



Tools of Smart Governance in Cities of the Slovak Republic

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Abstract. The aim of the paper is to define the Smart Governance and its tools from the theoretical point of view, with special attention given to the civic participation as an important part of governance. Referring to the theory review, the authors of the paper identify the tools of Smart Governance in the Slovak Republic at the local level. Consequently is demonstrated its utilization on the examples of Slovak city, Banská Bystrica, as one of the pioneers in implementation the smart city concept in Slovakia. The main source of data are the Acts of the Slovak Republic, strategical documents at the national and local level, as well as the primary research in a form of questionnaire survey carried out among citizens in 2019. The final part of the paper presents the possibilities to develop systematically civic participation in the cities with support of smart IT technologies based on inspirations from well-developed smart cities in Europe.

Keywords: Smart governance · Participation · City · Tools

1 Introduction

Nowadays, local municipalities deal with many problems resulting from increasing urbanization. The number of people living in cities is growing steadily, affecting pollution, employment, energy demand, waste production, as well as local public budgets. To tackle with these problems, the strategy of smart city has been developed that effectively interconnects and utilizes the digital, physical and social systems in public space to create a sustainable and prosperous future for the city's inhabitants. In this concept, the city has an ambition to become better place for living. It should be based on the change in city mindset by linking and activating stakeholders as its integral part of city.

The local stakeholders, especially citizens, should be actively involved in city governing and managing. In the smart city the governance is embodied in transparent management system that allows residents to participate easily in planning and decision-making processes of city development, as well as to provide open access to information to residents. These processes are carried out via modern information and communication technologies. In the literature, it is named as smart governance.

The issue of smart governance is rather up-to-date topic, still with great potential for research. In the first part of the paper, the authors of the paper define the basis of the smart governance and identify its tools with emphasis on the civic participation. Subsequently, there are analyzed the tools on the example of the Slovak Republic, namely Banská Bystrica city in a form of case study. In the last part, there are discussed the empirical research results and suggested the measurements how to systematically develop civic participation in the cities as a part of smart governance with inspirations from well-developed smart cities in Europe.

2 Smart Governance and Civic Participation

City is smart, if it uses participatory governance based on active involvement of relevant stakeholders, invests in human resources, social capital, traditional and modern (ICT) infrastructure and thereby ensuring sustainable economic growth, high quality of living and efficient management of natural resources (Caragliu et al. 2011; Dominici 2012). It requires also smart management approach of public administration representatives as a part of smart city governance.

Smart governance can be seen as a basis for the development of smart administration through the application of new information and communication technologies (ICT) in management of local municipalities. Smart governance with utilization of ICT improves decision-making process by better cooperation with different stakeholders and higher rate of their participation at solving public issues. It forms the public value through leadership, civic participation, partnership, accountability, responsiveness, transparency, collaboration, data sharing and its mutual linking (Osella et al. 2016).

According to Mellouli et al. (2014) the smart governance is characterized by two features, free access to information and presence of technologies. Although, ICT and technology innovations are a key element of smart governance implementation, the government in smart city aims to harmonize management, governance and policy with other factors, especially with human capital as a driving force of changes. (Lee and Lee 2014; Cagaňová 2019). Finally, it contributes to better measurement processes, data sharing among stakeholders, more efficient resources use and performance assessment what facilitates the public participation and monitoring (Maheshwari and Janssen 2014; Nam and Pardo 2014).

To the main success factors of smart governance belongs the change of organizational and administrative structure within local authority and involvement of stakeholders into the management and governing of municipality (Alawadhi and Scholl 2016). The new structure is usually more resistant and active in combination with new technologies and innovative strategies lead to better understanding of societal problems, improving government to citizen relationships, government to businesses relationships as well as

to non-profit organizations (Gil-Garcia et al. 2015; Mellouli et al. 2014; Cagáňová et al. 2017; Bolívar, 2016).

To summarise the abovementioned and including the approach of Pereira et al. (2018) the main features of smart governance are as follows:

1. strong focus on government decisions aimed at improving the quality of life in cities in various dimensions (smart living, smart mobility, smart people, smart economies and smart environment);
2. widely available, user-friendly and interactive technologies that promote the involvement of citizens and other stakeholders beyond the traditional objectives to optimize and co-create services and improve the quality of life;
3. strong emphasis on citizens, recognition of their key role in co-decision making processes to increase public value creation;
4. the management of smart cities is a form of governance that allows decision-making rights to be allocated to stakeholders, especially citizens, so that their participation is effective and has an impact on decision-making processes, thereby improving the quality of living in cities.

The following authors (Borseková et al. 2018; Gil-Garcia et al. 2016; Scholl and Alawadhi, 2016; Castelnovo et al. 2015; Estevez and Janowski 2013; Picazo-Vela et al. 2012) defined various dimensions of municipality on the basis of the deeper smart governance analysis. The particular policies contribute to sustainability and resilience of the locality. The government awareness is strengthened in environmental field, that helps to prevent the environmental consequences of growth and development to improve the quality of life for next generation and to be more flexible in case of disasters and citizen emergency. Another dimension is ability to use digital technologies and smart information-processes and decision-making activities. Their integration into the administrative system transforms all kinds of interactions with stakeholders, especially with citizens and foster those by transparency, open access of data and information as well as by control processes and performance assessment. The last dimension is associated with creativity, entrepreneurship and social equality, because the concept stimulates culturally diverse citizens and the business environment and supports the decrease of social exclusion and social justice. On the other hand, there appears also a criticism of this dimension caused by digital gap excluding some categories of residents (e.g. older residents, disable persons, or with lower income).

Smart governance covers various activities supporting participation of stakeholders, especially citizens, in all stages of local policy process (Castelnovo et al. 2015; Vitálišová 2018; Szilva et al. 2017). Governments use and share data, information and knowledge to support evidence-based decision-making that allows governments to make decisions based on credible findings and improves the effectiveness of public policies and programs. The traditional activities of stakeholder's participation is a participation in decision-making processes and engagement in improving public services in the city or co-creation of public services. These activities increase the government openness, transparency, accountability and thus the quality of relationships between citizens and local governments.

In the paper, the focus is put on activities aimed at supporting participation of citizens in local policy process including also the term of civic participation. So far, in the next subchapter, the authors of the paper define the tools used within smart cities.

2.1 Tools of Smart Governance in Civic Participation

Citizens play a central role in the decision-making process and their fundamental contribution is in the formation of public values in the city. By many authors (inter alia Vaňová 2018; Pereira et al. 2018; Melouli et al. 2014; Castelnovo et al. 2015), citizens' engagement is seen as a basis for smart governance in the concept of a smart city.

According to Pereira et al. (2018) civic participation is defined as an intensity of the direct involvement of stakeholders in the decision-making process on government measures. It is important to monitor the way in which civilian meetings are organized in order to facilitate communication between government, citizens, companies, stakeholders and relevant groups directly affected by a particular decision or problem.

From the citizen point of view, they tend to be more involved when they notice that the government is open to interaction and incorporate their views into decision-making, and when they have access to useful, relevant, complete set of government information (Mellouli et al. 2014).

The traditional participation activities include public consultations, public meetings, focus groups, surveys, civic counseling or committees, referenda and initiatives.

Due to dominant role of ICT in smart cities, they are widely implemented also in all areas of civic participation with aim to increase citizens' ability to participate in governance, including public service delivery processes at various stages of preparation such as planning, decision-making, implementation and evaluation (Pérez-González and Daiz-Daiz 2015; Kleinhans et al. 2015; Castelnovo et al. 2015). In other words, city planning and management can be improved by involving citizens through new technologies in a smart city (Khan et al. 2015). It is appropriate to use ICT-based tools especially in order to increase the number of participating citizens in a public debate that were excluded from the debate or not attracted by traditional participation tools. ICT contributes to create the values of society; leads to an important transformation of government-public relations in public governance as a key aspect of smart governance. Therefore, smart governance can be defined as a form of participative governance strongly linked to a governance model that promotes communication, interaction, cooperation, participation in public administration and direct democracy (Pereira et al. 2018; Navarro-Galera et al. 2016; Misuraca and Rossel 2012).

The new phenomena in ICT tools are social media (e.g. Facebook, Twitter, Linked in, etc.). In the public sector, they have a positive impact on openness, accountability, transparency, direct democracy, as well as on new strategies for managing public consultation and public policy interactions. The result is a change in the role of citizens in policy-making. Citizens' cooperation in policy-making can increase their innovation and efficiency, leads to new forms of cooperation between government and citizens, and among citizens. (Linders 2012; Stamati et al. 2015; Díaz-Díaz and Pérez-González 2016).

To the tools of smart governance belong also the tools of e-participation and e-democracy (MacIntosh and Whyte 2002; Buchsbaum 2007; Pekárek 2008), and

tools supporting the availability of open data and transparency of local municipality (Johannessen and Berntzen 2018). The list of all tools presents the Table 1.

As it is evident from the Table 1, tools of smart governance are simple, fast, and accessible with clear results and measurable benefits. They include the tools of e-participation, e-consultation, e-democracy, supporting tools in communication and information collecting from citizens, which guarantee also the transparency in local municipality. All these instruments aim to increase citizens' engagement in governance and their participation in policy-making; facilitating and promoting participation by information and communication technologies; as well as the availability of information in a clear way (MacIntosh and Whyte 2002; Bawa et al. 2016).

These tools prove to be useful with the use of modern ICT, as they offer useful information and various ways of interaction, but the challenge is a lack of knowledge and skills of users. The link between transparency and smart cities is in technology as well as in information that is rather transparent and digitized, so make them easier to

Table 1. Tools of smart governance in civic participation.

Tools of e-participation	Tools for supporting e-consultation	Tools supporting e-participation activities	Tools of e-democracy	Tools supporting transparency
Electronic petitions	Electronic advisory voting	Frequently Asked Questions (FAQ)	E-vote or e-Voting	Transparent documents (online incoming and outgoing mail records, online documents, online records of minutes, search mechanism)
Electronic referendum (SMS, electronic election kiosk, electronic voting equipment)	Decision making simulation	Webcast, webcasting of council meetings	Electronic petition	Transparent meetings (time and place of meetings, online agenda, online webcasting)
E-panel	Quick polls	Blog	Electronic Questionnaire	Transparent processes (processes description, visual tools)
Discussion forums, chat rooms	Surveys	Alerts and notification services	Mailing list, SMS notification	Transparent benchmarking (online planning documents, online annual reports, references to relevant statistical data collected by authorised offices, online survey results)
Electronic Communities (online group of citizens discussing selected political issues and making possible suggestions)		Notification Services	Electronic registers, databases and archives on the Internet	Transparency of local municipality (online list of local government members, voting records and calendar management)

(continued)

Table 1. (continued)

Tools of e-participation	Tools for supporting e-consultation	Tools supporting e-participation activities	Tools of e-democracy	Tools supporting transparency
Electronic Citizens' Councils (a group of selected people listens and communicates with experts on selected issues)				Transparent data and information publishing (questions via email, survey or social media, online (real-time) questions (net-meetings or chat), discussion forums/blogs where citizens can ask questions)

Source: MacIntosh and Whyte 2002; Johannessen and Berntzen 2018

find and use. Different categories of transparency allow citizens to use government data to create new and useful applications that are targeted at citizens to solve their problems and thus to improve city life. So digital information can help to address the objectives of a smart city for more informed and participatory citizen (Chourabi et al. 2012).

3 Materials and Methodology

The paper is dedicated to the topics of smart governance, specifically its tools in civic participation. The paper aims to explain the term smart governance and its tools from the theoretical point of view, with special attention given to the civic participation as an important part of governance. Subsequently, it researches the issue on examples of cities in the Slovak Republic. It defines generally the available obligatory and facultative tools of governance in the Slovak cities. In the next step, it demonstrates the tools exploitation in Banská Bystrica, the city in central Slovakia, belonging to the pioneers in implementation of smart city concept.

The analysis of smart governance tools in the Slovakia uses data from Slovak legislation and strategical documents. The case study of Banská Bystrica presents the data of primary research in a form of questionnaire survey among citizens realized in spring 2019. In data processing were used the methods of statistical correlation and induction, e.g. hypothesis testing, as well as the methods of descriptive statistics.

The last part of the paper discusses and summarizes the most important research findings and identifies suitable proposals to develop systematically civic participation in the cities as a part of smart governance with inspirations from Vienna and Helsinki.

4 Tools of Smart Governance in Civic Participation in Slovak Cities

Civic participation is a democratic activity in a democratically established state that includes a wide range of opportunities for citizens to express their active attitude towards public affairs and to actively pursue their interests (Kováčová 2011). By creating space

for civic participation, municipalities can gain different ideas and feedback from their citizens. They can also participate in the decisions of the local government and thus eliminate possible conflicts. The civic participation enables citizens to see, understand and participate in decision-making and control decisions taken by local government (Pirošík 2005).

Citizens able to participate should be aware, able to deduce, present opinions, challenge decisions, control power, engage in dialogue, communicate with key local authorities and collaborate with various social institutions and the third sector (Višnovský 2010). To be efficient and prepared local government, the municipal authorities should be relevantly trained and handle the expertise needed to create proposals and activities. It should strengthen activities to increase citizens' participation in decision-making and to get feedback for assessment the realized activities. (Jackson 2012).

In the Slovak Republic, according to the Constitution the local municipality has the obligation to provide information on its activities in the state language in an appropriate manner. In more details this issue is regulated by Act no. 211/2000 Coll. on free access to information. The main ways of civic participation are defined by Act no. 369/1990 Coll. on municipal establishment following the Constitution as to be elected or to vote the representatives of municipal authorities, local referendum and assembly of municipal residents. These are the obligatory tools of civic participation. There belong also the possibility to be a member of advisory bodies of local parliament as well as the possibility to take part at the meeting of local parliament.

However, in practice, also the group of "voluntary" civic participation tools is evident (Staroňová and Sičáková-Beblavá 2006). Voluntary participation is based on the local government's own initiative, which aims to increase citizens' active participation and support local democracy. This group includes tools of informing and getting feedback as follows: polls, surveys, collection of comments, public commenting, information for the public in various printed forms (e.g. leaflets, brochures, etc.), complaints, local media, events for citizens, information in local newspapers, information boards and bulletin boards. The second subgroup contains various forms of communication with citizens as citizen board, citizens' advisers, hours for intercourse with the public, first contact office, public assembly, public discussion, public hearings and meetings, advisory board and action group, communication through mediators, telephone communication (Staroňová and Sičáková-Beblavá 2006; Pirošík 2005; Vaňová, Bernátová 1999 and 2000).

In the field of electronic tools for the local municipalities, there is available portal eGov to increase informing and communication between citizens and government. Citizens can not only get information, but also comment on materials and evaluate the office and members of the local parliament what helps municipalities to become more transparent (eGov 2017). As voluntary forms of participation are unlimited, its possibilities are continually being expanded mainly by modern forms that use information-communication technologies to a large range.

Some local municipalities in Slovakia use different platforms to improve e-services, as a part of smart governance. One such platform is "Digital City". The platform is divided into two parts, namely services for local municipalities and citizens. The services for municipalities include digital local parliament (planning and preparation of meetings and archive of materials and resolutions), eVoting (transparent and paperless management

of negotiations and voting of local representatives), registry administration, geographic information system, electronic auctions (fast, clear and transparent look on the auctions), interactive maps (the possibility to review the zoning plans, land register and addresses), reporting and city budget. For the citizen are available - on-line forms, that help filling and checking for correctness, various submissions, decisions and reimbursement; "City" in mobile (application offers information about city activities, displays a city map), publicly available office information (obligatory published information on website – contracts, orders, invoices etc.) (Datalan news 2/2014).

In the next part of the text, the authors of the paper analyze the exploitation of various obligatory and voluntary tools of civic participation with special attention given to the new modern tools based on ICT and smart governance in a form of case study.

4.1 Case Study of Banská Bystrica

Banská Bystrica is located in the centre of Slovakia. On 1 January 1991, Banská Bystrica became an independent self-governing territorial unit of the Slovak Republic. The city consists of nineteen city districts. The municipal bodies are the mayor of the city and the city council. The city council has 31 deputies. The mayor of the city is the independent candidate Ján Nosko. The mayor of the city is a representative and supreme executive body.

The city council establishes the city board, which is an initiative, executive and control body of the city council. It also serves as an advisory body to the mayor of the city. The city council has eight members and consists of members of local parliament. The municipal authority is an executive body of the city council and the mayor. It includes municipal employees and provides services for the organisational and administrative affairs of the city council, the mayor and bodies established by the city council.

The City of Banská Bystrica has established eleven city council commissions for economic development; transport; construction and technical infrastructure; environment; education; social development, housing and health; tourism; sport, leisure and youth; modern self-government and urban areas; culture; protection of public interest in the function execution and complaints investigation. Problems of transport, security and protection are the responsibility of city police.

In addition to the tasks of self-governing, the city also performs some delegated tasks of state administration, in particular through: building office - construction, land-use planning, decision-making and building regulations; registry office - works in the area of registry, civil matters and citizens' records; education office.

Banská Bystrica is the sixth largest city in Slovakia with population of 78,484 inhabitants (Statistical Office of the SR). The number of inhabitants is decreasing annually. This is due to lower birth rates and population migration.

Most economically active people work in public administration, defense and education, retail and healthcare. The biggest employers in Banská Bystrica are from the service industry (PHSR of Banská Bystrica).

From 8 regional cities, Banská Bystrica region is on the 7th place in GDP per capita. The region is lagging behind in labour productivity and inflow of foreign direct investment. Despite this, unemployment in 2019 fell to 3.53%. (State Office of the Slovak Republic).

There is quite a good transport infrastructure in the city. There is a train station, a newly built bus station. Population transport is carried out by suburban transport and urban public transport, using buses and more environmentally friendly trolleybus. There is no network of cycling paths in the city. Sliach Airport is close to the town. The city is a crossroad to the north and south of Slovakia.

Banská Bystrica has decided to become a smart city. In the first phase of the implementation of the Smart City concept, the priority of the city became Smart Governance. The city of Banská Bystrica wants to realise Smart City concept comprehensively and focus on all areas of smart city, like a people, life, environment, mobility, economy, but nowadays it considers the change inside the office to be a key one. The city perceives the process of creating Smart City as a comprehensive solution, from sensors and data collection to complex solutions, in which citizens can also be involved through civic participation tools. At this stage of the smart city strategy, the city management puts emphasis on obtaining information, creating statistics that can focus on linking with the city's project intentions.

In terms of smart governance, the city is looking for opportunities to increase the quality of internal processes at the office. The Informatisation and Digitization Department introduced a cloud link. The aim is to centralize the entire municipal information system in one place. In this way, all municipal departments, contributory and budgetary organizations of the city will be linked. New solutions are being implemented, the use of old software that does not meet today's technological conditions is being eliminated.

Currently, the municipal authority uses the following channels and media for communication and participation (Table 2):

To evaluate the current situation in the use of modern tools of civic participation the authors of the paper carried out a questionnaire survey in the segment of Banská Bystrica citizens in spring 2019. The aim of the questionnaire was to examine the current situation of using modern forms of civic participation in Banská Bystrica and to identify the possibilities of its development.

The questionnaire was distributed electronically by e-mail and placed on social networks. For those who do not use the Internet, the authors of the paper have distributed the questionnaire in printed form. The questionnaire was made available for six weeks and its completion was anonymous. The authors of the paper have used the statistical methods to evaluate the questionnaire and then verified the hypotheses on the significance level $\alpha = 0.1$. So far, in the research participated 93 respondents - 61 were women and 32 were men. The authors of the paper have tested the representativeness of the selected sample with a Chi square test based on the population age category at a significance level of $\alpha = 0.05$. The results of Chi square test are:

Chi-Square	6.851
df	4
Asymp. Sig.	0.144

Thus, it is possible to conclude that the sample is representative based on age.

In the questionnaire survey, the authors of the paper have investigated how citizens are interested in public affairs, whether they are involved in decision-making processes,

how they evaluate the possibilities of civic participation and which forms they consider to be beneficial. According to the research results, 22 respondents (23.7%) are actively involved in public affairs and 17 respondents (18.3%) are interested in public affairs, but are not actively involved. Up to 58.1% are not interested in public affairs, and only 6% of these respondents would be interested in taking decisions in the city, if something changed.

Citizens also evaluated the possibilities of civic participation. Up to 45% of respondents rated options as average (on a rating scale from 1 to 5, where 1 is an excellent score, the score was 3), 26% of respondents rated participation opportunities as good and 29% of respondents considered opportunities for civic participation as insufficient.

Consider the low level of citizen involvement; the authors of the paper were interested in the resources and channels of communication from which citizens have information about the city. The residents could choose multiple sources from which to gather information. Based on Fisher exact test and Binomial test (Table 3), the authors of the paper have found that up to 90% of the respondents receive information via information and

Table 2. Tools of smart governance in civic participation.

Applied form of civic participation	
Electronic board	Obligatory information such as draft general binding regulations, master control plan, etc.
Open data	Administrative segmentation
	Inhabitants/Population
	Self-government
	Registry of dogs
	List of tax debtors
	Contracts
	Delivery invoices, customer invoices, order
	Petitions
Electronic services	Submission of online requests and electronic communication with the municipal authority
Client centre	Electronic communication of citizens with the City Hall, free telephone lines
Purity line	A free telephone line designed to stimulate cleanliness and public order
Electronic contacting local government representatives	Contact via email and social networks
Electronic questionnaire, polls	Email and online polls
Electronic petition	Electronic petition without a guaranteed electronic signature
Video recording	Offline video from City Council meetings
Discussion forum on the city website	Discussions divided into individual thematic sections
Social networks	Official website of the city on Facebook, Instagram and site of the mayor. Participation in discussions, city events, photo and video galleries
Blog	Sources of information where volunteered city representatives contribute interesting topics from the city's current affairs
Newspaper Radničné noviny	The monthly of the city is distributed on-line on the official website and on social networks
Link to the mayor	Mobile app for city-based complaint reporting available on the Internet
Geographic Information System	Map view of the city for the possibility of viewing the greenery, cadastral map, city plan, etc.
Map guide of Banská Bystrica	Map of the location of parks, landmarks and places of interest

(continued)

Table 2. (continued)

Applied form of civic participation	
Participatory budget	A democratic instrument that enables citizens to be directly involved in the decision-making process on redistribution of financial funds. Current information is available on the website and Facebook social network

Source: own research, 2019.

communication technologies - from the city's official website (banskabystrica.sk), from social networks such as Facebook and Instagram or from other websites.

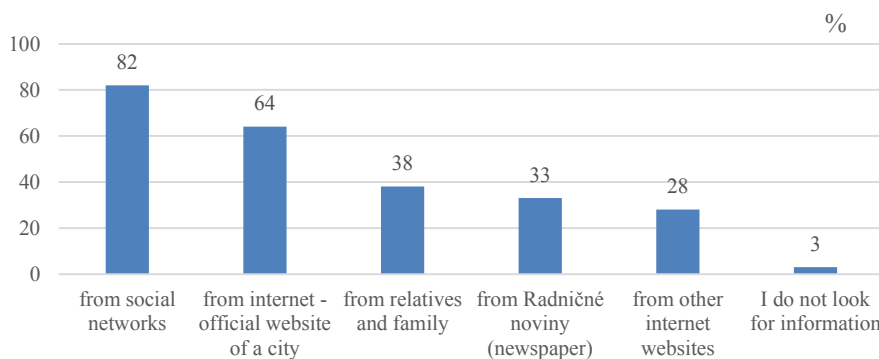
Table 3. Fisher exact test and binomial test of dominant information sources.

Responses in survey	Responses		Percent of Cases
	N	Percent	
From internet	58	25.9	64.4
From social networks	74	33	82.2
From Radničné noviny	30	13.4	33.3
From other internet sources	25	11.2	27.8
From relatives and family	34	15.2	37.8
I do not look for information	3	1.3	3.3
Total	224	100	248.9

	Category	N	Observed Prop.	Test prop.	Exact. Sig. (2-tailed)	Exact. Sig. (2-tailed)
Group 1	1	84	0.9	0.5	0.000	0.000
Group 2	0	9	0.1			
Total		93	1			

Source: own research

The Fig. 1 shows the percentage of respondents who identified individual responses for a particular source of information.

**Fig. 1.** Sources of information. Source: own research

The respondents rated individual modern forms of civic participation with a grade of 1- excellent up to 5 - insufficient. The authors of the paper have made the evaluation in the form of an arithmetic mean. The evaluation results are shown in the Fig. 2. The best scoring options were e-poll and questionnaire, electronic board and blog. For the sake of clarity, the authors of the paper have ranked the individual modern forms of civic participation from the best rated to the worst rated. All values in the graph are shown in the average values given by the respondents.

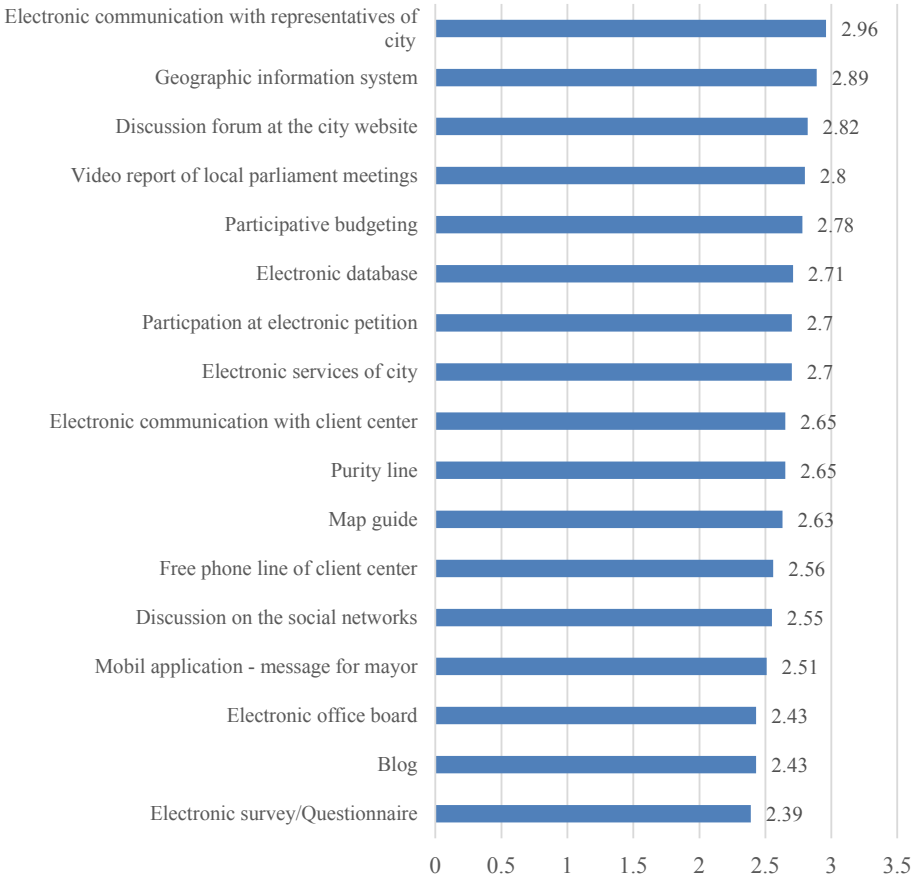


Fig. 2. Average evaluation of civic participation forms. Source: own research

However, in the research is also included the finding which modern forms of civic participation should be a part of the Smart Governance concept in Banská Bystrica. The evaluation of interest in using modern forms of civic participation was tested by a non-parametric Friedman test, which determined the continuous order of forms that the respondents are most interested in and the Wilcoxon Signed Ranks test ($\alpha = 0,1$), which has helped to determine the difference between the forms in their previous Friedman test. The test result was divided into three groups. According to the results, the authors of the

paper can declare that the order of the tools is as follows. The first group of instruments is an electronic referendum; electronic voting or electronic voting; electronic petitions and emergency services. The second group involves the application of urban activity along with the city map; E-panel; electronic services and online forms. The last group included those instruments of civic participation that were not of great interest to citizens - electronic advisory voting; frequently asked questions; electronic citizens' councils; mailing list and SMS notifications; electronic communities and decision making. According to the results, the authors of the paper can declare that the inhabitants are interested in such modern forms of civic participation where their regular participation is not necessary. They are interested in civic participation where they express their opinion, but do not have to comment it and discuss it. The respondents were interested in receiving alerts that would keep them informed of the current city events (Table 4).

5 Discussion and Recommendations

Civic participation includes a wide range of opportunities by which a citizen can express his/her active attitude to public affairs and can actively pursue his/her interest. Citizens' participation in local government decisions can eliminate possible conflicts. The city is supposed to provide quality services and tools to ensure that public confidence in decisions is increased, thereby encouraging a responsible approach to decisions in matters of public interest. Only to create a space for people to participate is not enough, there is necessary to teach citizens how to do it. Therefore, informing citizens about opportunities for participation plays an important role. The citizen awareness and their informing as a key component of civic participation was confirmed also by research results. The authors of the paper assume that the situation is very similar in all Slovak cities, and probably in villages too. The modern age provides various possibilities how to inform and communicate with citizens, especially with support of ITC. However, it is necessary to cover by these activities the whole range of citizens, from young to older and to accustom the used tools to its abilities and age. In addition, the city of Banská Bystrica should focus on creating space for civic participation and gaining ideas and feedback from citizens, what can be currently defined as a weakness of the city by the research results.

The key precondition to develop civic participation as a part of smart governance is also close cooperation with all relevant stakeholders. In case of Slovak cities, it should include the collaboration with citizens, local companies, educational institutions, non-profit organisations and other stakeholders in the region, or coming from abroad. The main instrument how to develop smart governance systematically in context of multilateral cooperation is a smart city strategy. It should indicate the development direction of all smart city components including the smart governance. It should be linked with all other strategic documents of the city, deadlines for implementation, budgeting, defining co-workers and coordinators of these plans together with other investment projects of the city, intentions of city individual departments and individual city districts. It is also a case of Banská Bystrica. The management of Banská Bystrica is aware of the benefits of using smart solutions in urban space and is working on smart solutions, but there absent a comprehensive development document which defines the main development tendencies and priorities. Most of the planned smart solutions and tools are aimed at solving a

Table 4. Wilcoxon Signed Ranks Test of modern participative tools.

Combination of compared answers	Z	Asymp. Sig. (2-tailed)	Monte Carlo Sig. (2-tailed)			Monte Carlo Sig. (1-tailed)		
			Sig.	99% Confidence interval		Sig.	99% Confidence interval	
				Lower bound	Upper bound		Lower bound	Upper bound
9 × 1	-0.415	0.678	0.695	0.683	0.707	0.346	0.334	0.359
10 × 9	0	1	1	1	1	0.52	0.507	0.533
8 × 10	-0.769	0.442	0.458	0.445	0.471	0.229	0.218	0.239
14 × 8	1.391	0.164	0.164	0.154	0.173	0.083	0.076	0.09
2 × 14	-0.232	0.817	0.82	0.81	0.83	0.406	0.394	0.419
13 × 2	-0.022	0.982	0.983	0.98	0.986	0.494	0.481	0.506
12 × 13	-1.127	0.26	0.279	0.267	0.29	0.138	0.129	0.147
5 × 12	-1.511	0.131	0.14	0.131	0.149	0.07	0.064	0.077
7 × 5	-0.982	0.326	0.341	0.329	0.353	0.174	0.164	0.184
4 × 7	-0.602	0.547	0.56	0.547	0.572	0.277	0.266	0.289
11 × 4	-0.249	0.803	0.811	0.801	0.821	0.402	0.389	0.099
3 × 11	-0.318	0.751	0.762	0.751	0.773	0.385	0.372	0.398
6 × 3	1.286	0.199	0.201	0.191	0.211	0.099	0.091	0.106

1 Electronic survey/Questionnaire

2 Discussion forum at the city website

3 Electronic communication with representative of city

4 Participative budgeting

5 Participation at electronic petition

6 Video report of local parliament meetings

7 Blog

8 Electronic database

9 Purity line

10 Electronic communication with client center

11 Discussion on the social networks

12 Mobil application - message for mayor

13 Electronic services of city

14 Electronic office board

15 Free phone line of client center

16 Geographic information system

17 Map guide

Source: own research

particular problem in the city and are not a part of a systematic solution. The weakness of the city is a system of organization and non-involving the relevant partners, which can cause the fragmentation of civic participation tools and their inadequate exploitation in

defined areas of the smart city. Another factor influencing the level of smart city concept implementation in each city are relevant competences of local authorities' employees. To be successful in the implementation process is necessary to trainee the employee in their PC skills, to teach the relevant knowledge of various tools and platforms that operate through information and communication technologies in the field of smart governance.

Because of the slow progress in implementation of new ICTs in Slovak local authorities, the possible threat is a lack of funds for smart technologies implementation. However, there is a conceptual support at the European Union's and national level (e.g. URBACT, Operational programmes, the calls of Ministry of Economy or Deputy Prime Minister of the Slovak Republic for Investments and Informatization). As a supporting institution there is established also the first Slovak Smart City Cluster in Poprad. It promotes the Smart City concept in the Slovak Republic and raises awareness of the Smart City concept; links academic and commercial spheres, supports cooperation with other organizations and associations with a similar subject of activity, as well as with state and local government authorities in preparing and commenting on relevant legal standards. The authors of the paper consider equally important also to develop the international public-private partnerships for the development of high-quality ICT services.

In tools of civic participation as a part of smart governance the social networks (e.g. facebook, Instagram, twitter, etc.) are often used. The research confirmed also the dominant role of electronic informing of public. The social networks contribute to increase the citizen awareness with relatively low costs. Citizen's informing should cover a wide range of information provided, so the city should involve also other important stakeholders from the territory to present information (e.g. secondary schools, universities, libraries, information offices, local business entities, etc.) in electronic way. For inspiration, Vienna uses as a tool to inform citizen an artificial intelligence assistant who answers questions about accessible information on the city's website. It uses a text and voice computer program based on artificial intelligence that simulates a dialogue between two people. Such a system responds to topics related to city services such as local municipality, parking, swimming pools, ticket prices, opening hours or events. Depending on the location of the user, the program can show the nearest point of interest on the map as a drinking water fountain or waste collection point. The service is also used to commemorate events that the user is interested in, such as meetings and public hearings.

The experts in the issues of smart governance, as well as the research results point out the importance of online questionnaires, polls and surveys. Their importance is significant in all stages of strategic development planning. They help to make better decisions in development activities and prepare the projects that meet the needs of the residents. This kind of platform already operates in Vienna as Vienna Digital Agenda. The platform allows the residents to provide feedback on projects at different stages of planning, thereby strengthening civic participation. Citizens can overlook and comment on several alternative plans and vote for suggestions for solution alternatives. Electronic voting is available. The user registers for the service through a functional email address and the participants must respect the ethics code. The service is monitored by an administrator for inappropriate posts. The service serves to actively exchange views between experts from the city council and citizens in the various preparatory phases. Such a process

facilitates electronic communication between the residents and officials of the municipal office. The residents can contact the competent staff directly by the subject, thereby shortening the time for responding to the citizens' comments and hearing the public's voice (Sag's Wien, 2019; Smart city Vienna, 2019; WienBot-digital assistant, 2019).

Another good practice example in implementation of smart governance tools comes from Helsinki. The city uses the European platform of D-Cent project, which develops tools for online democracy and participation. The D-CENT participatory platform enables citizens to be informed and receive real-time notifications on issues of interest; design solutions; cooperate in policy-making; vote for solutions that would improve access to proposed ideas from residents to improve city life.

All the proposals can significantly improve the decision-making process within the local policy. They effect positively all stages, from open consultation, input collecting, creating proposals and communication (Anthopoulos 2017). This serves to increase citizens' interest in engaging in policymaking and services, enabling the co-decision and co-creation process using alternative instruments.

6 Conclusions

Using modern tools for civic participation as part of smart governance should become a part of the decision-making processes in all dimensions of smart city. To do it systematically, the key step is to prepare and implement smart city strategy integrated with all other strategical municipal documents.

Sufficient and appropriately set up opportunities for civic participation and the use of online platforms for more transparent governance can help to increase citizens' involvement in public affairs, and facilitate the processes inside the city authorities.

The issues of smart governance has not been deeply researched and still there are many questions regarding its role and importance for local policy. The paper covers partially the gaps in exploring the role of civic participation tools in a smart city, with demonstration on the case study of Banská Bystrica, the city in the central part of Slovakia. The case study pointed out that also cities in central European countries have ambitions to be progressive and implement recent trends in their development. However, only next years or even decades will show the real impacts of smart governance and success rate in changes in civic awareness and participation in public affairs in these countries with specific "soviet" history.

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