

DISRUPTIVE INNOVATIONS – THE IMPACT ON STRUCTURE OF POLISH CITIES (THE CASE OF TRADING NETWORKS EXPANSION)

Konrad LEWACKI*

* MSc; Faculty of Architecture, Wrocław University of Technology, B. Prusa 53/55, 50-317 Wrocław, Poland
E-mail address: konrad.lewacki@pwr.wroc.pl

Received: 15.01.2014; Revised: 31.01.2014; Accepted: 8.09.2014

Abstract

Foreign capital investments in Poland have an increasing impact on transformation of the functional and spatial structure of cities and regions. It is particularly apparent in the change of retail profile and distribution. Innovations used by international corporations lead to crowding-out Polish companies of this sector. One of the solutions to counteract the trend is to do suitable territorial marketing of the city and apply the disruptive innovation theory in the process of creating spatial offers, which should be reflected in proper spatial planning.

Streszczenie

Inwestycje kapitału zagranicznego na polskim rynku zaczynają mieć coraz większy wpływ na transformację struktury funkcjonalno-przestrzennej miast oraz regionów. Sytuacja ta szczególnie widoczna jest w zmianie profilu i rozmieszczeniu handlu detalicznego. Innowacje stosowane przez międzynarodowe korporacje prowadzą do wypierania z tego sektora firm polskich. Możliwością przeciwdziałania temu trendowi jest tworzenie odpowiedniego marketingu terytorialnego miast, zastosowania teorii innowacji przełomowych w procesie tworzenia ofert przestrzennych, które powinny znaleźć odzwierciedlenie w odpowiednim planowaniu przestrzennym.

Keywords: **Disruptive Innovations; Spatial Offers; Urban Product; Place Marketing; Trading Networks.**

1. INTRODUCTION

The entry of Poland into the European Union is the reason why it is necessary to view urban planning in a wider context. Opening the borders for the flow of both capital and people brings not only new possibilities but also the danger in the form of a very strong competition from the other European agglomerations. Keeping in mind that Polish cities are still lagging far behind western European cities in terms of development, the chances to increase their competitiveness may be searched for in the creation of emerging market-oriented offers. On the other hand, however, the diffusion of different innovations from the Western Europe can be observed, which significantly affects the functioning of Polish cities.

2. DISRUPTIVE INNOVATIONS (INNOVATIONS THAT BREAK APART THE CURRENT STATUS OF DEVELOPMENT)

Innovations may be divided into several groups, i.e.: innovations for production technologies, related to the principles and structure of an organization, related to consumables and socio-political innovations [1]. Further, it is possible to differentiate two types of innovations, namely continuous innovations and innovations that break apart the current status of development. The former ones refer to the upgrading of a specific product (spatial offer can be also considered a product), which is already well-known in the market and has a specific group of recipients. The process leads to a greater advancement and thus to a raise in the product price, which finally causes the product to exceed the requirements established by the customer.

Disruptive innovations are often simpler and less advanced solutions which offer a different view to the matter of value. Their sales markets are just shaping up and constitute a niche, hence, they are not attractive to large manufacturers. Along with the improvement of products of this type, their quality is gradually enhanced and they meet the requirements of an increasingly wide group of customers. Thanks to the new approach to solving the problem, they are at the same time cheaper and successively crowd out the older solutions of the market. What is characteristic is the fact that the pioneers implementing disruptive innovations usually become leaders in the new market [2].

The emergence of discount stores in the 50s in the USA is an example of the innovation breaking apart the previous status of development. That new way of sales completely changed the development of the retail sector. In contrast to the top department stores in those days that offered high quality trading space and services bringing a spirit of luxury and enabling the determination of higher prices of products, the discount stores displayed a different attitude towards the matter of value. The new store chains were dedicated to a group of customers composed mainly of wives of factory workers. That was the reason why the discount stores did not have to be centrally located and did not have sophisticated architecture or qualified personnel. It was compensated for by branded goods at prices much lower than in the department stores. It was actually the well-known brands associated with high quality that ensured success of new stores. As a result of great interest, the discount stores despite imposing lower margins obtained similar profits as the department stores thanks to the greater quantity of goods sold, whereas their structure of costs was at the same time much lower. The innovative approach made it possible for the share in retail sales of the discount stores to increase from 10% in 1960 up to 40% in 1966 [2].

3. URBAN PRODUCT (SPATIAL OFFER)

The concept of urban product has been introduced by the recently developing field of knowledge, i.e. place marketing. One of its basic assumptions is the stimulation of behaviour patterns of inhabitants and investors, which should lead to the sale of city assets (tangible and intangible) in a way ensuring the development of the whole spatial unit. In theory, offers are therefore prepared by territorial self-governments (spatial planning) for specific groups of clients. They

include both macroeconomic factors (demography, economics) taken into account in the first stages of decision making and spatial factors considered during the location of building units within the specific urban system (population density, parameters of the building lot, access to transport networks and technical infrastructure, provisions of the Local Spatial Management Plan). A territorial self-government represents the interests of inhabitants, who constitute a direct partner of the investor. In the process of determining the location also other parties may be differentiated: real estate owners, social groups whose functioning will be affected by the new investment. Each of them should gain benefits from the new initiative. Generally, it is assumed that foreign investments have a positive influence on the development of territorial self-government units, attest to their attractiveness, often bring an increase in the number of new workplaces and are followed by spatial development [3].

In case of spatial offers connected with trading services, the above “perfect” pattern does not hold true in practice. Locating new building units does not take into account the assumptions of spatial policy of the territorial self-government unit. Investments are in fact directed to the real needs of inhabitants, yet, they do not consider their interests in the long run. It can be assumed that a dynamic increase in foreign capital investments in this sector will ultimately slow down the pace of development and worsen the standard of living of inhabitants as opposed to the assumptions of place marketing. This is due to several factors.

4. FACTORS OF GLOBAL NATURE AFFECTING THE CHANGES IN THE TRADE SECTOR

The system transformation in Poland coincides with the period of shaping the global economy. Thanks to the development of transportation and communication infrastructure as well as the deregulation of financial markets an international trade liberalization, there is an opportunity not only to act but also invest capital in every place and time. Since the nineties of the 20th century, the amount of direct foreign investments has significantly increased, also the sectoral transformation (growing importance of services) has been proceeding, international production networks have been established. Moreover, institutions like Rating Agencies evaluating the economy as a whole or share values have grown in importance [4]. This is reflected in the process of uniting European

countries which have gained certain autonomy in the globalized world at the cost of their sovereignty. The process began in the fifties and first aimed at economic connection to prevent further wars inside Europe. In the seventies, when Europe lagged behind technology development of the USA and Japan, it was again necessary to expand the European Economic Community because of their strengthened position in the globalized market. For fear of becoming an economic and technological colony of the USA and Japan, *the Single European Act* was enacted in 1987, whose aim was total unification. The globalization of financial markets forced the creation of a single currency to protect the countries against exchange rate fluctuations, stabilize the situation and increase the pace of economic integration. The next step was the unification of Germany in 1989, which helped it to gain importance in the European Community. A new geopolitical situation resulted in the enlargement of the Community to the countries of the Eastern Europe, which was one of the conditions for entry to the euro zone dictated by Germany. The objective was political and economic stabilization of those countries as a way to counteract the transfer of future problems to Germany. On the other hand, the countries wanted to finally set free from the influence of Russia. An increase in the number of EU members and huge disproportions in their development have formed an obstacle to common decision making. Therefore, the European Union is rather the area of free trade, low political integration and great significance of development strategy in particular fields (infrastructure, agriculture, environmental protection). At the same time, establishing autonomy in technology, research and development has failed, which is connected with the development of supra-national production networks, where the role of Europe is stabilized so that its countries have started to cooperate with the other developed countries [5].

Already before the entry into the European Union, Poland was deeply penetrated by German investors. After opening the borders, a great difference in the technology development resulted in the diffusion of innovative solutions (new technology, forms of organization, e.g. discount stores). As the amount of foreign capital investments grows, the solutions gradually crowd out these Polish companies of the domestic market which are not able to compete with international corporations. According to the theory of place marketing, when selecting the location of a new investment, macro-economic indicators are first of all

taken into account. The cost of workforce is quite essential, as it is in Poland much lower than in the western countries. Another equally important aspect concerns potential sales markets that define the needs of customers earning roughly four times less in our country than, for instance, in Germany. Therefore, cheap everyday products are most popular and the corresponding effect can be observed both in changes of the trade sector and also in the functional and spatial structure of cities.

5. CHANGES IN THE TRADE SECTOR IN POLAND AFTER 1989

The initial period of transformation of trading services was characterized by formation of marketplaces in free areas inside cities. Marketplaces did not require large financial outlays and yet provided a wide range of products. They were places of local integration, meetings and cultural exchange and they also contributed to the development of trading networks. Marketplaces were gradually evolving and some merchants with luxury goods opened their stands in department stores in the city centre. In the same period of time first generation shopping centers were built in the suburbs, where usually one of foreign network hypermarkets was dominant. As the time passed by, next generation centers were constructed still nearer the city centre. The difference consisted not only in their location and architecture but also in transformation of their functional program which included more and more clothes shops selling well-known brands and also ensured additional services. The percentage share of the hypermarket area was therefore decreasing. Thus, in the city centre the creation of shopping malls offering the functional program “the city within a city” was initiated [6]. A high concentration of such foreign investments in agglomerations led to crowding out marketplaces of cities, as they lost with high quality of trading spaces and a rich variety of cheap goods. Shopping malls themselves, called “shrines of consumption” by Zygmunt Bauman, are the expression of globalization [7]. Created typically by foreign investors, they are based on the unified architectural patterns and frequently do not fit the surrounding city tissue. Their functioning is focused on commercial purposes. Shopping malls are inward facing, i.e.: shop windows open to covered and air-conditioned walkways, whereas the elevations cut themselves off from the city structure. A shopping mall is a perfectly directed space in a way depriving the city of its public life. Its

influence on the functional structure of the city is enormous. Depending on their size, shopping malls affect the area of several to more than ten kilometres and hence are a huge competition for local entrepreneurship.

The interest in foreign investment in the trade sector is illustrated by rankings. According to CB Richard Elbis which monitors the number of international affiliates to be opened in the EMEA (Europe, the Middle East and Africa), in the years 2009-2011 Poland successively took 4, 2 and 10 position. The drop in 2011 was excused by the lack of high quality trading spaces [8] but it can be also the sign of market saturation. This is also indicated by a change in the attitude of “key foreign players” in the market. Since 2010 a growing interest in “corner markets” has been observed, which is reflected in a smaller space and more peripheral location of new shops. It is the answer to the demand of Polish customers, who are eager to do shopping in local shops. Up to 2010, the local market was still dominated by Polish chains. Most recently, however, an increasing consolidation has been noticed – the take-over of declining corner shops and smaller chains by larger ones, generally with foreign capital [9].

6. DEVELOPMENT OF DISCOUNT CHAINS IN POLAND

According to the theory of place marketing, shopping malls and trading centers win their customers by creating a new pattern of consumption and offering a wide variety of facilities, from parking possibilities through high quality space and professional services to brand products of international networks and supplementary functions such as cinemas and services like fitness or gastronomy. Along with the accelerating pace of life in cities, this gives the possibility to meet majority of needs of inhabitants in one place.

Discount chains, whose quick development has been observed since the end of the nineties, focus on meeting other needs originating from macro-economic indicators and which related to relatively low salaries of Poles. One of the examples is Biedronka which had 50 shops during its take-over by the Portuguese operator in 1997; in 2004 the number increased to 676 and in 2015 it is to reach 3 000 [10]. It is hard to talk here about high quality trading space or a great selection of goods of one type. Discount stores grow in popularity thanks to their sales technology that minimizes costs, good quality products at low prices and location near the place of living. To a large extent, their

success consists in the fact that they form chains covering still greater areas of the country. The number of shops and a great turnover of goods are the reason why the chains can negotiate low prices at manufacturers', not abandoning quality. At the same time, the chain size decreases specific costs of promotion and advertisement because shops and goods are unified.

The distribution of elements of the chains should be considered at two levels, i.e.: the level of a city and of a region. Taking Biedronka discount stores in Wrocław as an example, it is possible to differentiate three types of location directed to different groups of recipients. A typical place of discount stores are residential districts of high population density, where local inhabitants do daily shopping, therefore there is no need for big parking lots. They may be new stores or local shops with suitable access to the infrastructure that are taken over by chains. The second type of location is far from the city centre, where the investor builds a new shopping unit with a larger parking lot. Its scope of impact is bigger and focuses on car driving customers of neighbouring residential districts of low population density. The third type of location is near main transportation nodes such as the surroundings of the railway station and the bus station, Dominikański Square and areas around the market square such as Petersdorf Department Store (presently: Kameleon) – the icon of Wrocław modernism designed by Erich Mendelsohn. The stores do not have short-term parking spaces and their location in the existing historic urban tissues causes substantial logistic problems connected with procurement. They are directed to customers who live in the area with no shops of the chain and the central location makes it possible for them to do shopping on the way home from work. Because of low prices, the stores are also willingly visited by a great number of people who work nearby or who come to the market square for other reasons. It is likely to impinge on the local small shops, which so far have cherished exclusivity and therefore could offer goods at higher prices, for instance, to cover high rental costs. Also in case of the other locations, there is a similar phenomenon of weakening local entrepreneurship which has no chances to go down to the level of prices offered by the discount stores. With the present minimum wage of PLN 1500 (gross) in Poland, it is hard to count on local patriotism of residents who already live from paycheck-to-paycheck. This increasing inequality is additionally deepened by a higher increase in prices than in the countries of the Western Europe (in the years 2005-2010 it reached 123% in Poland and 112% in Germany [11]).

At the level of a region, the distribution of discount stores is influenced by logistics centers. In the paper on trading networks, Waldemar Wilk presents locations of stores belonging to the German Netto chain, which are situated within the radius of up to 200 km from the border of the chain operator's country. The distance of 200 km is an area of the impact of the logistics centre, which gives rise to a presumption that the stores may be serviced by distribution centers located in Germany. One of the latest logistics centers of Biedronka chain is situated in Skarbimierz near the A4 motorway, which increases its impact [12]. The European Union emphasizes the development of infrastructure, which theoretically should contribute to the development of Polish economy, in practice however, it seems that it is of great importance for the expansion of foreign chains and the take-over of the Polish market.

7. GROWTH OF FOREIGN TRADING NETWORKS AND ITS CONSEQUENCE FOR POLAND

Taking into consideration an increasing penetration by foreign trading networks and their continuous growth (frequently by the take-over of smaller networks – consolidation and fusion which are characteristic processes of market globalization), it seems that the sector of retail trade based on local enterprises has diminishing chances for competition. This has the effect not only on transformation of the functional and spatial structure of cities but also on the functioning of whole regions. Under the assumption that local shops are only end elements of the chain composed of local wholesalers and small volume manufacturers, the lack of their profitability and closure may result in the decline of further links of this chain of connections, weakening the functioning of the whole region. This is mainly caused by procurement at bigger manufacturers' of trading networks. Thanks to their nationwide reach, they ensure almost monopoly for their suppliers, in a decisive way limiting the connection of the trade in cities with its region.

The situation is illustrated by the data of the Central Statistical Office included in the report on the internal market. What can be observed in the first place is an increasing importance of services for the GDP, but at the same time also a drop in importance of retail trade in this sector (from 68% in 2009 down to 30% in 2010). This is affected by a drop in margins on grocery product sales, despite a general rising tendency, which may indicate the increasing market dominance

of networks selling products at low prices. The fact is confirmed by the number of supermarkets and hypermarkets crowding out shopping centers and department stores of the market. It is a process similar to the increase, as already discussed here, in the discount store share in the American market (thanks to the application of innovations in sales technology). In 2010 a general number of business entities involved in trading dropped by 6.7% compared to the previous year, of which the number of grocery shops was about 92 thousands, which indicates a drop by 10.8%. In this group a drop both in the number of shops of the surface area below 99 m² and entities employing less than 9 people can be observed. At the same time, the highest rise was noted among shops of the surface area exceeding 400 m², which also indicates an increasing dominance of supermarkets and hypermarkets in the Polish market. Among the entities employing above 9 people, the number of enterprises with foreign capital increased by 19.8% and the share of their total surface area rose by 8.7%. The average surface area of shops with full foreign capital amounted to 656 m², whereas the corresponding area of domestic shops was 169 m² [13].

The trend in transformation of the functional and spatial structure was also presented in the Euromonitor International Report which estimates the number of small corner shops to be about 150 thousand in 2010 and forecasts its continuous drop: down to 130 thousand in 2013 and 30 thousand in 2025. This tendency results not only from the lack of possibility to compete with trading networks but also from the lack of support of local authorities, which was experienced by 97% of respondents [14].

The report prepared by the Central Statistical Office also shows the influence of changes in the structure and type of retail shops on their impact on the regions. The procurement system of retail shops is subject to distinct transformation, i.e.: procurement by wholesalers is diminishing and it was 24% in 2010 (drop by 19.7% compared to 2009) for the sake of direct purchases from manufacturers (54%) and import (23%). In case of companies with foreign capital, direct purchases from manufacturers amounted to 50%, from wholesalers 9% and from import 41%. The data clearly indicate a dominant role of trading networks, whose sales market is large enough to omit wholesalers and negotiate directly with manufacturers. This concurrently weakens, however, the local trading connections and functioning of the regions, where national network structures replace local hierarchical structures.

8. DISRUPTIVE INNOVATIONS IN THE CREATION OF URBAN PRODUCT

The prevention of dominance of trading networks may be discussed at two levels: bottom-up activities and interventions at the level of territorial self-governments. The former group includes activities of the wholesale chain of Macro Cash & Carry Polska which refer to the basis of territorial marketing, i.e.: creation of certain behaviour patterns among groups of customers. The campaign “I live here, I shop here” may serve here as an example. The program promotes local shops and their importance for the functioning of the region [14]. The second group of activities may relate to reducing the chain spreading process, for instance, by making suitable provisions in Local Spatial Management Plans, which will prevent the construction of trading units typical for the chain (the use of unification and standardization of construction solutions applied by the chains). The example of Wrocław, where such planning policies are implemented, shows, however, that in the reality of the free market, the chains manage to evade such restrictions by adopting new solutions (rental of the existing premises in the centre by Biedronka chain). Another approach is to create new spatial offers directed to local merchants. An example is GRAFIT Business Center constructed by the Wrocław Agglomeration Development Agency, which will house Hala Kupiecka of the surface area of 5 200 m², where small merchants can count on “the lowest rental prices in the city”. The shopping centre is located in a district of high population density and of not too much saturation of chain shops, which may decide about a success of this investment. The promotion of the shopping centre is based on building bonds with the local community. Within the “Neighbour Day” program, the inhabitants may acquire useful skills such as giving first aid or watch performances carried out by school children or pupils of culture centers [15]. This is, however, one of few local impact-oriented investments. It can be treated as a kind of experiment to check how such solutions would function in the reality of the city. On the other hand, location of the investment in the peripheral district, in the place rarely frequented by the inhabitants brings pessimism. The success of this initiative may contribute to creating subsequent similar initiatives. Its failure may lead to the conclusion that such assumptions should be made at the proper levels, determined when creating the Local Spatial Management Plan, considering the complex context of such investments (the present location of Hala Kupiecka seems to be random rather than truly planned).

The promotion of Ticket Restaurant vouchers in Paris may be considered a good example of the support of local entrepreneurs by the territorial self-government. Employees pay for 35% of the voucher whereas the rest is financed by the self-government. The vouchers may be used in restaurants and therefore most employees eat out during the lunch break or after work. This contributes to a substantial enlivenment of the city tissue, shaping the away-from-home eating pattern, which presents dual benefits. On the one hand, it ensures profitability of gastronomy and consequently forms new workplaces. On the other hand, it promotes the image of Paris as a city where there are everywhere small restaurants and cafés, which is one of the attractions of the city and creates its unrepeatably atmosphere. Another example of building relations between the city and the region is the use of public squares and parks in Berlin. At weekends they change into healthy food fairs, where local manufacturers sell their products. Such initiatives awaken a great interest and contribute to a greater activity of inhabitants in the local centers of their residential districts. This has a positive influence on the development of other functions there – small shops, cafés and restaurants. Thus, the mutually complementary functional program is formed, which enlivens the districts and creates some kind of patriotism and local bonds. In this context, planning “livable streets”, along which there are shops and restaurants is justified in contrast to the idealistic visions of a substantial group of Polish planners, who create plans out of touch with the social and economic reality in Poland.

9. CONCLUSIONS

In times of globalization, it is hard to consider the development of cities without viewing it in a wider context, in which international chain structures start to play more and more important role. This has the effect not only on transformation of the functional and spatial structure of agglomerations but also on the functioning of whole regions, changing the present connections of the cities with their surroundings. Counteracting this situation requires, on one hand, shaping proper patterns of customers (the conscious of difference of spending money in foreign chains and by local retailers and its influence on the economy of region) and, on the other hand, searching for new solutions, urban products, proper provisions in Local Spatial Management Plans which will enable the competition of small entrepreneurs with trading networks (for example planning of a compact city

structure, considering short distance between place of work and living, which suppose to activate space in between and enforce role of public spaces and sense of identification with neighbourhoods and region). The search for solutions breaking the present line of development may not only result in the improvement of the situation but also in becoming distinguished on the national or European plane. The creation of suitable offers (enabling activation of niches of activities by increasing attractiveness of space, creating a new standards and patterns of consumption by: reshaping structure of the city and stimulating planning, where location in attractive/livable place become a benefit for local companies [16]) requires monitoring of both potential rising markets and following customer expectations. It seems that one of the greatest barriers faced by Polish cities are macro-economic indicators, mainly wage-related, which are advantageous for foreign investments, yet allow inhabitants the limited choice, which is mainly directed by price and trends promoted by foreign chains.

ACKNOWLEDGEMENTS

Thanks to adviser – prof. dr hab. inż. arch. Tadeusz Zipsler.

REFERENCES

- [1] *Loboda J.*; Rozwój koncepcji i modeli przestrzennej dyfuzji innowacji (The Development of Concepts and Models of Spatial Diffusion of Innovation), Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław, 1983; p.46 (in Polish)
- [2] *Christensen C.*; Przełomowe Innowacje (The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (Management of Innovation and Change)), Wydawnictwo Profesjonalne PWN, Warszawa 2010; p.21-35, 176-179 (in Polish)
- [3] *Szromnik A.*; Marketing terytorialny. Miasto i region na rynku (Place Marketing. City and Region on the Market), Oficyna Wolter Kluwer, Kraków, 2010; p.13-55, 198-229 (in Polish)
- [4] *Castells M.*; Społeczeństwo sieci (The Rise of the Network Society), Wydawnictwo Naukowe PWN, Warszawa, 2011; p.131-149 (in Polish)
- [5] *Castells M.*; Koniec tysiąclecia (The End of Millenium), Wydawnictwo Naukowe PWN, Warszawa, 200; p. 309-321 (in Polish)
- [6] *Ledwoń S.*; Przekształcenia obszarów śródmiejskich z udziałem funkcji handlowej (Transformation of Downtown Areas Involving Commercial Function), [in:] Lorens P., Martyniuk-Pęczak J. (ed.): Wybrane zagadnienia rewitalizacji miast (Selected Issues of Urban Renewal), Wydawnictwo Urbanista, Gdańsk 2009, p.36-57 (in Polish)
- [7] *Bauman Z.*; Płynna nowoczesność (Liquid Modernity), Wydawnictwo Literackie, Kraków 2006; p.147-152 (in Polish)
- [8] http://www.biznes.gazetaprawna.pl/artykuly/577405,duze_sieci_handlowe_omijaja_polske.html as for December 20, 2011 (in Polish)
- [9] <http://www.rp.pl/artukul/807166.html> as for February 5, 2012 (in Polish)
- [10] *Wilk W.*; Miejsce miast w sieciach handlowych – przykład Polski (Place of the Cities in Commercial Networks – the Case of Poland), [in:] Lisowski A. (ed.): Prace i studia geograficzne (Geographical Research and Studies), Warszawa, 2005, Vol.35; p.129-153
- [11] <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=teicp000&plugin=1> as for March 19, 2012 (in Polish)
- [12] <http://www.biedronka.pl/str/4/i/511.php> as for March 17, 2012 (in Polish)
- [13] Rynek wewnętrzny w 2010 r., GUS, Warszawa, 2011; p.39-45
- [14] <http://www.portalspozywczy.pl/handel/wiadomosci/w-2025-r-w-polsce-pozostanie-jedynie-30-tys-malych-sklepow,67165.html> as for March 19, 2012
- [15] <http://www.grafit.wroclaw.pl/2012/05/20/otwarcie-hali-kupieckiej-w-centrum-biznesu-grafit> as for April 30, 2012 (in Polish)
- [16] *Zuziak Z.*; Strategie rewitalizacji przestrzeni śródmiejskiej (Strategies for Revitalization of the Downtown), Politechnika Krakowska, Kraków 1998, p.21-30 (in Polish)