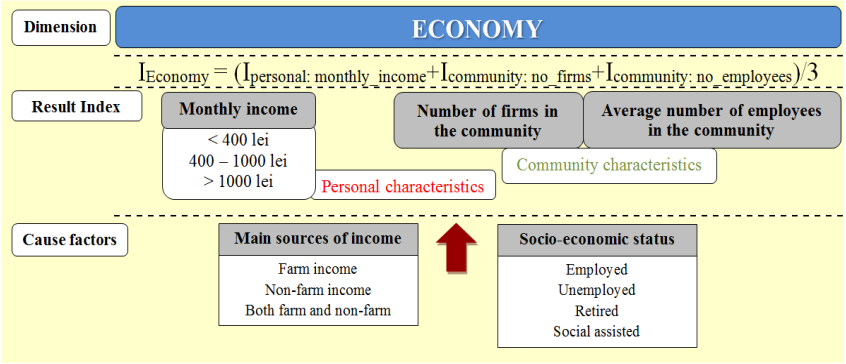

Figure no. 2 – Personal Rural Development Index (PRDI) – Economy

Therefore, we take into consideration the level of monthly income as a result variable representative for the economic aspect: 1) extreme low level of income (<400 RON, that means approximately 100 EUR) (0 points); 2) low level of income (400-1000 RON, that is equal to approximately 100-225 EUR) (50 points); 3) higher level of income (>1000 RON, approximately >225 EUR) (100 points). These levels of income were established in terms of medium Relative at-risk-of-poverty threshold for the past ten years since when this indicator has been measured (equal to 429 RON, meaning approximately 100 EUR), with a slow evolution in time (in 2016, being equal to 544 RON, meaning a little more than 100 EUR – approximately with 15 EUR more). In these conditions, we stated that the first threshold that is indicated to be established is equal to 400 RON (approximately 100 EUR). The next threshold was in function of the net minimum monthly wage in 2016 (equal to 925 RON, which is almost 1000 RON, that means approximately 225 EUR).

For obtaining a specific score for each of the three categories of income, we calculated it by using the mentioned formula from the methodology of HDI, as follows:

$$I_{personal\_economy:\,level\ of\ income} =$$

$$= \frac{Personal\ \ level\ of\ income\ \ - Minimum\ \ level\ of\ income}{Maximum\ \ level\ of\ income\ \ - Minimum\ \ level\ of\ income}\ x\ 100 =$$

$$= \frac{Personal\ \ level\ of\ income\ - 400}{2046 - 400}\ x\ 100,$$

where 400 RON is representative for the first category of income, being the lowest one between the three ones (0-400 RON; 400-1000 RON; >1000 RON), and also considered as the minimum threshold of income in the measuring of HDI (Jāhāna, 2016). Taking into consideration that we do not have data on the certain level of income of each respondent, but only an interval of income in which each respondent is included, and, also, the fact that the last category of income is the one of an income higher than 1000 RON, not having a superior limit, it is clear that the score for this category needs to be the highest, *i.e.* 100 points. For finding out the score of the second category of income, *i.e.* 400-1000 RON, we used the average level of income for 2016 in Romania, considering that it is the most significant one the more so as we refer here to rural communities that, in general, register low levels of incomes.

Regarding the number of firms and the average number of employees in the community, we used the same formula:

$$I_{community\ \_economy:no\ firms} = \frac{Number\ of\ Firms\ in\ the\ community\ -Minimum\ number\ of\ Firms\ in\ a\ community}{Maximum\ number\ of\ Firms\ in\ a\ community\ -Minimum\ number\ of\ Firms\ in\ a\ community} x\ 100 = \frac{Number\ of\ Firms\ in\ the\ community\ -2}{1033-2} x\ 100, \quad (1)$$

where 1033 is the maximum number of firms in a Romanian commune, *i.e.* Afumati commune, Ilfov county, and 2 is the minimum number of firms in a Romanian commune, *i.e.* Dimacheni commune, Botosani county.

$$I_{community\ \_economy:no\ employees} = \frac{Average\ no\ of\ employees\ in\ the\ community\ -Min\ Average\ no\ of\ employees\ in\ a\ community}{Max\ Average\ no\ of\ employees\ in\ a\ community\ -Min\ Average\ no\ of\ employees\ in\ a\ community} x\ 100 = \frac{Average\ number\ of\ employees\ in\ the\ community\ -8}{7195-8} x\ 100, \quad (2)$$

where 7195 is the maximum number of employees in a Romanian commune, *i.e.* Chiajna commune, Ilfov county, and 8 is the minimum number of employees in a Romanian commune, *i.e.* Batrana, Hunedoara county, but also, the case of Lelesa commune, Hunedoara County.

Related to causes, the main sources of income: farm income (cultivating crops, breeding animals, both cultivating crops and breeding animals), non-farm income (wage, social income, *i.e.* children allowances, family sustaining allowances, guarantee minimum income and others sources of income excepting agriculture) and both farm and non-farm income, and socio-economic status: employed, unemployed, retired and social assisted were considered as being determinant for the respondents' levels of income and, implicitly, for their level of personal development (Figure no. 2).

3.2.2 Health dimension

The second dimension of the index (Figure no. 3), *i.e.* health, first takes into consideration personal medical care. Having a health insurance (yes; no) may be representative for the personal health and put into evidence the possibility of having personal care for the health state. Nearby this personal component, we introduced other personal one, *i.e.* residential environment, as being representative for the dimension of health. It is analysed from different points of view such as permanent or temporary house, detaining a sanitary toilet, current water, electricity and home heating. These aspects were evaluated in terms of yes (100 points) or no (0 points). These are included in the list of basic needs, the ones even from the common core although this list varies from one country to another, as it is specify by Poulton and Busse (2016, p. 519).

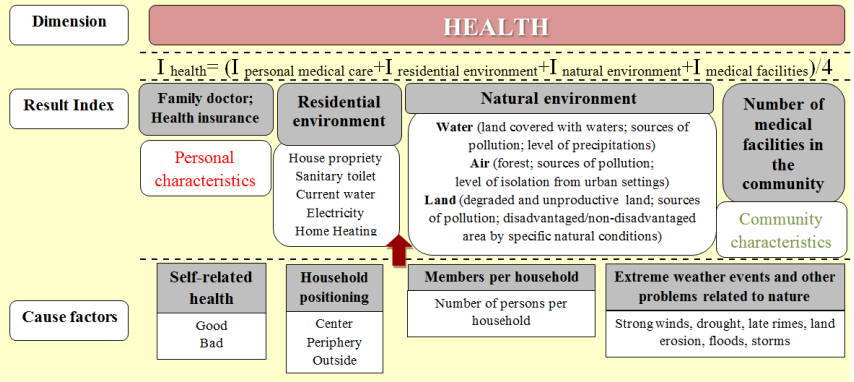

Figure no. 3 – Personal Rural Development Index (PRDI) – Health

Regarding the community component related to health dimension, our attention was on the natural environment, with its main components, *i.e.* air, water, land, and on the disposable medical facilities in the community as sources of meeting the people needs related to health. The natural environment analysed its three components in terms of percentages of the degraded and unproductive land from the total surface of a commune (as representative for land), of the land covered with waters, ponds (as representative for water component) and of forest and other forest vegetation (for evaluating the quality of air) as follows:

$$I_{land\_natural\ \ environment\ :Degraded\ \ and\ \ unproductive\ \ land} = \\ = \frac{Degraded\ and\ unprod.land\ in\ the\ community\ -\ Min.Degraded\ and\ unprod.land\ in\ a\ community}{Max.Degraded\ and\ unprod.land\ in\ a\ community\ -\ Min.Degraded\ and\ unprod.land\ in\ a\ community} x\ 100 \\ = \frac{Degraded\ \ and\ unproductive\ \ land\ \ in\ the\ community\ \ -0.02}{41.9-0.02} x\ 100, \quad (3)$$

where 41.9% is the maximum percent of the degraded and unproductive land from the total surface of a Romanian commune, *i.e.* Matasari commune, Gorj county, and 0.02% is the minimum percent of the degraded and unproductive land from the total surface of a Romanian commune, *i.e.* CA Rosetti commune, Buzau communecounty, Alexandru Odobescu commune, Calarasi county, Eftimie Murgu commune, Caras Severin county, Mihail Kogalniceanu commune, Ialomita county;

$$I_{Water\_natural\ \ environment\ :Land\ \ covered\ \ with\ waters} = \\ = \frac{Land\ covered\ with\ waters\ in\ the\ community\ -\ Minimum\ Land\ covered\ with\ waters\ in\ a\ community}{Maximum\ Land\ covered\ with\ waters\ in\ a\ community\ -\ Minimum\ Land\ covered\ with\ waters\ in\ a\ community} x\ 100 \\ = \frac{Land\ \ covered\ \ with\ waters\ \ in\ the\ community\ \ -0.01}{90.02-0.01} x\ 100, \quad (4)$$

where 90.02% is the maximum percent of the land covered with waters and ponds from the total surface of a Romanian Commune, *i.e.* Crisan commune, Tulcea county, and 0.01 is the minimum percent of the land covered with waters and ponds from the total surface of a Romanian Commune, *i.e.* Lunca Ilviei commune, Bistrita Nasaud county.

$$I_{air_{natural}\ \ environment\ :Forest\ \ and\ \ other\ \ forest\ \ vegetation} = \\ = \frac{Surface\ of\ forest\ in\ the\ community\ -\ Minimum\ Surface\ of\ forest\ in\ a\ community}{Maximum\ Surface\ of\ forest\ in\ a\ community\ -\ Minimum\ Surface\ of\ forest\ in\ a\ community} x\ 100 \\ = \frac{Surface\ \ of\ forest\ \ in\ the\ community\ \ -0.01}{92.76-0.01} x\ 100, \quad (5)$$

where 92.76% is the maximum percent of land covered with forest and other forest vegetation from the total surface of a Romanian commune, *i.e.* Nadrag commune, Timis county, and 0.01% is the minimum percent of land covered with forest and other forest vegetation from the total surface of a Romanian commune, *i.e.* Lenauheim commune, Timis county.

Nearby these measured elements with the formula indicated by the Malik (2014) for HDI, we added the sources of pollution for all the three components and other aspects like: if the commune is included or not in the category of disadvantaged areas by specific natural conditions (http://www.madr.ro), if it is a remote community or not (http://www.distanta.ro), and the level of annual precipitations (http://www.meteoromania.ro).

The other community component refers to the number of medical facilities from a commune, like hospitals, specialised ambulatories, polyclinics, dispensaries, pharmacies, medical labs, dental technique lab and other medical centres that help people to take care of their health and, in this way, to improve their standard of living. The formula used for calculating the score for each of our commune taken into analysis is the following:

$$I_{Community\ \ healt\,h:\,Sanitary\ \ facilities} = \frac{Number\ of\ Sanitary\ units\ in\ the\ community\ -\ Minimum\ Number\ of\ Sanitary\ units\ in\ a\ community}{Maximum\ Number\ of\ Sanitary\ units\ in\ a\ community\ -\ Minimum\ Number\ of\ Sanitary\ units\ in\ a\ community} x\ 100 = \frac{Number\ \ of\ Sanitary\ \ units\ \ in\ the\ commu\ nity\ -2}{56-2} x\ 100, \quad (6)$$

where 56 is the maximum number of sanitary units in a Romanian Commune, *i.e.* Chiajna commune, Ilfov county, and 2 is the minimum number of employees in a Romanian commune, *i.e.* Rauseni, Botosani county, but also, nearby other communities.

The cause factors related to the health component that were taken into analysis were: (1) self-related health, (2) household positioning, (3) members per household, (4) extreme weather events and other problems related to nature like strong winds, droughts, late rimes, land erosion, floods, storms to which the analysed communities are more predisposed.

3.2.3 Education dimension

Regarding the third dimension related to education, as a result variable and part of the index was considered the educational level with its four categories: without education (0 years of school); primary (4 years of school); lower-secondary education (8 years of school); secondary education (12 years of school) and tertiary education (15 or more than 15 years of school). The score for each level of education was calculated using the following formula:

$$I_{Personal\ \ education\ :\,years\ \ of\ school} = \frac{Personal\ level\ of\ education\ -\ Minimum\ level\ of\ education}{Maximum\ level\ of\ education\ -\ Minimum\ level\ of\ education} x\ 100 = \frac{Personal\ \ level\ \ of\ education\ \ -0}{15-0} x\ 100, \quad (7)$$

where 0 represents the category of people without school (0 years of school) and 15 represents the highest level of education taken into analysis as being representative for the rural space, *i.e.* tertiary education, with more than 15 years of school.

Nearby the educational level, we also considered being of great importance the cultural community aspect, including in our education index also the score for the report between the active readers in the community and its number of residents and, also, the number of activities possible to be included in the creative industries group (http://www.intracen.org/). The procedure of obtaining the communities' scores for each cultural item is:

$$I_{Community\ \ education\ :Active\ \ readers\ /residents} = \\ = \frac{Active\ active\ readers/\ residents\ \ in\ the\ community\ -\ Minimum\ active\ readers/residents\ \ in\ a\ community}{Maximum\ active\ readers/residents\ \ in\ a\ community\ -\ Minimum\ active\ readers/residents\ \ in\ a\ community} x\ 100 \\ = \frac{Active\ \ readers\ /residents\ \ in\ the\ community\ -0}{1.75-0} x\ 100, \quad (8)$$

where 1.75 is the maximum value of the report between the active readers in the community and its number of residents in a Romanian Commune, *i.e.* Pietrari commune, Valcea county, and 0.0038 is the minimum value of the report between the active readers in the community and its number of residents in a Romanian Commune, *i.e.* Branisca, Hunedoara county, and, taking into consideration the very low level of the last value, we considered it as being equal to 0.

$$I_{Community\ \ education\ :Creative\ \ industries} = \\ = \frac{Activities\ \ from\ creative\ \ industries\ \ \ in\ the\ community\ \ -Minimum\ \ activities\ \ from\ creative\ \ industries\ \ \ in\ a\ community}{Maximum\ \ activities\ \ from\ creative\ \ industries\ \ \ in\ a\ community\ \ -Minimum\ \ activities\ \ from\ creative\ \ industries\ \ \ in\ a\ community} x\ 100 \\ = \frac{No\ of\ \ activities\ \ from\ creative\ \ indu stries\ \ in\ the\ community\ \ -1}{25-1} x\ 100, \quad (9)$$

where 25 is the number of the main creative industries specific to a rural community and 1 is the minimum number of the main creative industries possible to be met in a rural commune (it has to have at least winter traditions, commonly met in every rural area).

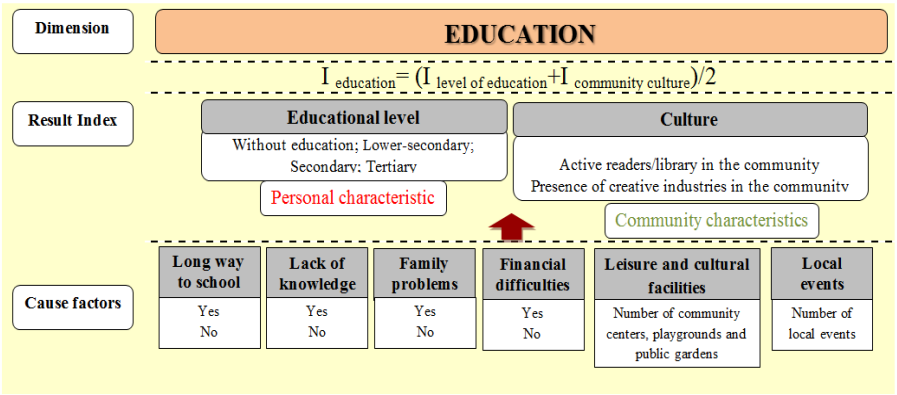

Figure no. 4 – Personal Rural Development Index (PRDI) – Education

The cause factors related to the educational level component taken into analysis were related to the perception regarding the main obstacles in the children educational success such as: the long way to school (up to 1 kilometre); the lack of parents' knowledge regarding the education of their children; family problems such as alcoholism, violence or other domestic conflicts and the financial difficulties within the family. The other cause factors included into analysis related to culture and leisure were the following: leisure and cultural facilities (number of community centers, playgrounds and public gardens) and number of local events.

3.3 Determining the main causes of the variation of PRDI

For understanding the level of personal development in more homogenous groups, Kim and Yang (2016, p. 132) divide the levels of rural development in four grades as follows: Grade A: 90-100 points; Grade B: 80-90 points; Grade C: 50-80 points; Grade D: 0-50 points. Segmentation of people in terms of personal development is required in order to better understand their weaknesses and strengths regarding the components of the three dimensions of the index, including the community characteristics. Unfortunately, as being observed in the previous section, where the particularities of each community were analysed, the seven investigated communes register low level at almost all the economic, environmental, health and cultural components, and these communities' weaknesses have a great influence on the opportunities and future prospects of the individuals choosing to remain in these poor rural areas that significantly impact on their level of development, as it was also shown in the findings of Malik (2014). More, not only the community characteristics register very low levels, but also the personal ones more or less in all the three dimensions. These low results constitute the basis for our composite index and the low levels of PRDI obtained in our analysis are explained by them. There is a bi-directional influence that condemns people from these poor rural areas to remain in the low development trap, being unable to escape from it. On one hand, their own abilities are not properly formed in order to offer the competitive advantage on the labour market. On the other hand, the socio-economic context of their belonging community is not capable to offer the proper conditions for personal advancement.

Sen (1997, p. 2) discusses about the five important sources of personal parametric variation and our cause factors proposal takes into account all of them. In this way, our proposed causes as being essential for the level of personal development can be included in these five categories of sources that influence the personal variation: (1) personal heterogeneities: individual main sources of income, socio-economic status, self-related health; (2) environmental diversities: variations in environmental conditions, such as climatic circumstances – extreme weather events like drought, floods and land erosion; (3) variations in social climate: family problems like violence, alcoholism etc., family financial problems, lack of parents' knowledge regarding their children education; (4) differences in relational perspectives: local events and cultural and leisure facilities within the community; (5) distribution within the family: members per household.

In this way, a linear regression model is built having at its base the link between the dependent variable, *PRDI*, and the independent variables, *main sources of income*, *socio-economic status*, *self-related health*, *household positioning*, *members per household*, *land erosion*, *family financial difficulties*, *family problems*, *lack of knowledge*, *leisure and cultural facilities*, *local events*. The linear regression model is estimated in the framework of Generalized Linear Model, which implies the parameters estimation using the maximum likelihood method. Based on this method, there are obtained the same estimators of the parameters as in the case of application of the Ordinary Least Squares (OLS).

4. RESULTS AND DISCUSSIONS

People's segmentation in terms of personal development is made in this section taking into account the approach of Kim and Yang (2016), but adapted to the context of the present

analysis. In this respect, because the calculated values of the PRDI are, in their majority, lower than 50 points (94.21%), we considered useful to fraction the last grade, according to the structure presented above, *i.e.* Grade D, in two parts, *i.e.* Grade D_1: 25-50 points and Grade D_2: 0-25 points, in order to understand better the specificities of our communities in terms of development (Table no. 5).

Table no. 5 – The residents' belonging to grades of development in the analysed communities

Community	Grade A	Grade B	Grade C	Grade D_1	Grade D_2
Total resp.	0%	0%	5.79%	36.44%	57.77%
Andrieseni	0%	0%	0%	33.33%	66.67%
Halaucesti	0%	0%	0%	34.37%	65.63%
Dancu	0%	0%	20.91%	29.09%	50%
Horlesti	0%	0%	3.12%	56.25%	40.63%
Rauseni	0%	0%	2.76%	34.97%	62.27%
Vladeni	0%	0%	11.76%	64.71%	23.53%
Slobozia	0%	0%	0%	20%	80%

Source: Authors' computations

In this regard, as a general perspective, we observe that the levels of development of the people from our rural communities is extremely low, the majority of them being integrated into the last level of development, *i.e.* Grade D_2, with a score between 0 and 25 points. It means that, on a scale from 0 to 100, our respondents, in their majority, are integrated in the lowest quarter of the total score. Exception is made by Vladeni commune, where its residents are most included (64.71%) in the Grade D_1, still having, in this way, low levels of personal development. The extremes are represented, on one hand, by the analysed disadvantaged area from Dancu village, Holboca commune, Iasi county, that has the highest percent of people with a level of development that can be included in the Grade C, and, on the other hand, by Slobozia village, Voinesti commune, Iasi county, with 80% of respondents included in the lowest grade of development, *i.e.* Grade D_2.

4.1 Main particularities of the grades of development in terms of economic, health and education components

Table no. 6 reports, on one hand, the average level of PRDI depending on the index grade of development and its main dimensions, and, on the other hand, the rural individuals distribution depending on the index grade of development and the socio-economic status.

Table no. 6 – Particularities in terms of development grades

Grade	$I_{Economy}$	I_{Health}	$I_{Education}$	Socio-economic status			
				Employed	Unemployed	Assisted	Retired
Grade D2	3	42	34	3.42%	73.11%	14.67%	7.82%
Grade D1	23	56	41	35.27%	35.66%	14.34%	13.57%
Grade C	37	58	64	73.17%	2.44%	0%	24.39%

Source: Authors' computations

Based on these results, it can be noticed that the lowest average levels of PRDI are obtained for the economical dimension, followed by the educational one. Moreover, for these two dimensions, the most important differences between the three grades of development are registered. Instead, for the dimension related to health, it can be observed that the levels of index are more homogeneous. Another important issue is related to the residents' distribution considering their grade of personal rural development and their socio-economic status. Therefore, significant differences are registered among the three grades for each socio-economic status, but also among status for grade D_2 and grade C. These findings show that the levels of personal rural development are heterogeneous within the seven communes considered, which underlines the importance of deepening the analysis in the way of finding the main cause factors and, also, of assessing their impact on the PRDI.

4.2 Main causes of the variation of individual development status

Within SAS, the GENMOD procedure is used to fit the linear regression model in the framework of Generalized Linear Models (GLM). The Type 3 analysis generated by using this procedure allows testing the relevance of one variable taking all the others into account. The results obtained are shown in Table no. 7. In column Chi-Square statistics, there is calculated for each variable two times the difference between the log-likelihood of the model which includes all the independent variables and the log-likelihood of the model obtained by deleting one of the specified variables. This test follows the asymptotic Chi-Square distribution for a level of significance of 0.05 and with *p* degrees of freedom that indicate the number of parameters associated to the analysed variable.

Table no. 7 – LR Statistics for Type 3 analysis

Dimension	Sub-dimension	Cause factors	Chi-Square Statistics	Sig.
Economic	Personal economic status	main sources of income	11.76	0.0028
		socio-economic status	70.66	<0.0001
Health	Health status	self-related health	3.37	0.0707
	Residential environment	household positioning	1.55	0.4604
		members per household	12.26	0.0005
	Natural environment	drought	0.11	0.7418
		floods	1.83	0.1758
		land erosion	15.40	<0.0001
Education	Education and school	family financial difficulties	3.60	0.0577
		family problems	5.82	0.0159
		lack of knowledge	3.21	0.0730
		long way to school	2.41	0.1202
	Culture and leisure	leisure and cultural facilities	27.17	<0.0001
		local events	14.93	0.0001

Source: Authors' computations using SAS 9.3

It can be observed that the variable drought is not statistically significant as it yields a *Sig* value equal to 0.7418 higher than the level of significance of 0.05. In consequence, this variable is excluded from the model and the analysis will continue in the same manner until the optimal combination of factors, which can explain the variation of PRDI, is obtained.

After excluding from the model the non-significant factors (household positioning, drought, floods, and long way to school), it is noticed that all the other predictors appear to significantly contribute to the level of development status among the rural residents.

The results of estimation test for the linear regression model that include only the significant variables are presented in Table no. 8. Interpretation of signs and estimated regression coefficients' significance is made taking into consideration the reference group that corresponds to the following categories: *main sources of income (non-farm income), socio-economic status (unemployed), self-related health (good), land erosion (yes), family financial difficulties (yes), family problems (yes), lack of knowledge (yes).*

Table no. 8 – Analysis of Parameter Estimates

Dimension	Cause factors	Categories	Estimate	Standard Error	Wald Statistics	Sig.
-	Intercept	-	22.7111	7.6307	8.86	0.0029
Economic	main sources of income	farm income	-15.8426	4.7607	11.07	0.0009
		both farm and non-farm income	-5.0928	3.1003	2.70	0.1005
		non-farm income	0.0000	0.0000	0.0000	0.0000
	socio-economic status	assisted	8.8558	11.3077	0.61	0.4335
		employed	20.6488	2.1295	94.02	<0.0001
		retired	19.5954	11.3077	3.00	0.0831
		unemployed	0.0000	0.0000	0.0000	0.0000
Health	self-related health	bad	-5.3082	2.9173	3.31	0.0688
		good	0.0000	0.0000	0.0000	0.0000
	land erosion	no	5.6974	1.4439	15.57	<0.0001
		yes	0.0000	0.0000	0.0000	0.0000
	member per household	-	-2.9512	0.8222	12.88	0.0003
Education	family financial difficulties	No	5.5796	2.9187	3.65	0.0559
		yes	0.0000	0.0000	0.0000	0.0000
	family problems	No	-8.5417	3.4888	5.96	0.0147
		yes	0.0000	0.0000	0.0000	0.0000
	lack of knowledge	No	-7.0616	3.9136	3.26	0.0712
		yes	0.0000	0.0000	0.0000	0.0000
	leisure and cultural facilities	-	1.0744	0.2041	27.70	<0.0001
	local events	-	1.3567	0.3493	15.09	0.0001

Source: Authors' computations using SAS 9.3

Taking into account the main sources of income, it can be noticed that there are significant differences only between farm and non-farm sources of income (*Sig* = 0.0009 < 0.05). The value of -15.8426 points is the estimated average of the difference between the PRDI of a person that has as main sources of income the farm activities and the one having a non-farm income. The negative value indicates that the difference is in favour of the non-farm source of income. In other words, within the communities with a higher level of poverty from the North-East Region of Romania, PRDI is, in average, lower with 15.8426 points for the farm income than for the non-farm income. The finding shows that the

agricultural activities do not produce high levels of income for the ones that imply in them, being suggested the fact that the potential of agriculture is not very well exploited at the individual level. This happens because the common rural individual has two choices: either opts to put his agricultural resources in the hand of landlords from their community and to receive a certain rent or tries to work by his own forces and, as the results indicate, to obtain low levels of income from these kinds of activities. In this context, the reality shows that the income from agriculture is not usually distributed on a large number of community's members, but is concentrated especially to those that manage the largest part of the rural resources. This means that encouraging the self-initiative in the agricultural domain should be one important point of the rural policies, trying to stimulate the common rural person to invest in the growth of agricultural production. On the other hand, other entrepreneurial initiatives should be also encouraged because they are job creators, offering the people opportunities to improve their level of income and, in this way, their level of development.

Concerning the socio-economic status of the respondents, significant statistical differences between the unemployed and the others do exist, exception being made by the ones that are assisted. The estimates unveil that the employed status has the highest impact on the level of PRDI comparing to the unemployed one. In other words, being active on the labor market offers higher personal benefits in terms of development. This finding is completed by the one obtained above, highlighting for the second time that the main political concern should be focused on the increasing of jobs' availability in the rural space.

Thus, the occupational status is one of the most important predictor for the development status of a person because, even if the wages are not high, the existence of a stable source of income offers to the individual a concrete possibility to have a decent life. On the contrary, unemployment is not merely a deficiency of income; it is also a source of far-reaching debilitating effects on individual freedom, initiative, and skills (Sen, 1999, p. 21), especially like loss of freedom and social exclusion, loss of skills and long-run damages, psychological harm, motivational loss and future work, loss of human relations and family life, loss of social values and responsibility (Sen, 1997, pp. 160-164). Taking into consideration these burdens of unemployment (Sen, 1997, p. 164), the perspective of the analysed communities is not at all too optimistic because of its alarming level of economic activities development. So, a major problem of the people from these communities is the occupational status, most of them being unemployed and unable to find a job and recommendations regarding a more "self-help" social climate without improving the level of jobs availability in the analysed communities or in the neighborhoods are inefficient and without any utility.

Passing from the first economic perspective on the health one, the empirical results support a significant impact of self-related health, land erosion and members per household upon the PRDI variation. Regarding the health status of the rural residents, the negative sign of the regression coefficient put into light the fact that the ones with a bad self-related health register low levels of personal development in comparison to the ones considering that they are in a good health. The estimation of the coefficient for member per household indicates a significant negative link between the numbers of persons in a household and the PRDI. The significant negative effect of members per household on PRDI shows that its level decreases with 2.9512 points, when the number of family members increases with one person. Analysing the results for the natural environment sub-dimension, it is observed that only the land erosion has a significant influence on the level of personal development. This means that when there are not registered frequent land erosions in a commune, the level of PRDI is higher than in the

situation when this kind of natural phenomenon is present at the local level. As a consequence, our findings reveal that the development is assured through some certain factors regarding health, such as a good self-related health status, lack of extreme weather events, especially land erosions, and, also, a smaller number of members per household.

In the context of the education dimension, taking into account the importance of variations in the social climate mentioned by Sen (1997, p. 2), our outcomes reveal that those who do not consider the family problems and the parents' lack of knowledge on educational issues as obstacles in the development of their children register a lower level of PRDI than the others. As to the relationship between the other significant obstacle, *i.e.* family financial difficulties, and PRDI, the positive sign of coefficient points out that the PRDI level is higher for those considering that this kind of family problem does not affect the educational path of children. These cause factors tend to intercept some parenting mentality patterns meaning that some efforts should be made in the sense of educating the rural parents in order to increase their awareness regarding the main obstacles in children's educational development, the way of perceiving to these impediments and their potential to find the most suitable solutions adapted to their family framework. Furthermore, as the number of leisure and cultural facilities and of local events increase, the level of PRDI also increases. In this respect, the local cultural development seems to be an important pillar in the development status of the rural individuals, being a lever of encouraging the local authorities to initiate and to stimulate the organization of cultural activities.

5. CONCLUSIONS

In this paper, we followed the development model which has in its centre the individual and his particularities and which focuses on the strengthening of the people's self-help capacity. In this regard, our study attended to better understand the level of development of rural area not especially as a local, regional or national result, but at a deeper level, with focus on the individual, putting in the centre the rural resident with his particular characteristics related to economic, educational, and health components and including, within these dimensions, the environment and cultural ones.

The empirical analysis developed in this study led to the construction of a Personal Rural Development Index that represents a summary measure of achievements in two dimensions: on one hand, an individual one, and, on the other hand, a community one, related to different components of rural vitality . Also, the proposed PRDI can be applied to analyse the main determinants of rural individuals' development. From a methodological point of view, our index is rooted in the studies on development indices as well as in the research focused on linking the measurement of a quality of life with welfare- and rural indicators. It is a 17-item instrument representative for the state of fact of the individual from rural area, composed by three elements, each of them with personal, but also community components.

Measuring the PRDI within the analysed communities, it was observed that its levels are included in the last two grades of development, meaning that their residents register very low level of development. It is important to mention that significant differences exist between the three dimensions of this index, with the lowest levels of the economic component. These results were expected as we opted for analysing especially communes that seemed to be less economically developed than others from the North-East Region of Romania. Nevertheless, this low level of development between the rural individuals could be representative for a large

part of the rural space from this region. These outcomes may also reveal a particularity of the analysed communities, concreted in a low level of rural vitality.

Besides these findings, our conclusions may be formulated regarding the impact of determinants of this development status index. Overall, the empirical evidences suggest that main sources of income, socio-economic status, self-related health, members per household, land erosion, family problems as obstacles in the children's educational path and leisure, cultural facilities and events significantly contribute to the variation of PRDI. Moreover, the analysis reveals that the rural individuals with a higher level of PRDI have the following characteristics: (1) obtain a non-farm income, (2) are employed, (3) are in a good health, (3) consider as main impediments in their children educational development the family problems and lack of knowledge, and (4) do not belong to a community that has frequent land erosions, (5) with a numerous cultural and leisure activities and events. Going deeper, the findings show that the potential of agriculture is not very well exploited at the individual level, meaning that encouraging the self-initiative in the agricultural domain should be one important point of the rural policies. On the other hand, other entrepreneurial initiatives should be also encouraged because they are job creators, offering the people opportunities to improve their level of income and, in this way, their level of development. Besides this economic perspective, our study aimed to intercept and analysed some parenting mentality patterns. This showed that some efforts should be made in the sense of educating the rural parents in order to increase their awareness regarding the main obstacles in children's educational development, the way of perceiving to these impediments and their potential to find the most suitable solutions adapted to their family framework. Furthermore, regarding the cultural components, the findings revealed the potential of cultural activities within the community for a higher level of development of the rural individuals and, thus, could concrete into a lever of encouraging the local authorities to initiate and to stimulate the organization of such activities.

Rural vitality is a public good that requires a complex investigation. This is the reason for using some composite indicators able to reveal the reconfiguration of the rural population in terms of development. Our findings regarding the assessment of the personal development status among people living in rural areas were obtained also taking into consideration the effects of local activities and changes in local context. Measuring, through different public and individual components, the level of development among the rural residents puts into light a deeper view of the rural vitality's characteristics, influenced by the public goods provided by the main activities from certain areas.

Our research result should, however, take into consideration some limits. In this respect, a daunting problem in the study comes from the fact that we were not able to intercept the level of influence of the community's particularities on the individual characteristics. This limit results from the unavailable information both in the literature, at least to our knowledge, and, also, in our data collected through the questionnaire survey. Secondly, taking into consideration that, according to our literature analysis, a theoretical background strictly on the methodology of the construction of a development index at an individual level does not exist, we do not have the guarantee of the index validity. Nevertheless, carrying out future research on measuring personal development in the rural context could allow such limits to be exceeded.

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