E-participation in Local Self-Government in Croatia

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This research examines the adoption of e-participation within local governments in Croatia. Drawing upon a literature review and expert consultation, measurement items were developed to assess the e-participation adoption in 83 local government units with government officials. The analysis focused on three dimensions of e-participation: e-informing, e-consultation, and e-decision-making. The findings showed varying degrees of e-participation maturity, with basic e-information services widely available, but deeper engagement tools and services being significantly lower. City (population) size has been demonstrated as significant when measuring e-consultation between larger and smaller municipalities, showing higher adoption rates for larger ones. In conclusion, the research highlights the

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need for local governments to use a wider and more advanced variety of e-participation tools and services and to formalize e-participation. This will lead to higher adoption rates and advancing collaboration between governments, organizations, and citizens.

Keywords: e-participation, local government, city size, municipality size, Croatia

1. Introduction

Today, cities and local governance play a crucial role as drivers of global change (UN, 2021). United Nation's (UN's) Sustainable Development Goals (SDGs) recognize cities and their leaders as implementers of the 2030 Sustainable Development Agenda and drivers of change, as they are responsible for connecting global goals with the objectives of local communities (UCLG, 2016). The importance of local governments is demonstrated in the inclusion of a separate goal, SDG 11: "Make cities and human settlements inclusive, safe, resilient and sustainable". Cities, being in constant and close contact with their residents daily, must continually adapt and innovate to meet evolving challenges and opportunities. Innovation plays a pivotal role in enhancing cities' ability to effectively address the diverse needs of their citizens.

E-participation represents a spectrum of interactive tools and platforms facilitating citizen engagement with governmental processes, starting from information dissemination to active involvement in decision-making. E-participation tools and platforms enable local governments to engage with their citizens more easily and thus foster transparency by making local government activities, decisions, and data more accessible to the public.

E-government research (which includes e-participation) in Croatia is still rather scarce (Andabaka, 2021). According to the author, the COVID-19 crisis has accelerated digitalization in public administration, fostering innovative solutions that could shape future e-government development in the country. The same is agreed by Bebić and Dolinar (2023), who talk about the rise of the main e-government platform, e-Citizens.

In research on the adoption of specific technologies in local governments, theories from the demand perspective (citizens' side) are more commonly utilized. For example, in e-participation research, Klačmer (2022) and

Chong and Song (2020) identify and explore factors that explain the reasons why some citizens use public e-participation services, while others do not. On the other side, previous empirical findings found that the e-participation adoption is insufficiently explored from the supply perspective, especially at the level of local governments (Ninčević Pašalić, 2023). New research indicates that providing additional tools significantly boosts citizens' adoption rates (Kopackova, Komarkova & Horak, 2022), highlighting the importance of addressing e-participation from the supply side as well.

Recognizing the transformative potential of e-participation in enhancing governance efficacy, this study explores the adoption of e-participation within local governments in Croatia. To the best of the author's knowledge, there has been no research on e-participation adoption in Croatian local governments ever conducted with government officials. Local government officials' perspective is especially important in understanding their motivation and implementation readiness (Zheng, 2015), especially in Croatia, where motivation and implementation have been recognized as one of the key problems of Croatian public administration (Koprić, 2016). This exploratory study has the following research aims:

- to develop the research instrument to measure e-participation adoption,
- to determine the level of e-participation adoption in Croatian local governments using local government managers' perceptions,
- to examine the role of size of local government units (LGUs) in regard to e-participation.

The paper is organised as follows. Section 2 presents the theoretical basis overviewing e-participation in general, its measures and its state in Croatia, adding to the importance of LGU size as a control variable. Section 3 outlines the research design and section 4 presents the results of the paper. Findings are discussed in section 5 and the paper is concluded with section 6.

2. Literature Review

2.1. E-participation

E-participation is a multidisciplinary research field supported by numerous theories (Sánchez-Ortiz, Morales & Arancibia, 2017), and discussed by many disciplines including public administration, communication,

information systems, political science and others. Due to its multidisciplinarity, e-participation has various research methods at its disposal (Sundberg, 2018). Qi and colleagues (2019) argue that it is extremely important to enhance communication and collaboration among scientists from different fields for researching e-participation, since the overall cooperation network is relatively scarce except for one cooperative cluster formed within the United States.

New technologies and the evolution of internet interactions have enabled the development of e-participation, a contemporary and research-relevant topic. The first definition of e-participation dates back to a 2002 paper by Kearns, Bend and Stern (2002), where it was seen as the use of digital tools that have the potential to connect citizens to the political process between elections. Today's most commonly used definition is that of United Nations Department of Economic and Social Affairs (UNDESA), where e-participation is considered the process of engaging citizens through information and communication technologies (ICT) in policymaking, decision-making, design, and service provision. According to Macintosh (2004), citizens should be engaged in the following stages and processes: 1) Agenda setting as the identification of needs and defining problems to be addressed according to citizens' priority selection; 2) Defining challenges and opportunities, gathering knowledge and evidence, and understanding the context; 3) Creating public policies; 4) Implementing public policies; and 5) Monitoring public policies since they can change, improve, or even be abolished depending on citizens' feedback.

Wirtz, Daiser and Binkowska's (2016) research outlines a strategic framework for e-participation. It emphasizes the importance for e-participation service providers to consider strategic and organizational factors such as defining goals, determining participation forms, and identifying stakeholder groups. Additionally, drivers like transparency, technology, and accountability are crucial in the e-participation ecosystem. Neglecting any of these aspects can hinder the success of e-participation initiatives. Thus, the authors stress the need for systematic consideration and clear stakeholder orientation, particularly in setting specific e-participation goals (Wirtz, Daiser & Binkowska, 2016).

E-participation can be characterized by different levels of utilization, ranging from simpler to more complex. The most commonly used model of e-participation is based on the OECD and UN survey model that measures e-participation at the state level through the E-Participation Index (EPI) consisting of three levels (UNDESA, 2018):

1. E-informing as the availability of information on the Internet,
2. E-consultation (online public consultation), and
3. E-decision-making (direct involvement of citizens in decision-making processes).

E-informing is a crucial phase because publicly available information is the foundation for evidence-based, relevant, and significant citizen participation. Therefore, public administrations are obligated to provide information to the public. This is usually done using web portals, e-mailing list, social networks, chat rooms, Geographic information systems (GIS) tools, podcasts and others (Al-Dalou' & Abu-Shanab, 2013). E-consultation signifies that public administrations will solicit feedback from people as part of the policymaking process and the design of new services or projects (they will do so through surveys, focus groups, and public discussions using e-surveys, feedback forms, e-mails, e-polls, consultation platforms, e-panels, decision making frames, chat rooms, video conferencing, e-referendum, instant messaging). E-decision-making refers to the process in which the public contributes to decision-making processes through direct e-voting or expressing preferences by evaluating proposed options and suggestions (also using e-petitions, e-voting tools, e-bulletin boards, e-polls, virtual e-meetings, chat rooms, discussion forums/boards etc.). These three phases encompass the most widespread model of e-participation and demonstrate the maturity stages of e-participation. This e-participation scale will be used in this study.

Additionally, further e-participation scales have been presented to illustrate the level of user participation ranging from non-existent participation to high. Tambouris, Liotias and Tarabanis (2007) defined five levels of e-participation as follows: e-informing, e-consultation, e-inclusion, e-collaboration, and e-empowerment. Krabina (2016) proposed the e-participation ladder in response to how policies and projects should be designed to be accepted by the public. The ladder of participation has already been discussed in the past (e.g. Arnstein, 1969), but new concepts of open and sustainable governance have led to the need for a new scale that will show the impact of delivered public services. Krabina (2016) described eight steps of the e-participation ladder: 1) unawareness; 2) apathy; 3) passive participation; 4) implicit participation; 5) active participation; 6) intended participation; 7) effective participation, and 8) influential participation.

2.2. E-participation Measures

The most popular measure of e-participation is the E-Participation Index, managed by the United Nations Department of Economic and Social Affairs (UNDESA). The same agency developed METEP, another national-level instrument measure - Evaluation Tool for Citizen Engagement and e-Participation (METEP) to measure the success of e-participation in contributing to the development of capacities for e-participation, exchange of best practices, and continuous learning.

The provision of e-participation offered by cities is evaluated through the E-Government Survey Index developed by the Rutgers-Newark University Institute (Holzer et al., 2014), namely through its sub-index of Citizens' e-participation Adoption. The sub-index includes 18 metrics measuring the extent to which e-participation is adopted, including various technologies and levels of e-participation. The importance of cities in achieving SDG goals has been recognized by UNDESA, which developed the Local Online Service Index (LOSI) focusing on the development of local e-governance. LOSI for 2022 encompasses 86 indicators related to five criteria (UN, 2022): institutional framework (8), content provision (25), service provision (18), participation and engagement (17), and technology (18). Additionally, LOSI for 2022 covers 193 cities, one from each UN member country. The implementation of citizen participation and engagement indicators on city portals (part of the LOSI index) indicates that the most frequently met indicator is the engagement of cities on social media (86.30%), and submission of feedback/criticism (80.14%). The lowest implementation values are real-time communication (22.60%) and e-voting (19.18%).

The Citizen Web Empowerment Index (CWEI) evaluates the portals of public agencies, taking into account variables for the following four categories: e-information, Web 2.0 tools and strategies, e-consultation, and e-decision-making (Bellio & Buccoliero, 2013). Evaluated variables for e-information include the structure of the public administration body, segmentation or life event, availability of contact details, policies, procedures, budgets, council minutes, and the availability of newsletters and/or web magazines, while tools and strategies for Web 2.0 include: the existence of blogs and forums, chat; social networks; mobile services; Web TV; open data strategy; GIS (UN, 2008). Evaluated e-consultation variables include online surveys, online complaints, reputation systems, direct online interaction between the mayor and citizens, and e-decision-making evidence that citizens' opinions are taken into account and evidence of other complaints.

To research smart city websites, Fietkiewicz, Mainka and Stock (2017) developed an instrument measuring the level of information, communication, transactions, integration, and city participation. City participation is most important for this research and is measured using four questions about the availability of online questionnaires, formulas, and platforms for asking questions, seeking information about attending meetings, and opportunities for online voting.

As evident from the previous paragraphs, various metrics for e-participation exist, ranging from those focusing solely on the national level (such as the E-participation index and METEP) to those encompassing broader aspects of the e-government spectrum and specific urban locales (e.g. LOSI). Additionally, certain measures are tailored exclusively for assessing websites (e.g. CWEI). To gain deeper insights into e-participation adoption from the perspective of implementers, the author has undertaken the development of a novel measurement tool. This tool aims to incorporate input from implementers, while maintaining a supply-side perspective.

2.3. E-participation in Croatia

E-participation services at the national level are manifested through two portals, the Open Data Portal and the Public Consultation Portal, offering two levels of e-participation, e-informing, and e-consultation to the Croatian public. While the Open Data Portal exists on the domain https://data.gov.hr and serves to collect, categorize, and distribute open data of the public sector, the Public Consultation Portal is used to gather information on citizens' views, proposals, and interests related to specific public policies, raise the level of understanding and acceptance of policy goals, as well as to identify weaknesses and negative effects of public policy to be eliminated (https://savjetovanja.gov.hr/).

The Act on the Right of Access to Information from 2013 prescribed that public authorities are obliged to publish draft laws and other regulations subject to public consultation on their website. In 2015, the Amendments to the Act on the Right of Access to Information established the legislative framework for the use of the "e-consultation" system through the provisions of Article 11, which states that: "Public consultation by bodies of state administration shall be carried out via the central state internet portal for public consultations and other state bodies, units of local and regional government and legal persons with public authorities via the website or the central state internet portal for public consultations, by

publishing draft regulations, general acts or other documents, with an explanation of the reasons and objectives to be achieved by adopting the regulations, act, or other document and by inviting the public to submit their proposals and opinions."

The e-Consultation application allows participation in open public consultations in the process of adopting laws, other regulations and acts, and enables the review of consultations, a summary of each consultation, the deadline for leaving comments, and the deadline by which the public authority plans to publish a report on the implementation of the consultation. Citizens who want to review consultations, comments and reports on completed consultations can do so without registering. Citizens who wish to comment need to create a user account.

Cities and municipalities in Croatia engage in e-participation activities as well. For example, the City of Split has actively engaged its citizens in decision-making and policy creation through online surveys. In 2017, citizens contributed to the development of the Žnjan plateau urban space. Similarly, in March 2021, citizens provided input for the "Development Strategy of the City of Split by 2030". These surveys, including those in 2022 regarding the "Eastern Coast" project[1] and the "Action Plan for Green Split",[2] aimed to improve environmental quality and citizen well-being and were not legally required.

2.4. Size of Local Government Unit

Due to the specificity of e-participation, the research restricted the number of local governments to be examined, considering that the identified need for e-participation is required in relation to the capacity of local governments (if the LGU is too small, traditional forms of citizen participation are sufficient).

Additionally, the size of the LGU was chosen as a control variable. Size is an important organizational factor in technology adoption (Tornatzky, Fleischer & Chakrabarti, 1990). The results of various studies indicate that larger organizations adopt more innovations largely due to their ability to absorb greater risk (Zhu & Kraemer, 2005). Organization size

[1] https://split.hr/clanak/poziv-gradjanima-ispunite-anketu-i-pridonesite-definiranju-aktivnosti-zastite-okolisa-na-podrucju-naseg-grada

[2] https://www.split.hr/clanak/anketa

encompasses several important aspects including resource availability, decision-making agility, and prior technological experience (Zhou & Kraemer, 2005). On one hand, large organizations possess significant resources that can facilitate innovation adoption (Tornatzky, Fleischer & Chakrabarti, 1990), while on the other hand, company size is often associated with inertia; larger organizations are often less agile and less flexible than smaller ones (ibid). Consequently, small and medium-sized organizations are more likely to adopt new technology than large organizations, but they must have the necessary resources (financial resources and certain employee skills).

In the observation of the public sector, specifically local governments, their size (measured by population) is a leading factor that can be associated with the adoption of various innovations (Homburg & Dijkshoorn, 2011). Norris and Kraemer (1996) concluded that size is associated with technological innovation by local governments because larger local governments have greater needs and larger budgets to support information technologies. In an analysis of Italian municipalities, Medaglia (2007) concludes that the adoption of e-participation is directly related to wealth, size, and political orientation. According to Neirotti and colleagues research (2014), city size is a structural characteristic that affects the adoption of smart city initiatives, in which e-participation should be one of the pillars of communication with citizens, which represents an additional argument for setting size as a control variable.

3. Research Design

3.1. Research Instrument

The e-participation adoption can be observed as a scale for the depth of e-participation usage in a local government unit, representing the local government's willingness to enable citizens to participate in policymaking, decision-making, and service design through information and communication technologies.

The e-participation adoption at organizational level is the central point of the research. However, the adoption of technological innovations is studied in various ways. For example, some researchers view adoption as 0 or 1, in the sense that an organization either adopts or does not adopt a certain innovation (e.g. Lin, 2014). Others challenge this simplified view,

arguing that not all technological innovations are simple tools but complex configurations of systems, people, and processes that organizations need to systematically arrange to achieve benefits (Racherla & Hu, 2008). This is true for this research, since e-participation involves different sets of technologies, software, and processes, so it will be measured with a more complex formulation as detailed further.

Based on the UN definition of e-participation (2013) and the measurement items for the adoption of social media according to Sharif, Troshani, and Davidson (2015), the author developed eight items for the adoption of e-participation and prepared a form to be sent to experts to validate the measurement items. Measurement items are presented in Table 1, along with their corresponding labels (displayed after validation with experts).

Table 1: *E-participation measurement items*

Item Label	Measurement items	Source
	E-participation adoption	
ePart1	Our LGU regularly informs the public by publishing the news on the LGU website.	The author's work is based on the UN definition (2013) and Sharif, Troshani, and Davidson (2015)
ePart2	Our LGU regularly informs the public by publishing news on social media (e.g. on the official Facebook page).	
ePart3	When creating public policies, our LGU regularly conducts consultation with the public using digital tools (e.g. discussion forums).	
ePart4	When designing new services, our LGU regularly conducts consultation with the public using digital tools (e.g. discussion forums).	
ePart5	When improving the quality of existing services, our LGU regularly consults with the public using digital tools (e.g. online surveys).	
ePart6	When making decisions, our LGU regularly consults with the public using digital tools (e.g. online surveys).	
ePart7	Our LGU uses digital tools that enable citizens' participation in decision-making (e.g. e-referendum, e-voting).	
ePart8	Our LGU promotes the digital tools that enable citizens' participation in decision-making (e.g. e-referendum, e-voting).	

Source: Author.

The research with experts was conducted in the period from March to May 2022, during which 10 experts were contacted, but a total of six responded to the research. The validity of the measurement items was tested using content validity (Tkalac Verčić, Sinčić Ćorić & Pološki Vokić, 2010; Creswell & Creswell, 2018), which gives the answer as to whether the selected particle measures exactly the content that is planned to be measured. Content validity is a subjective and systematic evaluation of the coverage of the construct by the proposed measuring particles (Tkalac Verčić, Sinčić Ćorić & Pološki Vokić, 2010). Experts in public administration and information and communication technologies were consulted in order to evaluate the importance and clarity of the proposed measuring items and constructs in the framework of e-participation. Content validity was checked using the Content Validity Ratio (CVR) according to the instructions of Lawshe (1975), and by using the average value of relative importance. The content validity ratio (CVR) ranges from -1 to 1, with a higher score indicating greater agreement among experts on the necessity of the item in the instrument. Each expert gave one of the following ratings for the proposed metrics (measurement items) (Lawshe, 1975): 1) irrelevant metric, 2) useful but not necessary, or 3) necessary. The formula is CVR = $(N_e - N/2)/(N/2)$, where N_e represents the number of experts who evaluate the items as necessary, and N is the total number of experts.

The ratio of respondents by gender was balanced for both sexes (50–50%), as well as the level of education of the experts (50% master's degree; 50% PhD). It is important to note that three experts are working in academia and three in public administration. The experts evaluated their level of expertise according to the offered levels, which is shown in Table 2 below:

- 0 – I am not familiar with the domain area
- 1 – I have sufficient knowledge of the domain area
- 2 – I know the domain area very well
- 3 – I am an expert in the domain

Table 2: *Level of expertise of experts*

Expertise	**Average**
Public administration and e-participation	1.83
Information and communication technology	1.83

Source: Author.

Table 3 below provides an overview of the CVR values and the author's interpretation of their importance (*i)* (CVR_i and $aCVR_i$) and clarity (*c*) (CVR_c) for each measurement item. In this study, the number of experts is 6, which means that the significance levels for individual measurement items are acceptable if the CVR_i is greater than 0.99 (Lawshe, 1975). The item ePart8 did not meet the first criterion. In order to check another content validity indicator, average CVR_i ($aCVR_i$), the condition applied was that the average value of relative importance (aCVR) should be at least 2. All items satisfied this condition. The author decided to retain the ePart8 considering that it is one of the two items (along with the item ePart7) representing e-decision-making as part of the e-participation concept. The CVR_c values (c stands for clarity) for items ePart3, ePart4, ePart5, and ePart6 are lower than the reference value (0.99), so they were revised based on expert comments to clarify their purpose (primarily by adding examples of tool usage for easier understanding of the statement).

Table 3: *Calculation of content validity ratios*

Label	**CVR_i**	**$aCVR_i$**	**CVR_c**	**Interpretation**
ePart1	1.00	3	0.67	Keep measurement item
ePart2	0.67	2.83	0.67	Keep measurement item
ePart3	1	3	0	Keep and revise measurement item
ePart4	1	3	0	Keep and revise measurement item
ePart5	0.67	2.83	0.33	Keep and revise measurement item
ePart6	0.67	2.83	0	Keep and revise measurement item
ePart7	1	3	1	Keep measurement item
ePart8	0	2.17	0.33	Author's decision to keep (and revise)

Source: Author.

3.2. Sample and Data Collection

Since this research has a broader context of study, e-consultation is also examined beyond legally prescribed activities, and the author did not include LGUs with less than eight thousand inhabitants because certain

other activities such as generating and collecting ideas from the public for some issues or evaluating ideas are not part of the legal minimum, but the author believes that larger cities should apply them following the example of developed Western societies.

The targeted respondents are decision-makers in innovation adoption, namely employees of the local government unit. More precisely, they include heads of administrative departments (only activities oriented internally, e.g., internal audit, legal business/representation, and city council services were excluded). A database of potential respondents was prepared, consisting of the following data: contact email, administrative department and position, and data collected from the official websites. Although the final list of respondents was formed a few days before sending out the questionnaire for more accurate research, during the research, some respondents reported changes that were not recorded on the websites, so the database of respondents was regularly updated during the research.

For this research, a database was prepared consisting of all LGUs that meet the aforementioned criterion. The study included 83 LGUs with more than 8,000 inhabitants, totalling 378 departments. Responses were received from at least one LGU out of 81, meaning that 97.6% of the population participated in the study. Responses were received from 191 departments, representing 50.53% of the population.

From June to August 2022, a total of 248 respondents' responses were received that were valid for the final analysis. First, the collected data on respondents were analysed to gain insight into the structure and characteristics of the respondents. Data on respondents were collected using six questions in the questionnaire to which respondents were not obligated to respond. The highest number of responses came from department heads (41.9%), followed by department managers (36.3%), acting department heads (10.1%), and deputy department heads (3.2%). All of these were the primary targeted respondents of the study. A small percentage (1.2%) comprises non-managers who were not originally sent emails but were forwarded the survey by the responsible person.

The structure of respondents by gender shows a higher number of responses from women (59.6%) compared to men (40.4%). The majority of respondents (82.7%) have graduate degrees followed by a completed Master of science or postgraduate degree (11.7%). Formal IT education is possessed by 10.5% of respondents.

In reference to tenure in their current position, the majority of respondents have 4 to 10 years of work experience (39.7%), followed by those with 1-3 years of experience (28.4%). Respondents with 11 or more years of experience are represented by 22.6%, with 12.1% having 11-15 years of experience, and 10.5% having 16 years and more. It can be concluded that the majority of respondents are less experienced in their current leadership positions (77.3% have up to 10 years of experience).

Regarding total work experience in the surveyed LGUs, the majority of respondents have four to 10 years of work experience (31.6%), followed by those with more than 20 years of experience (23.9%), and 11-15 years of experience (19.8%). Respondents with 16-20 years of experience represent 15%, followed by those with less experience, 1-3 years (6.9%), and less than 1 year (2.8%). It can be concluded that respondents have been in the respective local governments for a slightly longer period, as 58.7% of them have 11 or more years of work experience in a particular local government, compared to their tenure in their current position, where 22.6% have 11 and more years of work experience.

In addition to demographics data, data collection included collecting the responses related to e-participation adoption. This construct was measured using pre-proposed statements where the respondents had to express their agreement/disagreement with the proposed statements on an ordinal Likert scale ranging from one to five: 1) strongly disagree, 2) disagree, 3) neither agree nor disagree, 4) agree, 5) completely agree.

4. Results

Descriptive statistics for the e-participation adoption construct are presented in Table 4. They include measures of central tendency (mean, median, and mode), standard deviation as a measure of the dispersion of e-participation adoption variables, and measures of normality (distribution), kurtosis, and skewness.

Respondents agree with two statements: that their local governments regularly inform the public on their website and through social media related to e-informing (ePart1 and ePart2). Respondents' perceptions of regular public consultation using digital tools are generally neutral. While consultation on public policy creation has a slightly higher average value (a statement with which respondents still do not agree – ePart3), public consultation on designing new services, improving the quality of existing

services, and decision-making (ePart4-ePart6) are rated predominantly neutral (approx. 3) on a 1-5 Likert scale.

Respondents' answers to statements about e-decision-making indicate disagreement regarding whether their LGU uses digital tools to delegate decisions to the public or promotes digital tools for public decision-making.

Table 4: *Descriptive statistics*

Label	Mean	Median	Mod	Standard deviation	Asymmetry coefficient	Coefficient of roundness
ePart1	4.5282	5	5	.70223	-1.728	3.743
ePart2	4.3589	5	5	.84667	-1.446	2.233
ePart3	3.4113	3	4	1.06099	-.288	-.557
ePart4	3.1895	3	3	1.00221	-.169	-.246
ePart5	3.1169	3	3	1.05249	-.047	-.492
ePart6	3.1976	3	3	1.06341	-.097	-.566
ePart7	2.3548	2	2	.99954	.467	-.055
ePart8	2.3952	2	2	.97182	.339	-.195

Source: Author.

Considering that the variables ePart1 and ePart2, variables ePart3 to ePart6, and ePart7 and ePart8 belong to the constructs of e-informing, e-consultation, and e-decision-making, their adoption levels were calculated by normalization. The normalization of data was used in interpreting the mean values for the questions posed to the heads of local governments, using a Likert scale of 1 to 5 and creating e-participation components. The normalization value was calculated using the following formula, where x' represents the normalization value, x is the original value, min(x) is the minimum value according to the Likert scale, and max(x) is the maximum value according to the Likert scale:

$$x' = \left(\frac{\bar{x} - \min(x)}{max(x) - \min(x)}\right) * 100$$

Table 5 displays the level of adoption of e-participation and its three sub-levels. Observed on a scale from 1 to 5, where a higher score indicates a higher level of adoption of socio-technological innovation, it can be concluded that the average level of adoption of e-informing in the selected LGUs is 4.44. The adoption level of e-informing at 86% indicates that the vast majority of LGUs have adopted e-informing in the form of regularly informing citizens through websites and social media. The second component of e-participation is e-consultation, which relates to the evaluation of communication and the involvement of city stakeholders in the creation of public policies, decision-making, and the improvement of existing services and the design of new services, measured with four questions in the survey questionnaire. The adoption rate of 56% can partly be attributed to the mandatory e-consultation prescribed by law, but the result suggests that the full potential of e-consultation has not been realized. E-decision-making is measured through two statements. A low level of adoption of e-decision-making of 35% has been calculated, and the overall adoption of e-participation in the surveyed local government units in Croatia amounts to 59%.

Table 5: *Level of adoption of e-participation and its sub-levels*

Construct	**e-information**	**e-consultation**	**e-decision-making**	**e-participation**
N	248	248	248	248
Mean	4.45	3.23	2.38	3.35
Normalization	86%	56%	35%	59%

Source: Author.

Since the size of the city is a moderating variable in the research model, adoption levels were calculated for larger and smaller local governments. Local governments governing areas over 20,000 inhabitants were considered larger (25 cities) and those with lower number are considered smaller (58 LGus). Out of the 248 previously mentioned responses, larger cities account for 132 records (respondents' answers) and smaller for 116 records. Table 6 shows the adoption level of e-participation and adoption levels for its three sub-levels for the two mentioned subsets of data. The differences in adoption levels of e-participation between larger and smaller LGUs are statistically significant ($p < .05$).

Table 6: *Level of adoption of e-participation and its sub-levels for a subset of data*

LARGER LOCAL GOVERNMENTS				
Construct	**e-information**	**e-consultation**	**e-decision-making**	**e-participation**
N	132			
Mean	4.51	3.37	2.39	3.4
Normalization	88%	59%	35%	61%
SMALLER LOCAL GOVERNMENTS				
Construct	**e-information**	**e-consultation**	**e-decision-making**	**e-participation**
N	116			
Mean	4.38	3.08	2.36	3.27
Normalization	84%	52%	34%	57%

Source: Author.

5. Discussion

As emphasized in the introduction of the research, there is a gap and a need for quantitative empirical research at the local government level to explore the adoption of e-participation. Limitations accompanying previous research relate specifically to the motivation of the local governments themselves, but also to the use of contemporary theory to explore the adoption at hand. The development of ICT and encouragement of digital transformation by the central government have brought e-participation closer to local governments. Its importance in contributing to better city management is undeniable because if implemented correctly, it can result in greater satisfaction with public policies, services, and overall trust of citizens and other stakeholders in local government due to inclusive and participatory governance.

Following the research objectives of examining the level of adoption of e-participation in local governments in Croatia, i.e., to what extent ICT is used to involve citizens in their work in the form of e-informing, e-consul-

tation, and e-decision-making, the results obtained reveal the untapped capacity of e-participation adoption. The overall adoption of e-participation in the surveyed local governments in Croatia is 59%, and the adoption of its sub-levels is as follows: e-informing at 86%, e-consultation at 56%, and e-decision-making at 35%. The results are in line with a study on the use of e-participation tools in 20 city administrations in Croatia (Ninčević Pašalić, Jadrić & Ćukušić, 2020), where it was concluded, based on the analysis of city websites and other available platforms, that citizens in the 20 largest cities are digitally informed (via websites, Facebook, and spatial information via GIS), but they are not given a real opportunity to influence decision-making processes (e.g., no e-participation platform is offered in any city). The results of e-informing adoption are consistent with many studies that reveal that local e-government is mainly informational and not designed to promote interactivity (Royo, Yetano & Acerete, 2014). The results of the LOSI (Local Online Service Index) indicators of citizen participation and engagement at the local level indicate that only 35% out of 193 cities (UN member states) have implemented 75-100% of the corresponding indicators, especially indicators such as participatory budgeting, providing feedback on consultation processes, real-time communication, and e-voting. Although the City of Zagreb, as the only evaluated city from Croatia, entered the category of very high LOSI, with a value of 0.7558 compared to the world leader Berlin and the sub-leader of the region Madrid 0.9767, it is not completely satisfactory. This is evident especially when considering the LOSI indicators individually, e.g., the service offering index is 0.4444, and citizen participation and engagement are 0.7059 (UNDESA, 2022).

The level of 56% e-consultation adoption can be partly attributed to the legally mandated e-consultation, but improvements are possible in providing additional participation opportunities and supplementary methods that are not just filling out MS Word forms and sending them to specified email addresses. Đurman's research (2022) also suggests underutilization of potential and weak effectiveness of e-consultation in local government, due to two main reasons, certain shortcomings by local governments, and very low citizen interest. Particularly concerning is the low level of e-decision-making adoption at 35%, which in terms of using e-participation tools is confirmed by the findings of Ninčević Pašalić, Jadrić, and Ćukušić (2020) on 20 Croatian cities, where it was shown that engaging tools such as e-voting, e-petitions, discussion rooms, and debate discussions are not used at all. Moreover, these results correspond to findings for Slovenian municipalities, where Kukovič and Brezovček (2015) analysed

official web pages of 211 municipalities and revealed that although all municipalities provide e-access and offer various forms of e-consultations, other e-participation tools are rarely available.

In Türkiye, the findings of Demirhan and Öktem (2023) show that municipalities' e-participation initiatives are limited to e-information, while initiatives for e-consultation and e-decision-making were insufficient. E-decision-making, the most important step in e-participation is at the lowest level for all municipalities in both years (2011 and 2016) investigated. Akmentina's research (2022) shows that e-participation is an integral part of urban planning practices in 12 cities in Estonia, Lithuania, and Latvia, primarily contributing to diversifying information and consultation processes.

Considering the differences in the size of LGU, larger LGUs have a higher level of e-participation adoption, 61% adoption compared to 57% in smaller ones. The greatest differences are observed in e-consultation (59% and 52%), while negligible differences are noted in e-decision-making (only a one percentage point difference). In line with these findings, the research by Tejedo-Romero and colleagues (2022) conveys conclusions that larger local governments (size of population) offer the most e-participation mechanisms and the most solutions for disseminating information to citizens. Higher adoption of e-participation is very important as it leads to an increase in the adoption rate by citizens and other stakeholders by over 70% (Kopackova, Komarkova & Horak, 2022), which is in line with earlier research by Komito (2005) who believes that increasing the use of new technologies through expanding the offer of services to citizens can improve citizen participation in public life.

The findings of Karlström, Lidén and Sundberg (2023) indicate that municipalities with larger populations and well-established local democratic practices are more likely to adopt e-petitions compared to smaller jurisdictions. However, they also found that while institutionalized work structures associated with local democracy play a crucial role in e-petition implementation, prior experience with communication technologies positively influences the volume of incoming petitions.

The reasons for the limited offer of e-participation by local governments can be sought in several directions. Some authors believe that decision-makers are unwilling and unprepared to do so (e.g., Krishnan, Teo & Lymm, 2017; Zheng, 2015), while others provide reasons why this might be the case. Marques (2010) believes that many public administrations and their representatives are unwilling to share political power with citi-

zens. Le Blanc (2020) also argues that the limited progress of e-participation is a result of the unwillingness of public institutions to truly share the power of setting agendas and making decisions. Le Blanc (2020) also notes that at the global level (within UN member countries), there is a growing number of offered e-participation tools, but there is no evidence that this has translated into broader or deeper citizen participation in decision-making processes. Following the above, the author believes that the adoption of tools and generally expanding the offer of e-participation is the first step in citizen participation in policymaking, services, and decision-making. The second step should be the institutionalization of e-participation.

Reddick and Norris (2013) consider formal planning important for the success of e-participation. According to Randma-Liiv (2022), formal institutionalization is crucial as it increases the sustainability, transparency, and legitimacy of e-participation, and enables citizen proposals to be dealt with in a standardized manner, but it must be accompanied by informal institutionalization through supportive ideas, values, and inclinations of politicians and public officials who have the power to change public institutions. Similarly, Bouzguenda, Alalouch and Fava (2020) believe that cities would be mature enough for the introduction of digital participatory planning if there were existing good practices of conventional participatory planning, citizen trust in inclusion processes, and a sufficient number of digitally literate citizens.

6. Conclusion

This research developed a survey as a data collection instrument, where constructs and measurement items were revised and adapted based on previous studies by the author and experts in the field. Additionally, data were collected from 83 local governments in Croatia, with the majority of respondents being heads or managers of administrative departments. Despite the advantages it offers to citizens, the adoption of e-participation at the local level is modest. The adoption level of e-participation at the level of local government in the Republic of Croatia stands at 59%, which is a mediocre result, with sub-levels showing very good adoption of e-information, mediocre results for e-consultation, and a low level of adoption of e-decision-making. A greater variety of tools and formalization of e-participation at the strategic and operational levels would help

achieve higher levels of adoption. On the strategic level, e-participation tools should be integrated into long-term planning and decision-making processes which could include online consultation platforms (with voting and/or rating options), participatory budgeting tools and strategic foresight tools that allow citizens to provide input on future-oriented policies. On the operational level, e-participation tools could be used in day-to-day operations and implementation of policies using tools for public feedback on service delivery, real-time reporting of issues through mobile apps, and the use of social media for immediate community engagement. Local governments should adopt more advanced engagement tools to enhance citizen e-participation, as current utilization is still low. This is why voting or rating options should be introduced within e-participation platforms. These features will enable citizens and other stakeholders to have more meaningful participation by directly influencing decisions and policies. For example, citizens could rate the importance of different local projects or vote on budget allocations in participatory budgeting processes. This approach not only increases engagement, but also provides clear and quantifiable feedback to policymakers. The size of the LGU has proven to be significant, with larger cities having higher adoption of e-consultation.

The levels of e-participation adoption were calculated based on self-assessment by respondents, heads of departments, and departmental managers. Since self-perception is not an objective measure of e-participation adoption, this method represents a limitation and calls for future research, a comparison of obtained perceptions with more objective measures of e-participation adoption. Another limitation is employing a quantitative approach in measuring e-participation adoption. While this method allows for statistical analysis, it may overlook the depth and context of participants' experiences that qualitative research could provide. Therefore, future research could include a deeper investigation of e-participation adoption by employing qualitative methods such as interviews to gain more detailed insights.

The findings of this research have significant implications for various organizations and stakeholders. When public policies and services are formulated with the involvement of e-participation, they tend to be more effective. In addition, citizens are more likely to accept these policies and decisions sooner and more easily. For government agencies and local governments, adopting e-participation can lead to enhanced governance processes, increased transparency, and improved citizen satisfaction. Additionally, businesses and non-profit organizations can benefit from e-participation by gaining insights into public opinions and needs, which can

inform their strategic planning and decision-making processes. Overall, the results show room for advancing e-participation initiatives using more advanced e-participation tools to foster better collaboration between governments, organizations and citizens, ultimately adding to more responsive and inclusive governance practices.

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Legal sources

Act on the Right of Access to Information, NN 25/13, 85/15, 69/22

Appendix 1

Table 6: *List of local government units in Croatia with population size*

	Local government	Type	Number of inhabitants 2021.		Local government	Type	Number of inhabitants 2021.
1	Zagreb	City	767,131	**43**	Ivanec	City	12,723
2	Split	City	160,577	**44**	Umag - Umago	City	12,699
3	Rijeka	City	107,964	**45**	Trogir	City	12,393
4	Osijek	City	96,313	**46**	Ogulin	City	12,246
5	Zadar	City	70,779	**47**	Novi Marof	City	11,795
6	Velika Gorica	City	61,075	**48**	Nova Gradiška	City	11,690
7	Pula - Pola	City	52,220	**49**	Knin	City	11,633
8	Slavonski Brod	City	49,891	**50**	Krapina	City	11,530
9	Karlovac	City	49,377	**51**	Slatina	City	11,503
10	Varaždin	City	43,782	**52**	Gospić	City	11,502

11	Šibenik	City	42,599	**53**	Novska	City	11,137
12	Dubrovnik	City	41,562	**54**	Nedelišće	Municipality	11,017
13	Sisak	City	40,121	**55**	Matulji	Municipality	10,773
14	Kaštela	City	37,794	**56**	Brdovec	Municipality	10,737
15	Samobor	City	37,435	**57**	Opatija	City	10,619
16	Bjelovar	City	36,316	**58**	Labin	City	10,424
17	Vinkovci	City	30,842	**59**	Podstrana	Municipality	10,403
18	Koprivnica	City	28,580	**60**	Popovača	City	10,255
19	Čakovec	City	27,122	**61**	Duga Resa	City	10,212
20	Solin	City	24,862	**62**	Kastav	City	10,202
21	Zaprešić	City	24,133	**63**	Daruvar	City	10,105
22	Đakovo	City	23,577	**64**	Crikvenica	City	9,980
23	Sinj	City	23,452	**65**	Benkovac	City	9,680
24	Vukovar	City	23,175	**66**	Čepin	Municipality	9,665
25	Požega	City	22,294	**67**	Imotski	City	9,153
26	Petrinja	City	19,950	**68**	Županja	City	9,153
27	Kutina	City	19,601	**69**	Pleternica	City	9,138
28	Virovitica	City	19,302	**70**	Belišće	City	8,884
29	Križevci	City	18,949	**71**	Župa dubrovačka	Municipality	8,705
30	Sveta Nedelja	City	18,221	**72**	Zabok	City	8,656
31	Dugo Selo	City	17,676	**73**	Vodice	City	8,649
32	Poreč - Parenzo	City	16,607	**74**	Garešnica	City	8,624
33	Viškovo	Municipality	16,084	**75**	Konavle	Municipality	8,607
34	Metković	City	15,235	**76**	Ludbreg	City	8,477
35	Sveti Ivan Zelina	City	14,602	**77**	Pitomača	Municipality	8,402
36	Jastrebarsko	City	14,562	**78**	Otočac	City	8,332

37	Našice	City	14,291	**79**	Pazin	City	8,279
38	Omiš	City	14,139	**80**	Ploče	City	8,220
39	Makarska	City	13,301	**81**	Trilj	City	8,182
40	Ivanić-Grad	City	12,982	**82**	Donji Miholjac	City	8,031
41	Vrbovec	City	12,981	**83**	Beli Manastir	City	7,973
42	Rovinj - Rovigno	City	12,968				

Source: Author, based on Croatian Bureau of Statistics.

E-PARTICIPATION IN LOCAL SELF-GOVERNMENT IN CROATIA

Summary

Today, cities play a crucial role as drivers of global change, as well as leaders in implementation of UN's Sustainable Development Goals. They must capture and satisfy diverse needs of their citizens. On the other hand, e-participation adoption is crucial in open government movement as it allows the government to involve the public in their work, making it more transparent. This can be achieved through e-information, e-consultation and e-decision making as levels of e-participation adoption. This research puts focus on e-participation adoption in Croatian local governments and explores supply side of e-participation adoption with local governments' officials. After consulting relevant literature, public sector and ICT experts, a questionnaire (i.e. measurement items) has been developed to assess e-participation levels in cities/municipalities with over 8,000 inhabitants. More than 240 responses have been collected from local governments' heads of departments and departmental managers. The results show that the adoption of e-participation at the local level is modest with a score of 59%. E-participation sub-levels show very good adoption of e-information (e-information services widely available), mediocre results for e-consultation (mostly only compliance with respective law), and a low level of adoption of e-decision-making. The differences in adoption levels of e-participation are statistically significant between smaller and larger cities/municipalities. Therefore, the population

size of the city/municipality has proven to be significant, with larger cities having higher adoption rates, especially of e-consultation practices. The author suggests a greater variety of tools and formalization of e-participation at strategic and operational levels to achieve higher levels of adoption. In addition, local governments should adopt more advanced engagement tools to enhance citizens' (and other stakeholders') e-participation (with voting and rating options), as current utilization is still low.

Keywords: *e-participation, local government, city size, municipality size, Croatia*

E-SUDJELOVANJE U HRVATSKOJ LOKALNOJ SAMOUPRAVI

Sažetak

Danas gradovi igraju ključnu ulogu kao pokretači globalnih promjena, kao i predvodnici u provedbi UN-ovih ciljeva održivog razvoja. Moraju obuhvatiti i zadovoljiti različite potrebe svojih građana. S druge strane, usvajanje e-sudjelovanja ključno je u pokretu otvorene vlade jer na taj način vlada može uključiti javnost u svoj rad čineći ga transparentnijim. To se može učiniti kroz e-informiranje, e-konzultacije i e-odlučivanje, razine usvajanja e-participacije. Ovo istraživanje stavlja fokus na usvajanje e-sudjelovanja u hrvatskim lokalnim samoupravama i istražuje stranu ponude usvajanja e-sudjelovanja sa službenicima lokalnih samouprava. Nakon konzultacije s relevantnom literaturom, te stručnjacima iz javnog sektora i ICT-a, razvijen je upitnik (tj. mjerne stavke) za procjenu razine e-sudjelovanja u gradovima/općinama s više od 8000 stanovnika. Prikupljeno je više od 240 odgovora pročelnika i načelnika jedinica lokalne samouprave. Rezultati pokazuju da je usvajanje e-sudjelovanja na lokalnoj razini skromno s rezultatom od 59%. Podrazine e-sudjelovanja pokazuju vrlo dobro usvajanje e-informacija (e-informacijske usluge široko dostupne), osrednje rezultate za e-konzultacije (uglavnom samo usklađenost s odgovarajućim zakonom) i nisku razinu usvajanja e-odlučivanja . Razlike u razinama usvajanja e-sudjelovanja statistički su značajne između manjih i većih gradova/općina. Stoga se broj stanovnika u gradu/općini pokazao značajnim, pri čemu veći gradovi imaju veće stope usvajanja, posebno za prakse e-konzultacija. Autor predlaže veću raznolikost alata i formalizaciju e-sudjelovanja na strateškim i operativnim razinama kako bi se postigla veća razina usvajanja. Osim toga, lokalne vlasti trebale bi usvojiti naprednije alate za uključivanje kako bi poboljšale e-

sudjelovanje građana (i drugih dionika) (s opcijama glasovanja i ocjenjivanja), budući da je trenutna iskorištenost niska.

Ključne riječi: *e-sudjelovanje, lokalna samouprava, veličina lokalnih jedinica, Hrvatska*