ENTREPRENEURIAL ACTIVITY IN THE WESTERN ESTONIAN RURAL MUNICIPALITIES IN 2006 AND 2010: A CLUSTER ANALYSIS

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The region of Western Estonia consists of four counties, two of which are Estonian biggest islands in the Baltic Sea. The area is often regarded as one region; however, there are many differences between the counties and their rural municipalities, especially those that are separate islands connected with the mainland of Estonia only by ferry or air transport. Since the widening regional disparities appeared in the 1990s, the rural areas have suffered from many socio-economic problems like the loss of population, lower incomes, lower economic diversity, lower labour force participation and employment rate etc. The analysis of entrepreneurial activity is one way to study the socio-economic issues of a region and its enterprises. The aim of the research is to study the entrepreneurial activity in rural municipalities of the four Western Estonian counties in connection with the selected economic indicators. A hierarchical cluster analysis is conducted to group the rural municipalities on the basis of their entrepreneurial activity rate per 1000 inhabitants, share of sole proprietors, share of different sector enterprises and income per employee etc. The forty-eight rural municipalities of those counties are divided into three clusters.

Key words: *entrepreneurial activity, Estonia, hierarchical cluster analysis, regional development, rural enterprises.*

JEL classification: R1

Introduction

Estonia is divided into 15 counties that are in turn divided into local governments: towns and rural municipalities. In 2010, there were 33 towns and 193 rural municipalities in Estonia (Statistics Estonia, 2011). On the regional level, corresponding to the Nomenclature of Territorial Units of Statistics (NUTS) Level 3, the 15 counties are divided into 5 regions: Northern Estonia, Western Estonia, Central Estonia, North-eastern Estonia, and Southern Estonia. The present research studies the rural municipalities of the four counties that form the Western Estonia (Hiiu, Laane, Saare, and Parnu Counties) (Figure 1). Two of the counties: Hiiu County and Saare County are two Estonian largest islands. Three counties: Saare, Laane, and Parnu contain also smaller islands in the Baltic Sea that are separate rural municipalities. The main focus is laid on the characteristics of enterprises in those municipalities in the years 2006 and 2010.

The legal definition on an enterprise in the Estonian Commercial Code (1995) states that it is a natural person who offers goods or services for charge in his or her own name where the sales of goods or provision of services is his or her permanent activity, or a company provided by law. Any natural person may be a registered sole proprietor. As the statistical data on Estonian enterprises used in this analysis are based on the definition of the Commercial Code, the term "enterprise" is referred to sole proprietors and companies for the purpose of this research.

In the economic literature, the term "entrepreneur" is generally associated with a person and not with organisations. So a sole proprietor may be regarded as an entrepreneur. A.J. Schumpeter (1934) has emphasised that the entrepreneur is an innovator who implements change within markets through the carrying out of new combinations. Often the creation of new businesses is empathised in connection with the definition of entrepreneurship (e.g. Vesper, 1983; Low, MacMillian, 1998; Learned, 1992 etc.). D.F. Kuratko (2008, p. 530) sees the entrepreneur as "an innovator or developer who recognizes and seizes opportunities; converts those opportunities into workable/ manageable ideas; adds value through time, effort, money, or skills; assumes the risks of the competitive marketplace to implement these ideas; and realises the rewards". Fayolle (2007) emphasises that the definition of an entrepreneur is presented with multiple facets as it combines the roles of capitalist, innovator, opportunist, coordinator, and organiser of resources.

The entrepreneurial intentions of people are influenced by many factors. For example, the personal characteristics of individuals such as propensity to risk, innovativeness, tolerance of ambiguity, locus of control (Koh, 1996); the culture (Mueller, Thomas, 2001; Pillis, Reardon, 2007 etc.); the economic and institutional environment (Minguzzi, Passaro, 2001; Lu, Tao, 2010 etc.), have influence on the development of entrepreneurship. Gnyawali and Fogel (1994) describe the entrepreneurial environment as a combination of factors: the overall economic, socio-cultural, and political factors that influence people's willingness and ability to undertake entrepreneurial activities; and the availability of assistance and support services that facilitate the start-up process.

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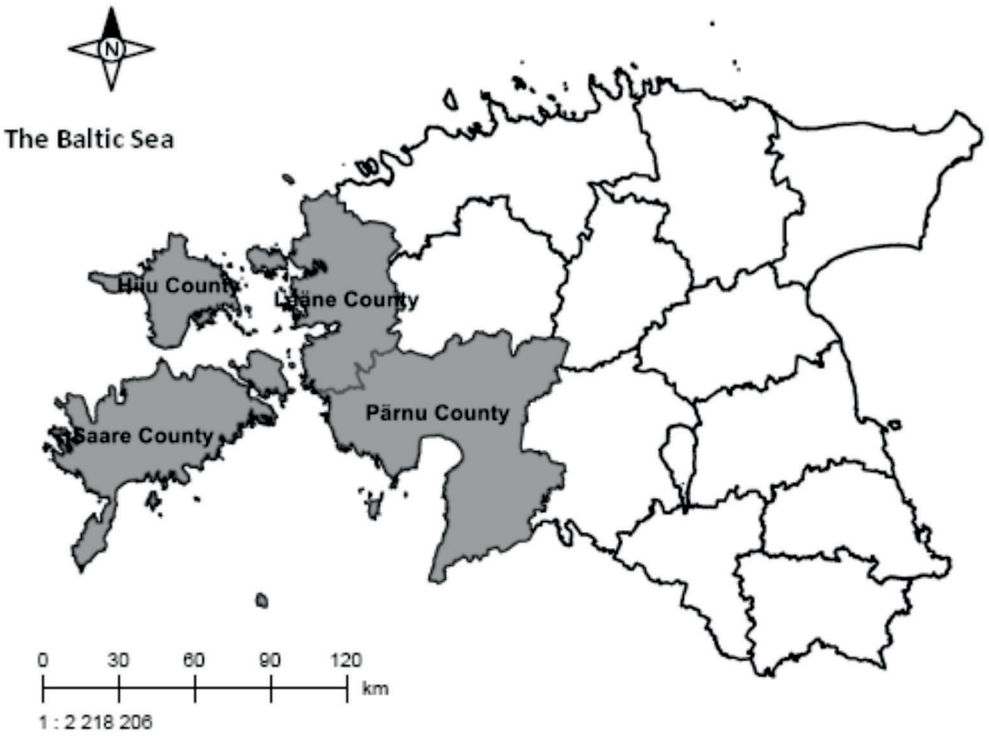

Figure 1. The studied Western Estonian counties

Since several studies have referred to the lack of entrepreneurial spirit of Estonians (Kolbre et al., 2006, Estonian Institute …, 2004), especially in international comparison (Flash EB No 160, 2004; Flash EB No 283, 2009), the topics of entrepreneurial activity and its regional issues are highly relevant.

The topic of regional entrepreneurial activity has gained relevance because of the developments in the past 20 years. The transition of Estonia in the 1990s from planned economy to market economy brought along the uneven regional development (for example studied by Terk, Raagmaa, 2004; Jauhiainen, Ristkok, 1998; Tamm, 2002 etc.). It has manifested itself in high persistent regional economic and social disparities. The Regional Development Strategy of Estonia (2005) describes that the regional differences are significant for the small territory of the country, especially the differences between the main urban centres and other regions in the standard of living and competitive ability. The regional economic development has been strongly polarised to the territory around the Estonian capital Tallinn and other larger towns (Venesaar, 2006). The government has set the goal to curb the concentration of population as well as economic activity in the capital region (Servinski, 2010).

In the transition process, the success of the economic development of a rural municipality was influenced by many factors, like its location and its Soviet legacy (e.g. level of development of the former collective farm) (Tamm, 2002); local economy's level of diversification (Terk, Raagmaa, 2004) and especially the availability of non-agricultural jobs (Loo, 2005); the administrative capability of local municipality, infrastructure and availability of labour (Tamm, 2002) etc. In the majority of peripheral areas, the diversity of enterprises is low, and in most cases, local economy is based on traditional resource consuming sectors like agriculture, forestry etc (Kiili, Mager, 2006). The issue of local economic diversity, especially the development of non-agricultural enterprises and jobs, gathered relevance because of the decline in agriculture. In the economic transition process, there was a considerable drop in agricultural production and arable land (e.g. studied by Unwin, 1998; Alanen, 1999; Alanen et al, 2001; Virma, 2004; Viira et al, 2009). The majority of newly established private farms were not viable in the long term. This also meant that agriculture was unable to provide sufficient income for the majority of rural population (Loo, 2005). This can also be demonstrated by the drop of agricultural employment in rural population – in 1989, totally 56.9% of rural population was employed by the primary sector, by 2000 it was 22%, and by 2010 it was 11.8% (Statistics Estonia, 2011). By the 2000s, the share of agricultural enterprises among the total number of rural enterprises, had decreased approximately by 50%, but the jobs created in the secondary and tertiary sectors compensated for less than one third of the jobs that had disappeared (Ministry of Agriculture, 2008). This in turn resulted in higher economic inactivity in rural regions. Therefore, the comparison of differences between regions and municipalities in entrepreneurial activity, share of different sector enterprises, share of sole proprietors, and other socio-economic data, is that of interest not only to researchers but also to local stakeholders in order to study how different regions have fared in ongoing social and economic developments.

The aim of the research is to study the entrepreneurial activity in rural municipalities of the four Western Estonian

counties in connection with selected economic indicators like share of sole proprietors, share of different sector enterprises and income per employee etc. Therefore, a hierarchical cluster analysis is conducted and the 48 rural municipalities of those counties are grouped into three clusters. The main focus is laid on the indicators from the year 2010; however, the data of the year 2006 are also given for the comparison purposes.

The paper is organised as follows. The introduction is followed by a short overview on the methodology. The results section is divided into two subsections: a general description of the counties studied is given on the basis of selected socio-economic indicators. It is followed by the results of the hierarchical cluster analysis. The results are discussed in the concluding section.

The following research tasks have been set: to give an overview on the socio-economic situation of the region on the basis of selected economic and social data; to compare the urban/rural indicators and Estonian average indictors; to study the entrepreneurial activity in the Western Estonian rural municipalities in 2006 and 2010; and to cluster the rural municipalities in order to study the differences between the municipalities.

Materials and methods

The following methods have been used for the research purpose: a hierarchical cluster analysis is conducted on the basis of data on the entrepreneurial activity rate per 1000 inhabitants, and different economic and population indicators of the 48 rural municipalities in four counties as well as monograph, and analysis and synthesis methods.

In the present research, the entrepreneurial activity rate is defined as the number of enterprises per 1000 inhabitants. The enterprises mean both companies and sole proprietors, and their data are derived from the database on economically active units of the Statistics Estonia (2011).

Cluster analysis is a multivariate statistical procedure that aims to group the studied entities into a smaller number of clusters. It starts with a data set containing information about a sample of entities and attempts to reorganise these entities so that the entities within each cluster would be relatively homogeneous and distinct as possible from entities in other clusters (Aldenderfer, Blashfield, 1984). The hierarchical cluster analysis was selected for the analysis. Hierarchical clustering aims to group the studied entities into a hierarchical set of clusters. In the present analysis, the entities studied are 48 rural municipalities of four Western Estonian counties.

The following economic and social indicators were used in the grouping of the municipalities: population of the municipality in 2010; change of population from 2006 to 2010 (%); entrepreneurial activity rate per 1000 inhabitants in 2006 and 2010; share of primary sector, secondary sector and tertiary sector enterprises in 2010 (%); average monthly gross income by employee in 2006 and 2010 (euros); and share of sole proprietors in 2006 and 2010 (%). The data are derived from the statistical database of Statistics Estonia (2011).

The selection of socio-economic variables for the analysis was affected by the availability of the statistical data on the municipal level that sets limits to the analysis. For example, the labour data on labour force participation and employment rate are not available on the municipal level, while they are available on the county level by the type of settlement: urban/rural. The statistical data on the average wages are published on the county level, but not on the municipal level; and therefore another indicator – average gross monthly income per employee was used in the analysis. This indicator is not calculated by Estonian Statistical Office but it is computed on the basis of the data from Estonian Tax and Customs Board using different methodology. The Board publishes no average wages but the remuneration paid to an employee in relation to the employment relationship (Statistics Estonia, 2010).

Another methodological delimitation that has to be taken into account is that of the quality of population registration data, especially in case of the small islands. In a 10-years period starting from the 1990s it was not obligatory to register the actual residence (Sjoberg,Tammaru, 1999). This resulted in under registration of migration data and some other distortions. In case of many rural municipalities, especially in case of the small islands, the population data tend to be elevated as the number of registered population may be higher than the actual permanent residents, because summer residents have registered themselves by the local municipality, but during the most of the year, they work and live in some other area. There are also people who have moved away, but have not changed their registration, although they already live elsewhere for the most of the year. This has to be taken into account analysing individual rural municipalities and one way is to analyse the groups of municipalities to minimise the effect of this kind of distortions in case of individual municipalities.

In the hierarchical analysis, the variables were standardised for the analysis and squared Euclidean distances were used for the computing the distances. The squared Euclidean distance between the objects and is calculated as follows:

$$distance\,(x,y) = \sum_i (x_i + y_i)^2 \qquad (1)$$

Ward's method was chosen for clustering. Aldenderfer and Blashfield (1984) explain that the Ward's method aims to optimise the minimum variance within the cluster; the objective function is known as the error sum of squares (ESS), where x_i is the score of the y_i case.

$$ESS = x_i^2 - {}^1\!/_n (\sum x_i)^2 \qquad (2)$$

The method works by joining the groups that result in the minimum increase of the ESS (Aldenderfer, Blashfield, 1984, p. 43).

In the cluster analysis, different solution with different number of clusters was studied and it was decided to proceed with the three-cluster solution.

Table 1. Rural and urban population in the Western Estonian Counties

Region	Type of settlement	Local government units in 2010, number	Population in 2010, number	Share of Estonian population in 2010, %	Population in 2006, number	Population gain/loss from 2006 to 2010, %
Estonia	**Total**	226	1 340 127	100	1 344 684	-0.34
	Towns	33	866 842	64.7	866 907	-0.01
	Rural municipalities	193	473 285	35.3	477 777	-0.94
Hiiu	**County total**	5	10 032	0.75	10 222	-1.85
	Towns	1	3 634	0.27	3 724	-2.41
	Rural municipalities	4	6 398	0.47	6 498	-1.54
Laane	**County total**	12	27 366	2.04	27 853	-1.75
	Towns	1	11 618	0.87	11 774	-1.32
	Rural municipalities	11	15 748	1.17	16 079	-2.05
Parnu	**County total**	20	88 428	6.59	89 017	-0.66
	Towns	2	48 062	3.58	48 247	-0.38
	Rural municipalities	18	40 366	3.12	40 770	-0.99
Saare	**County total**	16	34 644	2.58	35 076	-1.23
	Towns	1	14 977	1.11	14 919	0.38
	Rural municipalities	15	19 667	1.46	20 157	-2.43

Source: *Statistics Estonia, 2011*

Table 2. Labour force participation and employment rate in 2006 and 2010 in the Western Estonian counties

Region	Type of settlement	Labour force participation rate, %		Employment rate, %	
		2010	**2006**	**2010**	**2006**
Estonia	**Total**	66.4	65.5	55.2	61.6
	Towns	68.3	67.2	56.4	63.3
	Rural municipalities	62.0	61.5	52.4	57.7
Hiiu	**Total**	55.6	70.1	49.2	67.6
	Towns	57.7	69.6	51.6	69.6
	Rural municipalities	53.5	70.4	46.7	66.3
Laane	**Total**	66.0	57.4	51.3	53.5
	Towns	70.5	64.7	56.6	60.0
	Rural municipalities	62.1	51.6	46.7	48.4
Parnu	**Total**	62.2	58.6	53.4	56.5
	Towns	63.6	59.9	56.6	57.5
	Rural municipalities	59.8	56.4	47.7	54.8
Saare	**Total**	60.7	56.4	55.1	54.6
	Towns	70.5	66.4	66.6	66.0
	Rural municipalities	53.3	50.8	46.3	48.2

Source: *Statistics Estonia, 2011*

Results

An overview of the Western Estonian counties

Before the results of the cluster analysis are presented, a short economic and social overview is given in order to compare the counties and their rural and urban municipalities.

In 2010, there were 5 towns and 48 rural municipalities in the four counties (Table 1). These four Western Estonian counties form 25.6% of Estonian area and as of 2010, have 11.96% of total Estonian population. The population of rural municipalities of Western Estonia account for 6.22% of total Estonian population and 17.4% of Estonian rural population (Statistics Estonia, 2011). The population density of the Western Estonia has been lower than Estonian average rural population density. One reason for that are the geographical characteristics of the counties situated on the islands and isolated from the mainland of Estonia.

In the period of 2006-2010, the population in the area studied has continued its slight decrease and the decline has been somewhat higher than the Estonian average and in most cases has concentrated more into rural municipalities.

Table 3. Unemployment rate and average monthly gross wages in the Western Estonian counties

Region	Unemployment rate, %	Average monthly gross wages, euros		Share of Estonian average wage, %	
	2010	2010	2006	2010	2006
Estonia	16.9	792.3	601.2	100	100
Hiiu county	11.5	629.1	475.1	79.4	79.0
Laane county	22.3	655.4	460.2	82.7	76.5
Parnu county	14.2	693.8	508.0	87.6	84.5
Saare county	9.3	646.8	505.9	81.6	84.2

Source: *Statistics Estonia, 2011*

Table 4. Number of enterprises and entrepreneurial activity rate per 1000 inhabitants in the Western Estonian counties

Region	Type of settlement	Enterprises, number		Share of Estonia enterprises, %		Entrepreneurial activity rate per 1000 inhabitants	
		2010	2006	2010	2006	2010	2006
Estonia	**Total**	100216	71012	100	100	74.8	52.8
	Towns	66517	48589	66.4	68.4	76.7	56.0
	Rural municipalities	33699	22423	33.6	31.6	71.2	46.9
Hiiu	**Total**	834	603	0.8	0.8	83.1	59.0
	Towns	294	206	0.3	0.3	80.9	55.3
	Rural municipalities	540	397	0.5	0.6	84.4	61.1
Laane	**Total**	1886	1302	1.9	1.8	68.9	46.7
	Towns	686	454	0.7	0.6	59.0	38.6
	Rural municipalities	1200	848	1.2	1.2	76.2	52.7
Parnu	**Total**	6530	4733	6.5	6.7	73.8	53.2
	Towns	3508	2558	3.5	3.6	73.0	53.0
	Rural municipalities	3022	2175	3.0	3.1	74.9	53.3
Saare	**Total**	2776	1950	2.8	2.7	80.1	55.6
	Towns	1151	818	1.1	1.2	76.9	54.8
	Rural municipalities	1625	1132	1,6	1,6	82,6	56,2

Source: *Statistics Estonia, 2011*

Table 5. Share of microenterprises and sole proprietors in the enterprises of the Western Estonian counties

Region	Type of settlement	Share of microenterprises, %		Share of sole proprietors, %	
		2010	2006	2010	2006
Estonia	Total	93.2	88.2	31.3	20.3
	Towns	92.4	86.8	24.0	9.9
	Rural municipalities	94.9	91.1	45.8	42.9
Hiiu	Total	95.6	93.0	54.1	47.3
	Towns	92.9	89.8	40.1	21.8
	Rural municipalities	97.0	94.7	61.7	60.5
Laane	Total	94.6	89.7	50.7	42.7
	Towns	93.3	86.8	39.2	18.1
	Rural municipalities	95.4	91.3	57.3	55.9
Parnu	Total	94.4	89.5	43.2	34.0
	Towns	93.3	86.7	33.8	18.8
	Rural municipalities	95.7	92.7	54.1	51.8
Saare	Total	94.4	90.8	52.8	44.1
	Towns	91.7	86.7	36.0	19.8
	Rural municipalities	96.3	93.8	64.7	61.6

Source: *Statistics Estonia, 2011*

The persisting lower labour force participation rate (share of labour force in the working age population) and employment rate (share of employed in the working age population) of the rural areas are among the socio-economic challenges of Estonian regional development. As the data in Table 2 illustrates, the labour force participation and employment rate in the rural municipalities of the four counties have remained lower than the national average in most cases. Especially problematic is the issue of employment rate that by 2010 has dropped under 50% in all the rural municipalities of the counties studied.

In 2006, Estonia was experiencing the economic growth and the overall unemployment rate in Estonia was 5.9% (Statistics Estonia, 2011). However, as the statistical data on the unemployment are not available on the county level for 2006, Table 3 presents the unemployment rate only for the year 2010. As in 2008 the economic recession started in Estonia bringing along fast increase in unemployment, by 2010 the national unemployment rate was 16.9%, having hit Laane and Parnu counties considerably harder (Table 3). However, the average wage level in those areas was higher indicating that the onset of recession has wiped the lower paid jobs first.

The statistical data on the average wages are not available for the local government level; Table 3 presents them on the county level. The wages in the counties studied consistently have been considerably lower than the Estonian average, especially it is a problem on the islands of Saare County and Hiiu County, where in 2010, the average monthly gross wage was 81.6% and 79.4% of the Estonian average; besides the increase in average wage has been stagnant or non-existent in the period studied. The nearness of the larger town of Parnu has provided better paid job opportunities for the residents of Parnu County.

In the recent years, the number of enterprises in Estonia has been on increase, since the number of economically active enterprises (companies and sole proprietors) has grown from 71012 in 2006 to 100216 in 2010 (Statistics Estonia, 2011). In 2010, totally 12% of all Estonian enterprises and 18.9% of Estonian rural enterprises were located in the Western Estonian counties (Table 4).

One characteristic feature of the area studied is that the entrepreneurial activity rate in rural municipalities of the four counties has been higher than in the towns and in case of the two counties on the islands – Hiiu and Saare County, it has been higher than the national average. This has been explained by the high share of sole proprietors, since due to the lack of other employment opportunities on the islands, the people are more likely to be forced to become sole proprietors. The share of microenterprises with less than 10 employees has been higher than average in the rural municipalities studied (Table 5).

In Estonia, the share of tertiary sector enterprises has been on the increase, reaching 70.2% of all enterprises in 2010 (Table 6). The share of primary sector enterprises has continued its decrease. The same kind of decrease has taken

Table 6. Enterprises according to the economic sector in the Western Estonian counties, %

Region	Type of settlement	Share of enterprises, %					
		2010			2006		
		Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
Estonia	Total	12.5	17.3	70.2	14.2	19.5	66.3
	Towns	2.3	17.1	80.6	2.0	20.4	77.6
	Rural municipalities	32.8	17.7	49.6	40.9	17.5	41.6
Hiiu	Total	33.9	17.3	48.8	40.6	16.6	42.8
	Towns	17.3	20.1	62.6	18.4	23.8	57.8
	Rural municipalities	43.0	15.7	41.3	52.1	12.8	35.0
Laane	Total	30.6	17.2	52.2	37.2	17.4	45.4
	Towns	8.2	20.0	71.9	8.6	24.9	66.5
	Rural municipalities	43.4	15.7	40.9	52.5	13.4	34.1
Parnu	Total	22.3	18.5	59.3	25.5	18.8	55.7
	Towns	5.3	19.3	75.4	6.4	21.8	71.9
	Rural municipalities	42.0	17.5	40.6	48.0	15.4	36.6
Saare	Total	32.2	18.0	49.8	38.1	16.4	45.5
	Towns	6.2	20.7	73.2	9.2	19.9	70.9
	Rural municipalities	50.6	16.1	33.3	58.9	13.9	27.2

Source: *Statistics Estonia, 2011*

place in the four counties studied; however, the share of primary sector enterprises has still remained higher than in Estonian rural municipalities on average. The share of tertiary sector enterprises in the towns of the four counties is higher than Estonian overall average, but somewhat lower than the average of Estonia towns in 2010. It may be associated with the tourism industry, because the western coast of Estonia and the islands are major tourism destination.

Results of the cluster analysis

A cluster analysis of the rural municipalities of the four counties was conducted to study the possibilities for grouping the municipalities based on their entrepreneurial activity rate and other economic data, Hierarchical cluster analysis was selected for the grouping of municipalities. Solutions with the different numbers of clusters were studied and the three cluster solution for the grouping of rural municipalities was chosen in the research. In this solution, forty-eight municipalities in the analysis were divided as follows: Cluster 1 consisted of 23 municipalities; Cluster 2 had 10, and Cluster 3 included 15 municipalities (Figure 2, Table 7). One way to characterise these three clusters is to provide their characteristics based on the entrepreneurial activity rate: higher than the average, average entrepreneurial activity, and lower than the average activity.

Cluster 1 consists mostly of the rural municipalities on the islands and of the Northern part of Laane County in the mainland. It contains the municipalities that are smaller population wise. Both smallest rural municipalities in this group are those on separate islands: Ruhnu Island with 72 inhabitants and Vormsi Island with 245 inhabitants in 2010. The entrepreneurial activity rate per 1000 inhabitants is higher than the average. The share of primary sector enterprises, and secondary sector enterprises and sole proprietors is close to the overall average and lower than in case of Cluster 2. In 2006 and 2010, the average monthly gross income was higher than in other clusters.

Cluster 2 consists of municipalities that mostly have between 1000 and 2000 inhabitants. In comparison with other groups, however, their population loss has been higher in the 5-years period (Table 8). Cluster 2 is characterised by considerably higher share of sole proprietors and higher share of primary sector enterprises than other clusters or overall in Estonian rural municipalities. The share of secondary sector and tertiary sector enterprises is lower than the average and the average monthly gross income per employee is also considerably lower.

Cluster 3 contains the rural municipalities with the highest population on average. The overall population loss has been smaller than in the other clusters. This can be explained also by the fact that most of the municipalities in this cluster are surrounding or located near the towns in the three counties studied. In case of Parnu County, some of them also include a town without a municipal status. This administrative division has been a result of the ongoing attempt for administrative reform in Estonia, since in 2005, many of smaller rural municipalities and small towns were merged together to form

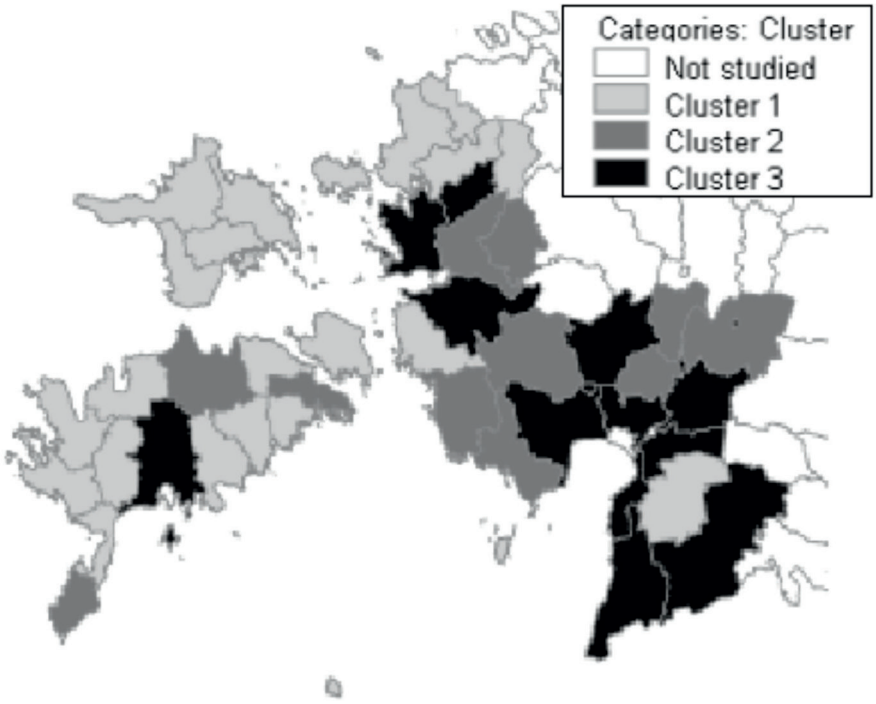

Figure 2. Rural municipalities by the clusters

Table 7. Local rural municipalities in the counties studied by the cluster

Clusters		
1	2	3
Emmaste	Are	Audru
Hanila	Koonga	Halinga
Kihelkonna	Kullamaa	Haademeeste
Kihnu	Leisi	Kaarma
Korgessaare	Martna	Lavassaare
Kaina	Poide	Lihula
Karla	Torgu	Paikuse
Laimjala	Tostamaa	Ridala
Lumanda	Varbla	Saarde
Muhu	Vandra	Sauga
Mustjala		Taebla
Noarootsi		Tahkuranna
Nova		Tootsi
Orissaare		Tori
Oru		Vandra town
Pihtla		
Puhalepa		
Risti		
Ruhnu		
Salme		
Surju		
Valjala		
Vormsi		

Table 8. Average values for the four groups of municipalities

	Clusters			
	1	2	3	Total
Number of rural municipalities	23	10	15	48
Population in 2010	1092.7	1390.9	2875.9	1712.1
Change in population from 2006 to 2010; %	-2.3	-2.9	-1.0	-2.0
Entrepreneurial activity rate per 1000 inhabitants in 2006	64.7	63.8	47.3	59.1
Entrepreneurial activity rate per 1000 inhabitants in 2010	96.1	81.9	66.3	83.8
Share of primary enterprises in 2010; %	49.0	65.3	31.9	47.0
Share of secondary sector enterprises in 2010; %	14.3	9.0	19.4	14.8
Share of tertiary sector enterprises in 2010; %	36.8	25.8	48.7	38.2
Average monthly gross income per employee in 2006; euros	542.2	479.6	524.3	523.6
Average monthly gross income per employee in 2010; euros	719.1	653.9	681.9	693.9
Share of sole proprietors in 2006; %	61.9	75.7	40.1	58.0
Share of sole proprietors in 2010; %	64.7	71.7	46.0	60.3

larger rural municipalities and those small rural towns lost their municipal status as separate administrative units and local governments. The overall entrepreneurial activity rate is lower than in other clusters. The secondary sector and tertiary sector enterprises play a key role in the economy and the share of sole proprietors among the enterprises is considerably lower. The infrastructure and nearness of larger centres and labour provide better access to market and more favourable conditions for the development of tertiary and secondary sector enterprises.

Conclusions

The research aim was to study the entrepreneurial activity of local rural municipalities in the Western Estonian counties. A cluster analysis was chosen to group the municipalities based on the selected entrepreneurial and socio-economic indicators. The availability of data on municipal level and the acknowledged issues with the reliability of some of the population data in Estonia, especially in case of the small islands, sets limits to the comparison of individual rural municipalities. Besides those delimitations, the approach adopted in the present research is relatively simplistic — the grouping of municipalities based on their entrepreneurial activity and selected socio-economic indicators. However, the grouping of municipalities and the study of characteristics of those groups do provide useful information on the development and regional discrepancies of the area studied. The topic is relevant as there is a heavy discussion going on in Estonian society on the necessity of exhaustive regional administrative reform that would considerably reduce the number of rural municipalities. Another topic has been the overall entrepreneurial activity in Estonia that gained relevance especially since the onset of economic recession, since the establishment of new enterprises has been seen as one way out of the recession and unemployment.

The three clusters retrieved in the analysis can be distinguished by their entrepreneurial activity, entrepreneurial diversity (share of enterprises of different sectors), socio-economic indicators and population statistics. The municipalities on the islands have more in common, however, those in the counties of the mainland of Estonia may be located in relative proximity, but there are some considerable differences between them.

The average gross income and entrepreneurial activity rate were higher in case of the municipalities in the islands. In case of the municipalities on the islands, however, there is the aforementioned issue with the elevated population numbers. But still the isolation of the islands can be regarded as one of the "push" factors that forces people to establish their own company or to become sole proprietor.

The municipalities with larger population and in more favourable distance from local towns are characterised by lower entrepreneurial activity rate, but it does not manifest itself in lower incomes or in a larger than the average population loss as their economy is more diverse. The key is the higher diversity of enterprises. The group of municipalities with highest share of sole proprietors and primary sector enterprises had the lowest gross average income per employee. The wage level in agriculture in Estonia has been constantly one of the lowest of all the economic activities in the past 20 years, so it can be expected that the high share of agricultural enterprises comes with low level of gross income of employees. So the non-agricultural jobs and economic diversity has to remain one the main goals for the development of rural municipalities. The results of this analysis confirm that of several other studies, the rural municipalities with the more viable tertiary and secondary sector enterprises and with access to infrastructure and nearness of larger centre, have been better off as their population loss has been smaller and incomes of locals higher.

The high entrepreneurial activity rate by itself does not necessarily translate to higher incomes as the choice to become

an entrepreneur may often be a forced one, because of the lack of other alternatives in an isolated region as an island. So the high number of enterprises in itself should not be an economic developmental goal.

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