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THE EXPRESSION OF THE POTENTIAL OF LITHUANIAN MUNICIPALITIES IN THE FIELD OF SMART ECONOMY

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Abstract: *The article analyses the field of smart economy in the Lithuanian municipal system. Based on the authors' works, that examined the concept of a smart social system and the smart economy as one of such systems, the designed model of the smart economy with dimensions was adapted to Lithuanian local self-governance. It was found that in the case of municipalities, the strongest expression of dimensions is ranked in the dimensions of general well-being, learning economy, and agile economy. The weakest expression of dimensions is found in the dimensions of entrepreneurship and intelligence. Such insights have been based on expert interviews.*

Key words: *smart social system, smart municipality, smart economy*

1. INTRODUCTION

In the conceptual model of the smart region proposed by Sinkienė and Grumadaitė [1] three areas are distinguished: public governance, community and economy. The author of this study states that a municipality is a well-defined territory that performs the political and administrative functions of the state sub-national governance level, therefore the concept of a smart region is considered appropriate to analyse the concept of a smart municipality as a territorial unit.

The value of economic growth to society has become questionable due to growing inequality, progressive technological changes, and negative factors of globalization. All these challenges of the modern economy make us look at the economy not only through the prism of developing technologies, but also call for productivity and long-term sustainability to be kept in mind alongside entrepreneurship and innovation. In this context, there is a need for smartness used by both business developers and policymakers [2].

Till now, the majority of smartness-related academic studies have focused on the analysis of smart urban planning and smart city initiatives, regional development and smart specialization strategies, or the overall development of a smart economy system [2]. This

article focuses on one of the areas underlined in Sinkienė and Grumadaitė's smart region model – the smart economy [1] as well as its expression, at the level of municipalities as a smart social system.

To achieve this goal, the author of this article presents the model of the smart economy as a smart social system, its dimensions and access to analysis at the beginning of the work. Later, analysing the model of the smart economy, it is adapted to local self-governance. An empirical study was conducted using the local self-governance model of the smart economy. The article presents its results revealing the expression of the dimensions of the smart economy at the local level.

2. THE MODEL OF THE SMART ECONOMY AS THE SMART SOCIAL SYSTEM

The analysis conducted by Bruneckienė and Jucevičius [3] revealed that there is no uniform and universally accepted definition of the term 'smart economy'. In summary, a smart economy means what is smartly created or achieved by economic operators, generating new ideas and getting more at a lower cost. However, this definition is narrow and does not sufficiently reveal the specificity of the smart economy. Therefore, these authors provide their own definition of the smart economy: the smart economy globally envisages and/or creates breakthroughs and new opportunities that are rapidly and smartly used to enact knowledge, innovation, learning, networking and digitalisation to create the greatest possible economic value with rational costs now and in the future; this ensures the coherence of the whole economic system and social responsibility in interaction with the environment [3].

Dagilienė et al. [4] compose similar essential elements of the smart economy. According to these authors, the formula for smart economic development looks like this: economic dimension + social dimension + environmental dimension, which goes together with information and communication technologies to address long-term sustainability and coherence issues. Greater emphasis is being placed on soft knowledge and the ability to enact technology, innovation and infrastructure for economic development.

According to Dagilienė, the goal of a smart economy is long-term economic competitiveness [4]. It is inseparable from the economic value created. However, in the academic literature, the issue of economic value creation is usually studied at the enterprise level, but not at the city or regional level. Recently, researchers have become increasingly interested in this and are beginning to explore economic value in the context of creating the city's gross value [5]. Enterprises are beginning to realize that their economic goals and the competitiveness of the

enterprises themselves are directly linked to the city's economic and social well-being and progress. This process of creating economic value is special in that qualitative criteria specific to a smart social system can be applied to its analysis. Researchers have applied eight dimensions to define a smart social system: intelligent, knowledge-driven, learning, networked, innovative, agile, sustainable, and digital. Such an approach also helps to reveal the process of value creation in the smart economy. Based on the model of dimensions of the smart social system, the authors have proposed the following model of the smart economy pyramid [5]:

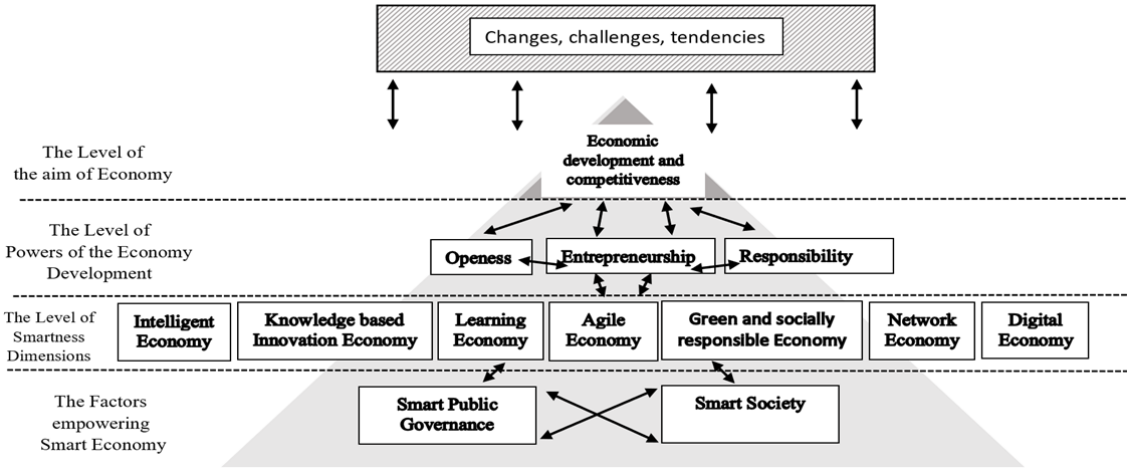

Fig. 1 The smart economy pyramid model, Source [3]

3. SMART ECONOMY IN THE CASE OF LOCAL SELF-GOVERNANCE

Furthermore, the article aims to describe and present the model of smart economy applied in the case of local self-governance. According to Bruneckienė and Jucevičius [3], the goal of a smart economy is to achieve economic progress and competitiveness, which is manifested through constant economic growth, resistance to economic turbulence and high quality of life. The main forces of the smart economy, according to the authors, are openness, entrepreneurship and responsibility, and it is the development of the smart economy that is enabled by smart governance and a smart society. Returning to the dimensions of the smart economy, they are described, respectively:

Welfare –Vormann and Lammert [6], who examine the roots of the smart economy, argue that it is smart city leaders who strive for common prosperity in pursuit of smart economy goals, in order to ensure low inflation, global investment, and a highly-skilled workforce. Due to all these factors, the general well-being is important for researchers in the smart

economy, and in order to assess its progress, we need to look at these indicators (inflation, foreign direct investment and skilled labour force).

Openness – Gandy Jr. and Nemorin [7], in their work investigating the links between smart cities and the economy, highlighted the importance of openness to smart cities. These insights could be applied to smart self-governance as well. The authors indicate openness as one of the main economic forces leading to international markets. Openness also helps to build international partnerships for competitive advantage. Researchers emphasize that there is a wide range of initiatives, such as the European Commission, to promote economic openness. They aim to strengthen consumer-based initiatives in the smart urban ecosystem by strengthening collaboration among citizens, government, businesses and researchers.

Entrepreneurship – A team of Romanian researchers examining the importance of entrepreneurship for the implementation of smart urban strategies in Romania highlights the negative factors that determine low entrepreneurship: poor quality management, problems of entrepreneurship education, and entrepreneurs with few opportunities. According to the authors, these criteria should be improved in order to raise the level of entrepreneurship in smart cities. Based on the insights of the Danube Academic Consortium, they develop the idea that smart growth can be driven by the development of three concepts: creativity, innovation, and the general level of entrepreneurship. Each of these three factors alone cannot ensure smart growth [8]. Therefore, all these aspects need to be taken into consideration when assessing entrepreneurship.

Responsibility – Bruneckienė and Jucevičius [3] describe this dimension as the establishment of the principles of the concept of common value and the development of social responsibility. Del Baldo and Demartini also investigated the experience of Italy in their work on territorial social responsibility [9]. According to them, the Italian National Action Plan, prepared by the Ministry of Social Affairs and Labour together with the Ministry of Economy and Development, defines the concept of territorial social responsibility in practice. This document emphasizes the interrelationships between the actors operating in the territory and the relations with external partners. The document sets out objectives for public sector policies to promote synergies and partnerships at a local level. The works of Italian scientists illustrate how the dimension underlined by Bruneckienė and Jucevičius manifests itself in practical strategic planning documents and how it could be rated in respect of self-governance, i.e. a specific administrative territory [3].

Intelligence economy – the context of the concept of intelligence can be recognized by analyzing the article by Jucevičius and Liugailaitė-Radzvickienė [10], which deals with the

smart society. In this article, the authors single out five characteristics that a smart society should have. Smartness is reflected in the pursuit of networking, the knowledge-based labour force, the pursuit of innovation, the promotion of digitalisation and the understanding and use of their own strengths. According to the author of this work, the expression of similar features could be sought in the context of smart economy municipalities.

Knowledge-driven and innovation economy – knowledge evaluation and emphasizing its importance help to create added value in the economy. Using knowledge, news, academic research, applying various innovations can significantly increase work productivity. Bruneckienė and Jucevičius distinguish as many as five important features of this dimension: development of knowledge-using and adapting the achievements of the research sector, positive attitude to knowledge and innovation, allocation of resources to research and innovation, cooperation between academic and private sectors, access to innovation system [3].

Learning economy is a dimension similar to the dimension of the knowledge and innovation economy. However, it differs because it is more focused on the role of the person or employee in the system. Bruneckienė and Jucevičius emphasize the assessment of a highly qualified work environment and the understanding of the importance of continuous improvement and learning [3].

Agile economy – in this dimension Bruneckienė and Jucevičius emphasize the importance of strategic efficiency and strategic flexibility [3]. The agile response is described in more detail by researchers from the Czech Republic Lom, Pribyl and Zelinka [11], who investigate the ability of smart cities to respond quickly from a provider-recipient perspective. To help understand how these relationships are changing, the authors highlight seven characteristics:

- The service provider has to seek to involve the service recipient in all stages of the development of the service so that he/she could express his/her opinion on the quality of the product.
- The service provider has to take into consideration the buyer's preferences for the product.
- The provision or production of the service must be divided into clear stages, thus enabling the recipient of the service to react.
- The service provider must be flexible concerning service specifications and requirements.
- Communication with the client must be daily.
- The success of the outcome depends on both the overall outcome and the ability to adapt to partial decisions.

- The whole process of service development and delivery must be smooth, without significant pauses.
- It is mandatory to eliminate all unnecessary work and strive for the simplicity of processes.

Although the Czech authors investigate the relationship between the client and the service provider, the principles followed perfectly reflect the essence of the concept of agile response and can help to apply it in the context of smart self-governance.

Green and socially responsible economy – Bruneckienė and Jucevičius distinguish four criteria for this dimension: application of sustainable development principles in business, development of socially responsible entrepreneurship, energy efficiency, and transport system efficiency [3]. Wang et al. tried to develop a model for assessing a green and sustainable economy in the case of Shandong Province, China [12]. Their research is based on the work of other authors who have done similar research. Shi, B. and Yang, H. distinguished 85 quantitative indicators to assess the green economy from the perspective of the economy, society, and available resources. Shi, L. and Xiang, X. attempted to identify the driving forces of the green economy and distinguished 19 indicators. These indicators included the region's GDP, energy output per unit of GDP, carbon dioxide per unit of GDP, the public attitude towards low-carbon cities, level of forest quantity and other similar criteria [12]. Assessing similar criteria could help identify the potential of a smart municipality from the perspective of a green and socially responsible economic criterion.

Networking economy – Bruneckienė and Jucevičius, presenting this dimension, analyse three main criteria: integration into value generation chains, availability of intelligent electronic services, use of excellence networks [3]. Ustyuzhanina et al. [13], examining the emergence of the networked economy from a historical perspective, indicate that it is the networked economy that is defined by stable cooperative and information links between economic actors, mutual coordination as a key form of cooperation, and the gradual replacement of negotiated relationships by operational transactions, gradual promotion of areas of cooperation, including market and value networks. In a network economy, the source of power is the ability to impose the rules of one's cooperation on an opponent [13]. Such an understanding of the network economy could help to analyse it more clearly from the perspective of smart self-governance.

Digital economy –The International Agency for Economic Co-operation and Development (OECD) states in its 2016 guidelines *Harnessing the digital economy for developing countries* that the digital economy promotes growth, productivity and inclusive development.

This growth is reflected in the proliferation of digital technologies by consumers, firms and governments in different countries and areas. Digital technologies help increase the productivity of capital and employees, allow participating in international value creation networks. It lowers transaction prices, eliminates information asymmetries, helps use market opportunities for marginalized groups through new educational opportunities, peer-to-peer learning, the sharing economy, crowdfunding opportunities, etc. <...> The digital economy offers more opportunities for consumers and citizens in completely new areas. Digital technologies help create completely new business models and help the public sector to offer services in a simpler, more accessible way by offering social welfare programs. These guidelines also address the risks of the digital economy: 1) the digital economy reduces the need for labour from third countries, which in turn reduces development in developing countries through re-migration; 2) the digital economy, together with robotisation, reduces labour force demand in less developed countries; 3) the digital economy forces the creation of a new regulatory framework that acts as an additional brake on more backward countries, further slowing down development opportunities [14].

Taking into consideration the significance of the presented dimensions, as well as the works of other academics [3] and [4], the author of the article presented the adapted system of quantitative and qualitative characteristics of the smart municipal economy (Table 1):

Table 1. The characteristics of the smart economy of municipalities

Dimensions	Quantitative characteristics	Qualitative Characteristics
Welfare	Consistency in achieving the vision of territorial development	The number of recipients of municipal social benefits in comparison with the general public (in percentage)
	Balanced development of the whole territory	Municipal welfare index
	Territorial government sector financial stability	The amount of municipal debt from the collected budget
	Low social burden	Change in municipal demographic indicators
Openness	The developed image of a competitive and business-friendly economy	Entrepreneurship development index
	An open and transparent institutional business environment	Foreign direct investment per capita and their growth rate
	Business administration is not	

	complicated by bureaucratic procedures	
Entrepreneurs hip	High business culture, private business leadership by engaging in solutions to territory problems	The proportion of newly established enterprises compared to existing economic entities
	A positive attitude towards cooperation and partnership between business leaders and local government leaders	The number of actively operating enterprises per 1000 population
		Average gross monthly earnings reflecting business productivity
Responsibility	Perception of the total value concept at the level of local leaders	Business cooperation at the local level in addressing social and environmental problems
	Understanding the concept of corporate social responsibility	The number of socially responsible enterprises in the municipality
Intelligence	Enterprises, organizations and institutions regularly share important information on trends in global and local markets, technologies, political and economic processes	The number of business seminars, conferences, presentations for the local community
	Municipal strategic documents reflect important challenges for economic development and expected in the near future	
Knowledge-driven and innovations	Local business understands the importance of high technology in business processes, invests in the development and application of the latest technologies in the enterprise's activities	The average investment of local enterprises in R&D
		The number of enterprises that have used public services for innovative activities
Learning	Businesses tend to implement pilot projects and are willing to participate in the process of creating prototype products	The proportion of population with higher education
Agile	The business is willing to invest in continuous professional development	Employment rate
	Companies tend to review their processes, seek efficiency	Amount of LEAN method application
Green and socially	Companies invest in solutions that reduce environmental pollution and	Amount of municipal waste per capita

responsible economy	increase its protection	
	Business willingly contributes to social initiatives	Share of recycled municipal waste in the total amount of waste
		Environmental pollution taxes have been paid and credited to municipal budgets
	The efficiency of energy use, economic value is increasingly based on renewable energy sources	Share of corporate funds allocated to charity
Networking	A culture of trust between business partners is maintained	The number of joint business projects
	Enterprises actively participate in the activities of associations	
Digital	The conditions are created for employees to work from home	The proportion of persons using the Internet to order goods and services (in percentage)
	Businesses tend to use smart technology to get feedback from consumers	Households with Internet access (in percentage)

Source: compiled by the author

4. THE EVALUATION OF LITHUANIAN MUNICIPALITIES IN THE FIELD OF SMART ECONOMY

Out of 11 dimensions outlined by Jucevičius ir Bruneckienė [3], having conducted the research, i.e. 8 experts interview, an analysis was conducted and the expression of these dimensions was rated at a local level. All dimensions were divided on a 3-point scale according to ratings: dimension expression is positive, dimension expression is medium, and dimension expression is negative. The expression of 3 out of 11 dimensions was rated positively: general well-being, learning economy and agile economy. Because there are no negative-rated dimensions, all others are rated on average. Although no subdivision into ranks was made, 2 out of 8 moderately rated dimensions were as follows: the entrepreneurial economy and the intelligent economy could be rated as weakly moderated. The full rating of the expression of the dimensions of the smart economy is presented in Table 2. The positively rated dimensions are depicted in green, moderately rated – in yellow, weakly rated – in orange, and dimensions rated negatively are depicted in red, although they are not present in this case.

TEMEL-ij
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Table 2. Rating of the expression of the smart economy

Area	Dimensions	Evaluation of experts
Smart Economy	Welfare	Good
	Openness	Average
	Entrepreneurship	Weaker than average
	Responsibility	Average
	Intelligence	Weaker than average
	Green and socially responsible	Average
	Digital	Average
	Knowledge-driven and innovations	Average
	Learning	Good
	Agile	Good
	Networking	Average

Source: prepared by the author according to the statements of experts

5. CONCLUSION

Economic growth also poses a number of challenges today, therefore, productivity, long-term sustainability and other factors must be brought in mind in order to achieve economic growth. In such a situation, the need for the concept of smartness arises. Researchers examining the applicability of smartness mostly focused on the analysis of urban planning and the implementation of smart city initiatives, the implementation of smart specialization strategies. The investigated subjects were cities, regions and states. However, the applicability of the concept of smartness is still little explored at the local self-governance level. Therefore, the article focuses on the field of the smart economy, at the level of municipalities as a smart social system. To this end, the system of dimensions, their quantitative and qualitative characteristics of the smart economy at the local level, based on the concepts and insights of other academics, is presented in the study.

All dimensions were divided on a 3-point scale according to ratings: the expression of dimension is positive, the expression of dimension is medium, and the expression of dimension is negative. The expression of 3 out of 11 dimensions was rated positively: general well-being, learning economy and agile economy. Because there are no negative-rated dimensions, all others have been rated on average. Although no subdivision into grades was made, 2 out of 8 moderately rated dimensions are as follows: the entrepreneurial economy and the intelligent economy could be rated as weakly moderated.

Such an analysis of the expression of the dimensions of the local self-governance in the field of smart economy in Lithuania allows to properly assess the current situation, see areas for improvement and plan actions to increase smartness at the local level, but due to the space limitations, it is not the subject of this article.

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