

E-PARTICIPATORY AND COMMUNICATION MOBILE APPLICATIONS: CASE STUDY OF PRAGUE

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Abstract: Worldwide usage of mobile Internet significantly increases, which underlines the importance of mobile applications as a tool for involving residents in local public affairs and decision-making processes. However, the Czech level of e-participation is below the EU average in the long term. Using an exploratory case study, this article aims to identify all available e-participatory and communication mobile applications designed for the city of Prague and its inhabitants offered on Google Play Store and Apple App Store. Moreover, using the content analysis method, features of identified mobile applications are explored and described. The majority of identified applications serve as one-way communication channels, and one application has a function that allows it to collect opinions of residents through voting polls. It is essential to significantly increase the user base of these applications and thus to ensure efficient development of e-participation in Prague and also in the Czech Republic in the future.

Keywords: E-participation, Communication, Citizen, Municipality.

1. INTRODUCTION

Participatory practices and tools such as public assemblies, meetings, public hearings, etc. have been known around the world for many years. However, the resulting effect of these tools may vary depending on the specific situation and location (OECD, 2001). Those practices are usually held during standard working hours at the fixed locations and thus, personal inconveniences might often discourage citizens from participating and lead to a low level of citizens' involvement in participatory projects (Kingston, 2007). However, digitalisation and widespread Internet access have made the tools of citizens' participation much easier and more accessible. Thus, the concept of e-participation is based on the assumption of the use of ICT to involve citizens into public affairs (Peristeras et al., 2009). Macintosh (2006) defined e-participation as "*the use of information and communication technologies to broaden and deepen political participation by enabling citizens to connect with one another and with their elected representatives*". According to this definition, e-participation can also be divided into three interrelated dimensions: 1) *e-enabling* – disseminating (providing) information to as many potential participants as possible and using appropriate tools in the most clear and understandable way; 2) *e-engaging* – involving citizens into the discussion and consultation related to important decision-making processes influencing public life; 3) *e-empowering* – active involvement of citizens into the decision-making processes in which citizens are treated as political partners.

Through the increased Internet access, a large number of citizens are enabled to express their opinion without the necessity to join personally any civic association or other institution of a similar nature and their voice serves as a valuable input for decision-making at the national and also local administrative level (Loukis et al., 2010). Generally, the most common tools used for

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e-participating and on-line communicating are social media, websites or web platforms and mobile applications (Gao & Lee, 2017). Moreover, usage of mobile Internet connections on a day-to-day basis significantly increases, which underlines the importance of mobile applications as a tool for involving residents in local public affairs and decision-making processes (Stieglitz & Brockmann, 2013).

Through mobile applications, citizens can directly provide opinions, feedback or voice concerns within the community (Höffken & Streich, 2013; Thiel & Lehner, 2015). Mobile applications may provide users with various functions such as sharing information from the area of city services, mobility, safety, statistics, news and events or environment (Beutelspacher et al., 2018). On the other hand, mobile online surveys or consultations represent valuable e-participatory tools (Wimmer et al., 2013; Zheng, 2017). Following the definition of the dimensions of e-participation by Macintosh (2004), social media and smartphones seem to have a big potential to support especially the stages of e-enabling and e-engaging (Stieglitz & Brockmann, 2013).

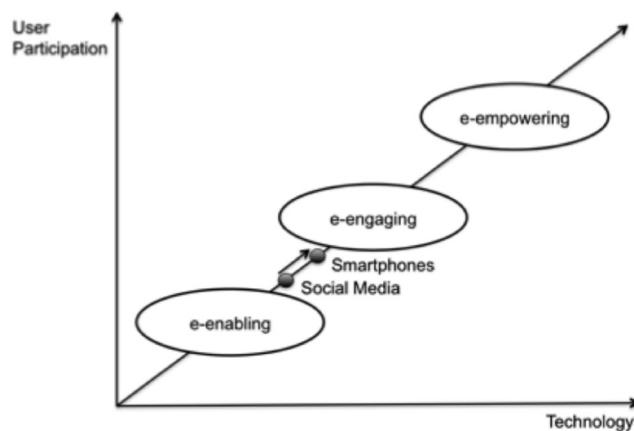


Figure 1. Degrees of E-participation with Support of Social Media and Smartphones
Source: Stieglitz & Brockmann, 2013

The level of e-participation in the Czech Republic has for a long time been relatively low. For international comparison, Figure 2 below shows the development of the E-Participation Index designed by the United Nations. Achieved values of the E-Participation Index for the Czech Republic are below the European regional average Index value in the whole monitored period of 2010-2020. Moreover, the Czech Republic ranked 65th place among 193 evaluated countries in 2020, when the regional and also global leader became Estonia with an Index value of 1 (United Nations, 2020).

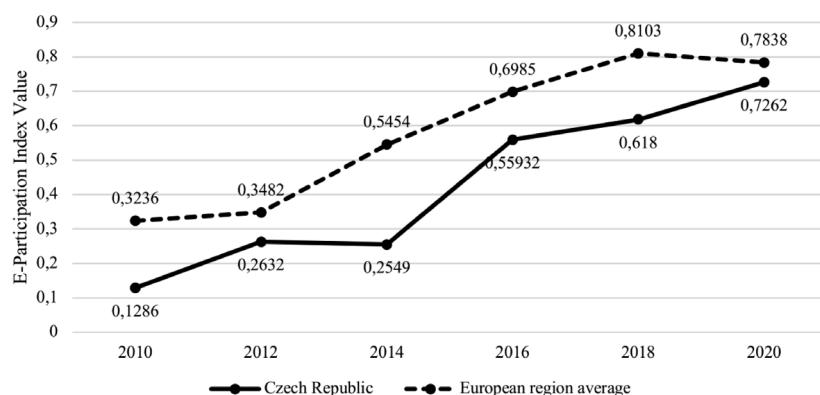


Figure 2. E-participation Index Development
Source: United Nations, 2020

It is now a crucial question of what kinds of obstacles prevent the successful development of e-participation in the Czech Republic, and thus prevent it from getting below-average values and approaching closer to regional leaders in this field in the future. However, to successfully identify and overcome these barriers, it is desirable to focus separately on each component of which the overall concept of e-participation is composed. The following text, as well as the main goal of this article, deals mainly with the issue of e-participation and communication between citizens and municipal leadership through on-line tools, particularly on-line applications designed for their use in smartphones.

As fundamental international statistics and relevant data from the area of mobile Internet access show, the Czech infrastructure seems to be relatively wide, and the number of mobile Internet users corresponds with the EU average. According to DESI (Digital Economy and Society Index) evaluation, 4G mobile Internet network in the Czech Republic covers 99.6 % households (percentage of populated areas with coverage by 4G - measured as the average coverage of telecom operators) and the so-called Broadband price index, which represents prices of representative baskets of fixed, mobile, and converged broadband offers, in the Czech Republic is below the European Union average (European Commission, 2020).

Moreover, 70.5 % of the Czech population aged between 16-74 years reported using mobile Internet access regularly on a daily basis in 2019. For comparison, the European leader with the greatest number of mobile Internet users is Sweden (91.9 % of the population in the age group of 16-74), the country with the lowest share of mobile Internet users is Italy (49.2 %) and the European Union average of mobile Internet users is 72.7 % (Eurostat, 2020). The above-mentioned data may indicate that the main reason for the low use of municipal online mobile platforms among city and municipal residents is not the infrastructure itself. Therefore, the research might focus on why people are not interested in using these applications and how to expand their user base.

Relatively little scientific evidence related to the design and functionalities of mobile participatory and communication applications has been published so far. Studies addressing these questions mostly focus on analysing single case studies and projects (Cristobal et al., 2018; Briciu et al., 2020). This article serves as an initial description of the state of supply of e-participatory mobile platforms in the Czech Republic, which represents one of the key areas of the e-participation concept. Particularly, this article aims to identify and describe the e-participatory and communication mobile platforms offered to citizens of Prague. A thorough description and characteristics of the current state is a necessary prerequisite for determining the starting point for further follow-up research in the field of e-participation in the Czech Republic.

2. METHODOLOGY

The aim of this article is to 1) map all available e-participatory and communication mobile applications designed for the city of Prague and its inhabitants offered on Google Play Store and Apple App Store and 2) explore functionalities of identified mobile applications. The study uses the exploratory case study method, which can be defined as “an empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context” (Yin 2014), as a main research technique.

Firstly, the following search keywords were used to identify relevant mobile applications on Google Play Store and Apple App Store (see Table 1): “Praha” (Prague) and “participace”

(participation) or “komunikace” (communication) or “informace” (information) or “hlášení” (announcement) or “občan” (citizen) or “správa” (administration) or “veřejnost” (public). The search was conducted between the 1st of December and the 5th of December 2020. Most of the e-participatory and communication mobile applications were identified after using keywords “Praha” (Prague) and “občan” (citizen) or “hlášení” (announcement). After we filtered out duplicates, a total of 13 relevant mobile applications designed for communication and participation between the city of Prague or its municipal districts and their citizens were identified.

Table 1. Search keywords

Main search keyword		Complementary search keyword	Number of relevant results	
“Praha” (Prague)	and	“participace” (participation)	1	
		or		
		“komunikace” (communication)	3	
		or		
		“informace” (information)	2	
		or		
		“hlášení” (announcement)	7	
		or		
		“občan” (citizen)	9	
		or		
“správa” (administration)		1		
or				
“veřejnost” (public)		1		
Number of identified applications after removing duplicates			13	

Secondly, using the content analysis method, features, and functionalities of identified mobile applications were explored and described as well as their level of usage among Prague citizens. All 13 identified mobile applications were downloaded and individually assessed by researchers, and consequently, their functionalities were examined.

3. E-PARTICIPATORY AND COMMUNICATION MOBILE APPLICATIONS IN PRAGUE

The city of Prague with more than 1.3 million inhabitants is managed by the Prague City Hall. However, Prague is further divided into 57 city districts, each of which has its own City Hall and municipal representation. Many of these Prague districts have therefore decided to provide their residents with their own communication or participatory application, independently of the mobile applications run by the Prague City Hall. Therefore, the identified mobile applications can be divided into two main groups: 1) mobile applications with use and functionalities that are designed for all Prague residents and 2) mobile applications with use and functionalities that are designed for residents of particular Prague districts.

Firstly, we characterize mobile applications designed for all residents of Prague, regardless of particular citizens' place of district residence within Prague:

- “Moje Praha” (*My Prague*)

The primary goal of this mobile application is to provide citizens of Prague with basic and practical information. Therefore, its functionalities include providing information ranging from the availabil-

ity of free parking places (including direct payment option), live traffic cameras, contacts and opening hours of municipal authorities, list of city police headquarters, information on cultural events, weather conditions, lists of pharmacies, playgrounds, parks and public toilets, list of the most important telephone numbers for crisis situations to interactive map of Prague. The nature of this mobile application is therefore purely informative and does not serve as a two-way communication channel.

- “*Změňte.to*” (*Change.it*)

The second identified mobile application designed for all Prague residents is called “*Změňte.to*” (*Change.it*), which serves as a means of informing Prague City Hall employees and its subordinate organizations on all types of maintenance issues and disruptions in service of public transportation, roads, public lighting, litter, etc. Users can locate the disruption directly on the map via the mobile application, attach a photo and send it with a short comment directly to relevant city employees. Recently, the application has been extended with the addition of functionality enabling users to evaluate services at the city’s bureaus. This application, therefore, represents an opportunity to draw attention to accidents, disorders, or several other facts with which citizens of Prague are not satisfied and wish to change them.

Secondly, we characterize mobile applications designed for residents of particular Prague districts:

- “*Mobilní Rozhlas*” (*Mobile Broadcast*)

This smartphone application, also available as a web platform, represents one of the most used online communication and participatory platforms among Czech cities and villages. The application can be characterized as a universally designed product that offers a various number of functionalities and the city management itself can decide which of these available functions it is to offer to their citizens. If a municipality opts for using this application, its citizens can simply download it onto their mobile devices and then search for the name of their preferred city, subscribe to its newsletters and start using the available functionalities. The application offers functionalities such as: sharing news, reporting defects and filing complaints (in a similar way as the above-mentioned “*Změňte to*” application), emergency communication, information on cultural events, tips for trips, information regarding the waste and its collection, providing contacts and opening hours of municipal authorities or information on parking spaces. In addition, this smartphone application also offers an opinion poll tool, through which the leadership of municipalities can gather opinions of their citizens on various issues. A total of 12 Prague city districts are actively using this application (see more information in the Discussion section).

- “*Hlášení Rozhlasu*” (*Broadcast announcement*)

Another very commonly used, universally designed application is called “*Hlášení Rozhlasu*” (*Broadcast Announcement*). As well as in the case of the above-mentioned “*Mobilní Rozhlas*”, if a municipality opts for using this application, its citizens can download it onto their mobile devices and then search for the name of their preferred city, subscribe to its newsletters and start using the available functionalities. However, the range of functionalities of this application is limited compared to the previous option as the platform only offers newsfeed, emergency communication, reporting defects and complaints (in a similar way as above mentioned “*Změňte to*” application) or providing contacts and opening hours of municipal authorities. A total of eight Prague city districts actively use this application.

- “Praha 4 v mobilu” (*Prague 4 in Mobile*), *Praha 12 v mobilu* (*Prague 12 in Mobile*), *Praha 13 v mobilu* (*Prague 13 in Mobile*)

Districts of Prague 4, Prague 12 and Prague 13 are using the same universally designed application which, however, does not use a single application name (as above mentioned “Mobilní Rozhlas” and “Hlášení Rozhlasu”), but is named after the name of the particular city district itself. This application provides its users with newsfeed, information on cultural events, possibility to report defects and complaints (in a similar way as the above-mentioned “Změňte to” application), contacts and opening hours of municipal authorities, a tourist guide to the city’s cultural sights or upcoming weather conditions.

- “Praha Libuš” (*Prague Libuš*), “Praha Petrovice” (*Prague Petrovice*), “Moje Kunratice” (*My Kunratice*)

Districts of Prague Libuš, Prague Petrovice and Prague Kunratice also decided to use the same universally designed application, which works in a similar way to the previous example and holds the name of the particular city district. This type of applications offers the following functionalities: newsfeed, contacts and opening hours of municipal authorities, communication channel (feedback from citizens on any issue), information on cultural events, current issue of the city newspaper or information regarding waste and its collection.

- “Praha 5 v mobilu” (*Prague 5 in Mobile*)

The city district of Prague 5 has decided to develop its own mobile application. However, its functionality does not differ from the above-described examples. It therefore offers the same functions, namely: newsfeed, contacts and opening hours of municipal authorities, information on cultural events and reporting defects and filing complaints.

- “Praha 18 Letňany” (*Prague 18 Letňany*)

In the same way as Prague 5, the city district of Prague 18 Letňany also established its own municipal mobile application. Nevertheless, this application does not offer anything that is not included in the previous examples and therefore also serves more as a one-way communication channel. Citizens of Prague 18 Letňany can use functions such as: newsfeed, contacts and opening hours of municipal authorities and information on cultural events.

- “Lepší šestka” (*Better Six*)

City district of Prague 6 also runs its own mobile application. However, the purpose of this application is just to report city defects and complaints. After reporting the issue, the message is always handed over to the relevant official, who arranges for its resolution. This application does not offer any other features.

4. DISCUSSION

In 2020, Prague was home to more than 1.3 million citizens. The overall share of Prague citizens aged 16+ who use their mobile phone for Internet access on a daily basis grew by more than 33 % between 2015 and 2019, and their number continues to grow (Czech Statistical Office,

2020). Therefore, the city of Prague had more than 795 thousand citizens in 2019, who represent the potential user base of municipal communication and e-participatory mobile platforms. However, to access all the available online mobile functions, a citizen of Prague needs to download to his device various distinct mobile applications. As our research shows, the Prague City Hall runs two different mobile applications for defects and complaints reporting and another application for sharing information from the City Hall, information on free parking capacity, cultural events etc. Moreover, the city of Prague is further divided into 57 city districts each of which has its own City Hall and municipal representation. 29 of these city districts thus decided to use mobile applications for communication and participation with their citizens, independently from the two applications mentioned above managed by the Prague City Hall. This fact might be quite confusing for the inhabitants of Prague, and can impact their willingness to use this combination of mobile applications and fully utilize the functions that they offer.

From a total of 29 Prague city districts that decided to provide their citizens with a mobile application, eight of them use universally designed application called “Hlášení Rozhlasu” (Broadcast Announcement), nine of them use more custom designed applications named after the name of the particular Prague city district, and 12 of them use also universally designed application called “Mobilní Rozhlas” (Mobile Broadcast). Universally designed application “Mobilní Rozhlas” (Mobile Broadcast) is also the most used participatory and communication mobile application among all Czech municipalities. According to the information provided by the operator and developer of this online mobile tool, this mobile application is used by more than 1 300 Czech cities and municipalities, which is approximately 20 % of the total number of registered municipalities in the country.

The official website of “Mobilní Rozhlas” also tracks how many users are logged in to the profile of a particular municipality that decided to provide their citizens with this platform. Table 2 below shows the share of registered citizens among Prague city districts who use “Mobilní Rozhlas”. So far, 29.9 % of the population of the city district Prague 7 have registered to use the application, 25.5 % of the population have registered in city district Prague – Dolní Měcholupy and 17 % of the population have registered in city district Prague – Ďáblice. In other monitored Prague districts, the user base of this application is significantly lower. Despite the rapidly growing number of daily mobile Internet users in Prague, the user base of communication and participatory mobile applications is relatively small.

Table 2. Prague City Districts Using “Mobilní Rozhlas”
(Mobile Broadcast) Application and Share of Citizens Registered

City district	Total number of citizens	Number of registered citizens	Share of registered citizens
Prague 3	75 309	2 456	3.3 %
Prague 7	44 793	13 379	29.9 %
Prague 9	59 174	435	0.7 %
Prague 14	47 375	1 349	2.8 %
Prague 15	34 351	2 871	8.4 %
Prague 21	10 822	690	6.4 %
Prague 22	12 143	805	6.6 %
Prague - Běchovice	2 694	116	4.3 %
Prague - Ďáblice	3 639	619	17.0 %
Prague - Řeporyje	4 829	536	11.1 %
Prague - Čakovice	11 437	779	6.8 %
Prague - Dolní Měcholupy	3 147	803	25.5 %

Source: Mobilní Rozhlas website, Czech Statistical Office

5. FUTURE RESEARCH DIRECTIONS

This research paper serves as a description of the current status of the participatory and communication mobile applications in Prague which can be considered as a starting point of consequent research in this area. Future research direction might therefore aim to describe domestic and also world best-practices with characteristics of key barriers and benefits from the project implementation, examine the methods of working with application tools effectively and how the continuous promotion of those applications might effectively be implemented.

6. CONCLUSION

Most of the mobile applications we identified serve only as one-way communication channels, providing residents of Prague with up-to-date information from the City Hall, emergency communication, allowing citizens to report defects and file complaints or providing them with contacts and opening hours of municipal authorities. One identified mobile application has a function that allows to collect opinions of residents through opinion polls on various projects and issues and thus can be considered as a participatory tool.

Following the theoretical framework defined in the Introduction section of this paper, it is necessary and essential 1) to adopt the tools of *e-enabling* successfully (providing information to as many potential participants as possible and use appropriate tools in the clearest and most understandable way), and 2) to proceed to the second stage of *e-engaging* (involving citizens in the discussion and consultation related to important decision-making processes influencing the public life). Given the relatively small current user base of Prague city mobile applications, potential turnout in participatory projects would also be very low and thus would represent only a very small part of the city population's opinion. Therefore, it is essential to significantly increase the user base of these mobile applications to ensure efficient development of the concept of e-participation in the city of Prague and also the whole Czech Republic in the future.

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