

Summary of doctoral dissertation

Determinants of using the public-private partnership formula in the development of *smart city* in Poland against the background of foreign experiences

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Public-private partnership (PPP) is a form of implementing public tasks that brings hope for improvements, savings and modernization, but also disappointment when projects fail or the results achieved are far from expectations. The partnership activates the financial and technological capital of private partners. This issue has been raised many times by both theoreticians and practitioners, pointing out the advantages and disadvantages of this formula. Doctoral theses, habilitation theses and practical textbooks have been written dealing with this difficult matter of economic and social relations, which become visible in the cooperation of public and private partners. In some countries, PPP is popular and brings tangible benefits, in others, despite many attempts to implement it, the effects are modest.

The reason for taking up the problems of using PPP for the development of *smart cities* was, on the one hand, research curiosity, and on the other hand, a certain impatience with the observation, also in my own professional practice, that a theoretically beneficial and available solution turns into a difficult one in practice.

The aim of the doctoral dissertation was to examine the factors influencing the choice of public-private partnership as a formula for implementing elements of the development of *smart cities* in Poland. The aim of the dissertation was achieved by :

1. analysis of the literature on the subject in the field of public-private partnership and *smart city*;
2. review of research on the development of *smart cities* in Poland and around the world;
3. author's empirical research. The research was carried out in two stages. In the first one, the Delphi method was used to isolate factors influencing the use of PPP to implement *smart cities* and assess the strength of their impact. The Delphi method consisted of three rounds and involved experts. The second stage was carried out among public entities, private partners and banks financing public-private partnership projects.

Based on a literature review and a review of empirical research, the main hypotheses were formulated:

1. Similar factors influence the use of the public-private partnership formula in the development of smart cities in the world and in Poland,
2. The development of public-private partnerships in Poland is slowed down by a number of specific factors.

In order to verify the main hypothesis, two additional partial hypotheses were formulated:

1. There is a strong concentration of PPP projects serving the development of smart cities in specific areas around the world and in Poland,
2. Difficulties in implementing PPP projects in Poland are also reflected in the application of this formula to smart cities.

And 6 research questions:

1. How was the institutional environment of PPPs transformed in Poland?
2. Can the current level of institutional development of PPP in Poland, including support from central authorities, be considered sufficient?
3. How is the idea of smart cities developing in the world and in Poland?
4. What does the PPP market in Poland look like and how has it changed over the years?
5. What areas are the most attractive for cooperation between public partners and private in the context of smart cities in the world and in Poland?
6. What factors slow down the implementation of PPP projects in Poland?

The dissertation consists of an introduction and five chapters, each of which ends with partial conclusions, while the entire work ends with final conclusions.

The first chapter was devoted to public-private partnership as a formula thanks to which it is possible to find solutions to important socio-economic problems of the modern world. This allows answering the questions: How was the institutional environment of PPP in Poland transformed and whether the current level of institutional development of PPP in Poland, including support from central authorities, can be considered sufficient? The above assessment was made based on a literature review. The starting point is to present the evolution of the scope of tasks and management in public entities over the years. Then, the essence and institutional conditions of public-private partnership, definitions and models of public-private partnership

were presented. The roles played by public and private entities in public-private partnership projects are presented in turn. Barriers, stimuli and success factors of public-private partnerships in Poland and in the world were characterized. This allowed to answer the question: what factors slow down the implementation of PPP projects in Poland. The chapter ends with a discussion of the market for public-private partnership projects in the world.

The second chapter presents the city as a space for public-private partnership projects. The chapter begins by presenting an outline of the problems of contemporary cities. Then, the evolution of public-private partnership is presented in Europe and around the world in urban projects. The next part contains the definition and indicators of cities development towards *smart city*. The next subchapter concerns the possibility of using public-private partnerships for the development of *smart city*.

The chapter ends by identifying barriers and incentives in the use of public-private partnerships for the development of *smart city*.

The third chapter presents *smart city* projects in Western Europe, the Nordic countries, Asia and the United Arab Emirates. The focus was not only on those solutions that have the PPP formula, but attempts were made to outline a comprehensive picture of the processes and mechanisms for implementing *smart city* solutions.

This review was intended to show the specificity of *smart city* solutions and similarities and differences between individual countries using both urban development instruments and the PPP formula. It allows to answer the questions:

- how is the idea of a *smart city* developing in the world and in Poland?
- what areas are the most attractive for cooperation between public and private partners in the context of *smart city*?

The fourth chapter was devoted to Polish ideas for implementing *smart city* elements, including public-private partnership projects in these areas. It contains an analysis of the PPP market in Poland and allows answering the question of how the PPP market in Poland has changed over the years. Referring to the image of the use of the PPP formula in Poland, outlined in the first chapter, the author tried to indicate the areas of concentration of interest of public entities in *smart city* solutions. At the same time, she presented specific examples of implementation, thus illustrating the practice of the organizational and legal formulas used.

The last, fifth chapter contains the methodology of the study conducted by the author and its results. The verification of the hypotheses and the attempt to answer the research questions were based on an empirical study using the Delphi method. The chapter ends with a presentation of the results of empirical research.

The results of the empirical study allowed the formulation of several conclusions.

1. Among similar factors that influence the use of the public-private partnership formula in the development of smart city in the world and in Poland one can indicate: availability of financing, relieving the public entity in the sphere of financing, availability of specialized knowledge, striving for efficiency at the construction stage and operation, increase in the quality of services provided, more effective use of financial resources, availability of data needed to provide services within smart cities, the possibility of using innovative technologies, large investment needs, the need to share risk and linking payments to the private partner with monitoring the results of its task implementation.
2. PPP projects used for the development of smart cities concern the so-called "hard" areas of the city, in particular: waste management, public transport, intelligent mobility, intelligent economy (possibility for entrepreneurs to use open data), energy efficiency, water and sewage management, street lighting, intelligent construction using technology enabling obtaining energy from wind and solar, ecological production of electricity via wind farms, geothermal waters.
3. The factors that slow down the development of PPP in Poland include: lack of political will on the part of the public entity, lack of understanding of the idea of PPP on the part of the public entity, lack of social participation in making important local decisions, lack of social trust in government and local government institutions, low level of social capital, unstable law in general and tax and financial law in particular, budget solutions that treat PPP contracts as loan liabilities.

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