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The Urban and Peri-Urban Farms (UPFs) Relational Model: The Case of Greater Poland Voivodeship, Poland

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Abstract: Different studies demonstrate that urban and peri-urban agriculture (UPA) operate in so-called alternative food networks (AFNs). However, very little is known about UPA's relational business models. Therefore, this paper investigates how the urban and peri-urban farms (UPFs) form business relationships in food networks. Their business and social relationships are much more comprehensive than traditional transactional relationships. Therefore, this study aims to delimitate the relational model of UPFs. The managers and owners of nine UPFs in Greater Poland Voivodeship, Poland, in 2019 and 2020 were investigated. To this end, we employed a triple triangulation approach—methodological, theoretical, and investigator. The study refers primarily to the theory of inter-organisational relations (IORs); the empirical analysis adopts a network approach and activitiesresources-actors (ARA) model framework. The study identifies UPFs business relationships and the main features of their networks, which led to the development of a conceptual relational UPFs model. This shows the diversification of activities, the competitiveness of resources and formality of organisational structures as a basis of a farm business, the integration of activities, the sharing of resources, and the collaboration of actors as the basis of the relationship. Finally, this shows the joint nature of activities-locality of resources and mutual trust among actors-as the basis of UPFs networking.

Keywords: food networks; business relationships; urban and peri-urban farms (UPFs)

1. Introduction

'No business is an island' means that each business entity is embedded in general business and social environments [1]. Recently, network economists have recognised that business networks comprise various social, professional, and exchange relationships between enterprises and their customers, suppliers, competitors, or other institutional organisations, such as educational or governmental institutions [2]. In general, it could be said that, under these labels, there are various forms of social and business relationships, which may take transactional or non-transactional, short or long-lasting, and formal or informal structures. In any case, all of these business and social relationships influence networking actors' activities and resources [3]. It has also been highlighted that a business network is a proactive and voluntary community that is formed by at least two partners for mutual benefit. Networks are usually more complex and consist of more than two nodes. However, nowadays, business networking is being viewed from a different perspective, particularly with the growing need for sustainable and inclusive development and enhanced corporate social responsibility [4]. The creation of twin values—business and social—is representative of the next competitive network frontier; this is in line with Porter and Kramer's concept of creating shared value (CSV) [5].

Various studies have demonstrated that the agri-food sector is one of the most relational economic systems with respect to collaboration [4,6,7]. This sector has multiple cooperating forms, ranging from contractual agreements to cooperatives, producer groups,



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Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). alliances and clusters. These are conventional forms of horizontal and vertical integration. Nowadays, agri-food systems are mainly described as global, regional or local agri-food supply chains and networks [8]. It is now believed that they are primarily responsible both for the food supply of domestic regions and on a global scale. However, there is increasing discourse in agri-food supply chains or networks, with a push to change towards more 'green' responsibilities and CSV, which means seeking to make them more sustainable by protecting the natural and social environment [9].

According to the latest European Union (EU) agri-food policy, the main direction is to build sustainable, i.e., fair, healthy, environmental and climate-neutral agri-food supply chains and networks that can provide nutrition to present and future populations [10–15]. New approaches in agri-food policy are emerging, together with consideration for phenomena such as food insecurity, food contamination, price turbulence on world food markets or other disruptions such as the current global food supply issues caused by the worldwide pandemic. However, one of the greatest threats to sustainable agri-food supply chains and networks is the accelerated population and urbanisation. It is estimated that, in 2050, there will be 9.6 billion people on the planet, with 68% living in cities [16].

In the context of accelerated urbanisation, many authors are emphasising the growing importance of developing local food systems that supply cities with fresh food as an alternative to global and international food networks. These networks are referred to as alternative food networks (AFNs) [7,17–19]. Their main participants are supposed to be urban and peri-urban farms (UPFs). The literature findings indicate that the advancement of UPFs and their economic and social embeddedness is essential for developing local food systems. Hence, many authors claim that more research is required to identify existing UPFs business models, business and social relationships, supply chains, and formal and informal networks [7,20–22].

The study attempts to contribute to UPFs business model findings [23–27]. In this regard, UPFs' relational characteristics and universal network qualities are an identified research gap. The study undertakes a qualitative recognition of the relationality of UPFs but also seeks the versatile features of the phenomena under investigation. Universalisation may contribute to new categorisations and definitions. It develops ontological entities and has practical significance for implementing appropriate legislation and public support for entities emerging in response to economic, social, environmental or climate needs [28].

The study aims to delimitate the relational model of UPFs. Based on literature findings, it assumes that UPFs are the leading local food network operators, which face new consumer and production challenges for agri-food supply chains and networks. Nowadays, the main challenge is to build local, circular, socially inclusive, and zero-waste food networks, which all require innovation and sustainable urban area maintenance [18–20,29]. UPFs provide local food and services to urban dwellers. They are a fundamental element of sustainable urban development in the context of a growing population and associated social, environmental, and climate challenges [30–32].

The study hypothesised that UPFs are embedded in business and social relationships and networks. It assumes that confirmation means that the UPFs' practices are consistent with the local economic and social environment, the fundamental paradigm of the relational business model [28]. One other study premise is that the UPFs' practices vary according to financial, legal and social conditions, including traditions and culture, depending on the region, country, path dependence, etc. [23–25,33–35]. However, researchers continue to look for the defining universal features that determine UPFs [26,27,36]. In actual fact, the research should instead focus on UPFs' business and social relationships.

The theory of inter-organisational relations (IORs) and network approaches, namely activities-resources-actors (ARA) modelling, was applied to elucidate the results from a survey taken by the owners of nine farms from the Poznań agglomeration in Greater Poland, Poland [1–3,37–40]. On this theoretical basis, the conceptual relational model of UPFs was analysed. It generalises the relational features of the surveyed UPFs, showing a diversification of activities, the competitiveness of resources and the formality of organ-

isational structures as a basis of a farm business, the integration of activities, sharing of resources, and the collaboration of actors based on their relationships. Finally, it also shows the jointness of activities, locality of resources, and mutual trust among actors as the basis of UPFs networking.

With these findings, the present study aspires to fill the gap in the literature by offering empirical and theory-grounded insight into the business and social relationships of UPFs. This study investigates the basis of alternative food networks (AFNs) in agglomeration food systems. The scope of the study does not warrant wider extrapolations, but only qualitative analysis. As a further contribution, this study intermediates the ongoing discussion on feeding the growing world population after 2035 and 2050, while maintaining full access to healthy, nutritious, and ethical food. Various studies show that existing policies usually do not sufficiently target UPFs and are not feasible for the specific situation and the diversity of UPFs [30,33,41]. According to the European Green Deal, planned for implementation in two phases between 2035 and 2050, sustainability, particularly regarding climate challenges, has become mandatory for all business operators [10–15].

The paper is structured as follows. After the introduction, Section 2 discusses the theoretical background of the research. It points to urbanisation as a challenge for AFNs, the delimitation and benefits of UPFs and the Polish research context. In the following section, we introduce the Materials and Methods and the triangulation approach that was used. Firstly, this section presents the IORs theories and network approach framework. Then, the qualitative methodology and data sourcing are discussed. In the Results Section, the surveyed UPFs' organisational and economic characteristics are presented and contextualised for Polish and, more specifically, Greater Poland agriculture. Then, the network research findings are presented, and the attributes of business relationships and networks are discussed. The final discussion evaluates the UPFs' relational model in the findings from the literature.

2. Theoretical Background

2.1. Urbanisation as a Challenge for Alternative Food Networks (AFNs)

Urbanisation pressure decreases arable land availability. The reduction in access to food is the biggest threat resulting from urbanisation. This means converting rural land into urban areas. Following this, private and public investments in buildings and infrastructure expansively cover suburban areas in the direction of rural areas. Land speculation and competing interests result from the mass sale of arable land for industrial construction and residential plots, infrastructure, and services. At the same time, the increasing population causes an increase in food demand, which primarily forces rural dwellers to produce food in their abandoned fields. Many will move their settlements into cities, depending on food provision from global supply chains and intensive industrial agriculture [30].

There is an imminent threat in that cities will not be provided with fresh local or traditional foodstuffs. The growth of cities also brings with it social and environmental challenges. First of all, city dwellers adapt to urban occupation, lifestyle, culture, and behaviour. This means the disappearance of traditional local farming and rural culture, and a reduction in the number of people living with traditional lifestyles and employment. Population density also creates overcrowding and enclaves of poverty, and income disparity, which create social problems. Finally, environmental challenges come from the devastation of natural resources, pollution, and ecological degradation. The primary risk of urbanisation is ecosystem deterioration, including the most severe, which are the loss of soil quality, vulnerable biodiversity, climate change, and water shortage. At the same time, biotechnological progress causes the loss of native and traditional cultivars and breeds. This also diminishes the amount of tacit knowledge on the natural agro-economy, which involves natural cultivation, craftsmanship and manufacturing [31,42].

Urbanisation creates severe social and environmental challenges, but on the other hand, it is a challenge for local food chains and networks [43]. The primary potential is increasing foodstuffs and food-connected service demands in agglomerations. Remarkably,

more city residents have expressed a growing interest in consuming locally produced food, primarily organic products. There are new stimuli, such as superior taste, better health benefits, dietary advice, such as consuming slow-food, unprocessed products, fair trade products and other modes and lifestyles. There is a big trend showing a growing interest in sharing knowledge and practices around food by 'foodie' events, veggie communities, food markets, food writing, recipe elaboration, and food-related TV programs [20].

Consumers are also becoming increasingly aware of the importance of sustainability and social responsibility. They desire an understanding of the origin of what they eat, so food traceability has gained a growing reputation. They also want to see food growers personally and learn about their attitudes and beliefs. They want to influence their decisions and thus participate in the production process and help to create the final product. Therefore, they also want to support the local economy by buying domestic and homebased products and services, or even community self-service and self-produced products, primarily fruits and vegetables or herbs grown in backyards or community gardens and rooftops allotments [44].

In this context, in the late 1990s, local food networks regained scholarly and political attention [7,18,21]. The newly recovered political attention resulted in the formation of the sustainable development goals (SDGs) [41,45]. Scholars recognised these economic and social phenomena and identified them as alternative food networks (AFNs), which, over the last few decades, have grown worldwide [17]. Despite this, there is no universal definition of AFNs, and they are described in several ways. It is not apparent how the phenomena will develop, but it seems very much connected with current food demand and economic, social and political trends.

One can generally assume that AFNs indicate attributes, such as the spatial and personal proximity between food providers and consumers. This includes retail venues, such as farmers' markets or green markets, social and community-supported agriculture, and respect for sustainable, circular, zero-waste production and consumption [18]. Various studies demonstrate that AFNs are rooted in particular places and are specific and typical for operators and their developed space. They aim to be economically viable for producers and consumers, to use ecologically sound production and distribution practices, and to enhance social equity and democracy for all community members [19,21,29].

Short food chains and local food networks are an alternative to global networks, because consumers seek local fresh food and proximity to the producers. AFNs connect producers with consumers and other actors that embody alternatives to long global, standardised agri-food supply chains. International food chains are primarily associated with intensive industrial agriculture and massive amounts of food processing [46]. Various surveys show that AFNs promote locality, tradition, and ecology. AFNs are often linked with sustainable land use and approaches to lower the environmental impact of food production. Many farmers involved in community-supported agriculture exhibit a high degree of ecological awareness [47]. Remarkably, consumers' involvement in food production and distribution can create a sense of solidarity between farmers and consumers and connection in a social and economic community [48,49].

2.2. Delimitation and Benefits of Urban and Peri-Urban Farms (UPFs)

Urban and peri-urban farms (UPFs) refer to a diverse group of entities. They are local smallholders on the fringes of urban areas and possess larger farms that diversify on-farm and directly provide to city dwellers. They may become professional urban farms or even agricultural holdings located in rural areas that are focused mainly on commercial goals. They may be small self-supply city farms with subsistence production. They develop in response to new metropolitan food and food-connected service demands. The literature shows that one commonly accepted definition of UPFs does not exist, as there is no universal business model of UPFs [23–27].

Boundary demarcation is difficult, and the meaning of urban or peri-urban cannot be easily defined or delineated through specific criteria. Likewise, worldwide there are no uniform characteristics or distinctions of peri-urban areas [36]. The authors highlight that definitions of both urban and peri-urban areas and agriculture greatly vary according to geographical, regional, spatial and local contexts. Therefore, political systems, institutional arrangements, societal characteristics, environmental qualities, and economic drivers underpin urban and peri-urban farms (UPFs). These variables should always be considered and researched. Thus, these phenomena are ambiguous, just as their delimitation is also ambiguous.

It appears that UPFs are not historically new phenomena. Their primary role has always been to supply city residents with fresh local food [50]. However, today, they are seen in a much broader context, not only as food producers but also as providers of environmental and social services [51]. This further blurs scientific demarcations and definitions. Many of them provide ecosystem services, including biodiversity, climate change mitigation, and landscape protection. They are also known for offering city residents leisure, educational or therapeutic services [22,52,53]. This diversification is related to citizens' growing demands. As city agglomeration population densities increase, the noise of city life may cause citizens to look for rest in secluded, natural, and silent spaces that are increasingly far from city areas or even popular holiday resorts. Many city dwellers also begin seeking artistic and aesthetic inspiration and, as a result, return to rural regions. Nowadays, city residents show an increasing interest in regional and local traditions and cultures as a means of experiencing new impressions and emotions far from city agglomerations [54,55].

UPFs are local food providers and have become a part of sustainable urban development. UPFs have social, economic, and environmental value rather than a liability. Nowadays, most authors agree that urban agriculture brings great value to urban areas or the general urban public [56]. In this regard, they refer to Porter and Kramer's conception of CSV as a central aim of each sustainable and inclusive corporation [5]. Primarily, this relates to farming, particularly to ecological and food security issues [9,12]. In financial terms, this shows the growing importance of shareholder investment and income. Likewise, more non-financial value is considered the stake of various company stakeholders, such as internal owners, manager or employees, and external owners, such as customers, suppliers, society at large, the government, shareholders, and creditors [57].

UPFs create shared values for urban and rural societies and environments. The UPF business model is CSV manifold. While financial investment has substantial short-term monetary impacts, the non-financial benefits have long-term consequences [58]. Some of them do not have market value [59]. There is, for example, general agreement that a shift from conventional to organic agriculture brings lasting nutritional and health benefits for consumers of organic food and organic producers as well. Frequently, urban farmers adopt strategies that build upon elements of a sharing economy, e.g., crowdfunding and community financing models that make it possible to preserve land resources for small-scale agriculture [60–62]. The literature shows that UPFs create financial and long-term non-financial values. They are shared in the economy, society, environment, and in culture and tradition [49,51,52,54–56,58].

UPFs are the leading actors and value creators in local food networks. In accelerated urbanisation, and in SDG and AFN contexts, urban farms become an essential node in sustainable development. However, this form of agricultural activity is rarely well recognised by decision makers. Some authors recognise the need for better organisation in this context. This consolidation would allow for greater representation, for example, in negotiations with municipalities. Well-functioning networks can negotiate access to land, adequate tenure arrangements and access to credit. Branch organisations may also assume specific training and extension practises, infrastructure, processing and marketing, control, and the certification of the quality of the marketed products. The farmers involved require new communication and networking skills [17–19,21,41]. The willingness to communicate, resolve conflict, and develop new network organisation models as inherent features of the

professional profile of urban farming are also needed [47]. Therefore, as many authors claim, UPF business networks require a separate discussion.

2.3. The Polish Research Context

In Poland, in the 1950s, the annual percentage of the population residing in urban areas amounted to 38.3%. Nowadays, 60% of Poles live in urban areas. The estimations show that, by 2050, the proportion of city residents will increase to 70.4%. This is still below the estimates for the whole of Europe and Eastern Europe, which project 83.7% and 79.4% of the proportion of urban residents as a percentage of the total population in 2050 [63]. In Poland, there are 889 cities, with 19 containing over 100,000 citizens, including 11 with 100–500,000 citizens and 8 with a population of over 500,000 people [64].

Polish urbanisation brings many typical economic and socio-environmental problems. These mainly concern agglomeration land use, landscape, agriculture and rural areas [65–68]. Even arable land in urban areas is still significant, e.g., in Warsaw the estimate is 29% of the total area, which, in Cracow, is up to 52% [69,70]. In 2019, in Poland, 0.029% of the agricultural land was excluded for non-agricultural purposes. An estimated 4350 ha of total farmland (14,689,506 ha) was excluded, mainly for residential (2535 ha) and industrial purposes (768 ha) [71]. The exclusion of agricultural land from farm production is also a significant threat to Poland, and the growing urban population creates social and environmental risks.

On the other hand, the growing urban residents' demand is often the primary motivation for Poland's UPA. An equally important reason is to increase the production potential and multifunctional involvement of smallholder agriculture that is widely operating in Poland [72,73]. Many studies indicate higher income, production factors, and farmer investments on urban fringes, which are closer to the urban areas [74,75]. UPA development has considerable potential for the sustainable development of Polish urban areas. Conventional farm practices are primarily aimed at achieving economic goals. UPFs also incorporate broader social and environmental missions, related, among other things, to creating social, cultural, ecosystem, and infrastructural value for urban areas. At the same time, they offer an opportunity to maintain local food systems.

However, the low recognition of UPFs and increasing environmental and social issues related to growing Polish agglomeration population density seems to be the most critical development barrier [76]. There are significant concerns that, even if agriculture in cities is highly effective in enhancing food accessibility and urban food security, production often occurs in polluted environments, which involves health risks [77]. The lack of adequate development of UPFs and AFNs is also related to the fact that there is a robust political discourse in the Polish metropolis regarding their development direction. This direction often involves attempting to reconcile environmental and social challenges with strategic urban planning and industrial policy. Urbanisation, industrialisation and post-industrialisation processes are the main forces of urban planning in Poland [78].

Other significant barriers are the lack of adequate entrepreneurial law regulations (lack of legal status) and entrepreneurial skills among farmers. These laws contain complicated standard rules on off-farm activity and a lack of proper business models and practices; thus, business training for UPFs is among the barriers led by a lack of public interest or tailored aid. This results in fewer incentives for younger populations to get involved with UPFs and growing difficulties with generational renewal and small farm succession on the agglomeration fringes [79].

Most UPFs are poorly recognised and networked, if at all, and lack the channels and power to voice their needs. This limits the representation of their interests in urban policymaking and planning at the various levels and hampers their participation in development programmes. The recognition of the relational nature of UPFs may significantly contribute to their involvement in the construction of AFNs, supplying the growing number of inhabitants in Polish agglomerations.

3. Materials and Methods

3.1. Conceptual and Analytical Framework

The literature findings show a considerable differentiation in UPFs worldwide and that their nature may differ by the roles played for agglomerations. However, many authors point to some standard features of the UPFs that can delimit and universalise them. This study defines UPFs as a specific form of farming, adjusting their production profiles to agglomeration requirements by diversifying the products and services intended for urban dwellers. The studied entities produce and provide food and services. The urban and peri-urban nature of studied farms results from urban proximity and close relationships with urban dwellers, markets and sectors.

The study refers to food networks as business networks. Food networks comprise business and social relationships for producing and delivering food and services to agglomerations. Food networks provide food and food-related ecological and social services. Food and services are often channelled together in food networks—foods and services are sold as complementary goods to a single recipient. Food networks provide agglomeration dwellers with essential food and various food-related environmental and social services.

Food networks and business relationships are studied, primarily based on interorganisational relations (IORs) theory and the network approach applied in the activitiesresources-actors (ARA) model framework within the lenses of relationships with external stakeholders, mainly customers, suppliers and competitors, and other institutional organisations (e.g., local governments, education, non-governmental, and associations). The study based on IORs and ARA is concerned with understanding the content and shape of UPFs relationships in food networks.

IORs theory has developed since the 1990s. The relational view shows that business relationships are based on prevailing social norms, traditions, ethics, commitment, and trust. It considers the complexity and hybridity of various organisational forms and shows that cooperation occurs across competing companies' boundaries [37–39]. The business network approach was initiated by Scandinavian researchers Håkansson and Snehota in 1989 [1]. The main phenomena observed in networks are relationships, cooperation, interaction, exchange, association, relatedness, and competition. The main feature of a business is interaction. These interactions evolve into temporal relationships with specific features that are typical for business [2].

Two types of characteristics for business relationships are usually distinguished: structural factors, which include continuity, complexity, symmetry and informality, and process characteristics, which include adaptations, cooperation, conflict, social interaction and routinisation. Typical business relationships appear symmetrical in terms of the resources and initiative of the parties involved. They often have a lower degree of formalisation. Mutual adaptations are a prerequisite of the development and continued existence of relationships between two companies. Elements of cooperation and conflict coexist in business relationships. Despite business relationships essentially being about business-specific behaviours-subjective values, the personal bonds and convictions that are always present play an essential role in forming business relationships [80].

The model may serve as an instrument of classification and network recognition. It groups networks into three layers. The first activity relates to the links between the activities of two actors, such as production, logistics, administration, deliveries, and information handling. The second relates to resources, relating to how actors' resources may become adapted and mutually tied together, such as tangible (plant or equipment) and intangible (knowledge) importance, especially in the process of innovation. The third is the actor—interpersonal links developed between individuals in the involved entities. The relationship depends on the degree to which individuals see, know and feel close to each other; how they trust, appreciate and influence each other and are or become mutually committed [2,3]. This model provides a framework for a systematic description of the network processes and outcomes. It is also a well-applied application in business entities such as UPFs and their networks.

3.2. The Data and Measurement

Network studies primarily adopt qualitative methods for studying the features of network nodes (partners), links (interactions), and flows (exchange) that form the relationship [80]. They recognise the modes of processes, such as establishing and maintaining relationships and variables such as trust or commitment. Most of the relational features are qualitative and require latent constructs, which are usually weakly measurable [4]. Net-work analyses use the primarily descriptive and qualitative methods of a case or ground study [81]. They can generate a robust, comprehensive array of knowledge about complex, highly interdependent and dynamic economic and social phenomena [82,83].

The study uses mixed qualitative–quantitative research methodologies, focusing on qualitative methods. It seeks to break the resulting dualism from these survey research methodologies versus participant observation and the questionnaire versus in-depth interview [84]. The study is qualitative if it is about determining 'what things exist rather than determining how many such things there are' [85]. Literally, 'quality' refers to the nature of things rather than their quantity. The qualitative method is very laborious and, thus, is only applicable on a relatively small scale [84]. This study samples nine entities.

Quantitative methods recognise the subject–object relationship rather than the subject– subject relationship between the researcher and the subject [86]. In qualitative research, information richness is often the most critical factor in selecting samples, because selecting the participants can serve an inquiry's specific purpose [87]. The qualitative research methodology focuses on the quality of information obtained from the subject–subject relationship. This study sampled diversified entities that enriched the information quality. The research sample's diversification and quality of information represent its research context and allow for the research objective to be met.

In qualitative research, people are the source, directly or indirectly, of qualitative data. They are the primary, direct, and most crucial qualitative and indirect quantitative data source. They are direct sources of data when the researchers interact with them first-hand and indirectly when the researcher examines the products of peoples' activities and interactions, such as documents containing quantitative data [88]. The primary data sources in this study were farm managers and owners interviewed by two investigators using a questionnaire and participatory observation.

Qualitative research is encouraged to allow for access to human experience [89]. Qualitative research is pre-eminently appropriate if one is interested in the respondents' interpretation and wording concerning their related problems, motives, and experiences [84]. The study applies qualitative research to inform on informal ties, implicit knowledge and intangible assets. It allows for gathering expertise and the interpretation of the type and nature of the studied farms' business relationships and networks.

The validity of qualitative research is improved by using triangulation [90]. The study used triangulation to gather data from multiple sources, methods, investigators, and theories to corroborate evidence [91]. Three triangulation types were employed in this study: methodological, theoretical, and investigator [88,92]. Methodological triangulation involved the use of three research methods and the resulting data collection techniques. This consisted of the questionnaire, participant observation and in-depth interview. Theoretical triangulation involved substantive theoretical lenses of IORs theory and the ARA network approach. Investigator triangulation entailed the involvement of two researchers.

Purposive sample selection was used. The sample consisted of nine different UPFs, which aimed at gaining the most representative sample to show the structure of farms that provide products and services directly to the Poznań agglomeration and the capital of Greater Poland, Poland. The questionnaire consisted of three parts: (I) missions, aims and resources (22 questions); (II) partners of the entity (11 questions) and (III) establishing and maintaining relationships (15 questions). Primarily open-ended questions were used to avoid suggested answers and to obtain as many free responses as possible to enrich the information quality. However, close-ended questions and scale ranking were also used for quantitative purposes [93]. Respondents answered 37 open-ended questions and 11 close-

ended questions (including four scale-ranking questions and seven semi-open-ended questions). The questionnaire structure confirmed the mixed qualitative–quantitative research methodology with a predominance of qualitative approach (37 out of 48 queries).

In October 2019 and February 2020, the managers and owners of nine farms located in the Poznań agglomeration were interviewed. The respondents provided descriptive and enumerative answers. The interviews allowed for accurate information gathering from the respondents' experiences and perceptions [87]. Both analyses, unstructured and structured, were used, i.e., free inference based on responses and the assignment of responses to categories and counting the occurrence of given response categories from the respondents surveyed [94].

The received responses led to the triangulation of data processing methods. This allowed for the theoretical, qualitative and quantitative processing of the material. In qualitative processing, we used textual and word categorisation and summative analyses [95]. In quantitative processing, the simple summing of responses or shares computing was used. According to the model, three stylised theoretical categories for each modelled layer were used [2,3]:

- Activities (structure, links, pattern);
- Resources (collection, ties, constellation);
- Actors (organisational structure, bonds, the web of actors).

The respondents' statements were assigned to the categories describing the relational activities, resources and actors in the three analysed layers: the farm, the relationship and the network. The study tests the network model for Greater Poland UPFs.

4. Results

4.1. The Sample

Agglomeration urbanisation processes in Greater Poland exemplify the urbanisation processes taking place in Poland. Poznań is one of the eight biggest agglomerations in Poland. The Poznań agglomeration embraces 22 surrounding counties for over 3082 square kilometres inhabited by almost 1,050,383 people. The agglomeration average population density is 341 inhabitants per square kilometre, while in Poznań this is 2042 per square kilometre. The Poznań agglomeration covers 10.3% of the voivodeship and is inhabited by 30% of the voivodeship citizens. In total, 41.3% of those employed in the voivodeship work in agglomeration area [96]. In 2019, Greater Poland ranked third in Poland in terms of agricultural land excluded for non-agricultural purposes. In 2019, this was 393 ha, excluded from a total of 1,760,003 ha, which is a value of 0.022%. The main destinations of excluded agricultural land are residential, mineral, and industrial [71].

The farm structure in Greater Poland exemplifies the farm structure in Poland. In 2019, private farms operated on a total area of 13,598,960 ha of agricultural land in Poland, which comprises 92.58% of all farmland. Over 11.45% of the total area of Polish private farms is in Greater Poland. In this region, of the agricultural land, 20.80% is managed by farms no larger than 10 ha, which, in Poland, comprises a percentage of 29.43%. Farms of size 10–49 ha make up 52.53% of the land in Greater Poland and 44.03% in the whole of Poland. It is estimated that 12.39% (11.69% in Poland) of the total farming land belongs to private farms of size 50–100 ha. The remaining 14.28% (14.85% in Poland) belongs to farms over 100 ha in size [71]. In 2019, there were 15,353 certified organic farms in Poland, of which 3.78% of them are located in Greater Poland—581 farms. The average family farm income in Poland was EUR 10,510.98 per farm. The average private farm total labour input was two annual work units (AWU). In 2019, the percentage of agricultural producers entered into the register of producers as a natural person in Greater Poland was 99.01% (99.33% in Poland), and only 0.83% of total producers registered as a legal person (0.57% in Poland). The percentage of organisational entities without legal status in Greater Poland was 0.11%, which equated to 0.08% for Poland. Civil partnerships were present in 0.04% of producers

in Greater Poland and 0.02% of Poland producers [71]. Greater Poland farmers more often registered for running their business than the average for farmers in Poland.

The surveyed UPFs represent different historical paths, legal statuses and economic structures among those in Greater Poland (Table 1). In many cases, following the legal registering of producers prevailing in Poland, new initiatives required creating new legal forms for carrying out economic activity, primarily if it constitutes non-agricultural activity. The investigated farmers were often registered as a natural person, a civil partnership, or a legal person. In some cases, they had also set up non-profit forms, such as foundations, if appropriate. The interviewed farmers formalised the organisational structures of a farming and non-farming business.

No	Legal Status	Set-Up	Total Land/Agri Land (hectares)	Total Buildings/ Agri/ Non-Agri/ Family	Persons Employed/ Family	Sales Revenues (thou EUR)
1	Farm (energy)	2002	187.0/150.0	4/2.5/0.5/1	4/2	100-500
2	Farm/Civil partnership	1988/1992	2.7/2.1	4/1/2/1	9/3	5-20
3	Natural person	2017	1.23/0	1/0/1/0	2/2	5-20
4	Farm/Natural person	1985/2013	26.5/20.0	5/3/1/1	4/3	20-100
5	Farm (experimental)	1947	490/400.0	12/6/3/3	20/0	>500
6	Farm/Natural person	2000/2005	33.0/27.0	14/4/8/2	16/2	100-500
7	Organic farm/Legal person	2002/2019	300/260	8/2/6/0	11/2	100-500
8	Organic farm	1945	1.23/0.5	1/0/1/0	2/2	<1
9	Foundation	2015	1.23/0	1/0/1/0	0/0	<1

Table 1. The organisational and economic characteristics of the sample UPFs.

Source: Authors' survey.

Some of the investigated UPFs have a long corporate history, dating as far back as the post-war period in three cases. Two were established in the 1980s. Three dated from the beginning of the second millennium. Therefore, most of the sampled farms are longrunning farms. Some of them were developed as new formal initiatives, recently taken to broaden a product or service offer.

The sample exemplifies the farm structure of Greater Poland and Poland. The farms differ in the size of owned land, including the land used for agriculture. There are smallholders, and medium and more significant farms that stretch over 100 ha. They differ in the amount of building stock, which is not always related to the land amount. The number of buildings and their use determines the activities carried out. The sample includes households with between 1 and 14 building facilities. They employ from two to twenty full-time employees. The foundation employs the farm manager. This depends not only on the amount of land but also on the type and differentiation of business activity. Finally, the economic revenue is related to the resources at hand and the business' direction, which is the sales revenue variation. This varies in the surveyed sample from less than EUR 1000 to more than EUR 500,000. According to the EU definition, economic characteristics, mainly revenue and employment, show that most of the surveyed UPFs are small businesses [97].

4.2. Activities

A wide range of production systems characterise the surveyed farms. They concern both the whole sample and each interviewed farm. They diversify their activities, combining traditional agricultural production with innovative activities. The surveyed farms develop green and regional production systems. Some maintain conventional production (such as farms 1, 6, 7, 8) while simultaneously modernising their systems. They introduce certified ecological production (farms 2, 7, 8), and regional (farms 4, 5, 6, 7) or integrated production systems (farm 5). Some develop traditional food processing (farms 4, 6, 7) and innovative solutions for agro-biomass production (farm 1).

The farms are also conglomerates of various farm and non-farm activities and functions. They are multifunctional. There is also variation within agricultural and nonagricultural activities. All of the surveyed farms develop different service facilities, often social and related to food. In terms of the farming output, these are cultivation and processing functions, mostly for traditional recipes and artisanal methods as far as non-agricultural activities are concerned, combining various social roles, e.g., tourism with education or recreation with culture (Table 2).

No	The Mission	Scope of Activities		
	The Mission	Agricultural	Non-Agricultural	
1	Producing cheap eco-energy while respecting the environment	Cereals	Agro-biomass stationary and mobile lines for shredding and briquetting	
2	Delivering health-promoting products	Cereals, horticulture	Traditional oil production, education	
3	We help people realise their passions	Cereals, horticulture	Social, educational and cultural services	
4	Promoting the consumption of traditional, regional, and organic products	Cereals, orcharding, animal husbandry	Food processing, social services, education, promotion	
5	Running a farm at the highest level, promoting science and business	Cereals, horticulture, animal husbandry	Education, R&D, accommodation, internships, bio-energy production	
6	Making people happy through a rural lifestyle and traditional food	Cereals, animal husbandry	Agritourism, traditional food processing, social services, catering, culture, recreation	
7	Rest in the spirit of slow life with unique cuisine in a historical space	Organic horticulture	Food processing, agritourism, culinary, artistic, educational and cultural services	
8	Production and promotion of healthy food	Orcharding	Education, recreation, culture	
9	Initiating and supporting cultural and socio-economic development	Conservation of nature and rural heritage	Artistic, cultural and educational activities	

Table 2. Missions and scope of activities of UPFs in Poznań agglomeration.

Source: Authors' survey.

The vital characteristic of the farms surveyed is combining various activities, such as conventional growing with organic fuel and agro-biomass. Another example is regional products with traditional processing, certified organics with certified integrated pest management production—innovation combined with tradition. Multifunctionality multiplies sales by reaching customers with different needs, expectations, and tastes. This increases income and fulfils shared missions, such as protecting the environment or public health.

The farms broadly perceive their role as economic, social and ecological, thus showing deep recognition and understanding of the growing needs among city dwellers. Their produce complements the urban lifestyle and occupation, and solves various urban problems. Farmers understand missions much more broadly than simply as goals. For example, they define their mission as the desire to 'bring happiness or help', 'create conditions for recreation', 'develop peoples' passions', 'initiate and support development' etc. In Figure 1, the category of 'Others' included objectives of renewable energy sources (RES), customer satisfaction, customer loyalty, integration of the local community, and supporting socio-economic activities; this shows the importance of social and environmental factors.

4.3. Resources

After delimitating the highest value-added (VA) and costs (C) resources, the net valueadded (VAN) was calculated. On this basis, the most contributed resources to value-added were tested, taking into account their costs. The highest value-added (VA) and net valueadded (VAN) values come from intangible assets—experience and competences. The most value-added intangible assets are experience and competences and partnerships and a tangible asset, such as land. On the other hand, financial resources generate the highest farm cost. The survey delimitated five clusters of resources; the first consisted of experience and competences. The second cluster consisted of partnerships and two tangible assets: land and buildings, which are also rated very highly. In the third cluster, there were plantings and workers; there was one tangible asset: machinery and equipment, in the fourth cluster. The last cluster consisted of financial resources and others that did not add value to the farm (Figure 2).







Figure 2. Resource value-added of UPFs in Poznań agglomeration (no). Note: VA value-added; C costs; VAN net value-added. Source: Authors' survey.

In the group of highest cost resources, four clusters are distinguished. In the first, there are the highest cost resources. These include buildings and workers. In the second cluster are financial resources at a high price. The third cluster consists of resources with one indication (plantings, machinery and equipment, among others). The fourth and final cluster contains resources that generate lower costs. These include two intangible assets, experience and competences, and partnerships and tangibles, such as land and livestock.

Three clusters of VAN delimitate. In the first VAN cluster, there are two resources with the highest net added value. They are two intangible assets: experience and competences partnerships, and one tangible asset: land. In the second cluster, plantings have a VAN that is twice as low. The third cluster still brings a positive VAN, although the lowest come from livestock and machinery and equipment. The third cluster contains three resources with a negative VAN. These include workers, others and financial resources.

4.4. Actors

Suppliers and recipients are critical UPFs business actors. The farms cooperate with local and personally well-known partners and long-term contractors. The suppliers must provide products with specific characteristics, as indicated in the answer 'matching the style of the farm's offer', such as regional, traditional, organic or seasonal.

The farms primarily address their produce to city markets. Most of the recipients are Poznań dwellers (Table 3). Their recipients mainly come from the region's capital, though some come from the county or commune towns. The share of customers from Poznań from the total population ranges from 40% to 90%, excluding one entity, for which it is 10%. The farms direct at least 25% of their activities to agglomeration residents. For some of the farms, the share of urban customers is 100%.

No	Poznań (%)	Towns within a 20 km (%)	Other Large Cities in Poland (%)	Total Urban Customers (%)	Commune/County/ Poznań (km)
1	60	20	0	80	6.7/28.2/37.2
2	90	0	10	100	4.4/24.7/35.7
3	40	20	0	60	8.4/17.5/36.0
4	50	20	0	70	7.7/21.8/21.8
5	40	20	0	60	8.5/33.2/33.2
6	75	15	8	98	6.9/23.3/34.6
7	50	5	45	100	5.1/12.6/54.6
8	40	20	0	60	8.4/17.5/36.0
9	10	15	0	25	8.4/17.5/36.0

Table 3. UPFs customers and market distance in Poznań agglomeration (%, km).

Source: Authors' survey.

The distance from the different city centres range from 4.4 km to 54.6 km. However, for most, the distance from the Poznań centre is the highest. It ranges from 21.8 km to 54.6 km. In comparison, the length of the county city is from 12.6 km to 33.2 km. The farms are located even closer to commune towns' centres, from 4.4 km to 8.5 km away. However, they direct no more than 20% of their offerings to the commune or county city dwellers. In general, the percentage of customers from Poznań dominates, even though the regional capital is farther away from the commune towns and county city dwellers.

The surveyed farms' recipients were divided into four clusters. The first cluster consisted of individual consumers and health food shops. The second cluster included intermediaries and their shops. The third comprised gastronomy and retail chains and wholesalers. The last consisted of processors, producers and marketing groups, exports, and others. It is worth noting that nobody indicated a sales platform (Figure 3).



Figure 3. Recipients of UPFs in Poznań agglomeration (no). Source: Authors' survey.

The farms also network with institutional actors—local governments, chambers of commerce, associations, financial institutions, agricultural advisory bodies and state agencies. Three indicators were highlighted by institutional actors as being crucial: non-governmental organisations, local government, and the presence of a university. Farmers would like to expand business and institutional actors; the most desirable would be a trading and promoting actor. They have the same desire for institutional actors and would like to attract financial operators. However, farmers were much more likely to emphasise the desire to establish relationships with business partners than institutional partners.

The surveyed farmers show different levels of trust in business and institutional actors. They reveal medium or high confidence in business and institutional actors. However, they trust business actors more than institutional partners by almost twice as much (Figure 4). An essential conclusion is that farmers do not express a low or deficient trust for any of the actors. Farms are based on confidence in business and institutional actors, even if farmers see development potential with business actors more often than institutional partners.



Figure 4. UPFs trust in business and institutional actors in Poznań agglomeration (%). Source: Authors' survey.

4.5. Maintaining Business Relationships and Networks

The Poznań city green market is the central node of the surveyed food network, consisting of the business and social relationships of surveyed farmers. The farm revenue streams mostly come from direct sales or sales in short supply chains, which they sell to distributors or traditional manufacturers. They also supply the growing population of the Poznań agglomeration with different services, while receiving fees for them. They also channel these services in food networks. The surveyed farmers most often use the Internet and social media to acquire customers. They find recommendations, word of mouth, grapevine communication and opinions expressed on websites to be of the greatest importance. In this regard, they participate in fairs, exhibitions and local events.

Farmers reveal the importance of informal contacts and close social ties with customers. They prefer regular contact and communication with customers through social media, e-mail, traditional mail, talking in the marketplace and offering occasional greetings over the phone, which were all considered to be the most important aspects of maintaining relationships. Relationships with suppliers are also essential in the food network, and farmers are intensely interested in familiar and close casual relationships with farm suppliers. They also use the Internet, referrals and personal contacts to find suitable suppliers. Familiar meeting places such as trade fairs, commodity exchanges, training courses and exhibitions were considered to be the next most important aspects. The surveyed farmers also revealed maintaining relations with institutional actors by participating in local or regional authorities' official meetings.

The surveyed farmers participate in associations and networks, such as local action groups, the Polish brand association, branch associations, e.g., fruit growers, agritourism and rural tourism, and local heritage, culinary heritage or innovative food networks. There, they co-opt, i.e., cooperate with competitors. As indicated by one of the interviewed farmers, 'it requires a prior arrangement of non-conflicting areas'. This firstly involves establishing zones of collaboration that do not conflict with each other. The farmers recognise competitors in similar farms regarding their range of activities and land area under cultivation. In any case, two farms point to competitors in the distribution channels. Generally, investigated farmers emphasised the need to cooperate to achieve common goals that they cannot achieve independently. A crucial area of their cooperation is the exchange of experience.

Some assets must be pooled to reach joint payoffs. Seven out of nine interviewed farmers declared coopetition as being the most effective means of performing collaborative market research, and as a means of improving price setting and sales, sharing machinery, exchanging experience and reconciling mutual goals. Farmers revealed having informal, friendly relations with competitors. All farms compete on the quality of their products and services. Their prices are competitive because they do not include margins for intermediaries. However, farmers are aware of the uniqueness of their offered products and services, which are influenced by experience, knowledge, tradition, heritage, traditional production methods, and their organic raw materials. They competitively tailor products

and service offerings to individual customers' preferences, tastes, and flavours, and the orders placed by other customers. They are aware of product and service uniqueness and generally declare no fear of competition.

Interestingly, one such cooperation condition is market research in terms of two criteria: the quality of products and services and their prices. Another area of collaboration with competitors is to do business with them in areas where they are better than the farm in question. Thus, for example, an enterprise can foster cooperation with competitors in fruit and vegetable pressing. Farmers share pressing machines with their competitors. The most important thing is to maintain the highest quality of production, which is possible thanks to cooperation with competitors. A final area of collaboration with competitors is the joint sale of products by farms with competitors.

The surveyed farmers revealed various reasons for collaboration. They fall into six clusters. The most crucial reason for cooperation is trust. Trust independently constitutes the first cluster. The second cluster contains three aspects: personality, accumulated experience, and engagement. The third cluster consists of informal ties, norms of behaviour, and exchange of experience and information. In the fourth cluster, there is only emotional communication. The fifth cluster has only collective investments. The last includes two causes of interaction, combining resources and innovation (Figure 5).





5. Discussion

Business and social networking is necessary for economic and social sustainability [23,24,26,27]. The study explicitly intended to explore agglomeration farmers' relationships and to delimitate its relational model. The study hypothesised that surveyed farms are embedded in different relationships and networks. The study aim is realised, and the findings support the study hypothesis, finding that they are embedded in the local environment. Investigated farms establish and maintain relationships, thus building their business networks. They use various business and social tools and methods to attract business actors and retain long-term relationships. Building different actor relationships, including informal and personal relationships, and striving to increase the offered products' market values is the basis for maintaining a solid business. They revealed having casual and trust-based relationships with different stakeholders—customers, suppliers, competitors and institutions. This study confirmed that business and social relativity is among the primary features of farms in the Poznań agglomeration.

Based on the survey results, the relational model of UPFs in the Poznań agglomeration is delimitated (Figure 6). The surveyed farms are characterised by the diversification of activity structure, the competitiveness of resource collection and the formality of organisational structure as a basis of a farm business. The integration of activity links sharing of resource ties and collaboration among actor bonds as the basis of the relationship. Finally, it demonstrates jointness of activity partnerships, the locality of resource constellations, and mutual trust among actors as the basis of the web of actors in the network.

	Farm	Relationship	Network
Activities	Activity Structure	Activity Links	Activity Pattern
	Diversification	Integration	Jointness
Resources	Resource Collection	Resource Ties	Resource Constellation
	Competitiveness	Sharing	Locality
Actors	Organisational Structure	Actor Bonds	Web of Actors
	Formality	Collaboration	Trust

Figure 6. The relational model of UPFs in Poznań agglomeration. Source: Authors' elaboration.

The study shows that the first and most essential condition and foundation for maintaining a business network is trust, which is very much in line with the other survey findings [47,48]. Faith allows for establishing informal relationships among business actors and business and institutional actors—networking based on casual relationships and ties. Often, relationships are not only for business but also social purposes. Networking allows for seeking win–win solutions. Farms are networking to maintain an appropriate relationship between quality and price. They prefer to prevent unfair competition because they fear it. No formal regulations of fair competition can replace networking. Trust and informal ties are deeply rooted in networking actors. They make the creation of social networks, not just business networks, visible. Consequently, a relational business network embedded in a social and ecological environment can account for their shared values.

Trust is the primary and most important reason for networking. Second, they find reasons primarily concerning the qualities required from an individual to socially interact to build a business relationship. Third, the reasons for participating in interactions to build social and business relationships highlight the embeddedness of the individual in the community. It is worth noting that of secondary importance is the partner's personality and engagement. Its counterpart lies in the bonds of individuals in the community and the behavioural norms that frame their informal ties. Initially, the individual has accumulated experience and can exchange this within the community.

Emotional communication is also apparent in interactions in the community. The revealed emotions express the authenticity of the individual's relationship to the other individuals that make up the community. The network, with its diversity, can trigger the feelings of the individual, both building informal ties and exchanging knowledge and information. Only by getting to know and understand the individual, not only with their knowledge and experience, but also with their emotions, is it possible to make decisions about collective investments and combined resources. Decision-making in relational business networks, distinguished by social and technological innovation, is not always based on rational reasons (knowledge and experience) but may also result from emotional communication. However, all reasons for interactions to develop cooperation in a relational business network grow out of a common root of trust.

This study studied the characteristics of the participating farmers, which contributed to a greater understand of how they build and consolidate their relationships with city dwellers in alternative food and service networks (AFSN). The results suggest that surveyed farms mainly address their produce to the dwellers of Poznań, the capital of the region. They primarily focus on the densely inhabited and large agglomeration markets, even if they are further away from smaller markets in more minor but dense areas. The surveyed farms deliver to the Poznań market, even from a distance of over 50 km. In that case, a potentially large market is an essential factor in developing agglomeration farming in Greater Poland.

This relationship turns out to be at odds with the research results conducted in other world regions. For example, for Japanese UPFs, the distance from the city matters, and advantages in terms of lower transportation costs from the farm to the city play a significant role here, compared to earlier von Thünen models [98]. The market scale is the most important for the sample farms from Greater Poland. It was observed that the more considerable distance from Poznań is not a factor that reduces the share of customers from this market, which remains, in most cases, to be between 40–90%, and some even deliver their products to more distant cities in Poland. In comparison, the share of customers from towns within 20 km was only between 0–20% in our survey.

It was also observed that farms with lower potential are located closer to the city centre; the greater the distance from the city, the higher the farm economic potential. The observation confirms that urbanisation pushes agriculture outside of agglomeration fringes, which other authors also observed elsewhere. This phenomenon is quite dangerous, because it limits fresh food availability to city dwellers [31,49,50,75]. Interestingly, another aspect of the previous conclusion can be raised, which confirms other authors' views regarding the delimitation of agglomeration farming [49]. Namely, the fields' geographical position alone, whether located within city centres or beyond cities' geographical borders, appears inadequate in delimitating urban agriculture.

The study shows that assessing their contribution to the urban food system and the inclusion of the farmers' activities in urban social services are critical features of UPFs delimitation. Other authors also point to economic aspects, such as the achieved yields and professionalism [98]. The intensity of urban farming can be very different, depending on the land-use methods. Recently, many UPFs have transformed. Instead of industrial production methods that are mainly intensive, they use extensive organic or aquaponic methods. However, some researchers underline that UPFs are usually soil-based [46]. This study supports other authors' conclusions about the nature of UPFs, which suggest that the urban location is not its essence. Instead, these authors conclude that multifunctional networks are critical to delimitating their business model.

The literature findings show that multifunctionality is critical and necessary to delimit UPFs' business models. It predisposes UPFs to fully acknowledge sustainable development goals (SDGs) and create shared value (CSV) in social and ecological order. The UPFs surveyed in this study introduced new production systems, such as regional, environmental or integrated systems. They are also innovative in matters of manufacturing such as in biomass or food processing. All of the UPFs investigated in this study offer different social or bio services. Additionally, the UPF typologies found in the literature indicate a diversity of activities. This mainly emphasises their multifunctionality, which serves the urban and rural needs simultaneously, which is an essential aspect of sustainable development [33,42,46,54,55,61,98]. The findings are entirely in line with other surveys' results that emphasise the UPFs' multifunctionality paradigm as a suitable pathway to sustainable development.

Additionally, this study shows the sustainable inclusiveness of food networks. The studied UPFs are conglomerates of various activities, functions and missions. They combine agricultural and non-agricultural activities. They carry out several activities simultaneously, which often complement each other. This allows them to build sustainable relationships, especially with clients. Other findings also show that UPFs can gain in financial effects, and simultaneously realise various environmental and social missions. They target their offerings for city dwellers and bring added value to their own and to rural dwellers' welfare [56,58]. This research has also confirmed a significant variation in the economic, social and ecological potential of UPFs.

Finally, the study shows that valuable resources and their characteristics form an effective combination for UPFs. The respondents indicated that most were value-added resources. Intangible resources, such as experience and competencies, and partnerships are

the most critical values. According to the resource-based view (RBV), the research carried out in Brazil also confirms our results [43]. This shows that intangibles are the most critical resources for gaining a competitive advantage for UPFs. According to Brazilian studies, intangibles are valuable, rare, inimitable, and non-substitutable (VRIN). In combination with the most vital farms, tangible assets, i.e., land, also characterised by these features, create sustained competitive advantages for UPFs. This study also finds that combining experience, competence with land, and network potential all contribute to the consideration of a UPF's business model delimiting quality.

This research's main limitation is that the interpretation is mainly qualitative and refers to a particular case study and its context. Therefore, broader extrapolations of the results shall be made with great caution. This study provides some insight into the food networks. UPFs business relationships were somehow better recognised. Thus, the research results may contribute to further comparative studies. The study results may be an inspiration for further research, be it qualitative or quantitative. This study derived from earlier theoretical assumptions of the IORs, network approach and the ARA research tool grounded in theory. These theories made it possible to introduce new categorisations in business relationships and networks regarding farms in the Poznań agglomeration. This study's relational model details earlier explorations and suggestions on other studies of business models regarding the inter-organisational relationships with UPFs.

This relational model may serve to develop further research and, perhaps most importantly, will help to draw meaningful conclusions about how UPFs are functioning and are relevant to sustainable urban policy. As previous research highlights, nowadays, urban policies are poorly tailored to support UPFs' development [99]. The average trust of UPFs in institutional actors was much lower than in business actors. This results from a significant financial cost burden on their activities and a lack of institutional support and promotion of UPFs' activities, despite their outstanding commitment to sustainability in an economic, environmental and social sense. This lies very much in line with other findings [41,46,50,76,99]. Municipalities should also stimulate universities, non-governmental organisations (NGOs), and community-based organisations (CBOs) to support UPFs' organisations. They should care more about capacity development, linkages with other urban farmer groups, private enterprises, and consumers' organisations. They should keep UPFs' sustainable business models developing, since they are the main actors of sustainable urban food and services networks.

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