The region is perceived as a complex system created by man, including society, economy and environment. Regional economic development is a complex phenomenon, dependent not only on the combination between resources and factors of production, but also on the grounds of social, political or ecological, and cultural nature. The aim of the article is to present a positive impact on the business development of the region in terms of, among others, the number of business entities, individuals engaged in economic activity, employment and unemployment rates. For analysis, the synthetic measure the level of economic districts, and those areas of diagnostic variables were used. The analysis was carried out in a counties of the Świętokrzyskie voivodeship. As source material, data from the Local Data Base of the Central Statistical Office for the 2008, 2012 and 2016 were used. The condition for economic development is the continuous growth of entrepreneurship and competitiveness in local or regional scale. Entrepreneurship is an important factor in development of regions. Enterprises are an important component of the economic structure. They are an important source of jobs, create entrepreneurial spirit and promote innovation, determine the development of competitiveness and prevent unemployment. Entrepreneurship development aligns regional disparities. It contributes to the living conditions of local communities. Regardless of the method of aggregation of synthetic measure in 2016 in the studied period high on the list were kielecki, skarżyski, starachowicki, ostrowiecki counties (industrial units in the region). At the other extreme were kazimierski, opatowski, pińczowski counties (agricultural units).

Key words: entrepreneurship, the region, the region’s competitiveness, synthetic measure.
Introduction. The region is perceived as a complex system created by man, including society, economy, and environment (Naruszewicz 2004). He participates in market processes. It cooperates with other units and at the same time competing for inter alia investments, human capital. The most important characteristics of the regions include inter alia: 1) internal and external relationships; 2) determined economic specialization; 3) the ability to formulate the objectives and their implementation; 4) the operation of an urban center that acts as an integrating factor. The new meaning to the regions is given by the term „regionalization”, being associated with the increasing importance of regions in the realities of globalization (Korenik (red.) 2011). As Heller writes, the region is an area of such characteristic features that they allow to separate it from the larger territory, so that it can be a whole (Heller 2000). Closer surroundings are the local community and entities operating in the region, the further surroundings are other regions of the country, international organizations and institutions. These operators come into a variety of relationships and interactions between them in the region and outside the region (Światowy, Lisewska 2004).

Regional economic development is a complex phenomenon, dependent not only on the combination between resources and factors of production, but also on the grounds of social, political or ecological, and cultural nature. You could say that it is a social process that requires acceptance by social groups of the region and their active attitude (Huczek 2012).

Aim, material and research method. The aim of the article is to present a positive impact on the business development of the region in terms of, among others, the number of business entities, individuals engaged in economic activity, employment and unemployment rates. For analysis, the synthetic measure the level of economic districts, and indicated areas of diagnostic variables were used. The analysis was carried out in a counties of the świętokrzyskie voivodeship. As source material, data from the Local Data Base of the Central Statistical Office for the 2008, 2012 and 2016 were used.

The first phase of research is the choice of variables (describing the aspect of entrepreneurship in the region) and their preliminary analysis. Removed from the set were variables with low spatial variability (coefficient of variation less than 0.10) and a high correlation of variables. According to the method of reverse matrix of the correlation coefficients the diagonal elements (variable unduly correlated) with values greater than 10 are eliminated from the set of variables (Zeliaś 2000, Wysocki 1996). Malina notes that a large value of the correlation coefficient results in duplication of information of analyzed phenomenon and may lead to incorrect conclusions resulting from the revaluation of one area at the expense of other areas of life, or business (Malina 2004 s. 96-97).

In the next stage the standardization of values of simple features was made using the procedure of zeroed unitarization using the following formulas:

\[ Z_{ij} = \frac{x_{ij} - \min_{i} \{ x_{ij} \}}{\max_{i} \{ x_{ij} \} - \min_{i} \{ x_{ij} \}}, \quad \text{gdy} \quad x_{ij} \in S \]  
\[ Z_{ij} = \frac{\max_{i} \{ x_{ij} \} - x_{ij}}{\max_{i} \{ x_{ij} \} - \min_{i} \{ x_{ij} \}}, \quad \text{gdy} \quad x_{ij} \in D \]  

where: S-stimulant, D-destimulant; i=1, 2…n; j=1, 2…n, xij – value of j-feature for studied unit, max – maximum value of j-feature, min – minimum value of j-feature (Wysocki 1996; Mioduchowska-Jaroszewicz 2013; Dziekański 2016; Dziekański 2017; Dziekański 2015).

The standardization process was used to calculate the synthetic measure of development districts. The first method TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) allows to determine the value of synthetic measure for each object on the basis of the formula:

\[ q_i = \frac{d_i}{d_i + d_i^*}, \quad q_i \in [0; 1], \quad \text{gdzie} \quad 0 < q_i \leq 1, \quad i = 1, 2, ..., n; \]  

where: d* means the distance from the sample, the best individual in the population surveyed, d means the distance from anti-sample, qi∈ [0; 1]; maxi {qi} – the best object; mini {qi} – the worst object (Standar2017, Kurzawa, Łuczak 2018). The idea of TOPSIS method is to determine the distance of considered object from ideal and non-ideal solution. The final result of the analysis is the synthetic index creating the rank of the studied objects (Hwang, Yoon 1981).
Then a synthetic measure based on the distance in real space was counted with Euclidean metric according to the formula:

$$OE_{it} = \sqrt{\frac{1}{p} \sum_{j=1}^{p} (1 - \frac{z_{ij}}{\text{max} - \text{min}})^{2}}$$

(4),

where: $i=1, 2…N$; $j=1, 2…, p$ (N is the number of objects (provinces), and p – number of features); $z_{ij}$ – value of j feature for studied unit, $\text{max}$ – maximum value of j feature, $\text{min}$ – minimum value of j feature (Wysocki 1996). Synthetic measure enables the measurement of studied group in terms of selected features bringing the values to the compartment $[0;1]$. Metric value of 0 means the maximum positive value of each of the studied units (Trojak, Tokarski 2013).

Finally there was the presentation of individual variables describing the phenomenon studied (Dziekański 2015, Dziekański 2016).

**Entrepreneurship and the process of development of the region**

The condition for economic development is the continuous growth of entrepreneurship and competitiveness on the local or regional scale. Entrepreneurship is an important factor in development of regions. This involves the creation of new jobs and improvement of living conditions of the local community. Klasik and Kuźnik define regional development as sustained growth of economic potential of regions, their competitive strength and the level and quality of life. The essence of regional development is to ensure consistency in its three dimensions: economic, social and territorial (Klasik, Kuźnik 2001).

Owned structural features of the regions and the situational factors existing on their territory mean that the regions differ in the scale of entrepreneurial activity. Currently to the basic factors of production – labor, land, capital – one must also add an entrepreneurial attitude. They contribute to the creation and implementation of products, at the same time stimulating the regional economy (Jędrzejewski 2015). Among other factors, from the point of view of regional policy and economic activity, essential for the development of the region are, inter alia: the development and restructuring programs; tax breaks for investors; action in terms of human resources; strengthening of endogenous territorial capital (Latocha 2003). Other factors supporting entrepreneurship and development of the region, include: demographic characteristics of the region, the situation on the regional labor market, the viability of the economic structure of the region, the quality of human capital, the prestige of entrepreneurs in the region, housing and standard equipment infrastructure (Huczek 2016).

**Level of entrepreneurship in świętokrzyskie voivodeship – evaluation of spatial diversity**

In 2008 synthetic measure of development based on the distance in real space with Euclidean metric ranged 0.66 (starachowicki province, the best unit) – 0.84 (kazimierski, the weakest), in 2012 from 0.68 (starachowicki, skarżyski) – 0.82 (kazimierski) and in 2016 from 0.65 (starachowicki) – 0.81 (Chełm). Synthetic measure based on the TOPSIS method in 2008 valued from 0.25 (kazimierski; the weakest unit) to 0.41 (kielecki, the best unit), in 2012 from 0.26 (kazimierski) to 0.38 (skarżyski) and in 2016 from 0.27 (kazimierski) to 0.41 (kielecki). Regardless of the method of aggregation of synthetic measure high in the rank were kielecki, skarżyski, starachowicki, ostrowiecki provinces (industrial units in the region). At the other extreme were kazimierski, opatowski, pińczowski provinces (agricultural units; table 1 and illustration 1).

**Table 1**

| Synthetic measure of the development of the provinces in Świętokrzyskie voivodeship |
|-----------------------------------------------|
| **OE measure** | **2008** | **2012** | **2016** | **TOPSIS measure** | **2008** | **2012** | **2016** |
| starachowicki | 0.66 | 0.69 | 0.65 | kielecki | 0.40 | 0.37 | 0.41 |
| skarżyski | 0.67 | 0.68 | 0.66 | starachowicki | 0.39 | 0.38 | 0.4 |
| kielecki | 0.69 | 0.70 | 0.67 | skarżyski | 0.39 | 0.36 | 0.4 |
| ostrowiecki | 0.67 | 0.70 | 0.68 | kielecki | 0.39 | 0.35 | 0.37 |
| konecki | 0.76 | 0.74 | 0.70 | kielecki | 0.32 | 0.33 | 0.36 |
| buski | 0.71 | 0.73 | 0.71 | konecki | 0.32 | 0.37 | 0.35 |
| staszowski | 0.7 | 0.68 | 0.71 | staszowski | 0.36 | 0.32 | 0.35 |
| sandomierski | 0.71 | 0.73 | 0.72 | włoszczowski | 0.32 | 0.32 | 0.35 |
| włoszczowski | 0.7 | 0.75 | 0.72 | sandomierski | 0.34 | 0.32 | 0.34 |
| jędrzejowski | 0.76 | 0.77 | 0.75 | buski | 0.34 | 0.32 | 0.34 |
| opatowski | 0.73 | 0.75 | 0.72 | sandomierski | 0.34 | 0.31 | 0.33 |
| pińczowski | 0.77 | 0.77 | 0.72 | jędrzejowski | 0.31 | 0.29 | 0.32 |
| kazimierski | 0.84 | 0.82 | 0.81 | opatowski | 0.31 | 0.3 | 0.31 |

Source: own authoring (sorter according to 2016).
Assessment of the level of development of entrepreneurship was made by analyzing the number of persons registered per 1000 of population. In 2016 the most entities were in the districts: skarżyskie, ostrowieckie, sandomierskie. The fewer entities were in pińczowyskie, kazimierskie and opatowskie province. The level of self-employment has been measured as the number of physical persons conducting economic activity per 1000 inhabitants of the county. In 2016 most people carried on businesses in the counties: skarżyski, ostrowiecki, kielecki. The least active in this respect were the inhabitants of the district:pińczowski, opatowski and kazimierski.

Table 2

| entities registered per 1000 population | 2008 | 2012 | 2016 | natural persons conducting economic activity per 1000 population | 2008 | 2012 | 2016 |
|----------------------------------------|------|------|------|------------------------------------------------------------------|------|------|------|
| skarżyski                              | 99   | 96   | 101  | skarżyski                                                       | 81   | 77   | 79   |
| ostrowiecki                            | 99   | 91   | 90   | ostrowiecki                                                    | 84   | 75   | 71   |
| sandomierski                           | 80   | 78   | 81   | kielecki                                                        | 55   | 59   | 63   |
| konecki                                | 78   | 76   | 80   | konecki                                                       | 64   | 61   | 63   |
| starachowicki                          | 76   | 75   | 79   | buski                                                      | 64   | 60   | 62   |
| buski                                  | 77   | 74   | 78   | włoszczowski                                                   | 54   | 57   | 62   |
| włoszczowski                           | 66   | 72   | 78   | starachowicki                                                  | 61   | 58   | 60   |
| kielecki                               | 65   | 70   | 77   | sandomierski                                                   | 64   | 59   | 59   |
| jędrezejowski                          | 69   | 66   | 71   | jędrezejowski                                                | 56   | 52   | 55   |
| staszowski                             | 70   | 69   | 71   | staszowski                                                    | 57   | 55   | 55   |
| pińczowski                             | 58   | 60   | 66   | pińczowski                                                   | 43   | 44   | 48   |
| opatowski                              | 61   | 59   | 62   | opatowski                                                    | 48   | 45   | 46   |
| kazimierski                            | 44   | 50   | 52   | kazimierski                                                  | 32   | 36   | 37   |

Source: own authoring.

In 2016 most new entities per inhabitants were registered in the counties: kieleckie, skarżyskie, koneckie (industrial units). In 2016 the fewer entities were created in: sandomierskie, opatowski and kazimierskie. In the same year, most entities were crossed out in districts skarżyskie, włoszczowskie and kieleckie, the fewer in pińczowskie, opatowski and kazimierskie.

The low level of unemployment in the period occurred in the districts: buskie, pińczowskie, włoszczowskie. In the analyzed period a large spatial variation of this phenomenon occurred (from 5.6 to 19.6 in 2016). The highest level of unemployment was noted in districts: ostrowieckie, opatowskie and skarżyskie. In 2016 the most employed per 1000 of population were noted in districts: starachowickie, staszowskie and włoszczowskie, the fewer in: opatowski, kieleckie and kazimierskie.
Table 3

| newly registered units | 2008 | 2012 | 2016 | units crossed out from the register | 2008 | 2012 | 2016 |
|------------------------|------|------|------|-------------------------------------|------|------|------|
| kielecki               | 65   | 87   | 87   | skarżyski                           | 68   | 78   | 100  |
| skarżyski              | 74   | 94   | 86   | włoszczowski                        | 38   | 39   | 71   |
| konecki                | 67   | 75   | 72   | kielecki                            | 42   | 52   | 69   |
| starachowicki          | 68   | 70   | 67   | ostrowiecki                         | 39   | 68   | 68   |
| włoszczowski           | 47   | 70   | 67   | starachowicki                       | 57   | 63   | 65   |
| ostrowiecki            | 71   | 72   | 65   | konecki                             | 52   | 55   | 57   |
| buski                  | 46   | 46   | 62   | jędrzejowski                        | 43   | 43   | 48   |
| staszowski             | 52   | 51   | 56   | staszowski                          | 38   | 47   | 47   |
| jędrzejowski           | 55   | 55   | 55   | buski                               | 36   | 43   | 45   |
| pińczowski             | 39   | 48   | 55   | sandomierski                        | 24   | 33   | 45   |
| sandomierski           | 42   | 54   | 53   | pińczowski                          | 37   | 34   | 45   |
| opatowski              | 40   | 49   | 47   | opatowski                           | 25   | 39   | 37   |
| kazimierski            | 41   | 53   | 34   | kazimierski                         | 25   | 26   | 36   |

Source: own authoring.

Table 4

| Number of employed and the level of unemployment in the districts of świętokrzyskie voivodeship (sorter according to 2016) |
|------------------------------------------------------------------------------------------------------------------|
| Employed per 1000 of population in total (person) | 2008 | 2012 | 2016 | Level of registered unemployment in total (%) | 2008 | 2012 | 2016 |
| starachowicki                                          | 208  | 194  | 229  | buski                                          | 8,8  | 9,1  | 5,6  |
| staszowski                                             | 186  | 182  | 186  | pińczowski                                     | 8,1  | 9,8  | 7,6  |
| włoszczowski                                            | 164  | 168  | 185  | włoszczowski                                   | 13,6 | 14,3 | 8,5  |
| konecki                                                | 162  | 161  | 167  | sandomierski                                   | 10,1 | 12,8 | 8,6  |
| skarżyski                                              | 190  | 167  | 166  | staszowski                                     | 10,2 | 12,9 | 9,2  |
| ostrowiecki                                             | 184  | 164  | 164  | kazimierski                                    | 10   | 12,6 | 9,6  |
| sandomierski                                            | 143  | 160  | 164  | jędrzejowski                                   | 11,4 | 13,9 | 10,0 |
| buski                                                  | 138  | 143  | 154  | starachowicki                                  | 14   | 18,8 | 10,6 |
| pińczowski                                             | 138  | 153  | 150  | kielecki                                       | 19,4 | 19,7 | 13,6 |
| jędrzejowski                                           | 133  | 129  | 132  | konecki                                        | 22   | 22,6 | 14,0 |
| opatowski                                              | 125  | 111  | 119  | ostrowiecki                                    | 16,1 | 22,2 | 14,6 |
| kielecki                                               | 96   | 99   | 107  | opatowski                                      | 16,3 | 22,6 | 16,5 |
| kazimierski                                             | 92   | 80   | 87   | skarżyski                                      | 22,2 | 27,4 | 19,6 |

Source: own authoring.

Summary. Enterprises are an important component of the economic structure. They are an important source of jobs, create entrepreneurial spirit and promote innovation, determine the development of competitiveness and prevent unemployment.

Entrepreneurship development aligns regional disparities. It contributes to the living conditions of local communities. It also creates new jobs, thus generally contributes to improving the economy of the region. We are dealing with a classic feedback of studied phenomena. It is a necessary element for the economic development of the region. It becomes necessary, therefore, to take appropriate measures to create favorable conditions for the taking up and pursuit of economic activity. Responsibility for the implementation of these measures falls largely on local authorities.

Regardless of the method of aggregation of synthetic measure in 2016 in the studied period high on the list were kielecki, skarżyski, starachowicki, ostrowiecki districts (industrial units in the region). At the other extreme were kazimierski, opatowski, pińczowski districts (agricultural units).

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