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## DEVELOPMENT STRATEGIES OF URBAN FARMS IN DEVELOPED COUNTRIES ON THE EXAMPLE OF RUHR METROPOLIS (GERMANY) AND UPPER SILESIA METROPOLIS (POLAND)\*

### Abstract

*Development of various forms of agricultural activities in urban areas in developed countries is becoming increasingly important. This is due to a very high intensity of urbanisation and suburbanisation processes. The owners of farms located in areas of direct impact cities operate in a challenging market, where strong competition for land, local regulations on land development and planning often significantly hinder development and even maintaining agricultural production. Thus, to increase the chances of survival and development, managers of the holdings must apply business model adequate to local conditions.*

*The aim of this study was the characteristics of the different business models on the example of 20 urban farms located in the Ruhr and Upper Silesia Metropolis. Results demonstrated that, in principle, there are 3 main business models, i.e. diversification, specialisation and differentiation. The choice of a particular business model is derived from the local natural and cultural resources, owned land and capital, but also it is very dependent on knowledge and expertise of farm managers.*

**Keywords:** urban agriculture, business model, diversification, differentiation, specialisation.

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## **Introduction**

Agricultural activity in the cities and in urbanised areas is nothing new, but in many highly developed countries, including the USA, Canada, Australia, Germany, Japan and the Netherlands, it experiences a renaissance (Mok et al., 2014). Increasing interest in this form of activity derives from very dynamic urbanisation processes and intensifying conflicts between agriculture and the cities (Piorr, 2011). Thorough research in the field resulted in several definitions for and interpretations of the term urban agriculture (Sroka, 2014). Urban agriculture (UA) is most often termed as “activity in the field of manufacture, processing and distribution of food and non-food products, animal husbandry and forest plantations in urban and suburban areas” (Mougeot, 2000). It covers a very wide range of varied production systems represented by more and more numerous groups of entities. Already in 1996, research held under the United Nations Development Programme showed that urban agriculture consists of at least 40 different activities, including horticulture, aquaculture, kitchen gardens, roof and wall gardens, balconies, vertical farms, worm and molluscs farming, etc. (Mougeot, 2006).

The literature distinguishes between two basic forms of urban agriculture, i.e. urban farming and urban horticulture (Lohrberg and Timpe, 2011; FAO, 2007; Sroka, 2014). These forms are characterised by a different objective of activity (market production vs self-supply), different production intensity, different management method and scope of implemented functions, but their common feature is strong functional linkage with the city (Mougeot, 2000; Schulz, Weith, Bokelmann and Petzke, 2013; Sroka, 2014). At the other extreme is the third form of urban agriculture, i.e. non-urban oriented farming. These are entities which are situated in cities, above all in suburban areas, but fail to show functional linkages with urban centres. Moreover, city development and urbanisation are seen by these holdings as a threat to their further development or even survival (Cavin, 2014). This form of agriculture follows from the so-called urban sprawl process, i.e. absorption of neighbouring localities by cities and extension of their functional areas. It seems that this form is a rather transitory stage in the development of farms or agricultural enterprises, since these holdings either adjust their offer to urban conditions or slowly wane, releasing their resources. The closer these are to the cities, the faster will be the process.

Discussion in this paper concerns urban farms, i.e. entities operating in cities or suburban areas, engaged in plant cultivation, animal husbandry and provision of varied services, primarily for the residents of nearby cities. The main feature of urban farming is market-oriented production and strong linkage with adjacent cities. Because these entities operate in very demanding surrounding (major competition for land, different formal and legal constraints, e.g. local zoning plans), they have to show high management professionalism and apply different business models to achieve success (Pölling, 2016). According to

many researchers, the knowledge and business competences are the key source of dynamic development of urban agriculture entities in the developed countries (Van der Schans, 2015; Pölling, 2016; Vukelić and Rodić, 2014; Hol, Mubin and Ginige, 2014). The business models of selected urban farms presented in the paper can give inspiration to other enterprises located not only in the urbanised and industrialised areas.

### **Research aim and methodology**

The paper aims at defining the directions of development of urban farms through identification and characterisation of the business models of farms (enterprises), relevant to be implemented in the conditions of urban farming. The research was held on the example of urban farms located in the Upper Silesia Metropolis and Ruhr Metropolis.

The paper uses a number of research methods, including library search and case study method. The set of basic (general) research methods was applied at all research stages, starting from research aim formulation through results analysis and finishing off with drawing conclusions. The library search method was used mainly at the initial stages of the analysis and enabled to define urban agriculture and to present the theoretical aspects from the field of business models. The next method, i.e. case study, is very often used in research in the field of enterprise management (Matejun, 2011; Firlej, 2013), and in analyses concerning urban agriculture (Danso, Drechsel, Akinbolu and Gyiele, 2003, Pölling and Lorleberg, 2014). As regards the analysed problem, there are at least two reasons justifying its use. Firstly, urban farming entities are highly varied and often show unique organisational and business solutions, which can be presented only with the use of case study. Secondly, a business model is a specific philosophy of action of an organisation (Firlej, 2013); hence, it is very difficult to quantify. In such case, much better effects are brought by in-depth qualitative research.

To present the business models of urban agriculture entities, the concept of the Business Model Canvas (BMC) was used, which makes it possible to describe the reasons behind how an organisation generates value and how it ensures and makes profit on the value (Osterwalder, 2012). The business model proposed by Osterwalder was constructed as a sum of resources and activities organised and realised by a company to provide a specific value for a specific customer. This model is very universal and can be used in all types of enterprises also in description of highly differentiated entities of urban agriculture (Ganguly, Kujac, Leonard, Wagner and Worthington, 2011; Thuan Truong, Nguyen, 2013; Liu, 2015). The choice of BMC to present models of farms is also a derivative of research methodology and structuring method of the interview questionnaire adopted by the research team of the working group no. 2 (Cost Action Urban Agriculture Europe) (Pölling and Lorleberg, 2014).

The source of factual data were questionnaire-based interviews held in Upper Silesia Metropolis (Poland, Śląskie Voivodeship), which thoroughly analysed 10 urban farms, and in Ruhr Metropolis (Germany, North Rhine-Westphalia), which also researched 10 urban agricultural holdings. The entities were selected based on non-probability sampling and they were to represent the best possible solutions in the field of farm management and demonstrate, at the same time, considerable differentiation of urban agriculture entities.

### **Conceptualisation of the term business model**

The literature gives a number of varied definitions and interpretations of the term “business model”. For the first time, this term was used in the academic circles in 1957 and from the middle of the 1990s it is used increasingly more often (Osterwalder, Pigneur and Tucci, 2005). It can be very narrowly defined as “money-making idea” (Koźmiński, 2004) or more precisely as “conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams.” (Osterwalder, Pigneur and Tucci, 2005). Some authors also define a business model only by indicating elements that it should contain. Brzóśka (2009) states that the business model is a system composed of mutually related elements that interact over time. Among them he lists, e.g. the value offered to the customers, market segment, product range, price policy, necessary measures and skills and undertakings making it possible to keep up all aspects of competitive advantage. Paul (2014), analysing the literature as regards elements constituting business models, enumerates 56 different categories, and 15 of them appear in at least 5 models. The most often used ones in literature and probably the most important elements of the business model were included, e.g., in one of the better popularised business model, i.e. Business Canvas Model (Eppler, Hoffmann and Bresciani, 2011; Bis, 2013). Osterwalder’s proposal (2004) is based on 9 elements arranged in the form of a template (Fig. 1). The first and the most important stage of BMC business model creation is segmentation of customers. Different groups of customers are defined, to which “products” are supplied (i.e. proposal of value). An entrepreneur can focus on a mass, niche and multidirectional market, etc. Next, the proposal of value should be determined, which includes a set of “products and services” that generate value for a specific segment of customers.

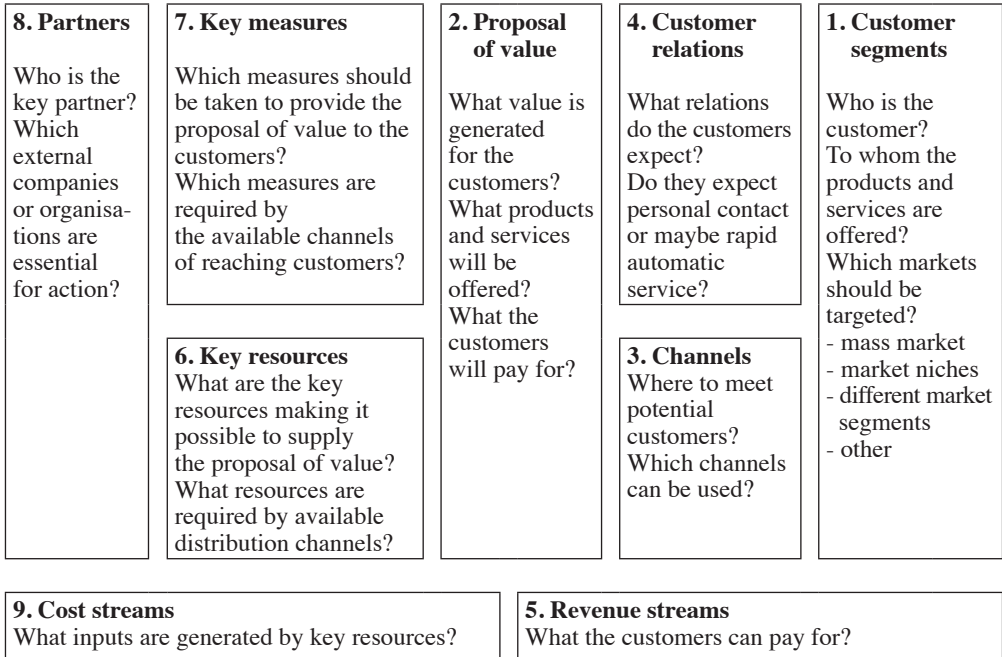


Fig. 1. Business Model Canvas.

Source: own compilation based on: Osterwalder (2012).

Another very important element of a business plan is the selection of the distribution channels which describe how an organisation communicates and reaches its customers. They should be adjusted to a specific group of customers and specific groups of “products”. The fourth stage in creating a model is definition of customer relations. These relations can take on varied forms: from very personal to completely automatic (e.g. vending machine). The next element, i.e. revenue structure, describes how the company (also a farm) generates revenue from respective customer segments. At this point the basic question is: what is the price that a customer is ready to pay for provision of a specific value added (product, service). The key resources are assets which are necessary to manufacture the products/services and reach the customers. Whereas the key activities are characterised as those which a company has to perform to deliver a proposal of value, establish customer relations and generate revenues. The final stage of a business model characteristic is the identification of key partners, i.e. contractors which allow the company to function. Moreover, it is necessary to determine the cost structure, i.e. indicate the most important costs of functioning and methods of their optimisation (Bis, 2013). Thus prepared template, enables to present a “business idea” of a specific entity and to identify the major success factors.

### **Business models in agriculture with special emphasis on urban farming**

Business models are still associated mainly with start-ups and ICT industry enterprises and to a much lesser degree with agricultural activity. The literature gives close to none examples of works devoted to the theory and pragmatics of using business models in agriculture (Paul, 2014; Żekało and Malak-Rawlikowska, 2011; Dudin, Lyasnikov, Leont'eva, Reshetov and Sidorenko, 2015). Enterprises and farms are equated rather with a conservative and traditional approach to run activities (Domagalska-Grędyś, 2009). However, recently research more and more often take up the issues of strategic management in agriculture (Bokelmann and Odening, 2012; Sulewski, 2007). Paul (2014) undertaking, one of the first in Poland, research strictly on business models of agricultural enterprises, argues that these models will be easiest to observe at large-area farms because they show maturity to take part in highly competitive economy and they are to a greater extent linked with the market. He suggested to separate business models by comparison of relations between three elements: production type (plant, livestock, mixed), share of resources and competences held by enterprises (financing of assets and field of education of workers) and type of transactions made (contractual, mixed, non-contractual). Thus, through combinations of the three elements he separated as much as 27 different models. Not questioning the achievements of the author, it needs to be, however, emphasised that the research makes several simplifications, including only partial consideration of the proposal of value (by distinguishing plant, livestock and mixed production), similarly only three very general distribution channels were selected, and the key resources were analysed only in respect to ownership (own vs external). The research fails to consider, e.g., financial aspects, market segments and key partners. This most likely resulted from the specifics of researched entities and too small differentiation. The aspects of strategic management of commercial farms are also analysed by Sulewski (2007), who based on eight areas of operation of a commercial farm (area, investment activity, diversification, specialisation, etc.) identifies three main strategies: reduction, continuation and growth. Just like the former author, he fails to analyse the “classical” elements of the business model due to the specificity of the researched entities.

Hedin (2015) analyses business models of urban agriculture entities (commercial farms and agricultural enterprises) considering such elements as: proposal of value, supply chain organisation, communication with customers and financial model (structure of costs and revenues). Simultaneous consideration of such a large number of elements was possible due to the use of the advanced research methods, including, e.g., hierarchical cluster analysis. Based on analyses it separates 3 groups of entities applying different business models. The first group encompasses entities producing at a relatively small scale, which usually are highly diversified and sell carefully selected products matched to the

customer needs with the use of short distribution channels (direct sales, sales to restaurants, marketplace, etc.). The second group of entities covered specialised farms producing fruit, vegetables, seafood and other perishable products. They concentrated on large-scale production and distribution of their products mainly with the use of longer distribution channels. The third group are multifunctional entities, which apart from manufacture of food products offered the possibilities of personal harvesting of crops (“from a field”), recreational services, etc. Similar approach to construct business models is presented by Liu (2015), who also uses cluster analysis when researching urban agriculture entities. He classifies respective entities considering such elements as: proposal of value, customer relations, distribution channels and others (in total 9 elements according to the Business Canvas Model). Based on research, 5 business models are separated, including: diversification, primary food production (specialisation), differentiation, provision of services and innovation-based model. In other research Van der Schans (2015), basing on examples of Dutch farms, apart from the differentiation, diversification and low cost (specialisation) models distinguishes two other models, i.e. experience economy model, e.g. the possibility to experience nature, and the model referring to the slogan “reclaiming the commons”. The latter deals with offering to the urban residents the possibility to involve in food production, e.g. based on community supported agriculture.

To sum up the description of research results of the aforementioned authors it should be stated that in the urban conditions, three main business models are implemented: diversification, differentiation and specialisation. They were identified in all of the analysed studies and basically refer to the strategy of competition suggested already by Porter (1980), i.e. cost leader strategy, consisting in distinguishing and focusing on a niche. Other constructs, i.e. service provision model and innovation-based model, and models proposed by Van der Schans (2015), are – according to the authors of this paper – only specific cases of the differentiation or diversification models.

Diversification business model consists in offering a wide range of products and numerous services, mainly non-agricultural ones (Van der Schans and Wiskerke, 2012; Liu, 2015). This model is implemented also by farms situated in rural areas, but the entities located in cities – due to access to usually much more receptive markets – have greater possibilities of extending their activity (Ilbery, 1991; Zasada, 2011). Taking up non-agricultural activity requires allocation of time and wide range of skills in the field of company management, but – according to research – additional activity contributes to greater stability of farm income (Liu, 2015). A specific group among farms diversifying their activity are socially engaged farms, e.g. providing care services for children and the sick, the disabled, running kindergartens and similar institutions, and providing free-time services, i.e. horse riding, rural tourism, organisation of events like birthday parties for kids, etc. Agricultural production is not the key

source of income, but farm resources form grounds for provision of varied services. These entities use different distribution and marketing channels, and are very active in the Internet, including the social media (Van der Schans and Wiskerke, 2012; Liu, 2015; Pölling, 2016; Torquati, Tancini, Paffarini and Illuminati, 2015).

Another model corresponding to forms of activities run in the cities is differentiation. It consists in offering products and providing services that generate major value added. Such products are often manufactured taking into account standards concerning place (regional product), production conditions, including even adequate wages for employees (e.g. according to the fair trade rule). These are usually seasonal products (e.g. spring vegetables, Halloween pumpkins), little known varieties of vegetables, fruit and herbs which farmers sell at homes or marketplace. It is also popular to deliver products to city residents (via on-line orders) or offer the possibility of personal crop harvesting. Another proposal is to personally process the crops and make jam, gherkins, etc. (Van der Schans, 2015). Moreover, projects under the so-called community supported agriculture are also being implemented. These projects consist in establishing cooperation between agricultural producers and consumers. Consumers pay in advance (before the production season) a specified amount of money and in exchange they receive manufactured products over a specified time (Mok et al., 2014).

Farms implementing this model drive at attaining a unique position in a given region or industry. They usually offer a relatively small number of products/services, but very thoroughly selected and adjusted to the needs of a given group of customers (mainly the wealthy or families with small children). The needs of recipients expecting individual approach and an exceptional product are thus satisfied. This model prefers short supply chains and the relation between buyers and sellers are often personal. The idea of the model boils down to competition in quality and uniqueness, i.e. making profits mainly from high product quality. Therefore, this model is at the other extreme of mass food production (Pölling, 2016; Vorley, Lundy and MacGregor, 2009).

The third model, i.e. specialisation, consists in concentration on a small number of products and aiming to increase their share in production. Most commonly these are products of relatively high added value, including vegetables, ornamental plants, special crops, crops under glass, seafood, etc., but farming of cereals and industrial crops is also popular (Coussy, 2015; Pölling, 2016). Products of animal origin are offered relatively less often, although in suburban areas this production branch is rather frequently encountered. Producers use a small number of distribution channels and often sell using longer distribution channels, mainly to markets beyond the adjacent urban areas. A positive financial result is the effect of economies of scale and of using resources provided by nearby urban areas. Examples of practices contributing to lower production



costs can include the use of municipal waste, rainwater surplus or district heat (Van der Schans, 2015). It should be, however, emphasised that this model is not especially predestined to be implemented at farms situated nearby city centres, since small supply of land and its high prices, and also various other limitations (e.g. sanitary or resulting from zoning plans) hinder high intensity farming (Pölling, 2016).

### **Research results**

The researched entities are professional farms or enterprises dealing with agricultural activity and providing varied services for the local community. They were selected to represent the most common types of farms and forms of activity. A definite majority of them (a total of 13 operators) manufactures agricultural products and delivers them mostly to the local market (Table 1). Apart from typical agricultural crops (cereals, rapeseed, maize, etc.) 9 farms had in their offer vegetables (lettuce, carrot, etc.), fruit, herbs and other products especially relevant for the urban conditions (products showing lowest level of transport durability), and only in case of 2 operators located in Germany the vegetable crops were predominant. Ten operators, included in the group of units forming the local food system, kept also livestock, i.e. pigs or cattle and dairy cows, sheep, goats, horses. Especially at farms located in the Ruhr Metropolis, livestock – apart from the production function – was also a tourist attraction (donkeys, goats, horses, ponies, etc.) and one of the farms had a small zoo. Urban farms are also characterised by significant linkage with a city through provision of different services. In almost all farms, classified as entities creating a local food system, services played a major part in their income generation. Farms situated in the Ruhr Metropolis focused mainly on services in the field of: catering, organisation of varied events and functions, and welcoming tours (demonstration and educational services against payment). Two farms rented also especially prepared fields for city residents to farm on their own (initiative known as “rent a field”) and offered a possibility to personally pick the fruit, e.g. strawberries and grapes. Polish farms offered services of slightly different character, mainly services executed using agricultural machinery, including clearing snow from parking lots of big-box stores, transport services, e.g. debris removal, etc. Practically all of the analysed farms conducted direct sales; also at this point there are considerable differences between Polish and German farms. The latter often had their own farm stores, where they sold not only agricultural products but also their own preserves, i.e. juices, jams, pastas, etc. At Polish farms, direct sales most often happened on-site and farmers offered milk, eggs, potatoes and other vegetables to the city residents. They also frequently sold cereal seeds for pigeon breeders and stable owners.

The researched farms included also 2 farms situated in the Ruhr Metropolis which can be classified as socially engaged. Their activity is based on farm re-

sources but they focus mainly on work with the disabled and children (running kindergartens, field trips, etc.). The first of them (Gut Königsmühle) is organised as an educational and social centre which is financed by public funds. The second one (Hof Holz) functions as a limited liability company and renders, above all, catering services and organises different events, overnight educational field trips, etc. These entities definitely stand out among the researched entities, therefore in the further part of the study the former will be presented in detail. Two farms also offered recreational services, and one of them – horse riding services, and they also offered to keep horses owned by other people. The other farm, apart from agricultural activity, also rented a small golf field, produced ostrich meat and rendered catering services.

Table 1

*Number and characteristics of researched urban farms*

Specification	Ruhr Metropolis			Upper Silesia Metropolis		Total
	Farms forming the local food system	Socially engaged farms	Recreational farms	Farms forming the local food system	Non-urban oriented farms	
Number of researched farms	6	2	2	7	3	20
Number of farms offering vegetables	4	2	-	3	-	9
Number of farms keeping livestock	4	2	2	6	3	17
Number of farms providing services	6	2	2	6	-	16
Number of farms conducting direct sales	6	2	2	6	1	17

Source: own study.

A specific group are 3 farms situated in the cities of the Upper Silesia Metropolis (Mikołów and Jaworzno) which were termed as “non-urban oriented farms”. These are professionally organised production units not showing any functional links with the cities. They keep large herds of pigs and cultivate cereals and, basically, apart from the fact that they are situated in cities and their activity collides with the local centre (e.g. zoning plans hinder farm extension), they are very similar to farms in rural areas. These farms do not sell their products to the local market or they do not provide services, and cities are for them, first and foremost, competition and a threat to development. It seems that in Poland such farms can still be numerous.

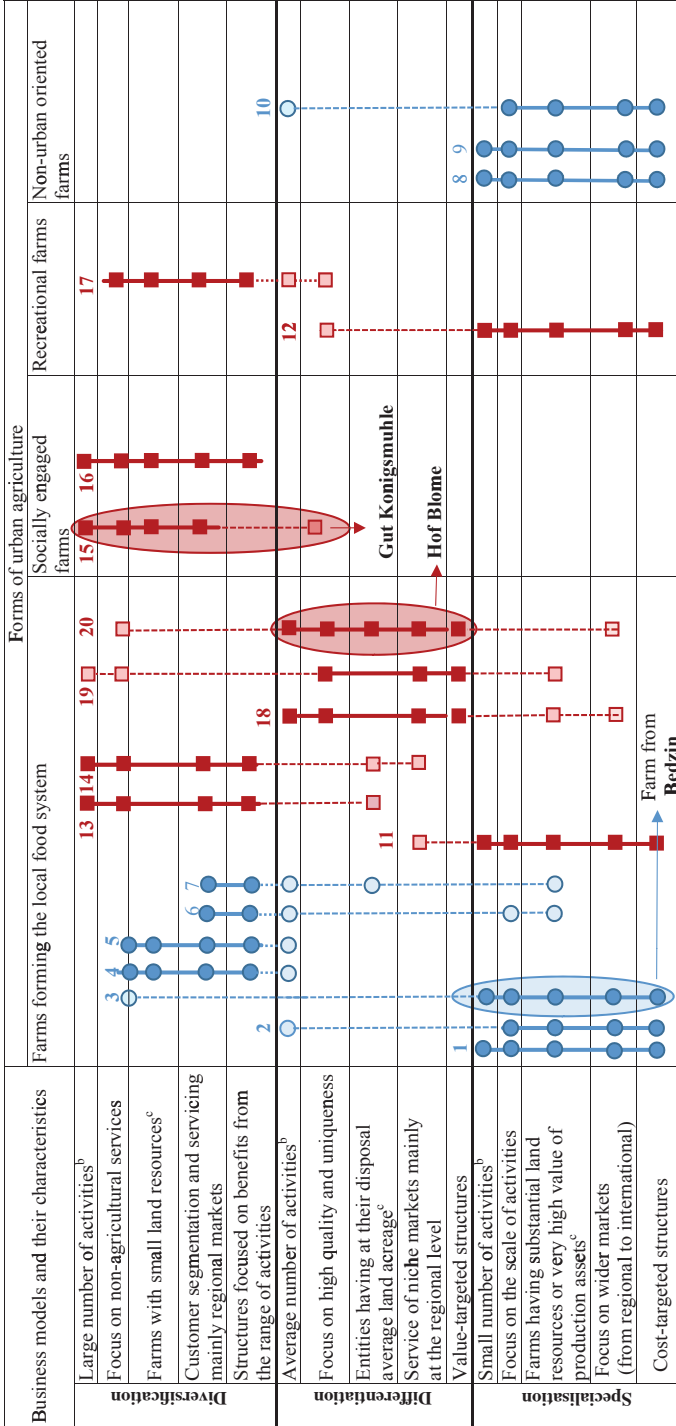
This study focuses on presentation of entities using different business models, typical for urban farms in given conditions (locations). Table 2 classifies the researched farms by the implemented business model. Based on literature review each of the three key business models (diversification, differentiation and specialisation) was described by assigning the most important distinguishing features of the given model. The detailed items illustrate the main elements of the business model (proposal of value, key resources, customers and financial aspect).

To make the classification it was required to adopt some simplifications and arbitrary assumptions (e.g. regarding quantification of the term large/medium/small number of activities and large/medium/small land resources), but the study did not aim at setting specific limits (these are only conventional), only to indicate differences between respective farms. Each of the researched entities was presented in the figure as lines with points drawn on them. Markers appearing in respective rows mean that a given farm “complies with” the given element of the business model. Farms situated in Germany were marked with squares and those in Polish cities with circles. Based on the classification, it can be noted that the researched farms implement various business models, most often diversification (9 farms) and specialisation (8 farms). Only 3 farms tried to apply the differentiation model.

It needs to be emphasised that most of the researched entities were not fully “compliant” with a specific model (which was marked with dotted lines) but – as mentioned by Van der Schans (2015) – it is typical for urban agriculture entities. Apart from that it sometimes happened that one entity focused on several elements of a business model simultaneously, e.g. high quality of services, but also their wide range and thus some entities are presented with a greater number of markers.

Table 2

Classification of urban agriculture entities by the implemented business model<sup>a</sup>



<sup>a</sup> Circles denote farms located in the Upper Silesia Metropolis and squares farms from the Ruhr Metropolis. Dotted line marks elements, which are not “compliant” with a business model, to which a given farm was classified.

<sup>b</sup> Number of activities was determined as a sum of different types of field crops (wheat, barley, etc.), animal species and service activities. Based on the analysis of research results, it was arbitrarily assumed that a large number of activities is 20 and more, medium – 10-19 and small – 9 and less. The average number of activities in the researched sample was 14.

<sup>c</sup> Based on the conducted analysis it was arbitrarily assumed that small land resources cover acreage below 20 ha, medium land resources was set at a level of 20-80 ha and large – above 80 ha. Average area of the analysed farms was 80 ha.

Source: own study.

### Diversification model

In case of farms implementing the diversification model, some part of them (e.g. entities numbered 6, 7, 13 and 14) run their activity basing on relatively large land acreages. Their business idea boils down to diversification as regards cultivation of a large number of plants and livestock farming. Building on a wide range of activity, they adjust to the local market considering varied groups of customers. What turns out to be the key resource of the holdings are considerable land resources; hence they focus on non-agricultural services to a much lesser extent.

The second group of farms (entities numbered: 4, 5, 15, 16 and 17), having small land acreage at their disposal (below 20 ha), diversify their activity mainly by non-agricultural services. These holdings often decide to cultivate various plants (especially vegetables, herbs, fruit), they also keep animal species rarely encountered in typical commercial farms (goats, sheep, ostriches, etc.), but a main stream of income is generated by a broad range of services. Agricultural activity is only the grounds for non-agricultural activity. A special place among the entities implementing the diversification model is taken by a group of socially engaged farms that offer social services. These are not typical commercial farms and the applied business model is a tad different than in case of the other farms, but given the fact that in Poland first attempts at such solutions are just being made (care farms), the authors decided to present the business model of Gut Königsmühle.

Gut Königsmühle operates as an association and is linked to the Pedagogical and Social Centre in Dortmund. The analysed entity is situated in the northern part of Dortmund, a city of over half a million residents (central part of the Ruhr Metropolis), and its activity focuses on care services for the disabled (14 places), children from dysfunctional families and on running a kindergarten (25 places) and agricultural production. The presented holding addresses its offer to several groups of customers, including in particular people requiring comprehensive care and different age children (Fig. 2). The basic activity is supplemented with horticultural production conducted with biodynamic methods (on the area of ca. 9 ha, including partly in foil tunnels), the disabled and other residents of the centre are also involved in the production (ca. 20 people). Moreover, the farm has a flock of sheep (ca. 33 ewes) and bees. Gut Königsmühle is not set on income maximisation, but the managers try to supplement the public funds with income earned on agricultural activity. They try to position their products presenting them as manufactured with biodynamic methods (they have a relevant certificate) and additionally with the involvement of the disabled. This is a specific value added of the offer, which makes it easier to find buyers willing to pay an adequately higher price for the product. Farm managers establish personal relations with the customers and focus on manufacturing products/ providing services of the highest quality. Some part of the manufactured organic products

is consumed by the centre residents, and the rest is offered in the café situated on-site and sold from the farm and in local organic food stores.

<b>Partners</b>  Pedagogical and Social Centre  Demeter Association (biodynamic agriculture)  Nearby organic food stores	<b>Key measures</b>  - care for the disabled - education of children - production, processing and marketing of organic products - running a café (sales or organic products)	<b>Proposal of value</b>  - living and work place for the disabled - organic products manufactured with organic methods - sheep meat and wool (maintenance breed) - kindergarten - café - organisation of events and functions, etc.	<b>Customer relations</b>  - personal and direct contact with the customer	<b>Customer segments</b>  - the disabled - kindergarten-age children - children with behavioural issues - residents of a nearby city (organic food consumers)
<b>Key resources</b>  - highly qualified employees - residential buildings - livestock buildings used in agricultural production, including foil tunnels for horticultural production - 4 ha of own agricultural land		<b>Channels</b>  - Pedagogical and Social Centre (refers charges to stay) - organic food stores - café - Internet		
<b>Key cost streams</b>  - wages for employees taking care of the disabled and administrative employees - production, processing and marketing of organic products - upkeep of buildings and equipment - lease rent per 5 ha of agricultural land		<b>Key revenue streams</b>  - social workers are 100% financed from public funds of Dortmund, - sales of products manufactured with the use of biodynamic methods (in own store and other nearby stores) - sales of sheep wool and meat, - sales of beverages and meals in the café		

Fig. 2. Structure of the business model of Gut Königsmühle.

Source: own study based on own research.

The analysed holding implements its objectives through diversification of activities and offering highest quality products and services – this is the key idea behind the presented business model. The key resources of the farms are its highly qualified employees and management personnel and the entity is termed as a model solution for care farms. Its success is largely determined by relatively certain sources of income in the form of co-financing from public funds.

Cooperation with the Pedagogical and Social Centre in Dortmund guarantees full occupancy of rehabilitation facilities for the disabled and agricultural activity, being also a part of therapy (hortitherapy), earns additional income. A major advantage of the entity is also proximity to the big city (ca. 6 km from the centre of Dortmund) and rural build-up and beautiful agricultural landscapes, making this place an ideal spot for rest and work for people suffering from different physical and mental conditions.

### Differentiation model

The differentiation model, i.e. standing out, offering unique products and services, which are usually characterised by high value added, is rather rarely used by the researched holdings. Farms implementing this were numbered as 18, 19 and 20 (Table 2). It needs to be, however, emphasised that they also show solutions typical for specialist farms or farms diversifying their production (these elements were marked with dotted lines in Table 2). Hence, it turns out that in case of the analysed entities niche market servicing is not yet able to ensure sufficient income.

The former of the researched farms offers milk sales from a vending machine in the backyard (which is a rather rare solution), apart from that a large portion of (milk and meat) production goes to neighbouring stores selling the highly appreciated in Germany regional products (Banik, Simons and Hartmann, 2007). Another entity (no. 19) focused on production of vegetables and fruit (strawberries, grapes), offering also the possibility to pick them yourself, and rents specially prepared fields (partly planted with a “particular group of plants”) for neighbouring residents (initiative presented in literature as “rent a field”).

The third farm (Hof Blome), which was described in detail below (Fig. 3), achieved uniqueness due to rearing pigs taking into account very high living and health standards for animals. Just like the former farm, it also rents fields for the customers of the website *Meine-Ernte.de* (which can be translated as “my harvest”). The website, under cooperation with farmers, offers the possibility to rent to the interested parties a field of 45 or 90 m<sup>2</sup> for the production season. Hof Blome holding joining the website was obliged to divide and describe respective fields and to sow them in part with specific plants (most often vegetables). The entity renting the land, against subscription per each field, has to ensure access to water and basic farming tools. The website customers cultivate the crops on their own and harvest them themselves. The *Meine Ernte* initiative is a response to the need of the city residents to have access to fresh, “healthy” food and fill in the market gap, presenting at the same time a rather unique solution.

<p><b>Partners</b></p> <p>“Meine Ernte” website administrators Regional and supraregional butcher’s shops Producer organisations (cereals)</p>	<p><b>Key measures</b></p> <ul style="list-style-type: none"> <li>- preparing and handling the rented fields (provision of water, basic tools, etc.)</li> <li>- pig rearing</li> <li>- organisation of educational services (farm tours)</li> </ul>	<p><b>Proposal of value</b></p> <ul style="list-style-type: none"> <li>- renting properly prepared fields for cultivation</li> <li>- pigs reared on bedding using high living standards</li> <li>- clearing snow from roads</li> <li>- educational services for children</li> <li>- cereals and industrial crops (wheat, barley, rapeseed)</li> </ul>	<p><b>Customer relations</b></p> <ul style="list-style-type: none"> <li>- personal and direct contact with the customer</li> <li>- website, email contact</li> </ul>	<p><b>Customer segments</b></p> <ul style="list-style-type: none"> <li>- people renting fields (mainly city residents)</li> <li>- families with small children</li> <li>- groups of school-age children</li> <li>- regional recipients of live pigs</li> <li>- supraregional recipients of live pigs</li> </ul>
<p><b>Key cost streams</b></p> <ul style="list-style-type: none"> <li>- livestock rearing costs</li> <li>- plant farming costs</li> <li>- upkeep of buildings and equipment</li> <li>- servicing the fields for rent</li> </ul>	<p><b>Key revenue streams</b></p> <ul style="list-style-type: none"> <li>- sales of livestock and cereals</li> <li>- payments under CAP (direct payments)</li> <li>- renting fields</li> <li>- educational services</li> </ul>			
<p><b>Key resources</b></p> <ul style="list-style-type: none"> <li>- 60 ha of own agricultural land</li> <li>- highly qualified employees</li> <li>- 400 pigs</li> <li>- livestock buildings used in agricultural production</li> </ul>	<p><b>Channels</b></p> <ul style="list-style-type: none"> <li>- “Meine Ernte” website</li> <li>- sales of animals to local butcher’s shops</li> <li>- sales of animals with the use of indirect channels</li> </ul>			

Fig. 3. Matrix of Hof Blome business model.

Source: own study based on own research.

Another product differentiating the described farm is pig rearing using traditional methods, which take into account high welfare standards. In the age of increasing awareness of consumers, this solution is strongly promoted in Germany and sales of regional brand products enjoys growing popularity. The presented farm earns income mainly on sales of livestock and cereals farming; it focuses on maximisation of the value added of a product, and also tries to implement innovative products to the offer (field renting, handling groups of school children – education), which – according to the farm managers – will bring increasing income in the next years.



On the whole, it needs to be emphasised that a farm basing on unique market offer and concentration on the quality of services and products complies primarily with the differentiation model, but it also uses diversification model elements (provision of non-agricultural services) and specialisation model elements (main source of income is sales of live pigs). A farmer tries to establish personal relations with customers (e.g. when servicing the rented fields) and to address his offer mainly to recipients appreciating not only product quality but also the conditions of keeping animals. The farm owner considers the relatively large farm (60 ha of UAA) and qualifications and knowledge on production and farm management as the key success factors and, at the same time, determinants of the business model. An additional advantage of the holding is its proximity to the city which gives the opportunity to develop the initiatives of field rental and provision of educational services. CAP payments are also important as they guarantee “stability” of funds.

### Specialisation model

The specialisation model is represented mainly by Polish farms which focus on cultivation of a relatively narrow number of plant species or keeping one group of livestock. The idea behind the model is minimisation of unit costs given the economies of scale and use of practices and technologies which aim at minimisation of the number of agrotechnical treatments, etc. These holdings usually have large land acreages, they often use land rented from the resources of the Agricultural Property Agency (for Polish farms) and owned by cities (for German farms). Their products are usually standard and high production volume causes that they are sold mainly on supraregional markets. Contrary to the typical rural farms, holdings situated in cities try to benefit from the proximity of city centres and offer, e.g., sale of small batches of products directly from a farm (e.g. cereals for pigeon breeders and stables), transport services, etc., and for specialised entities this is not a major source of income. They try to use the proximity to cities to reduce costs of activities, e.g., using sludge from wastewater treatment plants for fertilisation (farms no. 2 and 3).

Two German farms using the specialisation model differed significantly from the Polish farms. First of them, focused on cultivation of flowers and perennial plants (farm no. 11), the second – on services of keeping horses and horse riding (farm no. 12). Both farms built their advantages mainly by comprehensiveness of services. The first of them, apart from flowers and perennial plants, renders services in the field of garden design and broadly-conceived advisory services. Another advantage of the farm is also cultivation of local varieties of flowers and perennial plants which fill in the market niche. The second entity focuses on offering services of the highest quality and is specialised in comprehensive horse handling services (renting stalls with food and care for horses) and horse

riding courses. It focuses on a group of wealthy people expecting personal approach and the highest quality standard of service. Thus, it combines specialisation with differentiation.

A Polish farm that largely implements the business model based on specialisation and, simultaneously, is adjusted to the urban conditions is located in Będzin (north-east part of the Upper Silesia Metropolis). It is a large-area farm having the acreage of 360 ha, out of which 340 ha of land is under cultivation (Fig. 4). The analysed farm produces primarily cereals, including maize for seed, wheat, oats and rapeseed. Additionally, it collects sludge from the wastewater treatment plant, animal faeces from the zoo in Chorzów and renders services in the field of snow clearing from parking lots by shopping malls. Non-agricultural activities constitute ca. 50% of the total farm income.

The key partner for the analysed farm is a company which, at the same time, delivers fertilisers and plant protection products, and buys-in crops, thus enabling to negotiate better offers. A certain part of the production is sold to local stables and pigeon breeders, but it is a small percentage of the total sales. Farm manager establishes business contacts, mainly with large recipients of agricultural products and other enterprises, trying to get (e.g. by participating in tenders) orders for service works that can be done with their own equipment. Hence, new contacts help to better use the farm's assets. A very important advantage and, at the same time, the key to the success of the described farm are the skills of the manager who deals only with managing. As he admits, when he started agricultural activity in 2007 he was unable to tell the difference between wheat and barley, but he employed competent people and he himself dealt only with winning customers, orders and calculation of the efficiency of respective activities/investments. He aims at increasing production efficiency by using, e.g., no-till system, he also often uses leasing. Significant land resources are important in this case. However, apart from production of agricultural goods and obtaining direct payments, over 50% of income are revenues from various services (an element of the diversification model).

Business models are a specific idea for running a business, usually unique and difficult to quantify and classify, hence the presented case studies fail to fully reflect the business models of urban agriculture listed based on literature.

<b>Partners</b> Agromix (equipment, machinery, means of production) Zoo in Chorzów Large recipients of agricultural products Nearby farms	<b>Key measures</b> - manufacturing of agricultural products - provision of non-agricultural services - winning new customers, e.g., by participation in tenders	<b>Proposal of value</b> - production of cereals and rapeseed - reclamation of waste from wastewater plant - collection of animal faeces from the zoo - clearing snow from parking lots of shopping malls	<b>Customer relations</b> - communication mainly with large recipients - participation in tenders	<b>Customer segments</b> - supraregional recipients of cereals - managers of big-box stores - zoos - city/municipality managers - stables - pigeon breeders
<b>Key cost streams</b> - costs of cultivation of cereals and rapeseed (fertilisers, plant protection products, fuel, etc.) - wage of employed people (5 people) - land rent (330 ha leased from Agricultural Property Agency) - costs of maize harvest (external services)	<b>Key revenue streams</b> - sales of cereals and rapeseed - payments under CAP (direct and agri-environmental payments) - clearing snow from parking lots - collection of sludge from wastewater treatment plants - collection of faeces from the zoo	<b>Channels</b> - binding contracts (sales of cereals and rapeseed linked with purchase of fertilisers and plant protection products) - participation in tenders - direct sales		

Fig. 4. Matrix of the business model of the farm from Będzin.

Source: own study based on own research.

## Conclusions

Analysis of 20 urban farms confirmed the existence of three key directions of development equated in the paper with respective business models, i.e. diversification, differentiation and specialisation. The selection of a specific model depends on the owned resources, including land and capital resources as well as skills and competences of farm managers. The diversification model was usually used by holdings with smaller acreage of land but with considerable and qualified

human capital of extensive skills and tendencies to take up new measures. Entities using the model focused on provision of varied services for the local population, offered care services for the elderly, educational and catering services, etc. Apart from farms diversifying their activity towards non-agricultural activities, some part of holdings, especially those having at their disposal larger land acreages or large production assets, decided to diversify, but mainly in the field of extension of the range of agricultural products. These holdings provided also services using their agricultural equipment (e.g. clearing snow from parking lots, debris removal) but this was not the main source of income. The second option was used mainly by farms situated in the Upper Silesia Metropolis, while German farms engaged rather in activity beyond the so-called standard activity of holdings.

The second model, i.e. differentiation, is used rather rarely, but it seems very prospective. This consists in offering unique products and services, often of high value added, which are to fill in the niche markets. An example of such activities among the researched farms was the farm renting initiative for hobby cultivation by local residents, milk sales from milk vending machines or rearing pigs keeping very high animal welfare standards. In case of this model these entities try to maximise the value added of products and services. It is important at this point, to establish personal relations with customers, who often expect services and products matching their needs and of the highest quality. Given that niche market servicing brings on a rather sizeable risk, the researched farms usually applied selected elements of the diversification and specialisation models, minimising the risk of failing to meet the needs of very demanding customers.

The specialisation model is relatively often used, especially by farms having very large land acreage at their disposal or significant production assets associated with, e.g., cultivation under glass. Specialisation was most often selected by Polish urban farms. They tried to base on the scale effect usually manufacturing several standard products, i.e. cereals, industrial crops, pigs, milk and as far as possible use the advantage of proximity to the city, e.g., collecting sludge from wastewater treatment plant to reduce the expenditure on fertilisers. Also in this case, it was common to sell small quantities of products to local residents and diversify activity into varied services performed with the use of own agricultural machinery.

Most of the researched farms implement their aims applying elements of different business models. Owners of respective holdings try to use their assets, skills and knowledge to the maximum, but also to use the advantage of proximity to the city. There were very clear differences between Polish and German urban farms. The latter implemented innovative activities and to a greater extent used the owned resources and location. Some part of solutions applied in Germany can be implemented also in Poland. Basing on German examples, it is justified to popularise this form of activity and public support or at least (according to the interviews held) “not to disturb” in their development.

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## KIERUNKI ROZWOJU GOSPODARSTW ROLNYCH W OBRĘBIE AGLOMERACJI MIEJSKICH W KRAJACH ROZWIŃNIĘTYCH – NA PRZYKŁADZIE ZAGŁĘBIA RUHRY (NIEMCY) ORAZ METROPOLII GÓRNOŚLĄSKIEJ (POLSKA)

### Abstrakt

*Problematyka rozwoju różnych form działalności rolniczej na obszarach zurbanizowanych w krajach rozwiniętych nabiera coraz większego znaczenia. Wynika to z bardzo dużego natężenia procesów urbanizacji i coraz silniejszej suburbanizacji. Właściciele gospodarstw rolnych położonych w strefach bezpośredniego oddziaływania miast funkcjonują na wymagającym rynku, gdzie duża konkurencja o grunty, miejscowe regulacje dotyczące kierunków zagospodarowania terenu i inne uwarunkowania prawno-planistyczne często znacząco utrudniają rozwój, a nawet utrzymanie produkcji rolniczej. Tym samym, aby zwiększyć szanse na przetrwanie i rozwój, zarządzający gospodarstwami muszą stosować adekwatne do lokalnych warunków strategie oraz modele biznesu.*

*Celem opracowania jest określenie kierunków rozwoju miejskich gospodarstw rolnych na przykładzie 20 gospodarstw zlokalizowanych w Zagłębiu Ruhry oraz Metropolii Górnośląskiej. Prowadzone badania wykazały, iż zasadniczo można wyróżnić 3 główne modele biznesowe, tj. dywersyfikacja, specjalizacja oraz dyferencjacja. Wybór konkretnego modelu biznesu jest pochodną lokalnych uwarunkowań przyrodniczych i kulturowych, posiadanych zasobów ziemi oraz kapitału, ale również bardzo dużą rolę odgrywają wiedza i kompetencje zarządzających gospodarstwami.*

**Słowa kluczowe:** rolnictwo miejskie, model biznesu, dywersyfikacja, dyferencjacja, specjalizacja.

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