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# The Housing Pattern and Entrepreneurship in Polish Suburban Landscape

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**Abstract.** Housing stimulates the development of SMEs (small and medium enterprises) in the suburbs. The multidisciplinary research in fields of urban planning and economics, carried out by the Authors, confirms this trend. The purpose of this paper is to present the multidisciplinary results of the research on the determinants of SME localization in the suburban areas of Gdansk, Gdynia and Sopot (the Metropolitan Area Gdansk–Gdynia-Sopot – MAGGS). Many of researchers attach great significance to the term of urban sprawl. Most authors agree that this phenomenon is multidimensional. It also varies in the global perspective. The conducted research showed that urban sprawl in Poland had a positive impact on the development of entrepreneurship, leading to a situation when the SME location quotient (LQ) in some suburban areas is higher, in comparison to the core city itself. The communities characterized by an LQ significantly higher than in the core city have been identified by Authors as ‘entrepreneurship nests’. To identify the research problem, a two-pronged research in the fields of urban and architectural design as well as economics was adopted. The charter of suburban landscape was determined by site analysis and through a study of the architectural form. The results confirmed that more than 80% of the parcels, which encompass economic activity, also exhibit a residential function. Our study confirms that urban sprawl, with its characteristic housing patterns, stimulates business activity in the suburbs. According to our results, this phenomenon is not only determined by financial factors, but also results from social and spatial reasons.

## 1. Introduction

Polish suburban landscape has changed radically during the last decade and transformed into a form of extensive suburbanization. The pace and the scope of these changes was influenced by the political and the socio-economic transformations in 1989. Poland moved from a system of central planning towards neoliberalism. This change had major impact on the way in which the spatial planning policy was managed and shaped [1]. Land sale has been released onto the free market, while the local authorities in suburban municipalities became more flexible about developing new areas [2]. The suburbanization process itself can be considered a natural phenomenon associated with development of modern urban structures [3]. The development phases proposed by Van den Berg Leo in Klaassen [3] are based on the direction and the pace of the population’s migration between the core of a city and its outer areas. The tendency to seek a nearby residential place rather than residing in a central city is the key element



differentiating this process. In Polish landscape, the suburbanization process has adopted an individual character. It can be compared to the phenomenon of *urban sprawl*, which has been widely described in the literature on the subject [4]. However, as shown in the Authors' previous studies, the Polish dimension of suburbanization has a unique, individual character that is based on diffused and intensive entrepreneurship [5, 6]. The localities in which the values of the location indicators were the highest have been identified by the Authors as 'entrepreneurship nests' [7]. These localities are characterized by a higher location quotient (LQ) of SME-sector companies, in comparison to the core city itself.

Entrepreneurship in highly-developed countries is based on small and medium-sized enterprises (SMEs). They play an important role in the economy, which has been emphasized by the EU policy supporting entrepreneurship and by other government agencies, such as the Polish Agency for Enterprise Development [8]. SMEs are the source of income for the state and for municipal budgets, they constitute over  $\frac{3}{4}$  of the gross domestic product and provide new job positions. SMEs are viewed as the driving force for business, growth and competitiveness. Therefore, in current global economy, the spatial dimension of SMEs has been recognized by the Organization for Economic Cooperation and Development (OECD) as an important element of the region's economic development [9].

In the literature on the subject there are many papers discussing both phenomena i.e. the development of suburbanization in Poland as well as the development of the SME sector. However, there have not been any attempts to correlate these two phenomena. In the previous phases of the grant work, the authors investigated the determinants of SME allocation in suburban areas [10]. In the article, the authors want to present the results of the studies on the spatial dimension of entrepreneurship localization (spatial planning and architecture) in Polish suburbs.

In order to show the nature of the Polish suburban landscape, the study was divided into two parts: a spatial part and an economic one, which interpenetrated one another and shaped the path of the successive steps in the research. The purpose of the studies on spatial development was to show the impact of SMEs' localization on the suburban structure as well as on its architecture. Such approach was intended to present the Polish character of urban sprawl, being a part of the perception of these landscapes in these areas. The economic studies carried out via representative questionnaires were designed to underpin the process of selecting the objects within entrepreneurship nests to be examined and to show their nature, relatively to other areas.

The article has been organized in a way to show the two parts of the study. Firstly, the background of the Polish suburbanization has been outlined through literature research and the main SME enterprise characteristics related to the issue of spatial localization have been presented. Next, using the example of Chwaszczyno – an 'entrepreneurship nest', spatial analyses of the objects' structure and architecture have been presented. In order to confirm the spatial analyses, statistical studies that are based on the tests carried out on a sample of 251 SMEs located in the suburban area of the Metropolitan Area Gdansk–Gdynia–Sopot as well as the results of the Pearson's linear correlation coefficient, which verify the thesis about the unique character of Polish suburbs, have been presented.

## **2. Polish suburbanization– the background of the development process**

The suburbanization process is a permanent historical process of the development of Polish cities. The intensity and the scale as well as the causative factors of urban sprawl of the city structures beyond the administrative boundaries have changed throughout the ages. Medieval cities functioned on the symbiosis of the main city (archaeology: *gord/burgh/burh*) with its suburbium (archaeology: *borough / currently: suburban area*). At the turn of the 18<sup>th</sup> and the 19<sup>th</sup> centuries, during the period of the industrial revolution, trends in urbanism emerged, i.e. Sir E. Hovard's Garden City, which were meant as a proposal of alternative housing outside the central city's boundaries, offering higher standards for the

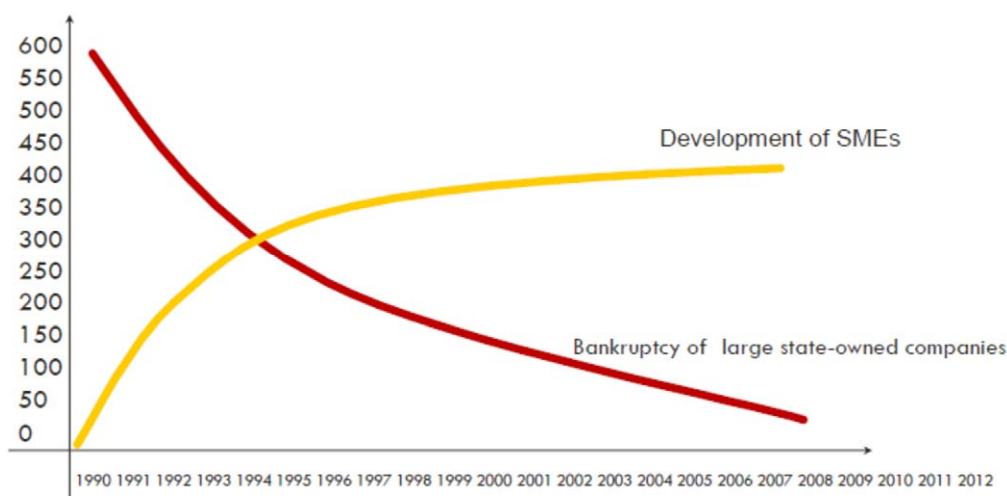
growing middle class [11]. Manifestation of these trends' impact on the shaping of modern cities can be noticed e.g. in the Gdansk Wrzeszcz district.

After the Second World War, the housing economy in the Polish communist system was a significant problem for city development. There was a tremendous housing demand, while the settlement network was controlled centrally [12]. Various attempts were made to solve this situation, through consolidation of the existing infrastructure and rebuilding parts of city districts. The largest increase in residential housing construction occurred in the 1970's, when prefabricated residential estates, the so-called concrete-plate blocks, were introduced [13]. Commonly, as in the case of Gdansk Morena or Chelmno, these districts were localized remotely from the central parts of the cities, yet, were connected to them via transportation infrastructure. Often, these estates were composed of multifamily blocks constructed using concrete plates, characterized by high density of concentration and monotonous architecture, with small apartment sizes [14]. During the period of the political transformation of the 1990's, it was the difficult housing situation of the Poles, which became an important impulse for seeking alternative forms of housing. The out-of-town areas, which, as a result of the transformation process, were introduced onto free real estate trade, became an attractive housing investment particularly sought by the growing middle class. It is estimated that during the years 1990-2000, that is before the period of the highest construction boom, migration from the cities to rural areas increased from 15.8% to 26.2%, thus exceeded migration from the countryside to the cities [15]. The greatest wave of the Polish suburbanization phenomenon could be observed during the years 2006-2013 [16].

In Polish literature, the concept of 'suburbanization' appeared after the year 2000. At that time, Lorens defined this problem as "suburbanization – spillage of the city spatial structure, uncontrolled development of suburbs and of suburban centres, 'washing out' of the city centre programme away from the traditional centres of city life, as well as deep transformations in the field of the social and economic structure of the cities" [own translation] [17]. Gzell elaborates on the phenomenon by describing the spatial form as urban sprawl [18]. Additionally, Kurek, Galka and Wojtowicz (2014) have elaborated on the concept in detail by referring to the decentralization process in urban areas which involves movement of the people and of business entities from the central cities to suburban zones [19]. However, based on the Authors' studies, it is clear, that this definition should be verified in the context of the movement of business entities. The Polish dimension of suburbanization has a unique, individual character that is based on the dispersed and intensive SME-sector entrepreneurship [5, 6].

### **3. Development of the SME sector in Poland and its spatial dimension**

The significance of the SME sector in the formation of modern economy began to be appreciated in highly-developed countries as early as the mid-20<sup>th</sup> century. By the late 1960's, economic development in most of the highly-developed countries was based on the activity of large enterprises. The changes took place in the early 1970's, as a result of the technological progress (miniaturization and specialization), the increase in global competitiveness, the transformations related to the lack of certain raw materials, the increase in the demands of the consumers who started to look for non-standard goods and services as well as the inflation jump. In Eastern European countries, development of small entrepreneurship took place twenty years later, in the wake of the systemic and economic transformations. Reduction of jobs in industrial enterprises (by 56% during the years 1986-1992 in the industry sector) and often a total decline of enterprises was the immediate consequence of economy liberalization and of enterprise restructuring [15]. Parallely to the decline of industry, an increase in the number of the firms from the micro, small and medium-sized enterprise sector could be observed. Figure 1 shows the curves of the collapse of state industry and an increase in the number of SMEs in Poland.



**Figure 1.** Development of the SME sector in Poland

In the post-war Gdansk agglomeration, Rumia-Reda-Wejherowo production and service lines developed, yet the Gdansk-Tczew railway line did not trigger the locality's economic activity. The above mechanism functioned successfully (despite the fiscal limitations of the socialist economy) until the transformational breakthrough in 1990. Since then, two barriers have been broken: the industrialization barrier and the land prices (mainly the lands used agriculturally). The post-industrial period was characterized by the collapse of large manufacturing plants and by a release of huge post-industrial terrains. The changes in transport technology (containerization, logistics) have also excluded large railway terrains. Localization assets were formed, which have been very slowly supplemented with economic activity.

The experience of highly-developed countries indicates that it is the small firms which determine the economic strength. Currently, Polish economy also is functioning, in large part, on the basis of these enterprises' activity. In the structure of the share in the GDP, the SME sector generates every second 1 PLN (48.5%), including the smallest firms generating nearly every third 1 PLN (29.7%), the share of medium entities is three times less (11.0%) than the share of microfirms, while the share of small companies – almost four times smaller (7.8%). The largest employer in Poland are microenterprises run by natural persons and large companies created by legal persons. Polish SMEs mainly operate in the service and the trade sectors (76.6%), less often in construction (13.0%) or in industrial manufacturing (10.3%). Compared to the EU average, the SME sector in Poland is mostly dominated by microenterprises, while the share of small businesses is half the EU average. However, the structure of Polish enterprises is gradually approaching that of the EU. Since 2008, a gradual decline in the share of microfirms and an increase in the number of the companies classified in other size categories has been taking place. Majority, i.e. 90.4%, of all SME-sector entrepreneurs are natural persons conducting business activity. Legal persons and non-legal entities constitute 9.6% of all small and medium entrepreneurs.

It has been generally emphasized that SME-sector enterprises have significant impact primarily on such important economic areas as economic growth or employment. They also are a major factor in the development of innovation and in the social and local integration within the EU. Significance of the SME sector for socio-economic development can be assessed using both economic and non-economic criteria. In the context of the country's social development, development of the SME sector should be



indicated as a factor creating the **middle class of the society**, which is usually understood as a group of people conducting business activity.

Among the features influencing the spatial aspects of SME-sector enterprises, their local nature should be highlighted. S. Skowronski [20] underlines this sector's strong connection to the place of its activity, as the source of supply rather than a sales market, by pointing to the local nature of small and medium enterprises (rarely the medium ones). High flexibility of activity and the ability to respond quickly to the changes in the environment allow effective competing on the market even with the strongest (in terms of the resources and the position) entities. SMEs also create the so-called regional decentralization effect. The local character and the flexibility in conducting business result in the lack of the need to localize enterprises in industrial zones. Often, the decision to start a business venture is based on locating it in the entrepreneur's own home.

The link between both phenomena –suburbanization and SMEs' development – which are based on the middle class of the society, has let the authors of the article to a reflection regarding the impact of the correlation between the two phenomena on the image of the Polish suburbs and on suburban architecture. In terms of this economic sector's expansion, the price or availability of land for investment seem to be of key importance. Locating a venture based on transport accessibility is secondary. The requirements are much reduced in terms of road quality. Of course, localizations with access to the road nodes are preferred. It can be expected, that future spatial clusters of SMEs will be located at those nodes.

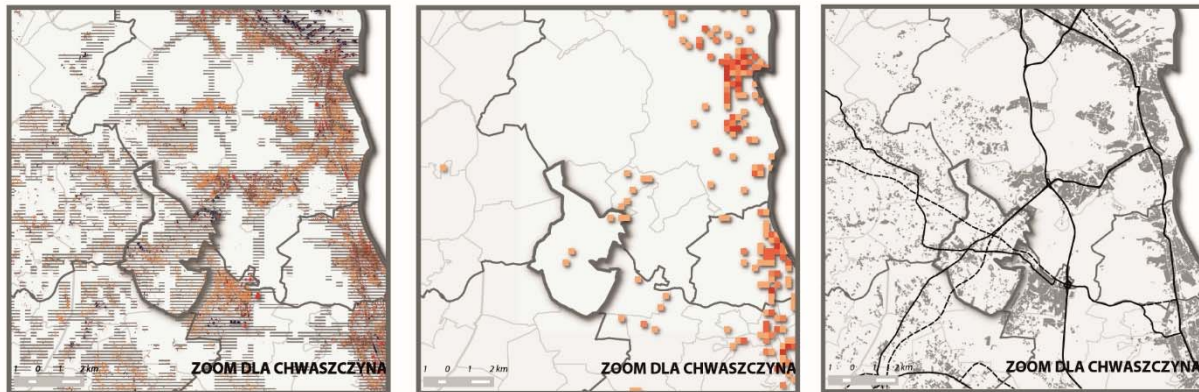
#### **4. Methodology and the results – the spatial structure 'entrepreneurship nest', on the example of Chwaszczyno**

The previous studies of the authors have proved that the strong link to the accumulation of SME-sector enterprises is a characteristic feature of Polish suburbanization [5, 6, 7]. The studies concerned the spatial and the economic layers. The purpose of the research, in the spatial aspect, was to single out those suburban municipalities within the Metropolitans Area Gdansk-Gdynia-Sopot, which exhibit the highest suburbanization index; in the economic aspect, to select the municipalities / towns with the highest concentration of SMEs. The results of the studies allowed determination of the location quotient which measures the degree of concentration of SME units in a given municipality, in relation to the population number. It allowed selection of two localities (Chwaszczyno, Straszyn) with the highest concentration of SME-sector enterprises. The authors decided to examine the village of Chwaszczyno, as to present the characteristic features influencing development of the SME sector.

Chwaszczyno is a village located on the border of Gdansk and Gdynia. Roads from both cities, running in the direction of Kaszuby – a holiday region for many residents of both cities - cross the village. Both roads intersect in Chwaszczyno, which makes it a unique place. The village dates back to the 12<sup>th</sup> century, when it was founded on an oval plan. The characteristic layout with an open common green space, along with the roads surrounding it, had been preserved until the end of the 19<sup>th</sup> century. Later on, housing buildings and a school were built on its corners. The post-war years and the communist system caused stagnation and continuation of the agricultural functions. In the 1980's of the 20<sup>th</sup> century, authorities allowed construction and localization of several craft establishments and hen houses. However, the locality underwent the greatest development after 1989, when the political transformation took place. The farmers regained land ownership, while the local governments begun to practice individual, often liberal, spatial development policies. The free real-estate market allowed the sale of land, while the strategic location of Chwaszczyno caused many private investors to seek a new place of residence in this area.

#### 4.1. Analyses – the urban layer

The aim of the urbanist analysis of Chwaszczyno was to search for the favourable elements influencing the location decisions for new buildings. First, the urban structure was examined by analysing the features of spatial development. Additionally, the architectural structure of selected buildings was also examined. Figure 2 shows selected aspects of the urbanist analysis; the first picture refers to the function of buildings, the second shows elements of the metropolitan service offer, while the third concerns the transportation network.



**Figure 2.** Analysis of the building function, the metropolitan function, and the transportation network of Chwaszczyno

Below is a tabular summary of the urbanist analyses for Chwaszczyno. The applied method of urbanist analysis enabled identification of the main developmental factors. The examined locality was characterized by an extensive transportation infrastructure. Interestingly, the infrastructure covered local and regional connections. National connectivity, however, is weak. What is more, analysis of the function of the building tissue showed a significant share of the function in single-family buildings. Social infrastructure was limited to basic forms, such as school, kindergarten and the health-care centre. The lack of extensive service forms gave a rise to development of the SME sector. This process filled in the missing gap in this infrastructure.

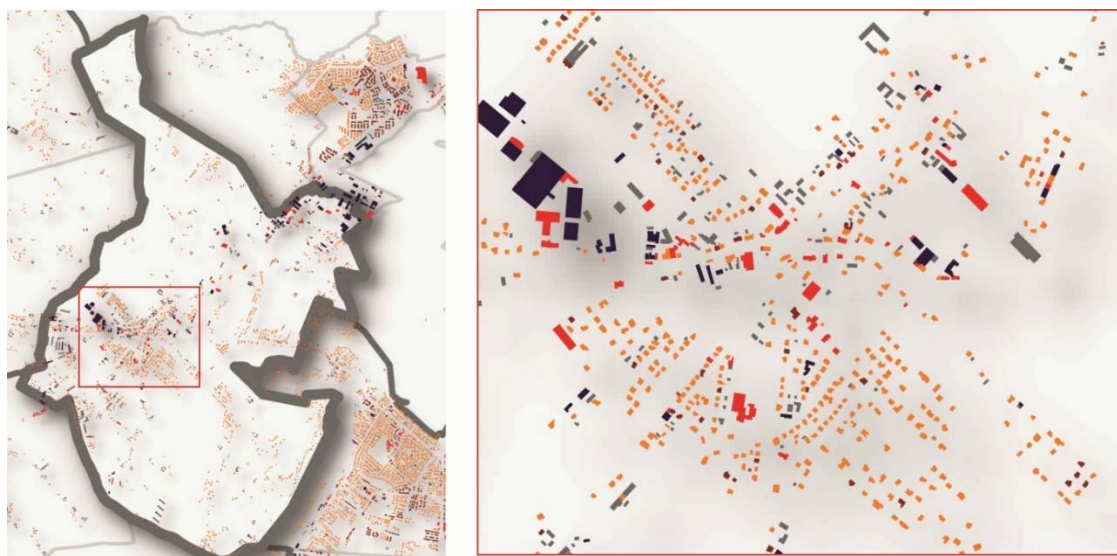
Subsequently, the morphology of Chwaszczyno's form was analysed – which is illustrated on figure 3. A strong link between the plot ownership system and the localization of new buildings was observed. There was no strongly highlighted centre, while the buildings were localized quite randomly. Larger cubature of production-storage buildings was located near old warehouses and then houses. New objects were localized more accidentally. Single-family buildings, in the form of detached houses, dominated. Multi-family housing development was sporadic, however, its cubature referred that of single-family houses. The structure of Chwaszczyno's buildings depicted a typical urban sprawl system, characteristic for the Polish suburban landscape.

#### 4.2. Analyses – the architectonic layer

Individual architectural objects were analysed subsequently. The purpose of this analysis was to determine the form of development of individual plots, in order to search for an answer to the question about the share of the housing function in the manner of land development. The authors wanted to investigate whether there are any principles regarding the SMEs' location on particular plots. The following urbanist parameters were used for the analysis: the plot area, the percentage of the building structures / the area of the building structures, the building height measured by the number of above-ground storeys, the size of biologically active area.

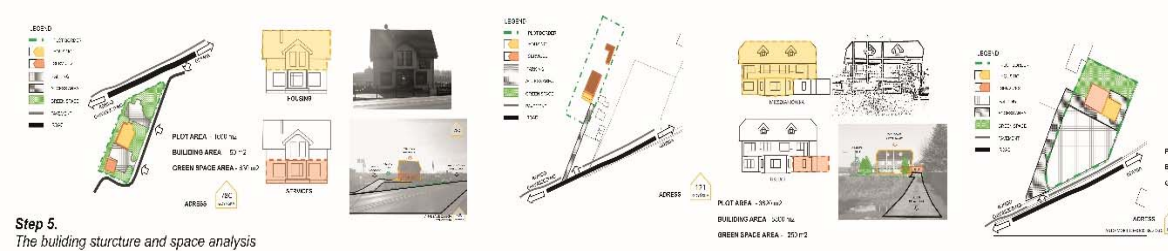
**Table 1.** Analysis of the functional structure – recapitulation

|  |   | Occurrence of individual elements                         | Chwaszczyno |
|--|---|---|-------------|
| <b>Wheeled infrastructure</b>  | <b>transport</b>                                | National road – accelerated traffic                       | -           |
|  |   | National road   | √           |
|  |   | Provincial road   | √           |
|  |   | Regional road   | √           |
|  |   | Local road  | √           |
|  |   | Regional communication node                               | √           |
|  |   | other   | -           |
| <b>Public infrastructure</b>   | <b>transportation</b>                           | Public transportation node                                | -           |
|  |   | Commute time to the city<br>– using public transportation | 20 mins.    |
|  |   | other   | -           |
| <b>Key planned elements of the transport system of the Gdansk metropolis</b> | Supra-local road system                         | √   |             |
|  | Public transport                                | -   |             |
|  | other infrastructure                            | -   |             |
| <b>Dominating spatial functions</b>  | Housing functions – single family               | √   |             |
|  | Housing functions – multi-family                | √   |             |
|  | Local services                                  | √   |             |
|  | Large-surface commerce                          | -   |             |
|  | Production and craft enterprises                | √   |             |
|  | other   | √   |             |
| <b>Social infrastructure</b>   | Kindergartens                                   | √   |             |
|  | Primary schools                                 | √   |             |
|  | Junior high schools                             | √   |             |
|  | High schools                                    | -   |             |
|  | Cultural objects, including tourist attractions | √   |             |
|  | Local sports facilities                         | -   |             |
|  | Health-care centres                             | -   |             |
|  | other   | -   |             |
|  | Forms of urban tissue                           | Compact structure   | -           |
|  | Loose structure                                 | √   |             |

**Figure 3.** Analysis of the building function, the metropolitan function and the transportation network in Chwaszczyno



This analysis was aimed at identifying the types of urban tissue as well as at assigning the characteristic features determining the building structure parameters. The results show that majority of the plots have a large area i.e. ranging from 1200 m<sup>2</sup> to 3500 m<sup>2</sup>, in some places even 9000 m<sup>2</sup>. Such size of plot area is characteristic for extensive use of the space in suburbs. The second feature characteristic for this type of layouts is a relatively low percentage of the building structures, most of which do not exceed 20% of the plot area. In consequence, the building structure is extensive in nature and its intensity ranges from 0.1 to 0.5. The building tissue is characteristic for the Polish suburban landscape and it largely exhibits the features of a lack of spatial order quality. Another interesting conclusion was an indication that a part of the housing buildings was adapted for the purpose of conducting business activity. This feature is strongly linked to the SME sector, which is flexible and fast-reacting to the changes or, in this case, to the needs.



**Figure 4.** Plots analysis - examples

**Table 2.** Analysis of land development – recapitulation

| Address                    | plot area [m <sup>2</sup> ] | % of the building structure | number of buildings | number of storeys | building structure intensity | % green spaces |
|----------------------------|-----------------------------|-----------------------------|---------------------|-------------------|------------------------------|----------------|
| Waska 21                   | 4 300                       | 13%                         | 2                   | 1; 1              | 0.136                        | 58%            |
| Polna 9                    | 9130                        | 19%                         | 3                   | 3; 2; 2           | 0.4                          | 54%            |
| Ogrodowa 3                 | 1130                        | 18%                         | 1                   | 1                 | 0.177                        | 65%            |
| Oliwska 92                 | 356                         | 24%                         | 1                   | 1                 | 0.24                         | 52%            |
| Gdynska 78                 | 4200                        | 14%                         | 3                   | 2; 1              | 0.165                        | 68%            |
| Gdynska 78C                | 1600                        | 9%                          | 1                   | 2                 | 0.19                         | 39%            |
| Gdynska 94                 | 1630                        | 9%                          | 1                   | 1                 | 0.09                         | 67%            |
| Gdynska 59                 | 3560                        | 6%                          | 1                   | 1                 | 0.06                         | 9%             |
| Waska 23                   | 1640                        | 23%                         | 1                   | 3                 | 0.7                          | 60%            |
| Jarzebinowa 5              | 865                         | 26%                         | 1                   | 1                 | 0.26                         | 68%            |
| Swierkowa 72               | 1200                        | 14%                         | 1                   | 2                 | 0.23                         | 58%            |
| Henryka Sienkiewicza 2     | 830                         | 18%                         | 1                   | 3                 | 0.53                         | 52%            |
| Cypriana Kamila Norwida 14 | 790                         | 18%                         | 1                   | 2                 | 0.33                         | 57%            |
| Ks. Dr. Bernarda Stychy 18 | 630                         | 27%                         | 2                   | 2; 1              | 0.43                         | 16%            |
| Majkowskiego 2             | 815                         | 29%                         | 2                   | 2;2               | 0.49                         | 22%            |
| Gdynska 133                | 6270                        | 4,00%                       | 1                   | 2                 | 0.09                         | 30%            |
| Gdynska 121                | 3820                        | 22%                         | 3                   | 2; 2; 1           | 0.37                         | 33%            |
| Kaszubska Droga 5          | 1320                        | 10%                         | 2                   | 2; 1              | 0.18                         | 64%            |

Table 2 shows a summary of the results of the analysis of land development forms. The analysis results in a large variation of the areas of the plots on which business activity is conducted, ranging from

6270 m<sup>2</sup> to 356 m<sup>2</sup>. Large-area plots are, however, less intensively developed and the percentage of building structures is averagely 12%. The percentage of building structures increases to over 20% for medium and smaller plots. In both cases, extensive development and a large share of biologically active areas are characteristic for the suburban building structure in this category. Only one property is distinguished, which has both a low building structure percentage and a low percentage of biologically active area. The above-presented characteristic of plot development illustrates the forms of business activity conducted in the suburbs. Their detailed characteristic is described in subchapter 4.3.

Conclusions from the analyses did not allow identification of the characteristic spatial elements influencing such intensive concentration of SME-sector entrepreneurship. To answer the question about the causes for the choice of enterprise localization precisely in this locality, the CATI survey method was applied.

#### 4.3. Analyses – the economic layer

To confirm the spatial analyses, statistical tests were carried out on a sample of 251 SMEs located in the suburban area of the Metropolitan Area Gdansk–Gdynia–Sopot which, to a great extent, has been subject to the process of suburbanization and is characterized by the greatest concentration level of SMEs. The analyses were based on direct interviews with the entrepreneurs. The questions in the survey referred to: the relations of living / working, the location criteria, the issues of spatial planning assessment.

The sample was prepared on the basis of a database of 3 500 companies from selected suburban areas of the MAGGS. The REGON number (a unique register number granted to business entities by the Register of National Economy) was used as the sampling frame. Selection of the sample was purposive–random in nature. The reserve of enterprises, in case of an additional draw, constituted 10% of the sample. Segmentation of the enterprises in the sample was subject to stratification by municipalities, towns and by company sizes. The entities investigated were characterised as follows:

- entities with 2–9 employees (microenterprises, excluding self-employed persons), in the sample they constituted 83.3% of all entities;
- entities with 10–49 employees (small enterprises), in the sample they constituted 14.7% of all entities;
- entities with 50–249 employees (medium enterprises), in the sample they constituted 2% of all entities.

The largest groups in the sample were retail enterprises – 26.4% of all the surveyed entities, industrial enterprises – 18.3% of the researched entities, construction enterprises – 11.2% of the investigated entities. Moreover, the authors have measured the strength of the relationships between the company characteristics and the most important location determinants. The following relationships involving company characteristics were investigated: the size of an enterprise (micro, small, medium); the age of an enterprise (1–5 y/o, 6–15 y/o, over 15 y/o); the type of business activity (manufacturing, retail, services); the nature of an enterprise (family business or non-family business); as well as the variables indicating whether the place of residence and the proximity to the place of residence constituted a determinant in the location decision.

Using CATI surveys, the Authors also wanted to investigate the relationships between the place of residence and business activity. A great majority of the respondents – 80% - answered that the housing structure accompanies the building where business activity is conducted. Additionally, more than half of the surveyed – 55% - answered that they conduct business activity in the housing buildings.

Based on the analysis of the architectonic forms of spatial development presented in subchapter 4.2, it can be concluded that the areas of the plots where business activity is conducted in the housing buildings were significantly smaller. Their area was averagely 800 m<sup>2</sup>, while the average size of the

plots in Chwaszczyno is 1600 m<sup>2</sup>. Table 3 presents the relationship between the plot size and the location of the housing buildings on the plot.

**Table 3.** Analysis of the relationship between the plot size and the number of housing buildings

| Address                    | Plot area [m2] | Number of buildings | Housing buildings | Business activity in the housing building |
|----------------------------|----------------|---------------------|-------------------|---|
| Waska 21                   | 4 300          | 2                   | 0                 | 0   |
| Polna 9                    | 9130           | 3                   | 1                 | 0   |
| Ogrodowa 3                 | 1130           | 1                   | 1                 | 1   |
| Oliwska 92                 | 356            | 1                   | 1                 | 1   |
| Gdynska 78                 | 4200           | 3                   | 1                 | 0   |
| Gdynska 78C                | 1600           | 1                   | 1                 | 1   |
| Gdynska 94                 | 1630           | 1                   | 0                 | 0   |
| Gdynska 59                 | 3560           | 1                   | 0                 | 0   |
| Waska 23                   | 1640           | 1                   | 1                 | 0   |
| Jarzebinowa 5              | 865            | 1                   | 1                 | 1   |
| Swierkowa 72               | 1200           | 1                   | 1                 | 1   |
| Henryka Sienkiewicza 2     | 830            | 1                   | 1                 | 1   |
| Cypriana Kamila Norwida 14 | 790            | 1                   | 1                 | 1   |
| Ks. Dr. Bernarda Stychy 18 | 630            | 2                   | 1                 | 0   |
| Majkowskiego 2             | 815            | 2                   | 1                 | 1   |
| Gdynska 133                | 6270           | 1                   | 0                 | 0   |
| Gdynska 121                | 3820           | 3                   | 1                 | 0   |
| Kaszubska Droga 5          | 1320           | 2                   | 1                 | 1   |

The analyses confirmed the thesis about a correlation between the housing building structure and the intensity of SME-sector business activity. It can be stated that housing is the main stimulant of development. The housing tissue is heavily varied and inconsistent in terms of spatial development.

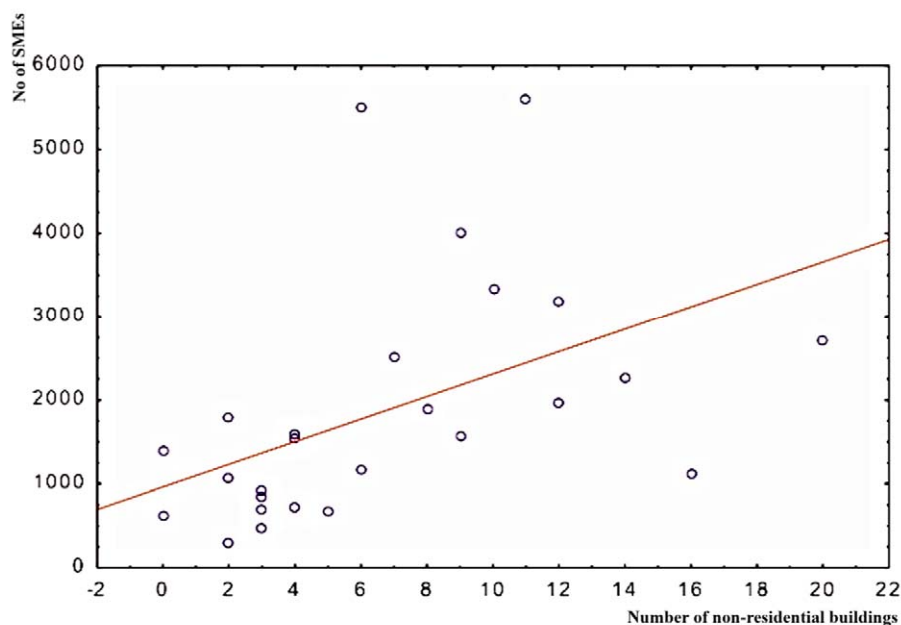
In order to confirm the thesis about the correlation between the number of housing buildings and the number of SMEs, additional analysis was carried out using the Pearson's linear correlation coefficient  $r(xy)$ . The study covered the year 2012 as well as the number of housing buildings and the number of SMEs.

**Table 4.** The number of housing buildings and the number of SMEs \*

| 2012              | Average | Median | Total | Standard deviation | Q1  | Q3   | V(s)  | V(Q)  |
|-------------------|---------|--------|-------|--------------------|-----|------|-------|-------|
| Housing buildings | 6.59    | 5      | 178   | 5.06               | 3   | 10   | 76.8% | 70.0% |
| SMEs              | 1852.52 | 1551   | 50018 | 1429.97            | 717 | 2523 | 77.2% | 58.2% |

\*/ SME Municipalities: excluding the Tricity (Gdansk, Sopot, Gdynia), Tczew (1) and Tczew (2) - total 27

The coefficient determining the level of the linear relationship between random variables is equal to 0.48, which can be interpreted as the average level of the correlation.



**Figure 5.** Pearson's linear correlation coefficient – the number of the housing buildings and the number of SMEs

The above studies allow partial confirmation of the thesis that suburban SMEs are more often located in the housing building structures.

## 5. Conclusions

The studies on the structure of Polish suburbs allowed formation of the conclusions on two levels: i.e. 1 - regarding the researched area and 2 - regarding the methods of carrying out scientific research.

1. Development of the Polish suburbanization entails multiplication of SME-sector enterprises. There is a link between two elementary functions: housing and work. As such, it is a model, in which the owner lives in the suburban zone, while the workers commute to work from different directions, also from the centre. This entire microstructure is 'beaded' on the main access road from the Gdansk agglomeration. In such way, residential-production bands emerge in the directions of: Kolbudy, Zukowo, Kartuzy, Chwaszczyno. Entrepreneurship nests emerge based on transport availability. The requirements here are much reduced in terms of road quality. Of course, localizations with access to the road nodes are preferred. It can be expected that it will be those nodes where future SME clusters will be localized.

The landscape of Polish suburbs can be described as a form of urban sprawl; however, it has a unique feature of large entrepreneurship intensification. It ought to be noticed that the pattern of Housing and Entrepreneurship is quite random and chaotic, without clear spatial order. Entrepreneurship nests are characterized by higher intensification of the SME sector; however, it does not affect the spatial appearance of the building structure, which has been confirmed by the studies based on the Pearson's linear correlation. The mixed pattern of Housing and Entrepreneurship is not very visible in the architecture of the Polish suburbs. Suburban areas are dominated by housing buildings, while service buildings are scattered and sometimes constitute a separate plot or are hidden on a housing plot. Only accumulation of advertisements and spatial signs suggesting the functions of the buildings is visible in the landscape.

The main problem of entrepreneurship nests is the lack of spatial cohesion in the areas filled with community services and public spaces. The lack of basic elements of urban structure significantly lowers the quality of residing, which can cause stagnation in the development of the SME sector or even degradation of the area in the future.

2. In the second layer of the conclusions, there is the need for multidisciplinary studies on the dynamically changing Polish suburbs. Urbanist analyses and statistical tests indicated existence of entrepreneurship. It is difficult, however, to draw solid conclusions which would describe in detail the stimulants of the SME sector's development in the suburbs. The survey study conducted using the CATI method allowed answering the fundamental question about the cause of localizing enterprises in the suburbs. Additionally, statistical analyses allowed interpretation and description of the phenomena, depending on individual elements. The complexity and multidimensionality of the research overlapping various disciplines allowed a thorough analysis of the problem and formation of innovative conclusions.

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