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Master's Thesis

Evaluation of ICT-based Citizen Participation

in Urban Planning and Management

- Cases in Moscow City

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ABSTRACT

All around the world cities are facing challenges of rapid urbanization and increasing complexity of urban system. Clash of interests of different stakeholders leads to difficulties in urban governance (Sassen, 2006). In this situation, strategy of engaging citizens into a process of urban planning and governance gains popularity (Dyer, 2017). It is considered, that such approach should contribute to making better and more legitimate decisions (Laurian, 2009) and enhance quality of living environment (Dyer, 2017).

The idea of increasing direct participation of citizens into urban planning and management was mentioned in SDG 11 (United Nations General Assembly, 2015) and the indicator for measuring the progress on achieving SDG includes need of creating such mechanism of direct citizen participation in more cities. This makes it necessary to come up with a role model to follow.

However, existing mechanism for direct citizen participation have many disadvantages, one of which is underrepresentation (Abers, 2000). Using ICT is considered as a possible solutions, which can overcome the issue of low representativeness and foster citizens' engagement into planning and management (Pietrapertosa, 2017; Muller, 2018).

Still there are no clear evidence proving the effectiveness of ICT based participation, neither there are any internationally agreed methods for evaluation of such systems (UN Habitat, 2018). That is why, it is unclear which are good examples to follow when creating new mechanisms for direct citizen participation.

This research aims to propose a framework for evaluation of ICT based citizen participation mechanism, make an attempt of applying the framework of actual evaluation of exiting mechanism in case study area and produce recommendation from the results of evaluation on how to improve existing and build new ICT based systems for citizens participation.

Analysis of criteria proposed in previous studies on evaluation of citizen participation mechanisms was used for design of a new framework, which is aligned with requirements of SDG indicator 11.3.2 and is suitable for assessing effectiveness of ICT based mechanisms.

Case study of Moscow was chosen because of existing ICT platforms, which have been in operation for over 4 years. The case study was evaluated with criteria of the new framework, that allowed to see successful and unsuccessful aspects of the case study.

Analysis of evaluation results showed interconnections between some criteria. It was succeed to formulate recommendations on improvement of the mechanisms existing in Moscow and to determine important points, which should be considered when building new ICT based mechanisms for direct citizen participation.

Key words: Citizen Participation, Evaluation, Urban Planning and Management, ICT, Moscow

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INTRODUCTION

Citizen Participation in Urban Areas

Cities have become the most important elements of human civilization. Being centers of population, economy, culture and politics it accumulates a bigger part of humans all over the world. It is forecasted that by 2050 66% of people will be living in cities. This creates a situation, when clash of interests of various stakeholders happens within the city and urban governance becomes very complex (Sassen, 2006).

In this situation governments turn their eyes toward strategies of engaging different stakeholders, including ordinary citizens, into planning and management (Dyer et al, 2017). It has been considered, that participatory planning and management can create better living environment (Dyer et al, 2017). Thus recently these strategies have been mentioned in Sustainable Development Goals as SDG target 11.3 with indicator 11.3.2, which requires an increase in number of cities, where these strategies are implemented. That creates a need to decide on which example to follow when implementing those strategies.

However, building a fruitful citizen participation is not an easy task and so far there are many problems existing, most common of which is underrepresentation occurring in traditional way of face-to-face engagement with citizens (Abers, 2000). Information Communication Technologies (ICT) based solutions are believed to be able to overcome those problems and foster citizen engagement (Pietrapertosa et al, 2017).

Problem Statement

The problem point is that in situation when there are few cases of using ICT for citizen participation, there are no clear evidences for it to be an effective way of engaging with citizens and

no example to follow exists. Moreover, it is not decided how to evaluate the effectiveness of such mechanisms.

Therefore, this study seeks to propose a framework for evaluation of ICT based citizen participation process and apply it for actual evaluation of effectiveness of a case study.

Organization of Thesis

This research is organized into 7 chapters. Chapter 1, the current one, gives an introduction into a topic and problem of the research. Chapter 2 summarizes relevant points from literature review. Chapter 3 states aim and objectives of the research, describes points of its originality and presents a case study area. Chapter 4 describes methods used within this research. Chapter 5 presents the results. Chapter 5 discusses the results and provides recommendations. Final chapter summarizes the results and discussion points and gives a direction for future research.

LITERATURE REVIEW

Need For Citizen Participation

In 20th century with rapid technological development and establishing new types of economy cities became crucial points of human civilization and centers of change in society, technology and environment (Dyer et al, 2017). Extreme complexity of urban governance (Sassen, 2006) required an introduction of practices of citizen participation in urban decision making process for creating better alternatives of solutions (Ianniello, 2019), more legitimate decisions (Laurian, 2009) and more people-friendly living environment (Dyer et al, 2017).

Citizen participation is defined as a political strategy formulated as “a process in which individuals take part in decision making in the institutions, programs, and environments that affect them” (Heller et al, 1984).

Importance of this strategy was recognized in UN Sustainable Development Goals as Goal 11 “Sustainable Cities and Communities”. The Goal with its target 11.3 “By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries” claims that urban area should be planned and managed in the way, which is sustainable, integrated and participatory. Indicator 11.3.2 “Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically” suggests, that the progress in achieving the SDG 11 should be done through implementing mechanisms of direct citizen participation in a maximum number of cities.

Problems of Citizen Participation

Although achieving SDG would require popularization of practices of engaging citizens into urban planning and management, currently existing mechanisms of face-to-face interactions such as workshops, round tables, public hearings, consequences groups, have not proved itself effective enough (Kubicek , 2010). These mechanisms have a number of drawbacks. Face-to-face participation mechanisms require very high level of motivation and a plenty of free time to come. They are often not entirely representative when it is crucial that public participation includes the appropriate range of interests of the people (Abers, 2000). Face-to-face participatory processes often end up by involving the “usual suspects”, people who are easily recruited, vocal, and reasonably comfortable in public arenas (Bryson et al, 2013). These factors put under the question an aspect of representativeness, which is an important element to gauge the opinion of general public (Rowe & Fewer, 2000).

ICT solutions

Development of the internet made communications easier through making email, websites, forums accessible by wide range of stakeholders, including local government and citizens. With these changes in technological paradigm, the term of E-Democracy started to gain its popularity in the Western world (Kubicek, 2010).

Using online participation tools was proposed as a measure to overcome the issue of underrepresentation (Lyons et al, 2014). Using the full scale of available Information Communication Technologies (ICT) based solutions are believed to be able to foster active involvement of citizens into discussion on urban issues, participation in planning, design and management of cities (Pietrapertosa et al, 2017; Mueller et al. 2018).

Research Gap

Although, ICT based citizen participation is expected to be a powerful opportunity for urban planning and management (Muller et al, 2018), there are still too few case studies done and there are no clear evidences allowing to claim that such mechanism would be actually effective.

Moreover, there is no consensus on how to evaluate effectiveness of this kind of mechanisms. UN Habitat provides no detailed guidelines on measurement of the Indicator 11.3.2 – proportion of cities with mechanism for direct participation of civil society in planning and management of cities (UN Habitat, 2018). Some studies did attempts to create evaluation tools (Rowe & Fewer, 2000; Fiorino, 1990; Webler, 1995; Henderson et al, 2008), but proposed frameworks are not aligned with requirements of the Indicator 11.3.2 – assessing participation mechanisms from the point of capability to operate regularly and democratically.

Therefore, there is a need for research, which would propose a new evaluation tool - suitable to SDG 11 requirements and applicable to ICT based participation mechanisms, conduct an actual evaluation of existing mechanisms for online participation and discuss how the results of evaluation can be used for popularization of direct citizen participation practices.

RESEARCH DESIGN

Research Aim and Objectives

The research aim is to build a method for evaluation of effectiveness of ICT based citizen participation mechanism and understand how the results can be used for providing recommendations on improvement of existing mechanism and building better new ones. The objectives used to achieve the aim are listed below:

- 1) Build an original framework for evaluation of effectiveness of citizen participation mechanism;

RQ1 – what criteria should be used for evaluation?

- 2) Evaluate ICT based citizen participation in case study area;

RQ2 – how the actual evaluation can be executed?

RQ3 – how effective is the case study mechanism?

- 3) Provide recommendations on improvement of case study citizen participation mechanism and on important points to follow when build new mechanisms in other cities.

RQ4 – what can be done to improve the case study area?

RQ5 – what should others learn from the case study?

Research Purpose and Originality

The purpose of this study is to propose and original method for evaluation of ICT-based citizen participation and to use the evaluation results for recommending on improvements for existing mechanisms and building new ones. In doing so, this study will assess effectiveness of the case study mechanism and provide recommendation for urban planning and management to better accommodate public needs in complex urban environment. Very few studies have been done on this

topic in context of Russian Federation, despite on large population and high level of urbanization in the country.

Originality of the research is lying in a complex approach to the problem of evaluation of ICT based citizen participation mechanisms. This study seeks to design an original framework, which would suit SDG 11 targets and be capable to identify strong and weak points of the mechanism being evaluated. This framework is going to be applied to a case study to evaluate its effectiveness. Finally, the results of evaluation are going to be analyzed and recommendations are going to be produced.

In this way, the research is going to be conducted with a complex approach, covering the 3 phases of developing an evaluation tool, actual application and analyzing the results.

Case Study Area

Moscow is a capital and the largest city in Russia located on the western (European) part of the country, on Moscow river. Population of Moscow is about 13 million people and area is 2511 km². It has 12 administrative areas and 146 municipalities inside.

Moscow was chosen as a case study because since 2012 it has been experimenting with engaging citizens into management of the city using ICT based platforms. The city has 3 platforms, which are parts of one project “Together – the system of urban decisions”. It includes:

- 1) Crowdsourcing Projects of Moscow Government

A platform with periodic projects, which are workshops on a particular conducted online topic in digital environment. Usually they are 2 weeks long, within which steps like idea brainstorming, group discussion, voting are executed.

- 2) Active Citizen

A platform for online referendums. Citizens vote for predefined options of some decisions about the city on both whole city and local scales. Citizens receive points when make a vote and can later exchange it for rewards.

3) Our City

A platform allowing citizens to have control over condition of urban environment. People can use the platform to report a various range of problems about the city with attaching photos and location of the problem. All reports have a response from authorities.

These platforms create a joint mechanism, which allows people to propose ideas, discuss and formulate options for decisions (Crowdsourcing), together decide on the best options (Active Citizen) and control how those decisions are implemented (Our City). The Active Citizen and Our City platforms have over 2.2 million and over 1.4 million users respectfully, that makes these platforms one of the most high scale ICT based citizen participation projects in the world.

Wide scope and high scale of citizen engagement in Moscow projects became the main reasons for choosing these 3 platforms as a case study for this research.

Research Limitation

This research is focused on evaluation of a case study of platforms existing in Moscow and the term of “citizen participation” is used in the way aligned with the meaning, used in a case study: the process of governing the city together with citizens. Scope of citizen participation in the case study and this research is limited to participation on the Moscow platforms in the form of proposing ideas, communicating ideas with other citizens, voting for ideas, voting for proposed decisions and reporting problems with physical condition of a city.

METHODS

Evaluation Criteria Review and Selection (Objective 1)

As the first step, evaluation criteria framework needed to be determined. As the basis, criteria mentioned in SDG 11 Indicator 11.3.2 - **democratic** and **regular** - were determined. Then other criteria needed to be selected. For this purpose, previous studies on evaluation of citizen participation were reviewed and those including original evaluation criteria were listed.

Author	Title	Year
Fiorino, D. J.	Citizen participation and environmental risk: A survey of institutional mechanisms.	1990
Webler, T.	“Right” discourse in citizen participation: An evaluative yardstick.	1995
Gene Rowe, Lynn J. Frewer	Public Participation Methods: A Framework for Evaluation	2000
Henderson, M., Hogarth, F., & Jeans, D.	Evaluation framework for assessing e-democracy policy	2008
Lucie Laurian & Mary Margaret Shaw	Evaluation of Public Participation The Practices of Certified Planners	2008
Loukas Kipenis, Dimitris Askounis	Assessing e-Participation via user’s satisfaction measurement: the case of OurSpace platform	2015
A. Simonofski, E. S. Asensio, J. De Smedt, M. Snoeck	Citizen Participation in Smart Cities. Evaluation Framework Proposal.	2017
L. M. Agudo et al	A Proposal of Assessment for Local Government E-Participation	2017
Emily F. Pomeranz & Daniel J. Decker	Designing regional level stakeholder engagement processes: striving for good governance while meeting the challenges of scale	2018
Revyakin, S.A.	On the Effectiveness of Electronic Platforms of Citizen Participation in Public Administration	2018

Table 1: Previous studies proposing evaluation criteria

In total 86 criteria were picked up from those studies. Next, all criteria were listed and reviewed in the following order:

- 1) **Selecting repeating criteria:** criteria, which were mentioned twice or more times or those similar to each other, were selected and moved forward;
- 2) **Filtering irrelevant criteria:** criteria, which were non-relevant to ICT based citizen participation or to mechanisms, implemented in the case study area, were filtered;
- 3) **Reorganization of selected criteria:** selected criteria were reorganized and reformulated to fit the new original evaluation framework.

Screencast recording (Objective 2)

For evaluation of the criteria “Ease of Use” an experiment with recording screencasts of actual usage by citizens was conducted. In total 10 screencasts were taken: 5 screencasts for “Our City” and 5 for “Active Citizen” platforms. It was impossible to record actual usage of the platform “Crowdsourcing projects” because, there were no projects available at that time.

Recordings were taken by screencast recording application on Operation System Android with the following conditions:

- 1) Respondents used both platforms for the first time;
- 2) Respondents received short introduction about function of the platforms;
- 3) Respondent received no guidance about how to use the platforms;
- 4) Respondents used researcher’s smartphone for recording;
- 5) Respondents reported the same problem on “Our City”;
- 6) Respondents were asked to conduct actions on “Active Citizen” freely and without any instructions.

Screencasts were saved as .mp4 video files and reviewed later for analyzing actions made by users and calculating time spent on action.

Review and Analysis of Official Data and Other Resources (Objective 2)

Evaluation of most of criteria was done with a similar methodology, which varies from depending on each criteria, but general method of data collection includes review of the case study platform's websites and applications, analytical reports made by other agencies. Both qualitative and quantitative secondary data was collected. Quantitative data in some cases was further processed to derive results from its analysis.

The reasons for primarily collecting data from official websites and reports are availability and accuracy of data. Below detailed methodology of evaluation of each criteria will be described.

Efficiency

For criteria of Efficiency it was not managed to obtain any appropriate data about financial, labor or time expenditures on running the case study platforms. This, unfortunately, makes it impossible to evaluate the criteria within a scope of this study.

Influence

Crowdsourcing Projects

Influence of the platform was evaluated at implementation rate of ideas formulated as a result of each project. Data was collected from official reports of each projects and included two lists of ideas: implemented ideas and ideas to be implemented. Then the implementation rate was calculated in the following manner:

Equation 1: Rate of Implementation for Crowdsourcing Projects

$$R = \frac{I_i}{I_i + I_n} \times 100\%$$

Where:

R = rate of implementation (%)

I_i = number of implemented ideas

I_n = number of non-implemented ideas.

This data shows in percentage a share of implemented ideas within the whole number of ideas. The higher rate would mean a higher level of implementation of ideas, what means a higher level of influence of the platform.

Active Citizens

For evaluation of the influence of “Active Citizen”, data of total number of surveys, which have ever been conducted on the platform, was taken from the platform’s official website. At the same time, the number of actual decisions made as results of surveys was obtained as a date in a result of importing this data from the server of the platform using API (see evaluation of “Citizen Oriented” criteria evaluation methodology for more details).

Set of data obtained at this step looks similar to the one used for evaluation of influence of crowdsourcing projects platforms, but it would be inappropriate to calculate implementation rate in the same way, because on Active Citizen there are cases when multiple surveys are conducted on the same topic, but in several steps, and have only one mutual decision. Thus the implementation rate calculated in the same way would not be precise.

Our City

For “Our City”, the following data from official website was taken:

1. Published reports (those which passed moderation)
2. Admitted reports with a problem inspected and admitted
3. Solved reports

In the following way the rate of problem solving was calculated from the data taken above

Equation 2: Rate of Problem Solving for Our City

$$R = \frac{P_s}{P_p} \times 100\%$$

Where:

R = rate of problem solving (%)

P_s = number of solved reports

P_p = number of published reports.

The rate shows a share of solved reports in the total amount of published reports.

Information Support

Crowdsourcing Projects

For Crowdsourcing Projects platform it was impossible to do a review and actually see the way of how information is presented to users and what is the content. The reason is that the platform is open for use only when there is an ongoing project, but there were no ongoing projects at the time of evaluation.

Active Citizen

For Active Citizen the official website, actual surveys published on official website and mobile application of the platform were reviewed to look at what kind of information is given. Screenshots of examples of the given information were taken, because it shows the evidences of how the information is presented to citizens.

Representativeness

Crowdsourcing Projects

The following data was taken from official statistic reports of every project:

- 1) Number of participants
- 2) Number of ideas proposed
- 3) Names of notable users

The data was processed in the following way:

- 1) Index of ideas per user was calculated in the following way:

Equation 3: Index of Ideas per User for Crowdsourcing Projects

$$I = \frac{I_i}{U}$$

Where

I = index of ideas per user

I_i = number of ideas proposed on a project

U = number of users registered in a project.

- 2) Names of notable users, who are listed in the end of each report for each project were listed. Then it was calculated how many times the user was mentioned in the reports and this number was assigned to each name. This gave a data showing who are the most active user on the platform

Active Citizen

Data of number of users registered was taken from the official website to see how popular the service are and how many people use it. Data of number of people participated in a survey was taken for 10 randomly chosen surveys to see an average number of people actually voting on surveys.

Our City

Data of number of registered users was collected from the platform's official website.

Fairness

No data was specially collected for evaluation of this criteria. Results were derived from analysis of data, collected at other steps: review of platforms' websites and mobile applications and questionnaire survey.

Transparency

Crowdsourcing Projects

Review of the platform's website was done to find mechanism, which ensure transparency of the platform.

Active Citizen

The following data was reviewed to investigate mechanism for ensuring the transparency of the system:

- 1) Website of the platform (Moscow Government, 2019]
- 2) Website of Moscow Open Data platform (Moscow Government, 2019)
- 3) Page of Active Citizen Blockchain technology on GitHub (Moscow Technologies, 2019)

Our City

The review of “map” page on the platforms’ website (Moscow Government, 2018) was done to see how reports and reaction from authorities is presented. Also during the review, the report actually done by researcher was found with a reaction from authorities.

Citizen Oriented

Determination of list of problems

To determine which problems are important to Moscow citizens, 3 sets of data on importance of problems were collected:

1. (1st set) Ranking of problems named by Moscow citizens – Survey “Moscow Citizens about Sobyenin and Problems of the City” (Translated from Russian: Москвичи о Собянине и проблемах города) by Analytical Agency “Levada-Center” in September 2017 (ANO Analytical Center Levada, 2017)
2. (2nd set) Ranking of problems named by Moscow citizens – Survey “Mayor of Moscow and Problems” (Translated from Russian: Мэр Москвы и Проблемы) by Analytical Agency “Levada-Center” in May 2018 (ANO Analytical Center Levada, 2018)

3. (3rd set) Categorized list of problems reported on “Our City” platform in 2012 – 2018.

This set of data was created by researcher in the result of collecting number of reports published at each category, which is available at official website of the platform. The data set has a limitation of missing number of reports on “public transport” category, because this number was not displayed on the website of the platform.

Problems named by Moscow Citizens in Sep. 2017 (number of responses)		Problems named by Moscow Citizens in Apr. 2018 (number of responses)		Problems reported on “Our City” platform in 2012-2018 (number of reports)	
Traffic Jams	24	Roads	16	Yard Space	1286731
Bad Roads	22	Problems of Transport, development of public transport	14	Apartment Houses	792205
High Prices/ Increasing prices	17	Development of urban environment, yard spaces, cleanness	14	Roads	686540
Lack of car parking	15	Affordability of Health Care	13	Clinics	5637
Problem with Housing Utilities	15	Problems of Housing Utilities, rise of Utilities Prices	12	Parks	59720
Health Problems	12	Low Wages and Pensions	11	Non-permanent retail facility	19735
Problems of Public Transport	12	Quality and Affordability of Education	9	Weekend Markets	525
Garbage, Dirty streets	10	Social Welfare	8	Summer Café	1929
Too many immigrants	9	Immigration Problems	8	Advertisement and Information Facilities	102792
Ecology, Air Quality	8	Development of playgrounds, clubs and nursery	7	Public Transport	n/a
Problems of Education	7	Greenery, Ecology	7	Public Transport Stations	77749
Problems of Yard Spaces	6	Housing Conditions, Housing for Young Families	6	Commercial Development	1511
Parks	6	Unemployment	6	Construction Sites	39654

Housing Problems	6
Metro	5
Low pensions	5
Playgrounds	4
Noise	4
Overpopulation	4
Wages, Poverty	4
Tile Development	3
Renovation / Demolishing of 5 floor apartment 3houses	3
Lack of Sport Clubs	3
Alcoholism, illegal distribution of alcohol	2
Other	7
No problems	15

Table 2: 1st set of problems

Corruption	4
Safety and Order	4
Overpopulation	3
Culture Events, Leisure	2
Alcoholism and Drugs Addiction	1
Other	5
Don't know	14

Table 3: 2nd set of problems

Multifunctional Centers	361
Ticket Kiosks	279
Parkomats	358
Road Zebras	8011
Public Toilets	548
Objects of public use	601
Urban territory	40173
Social Welfare Facilities	374
Metro	8292
Aeroexpress	4
Police	32

Table 4: 3rd set of problems

Data sets were integrated to build one list of important problems in Moscow. It was done in the following way:

- 1) Problems from the 1st and 2nd sets were categorized and an integrated set of categories was created. Numbers of responses of problems from the same category were summarized.

Problem	Number of Responses
Transport	65
Welfare	51
Urban Environment	50
Roads	38
Utilities	27

Health	25
Housing	19
Immigration	17
Education	16
Ecology	15
Noise	4
Sport	3
Alcohol and Drugs	3
Corruption	4
Safety	4
Culture and Leisure	2

Table 5: joint set of problems

Because the value of importance of categories in the joint set and the 3rd set are very different in a scale (the highest value of the joint set is 65 responses and the highest value of the 3rd set is 1286731 reports), but the both sets are equally important, the percentage index was calculated for both sets in the following way:

Equation 4: Index of Importance of Problems

$$I = \frac{V_i}{V_t} \times 100\%$$

Where:

I = index

V_i = value of a category

V_t = total value of responses or reports.

Category	Index
Transport	19%
Welfare	15%
Urban Environment	15%
Roads	11%
Utilities	8%
Health	7%
Housing	6%
Immigration	5%
Education	5%
Ecology	4%
Noise	1%
Sport	1%
Alcohol and Drugs	1%
Corruption	1%
Safety	1%
Culture and Leisure	1%

Table 6: joint set of problems with percentage index

Report Topic	Index
Yard Space	41%
Apartment Houses	25%
Roads	22%
Clinics	0%
Parks	2%
Non-permanent retail facility	1%
Weekend Markets	0%
Summer Café	0%
Advertisement and Information Facilities	3%
Public Transport	0%
Public Transport Stations	2%
Commercial Development	0%
Construction Sites	1%
Multifunctional Centers	0%
Ticket Kiosks	0%
Parkomats	0%
Road Zebras	0%
Public Toilets	0%
Objects of public use	0%
Urban territory	1%
Social Welfare Facilities	0%
Metro	0%
Aeroexpress	0%
Police	0%

Table 7: 3rd set of problems with percentage index

With both values presented in percentage indexes it was possible to integrate them and calculate one joint index for integrated list of problems. It was done in the following way:

Equation 5: Joint Index of Importance of Problems

$$I = \frac{(A_1 + A_2 + \dots + A_i) + (B_1 + B_2 + \dots + B_i)}{2}$$

Where:

I = index

A_1, A_2, \dots, A_i = values from joint set of categories to be integrated into one category of the 3rd set

B_1, B_2, \dots, B_i are values from 3rd set, which include categories of the joint set.

Category	Index
Yard Space	16%
Apartment Houses	11%
Roads	10%
Clinics	2%
Parks	5%
Nonpermanent retail facility	0%
Weekend Markets	0%
Summer Café	0%
Advertisement and Information Facilities	2%
Public Transport	11%
Public Transport Stations	6%

Commercial Development	0%
Construction sites	1%
Multifunctional Centers	0%
Ticket Kiosks	0%
Parkomats	0%
Road zebras	0%
Public toilets	0%
Objects of public use	0%
Urban territory	5%
Social Welfare Facilities	0%
Metro	6%
Aeroexpress	6%
Police	2%
Welfare	9%
Education	3%
Ecology	3%
Noise	1%
Sport	1%
Alcohol and Drugs	1%
Corruption	1%
Culture and leisure	0%

Table 8: Determined problems with index of importance of problem in percent

Categorization of Crowdsourcing Projects and Active Citizen Surveys

Crowdsourcing Projects

Official statistics reports for each Crowdsourcing project were reviewed and assigned with a set of problems, which those projects are targeting. Then the percentage index of reference was calculated for each criteria:

Equation 6: Percentage Value of the Category for Crowdsourcing Projects

$$p_1 = \frac{C_1}{N}$$

Where:

p_1 is percentage value of the category

C_1 is number of references

N is total number of references.

Category	References count	Percentage
Yard Space	1	3%
Apartment Houses	2	6%
Roads	1	3%
Clinics	3	8%
Parks	1	3%
Non-Permanent retail facility	0	0%
Weekend Markets	0	0%
Summer Caffe	0	0%
Advertisement and Information Facilities	0	0%
Public Transport	2	6%
Public Transport Stations	2	6%

Commercial Development	0	0%
Construction sites	0	0%
Multifunctional Centers	1	3%
Ticket Kiosks	0	0%
Parkomats	0	0%
Road zebras	1	3%
Public toilets	0	0%
Objects of public use	0	0%
Urban territory	1	3%
Social Welfare Facilities	1	3%
Metro	0	0%
Aeroexpress	0	0%
Police	0	0%
Welfare	1	3%
Education	4	11%
Ecology	1	3%
Noise	1	3%
Sport	1	3%
Alcohol and Drugs	0	0%
Corruption	0	0%
Culture and leisure	7	19%
Other	5	14%

Table 9: Percentage Value of Importance of Crowdsourcing Projects

Active Citizen

To determine which problems are targeted by Active Citizen platform, it was needed to categorize all past surveys. The set of 2928 surveys from the “Results” page of the Active Citizen official website (ag.mos.ru) were categorized with a web application, which was developed specially for this purpose.

Data was acquired automatically by connecting to Active Citizen’s Application Program Interface (API). It included: 1) Title of the survey; 2) Picture of the survey; 3) Text of report with the result.

Then the acquired data was displayed one by one through the specially developed web application, which is available at www.igor-research.site.



This application allowed the researcher to review survey, choose categories to assign by tapping on them and submit the categorization results by tapping on the bottom “Next”. It was possible to assign multiple categories to each survey. None survey was displayed twice.

The results of categorization were saved into a database, which was lately exported in .csv format. It was numbers of references of the surveys

Figure 1: Screenshot of Specially Designed Web Application

to determined problems. Percentage index was calculated as follows:

Equation 7: Percentage Value of the Category for Active Citizen

$$p_1 = \frac{C_1}{N}$$

Where:

p_1 = percentage value of the category

C_1 = number of references

N = total number of references.

Category	References count	Percentage
Yard Space	1399	39%
Apartment Houses	24	1%
Roads	50	1%
Clinics	51	1%
Parks	197	5%
Non-Permanent retail facility	2	0%
Weekend Markets	2	0%
Summer Caffe	1	1%
Advertisement and Information Facilities	42	0%
Public Transport	18	0%
Public Transport Stations	0	0%
Commercial Development	6	0%

Construction sites	8	0%
Multifunctional Centers	50	1%
Ticket Kiosks	0	0%
Parkomats	18	0%
Road zebras	1	0%
Public toilets	0	0%
Objects of public use	0	0%
Urban territory	180	5%
Social Welfare Facilities	1	0%
Metro	52	1%
Aeroexpress	1	0%
Police	3	0%
Welfare	31	1%
Education	80	2%
Ecology	39	1%
Noise	4	0%
Sport	612	17%
Alcohol and Drugs	1	0%
Corruption	0	0%
Culture and leisure	496	14%
Other	258	7%

Table 10: Number of References to a Category of Problem and Percentage Index of Importance for Active Citizen

Questionnaire Survey (Objective 2)

Design

Questionnaire survey was conducted for evaluation of the platforms and investigating citizens' attitude to some attributes of the platforms.

In total 3 questionnaires for each platform were designed. All 3 questionnaires had the similar structure, but the questions were specified for each platform.

Generally the questions were divided into 3 categories: Motivation, Information Support and Trust. There was also a section with general information about respondent: age, sex, occupation and place of living.

The "Motivation" section had an intention to find out which factors can motivate citizens to participate or demotivate them. Respondents could choose multiple motivating or demotivating factors and also write down their own answer.

The section "Information Support" was designed to understand the attitude of the citizens to additional information proposed on the platform: whether they read/watch it, consider it helpful or not, and why it happens so. Again in most questions people could make a multiple choice and propose their own answers.

The section "Trust" had an objective to find out if the citizens trust in the results of their participation on the platform or not and what makes them trust or doubt the results. The same as the previous sections, there were questions with multiple choice and option to provide your own answer.

For the most of questions, respondents had pre-designed options to choose from. Formulation of these options was done depending on hypothesis of what kind of responses citizens may think of. Also it helped to acquire data for evaluating the criteria. In this way, one of the

options for the question “What demotivates you to participate?” included option “inconvenience of use”. Higher number of responses for this option would mean lower level of ease of use of the platform.

The questionnaire was designed in English and then translated into Russian language. It was created on a platform of Google Forms. Before distribution it was piloted with Russian-speaking GPSS-GLI students, friends and family of the researcher. During the piloting it was noticed, that people spend about 3 minutes on answering the questionnaire. After piloting, some changes were made and the final version of questionnaires were made (see Appendix 2).

Distribution

Because the questionnaire were designed for a very specific group of people – actual users of the platforms, who use the same online service, but geographically live on a large area of Moscow, the most effective way of distribution was online. The questionnaires were distributed through Facebook and VK social networks by messaging to members of groups and followers of pages about the platforms. The questionnaires were also distributing by posting in one Facebook group about the platform “Our City”. Because the account of researcher on VK, which is the most popular social network in Russia, was blocked for suspicious activity after sending too many messages to different people, the number of people, to whom the questionnaire was distributed, was limited.

RESULTS

Evaluation Framework

Regularity	Democracy
Ease of Use	Representativeness
Efficiency	Fairness
Influence	Transparency
Information Support	Citizen Oriented

Table 11: Evaluation Framework Criteria

Regularity

Ease of use Evaluates the capability of non-expert citizens to understand and easily use all functions of the participation process.

Efficiency Evaluates cost of the process' results and high efficiency ensures that the participation mechanism is likely to be exercised regularly if it gives outcomes at appropriate financial, human power and time costs.

Influence Evaluates whether the output of the process has an influence on actual decision making. It is important for the process to have an influence, because it will help to maintain the motivation of both citizens and sponsor of the process for execution of the participation process.

Information Support Evaluates whether citizens are provided with enough information to ensure the best quality of their participation on the platform.

Democracy

Representativeness Evaluates the level of representation of citizens in participation process from the point of number of participants and categories.

Fairness Evaluates whether the process is open for everyone to participate and whether all participants treated fairly, without any discrimination or preferences.

Transparency Evaluates the degree of transparency of the participation process.

Citizen-oriented Evaluates the degree of matching of participation agenda with needs of citizens.

Questionnaire survey

In total the questionnaire was distributed to 332 citizen (121 citizen by direct messaging and to 211 members of the Facebook group). In total 35 responses were received (16 responses for Crowdsourcing Projects, 9 responses for Active Citizen, 10 responses for Our City). All results are presented in Appendix 1.

Crowdsourcing Projects

Most of respondents were 25 – 34 years old (50%). Others were 35 – 44 (31.3%), 12.5% were older than 45 and 6.3% were 18 – 24 years old. Half of respondents were male and half – female. 93.8% of respondents had higher education. Occupation was: private company – 68.8%, public services – 12.5%, unemployed – 12.5%, education – 6.3%. 81.3% of respondents lived in Moscow, 12.5% - in Moscow suburbs and 6.3% were from other regions of Russia.

The most motivating factors for citizens to participate in Crowdsourcing Projects were opportunities to solve problems of the city (named by 68.8% of respondents) and problems important to respondents themselves (31.3%).

The most demotivating factors were “Non-transparent process of moderation and processing of results” – 56.3% of respondents and “lack of competence in theme of project” – 31.3%.

Most of users have watched additional information (43.8%) or watched it partially (31.3%). 25% of respondents didn't watch the information. Main reasons for not watching the information are “didn't notice it” – 36.6%, “don't want to waste time” – 27.3% and “everything is clear without it” – 18.2%. At the same time most of respondents agreed on that watching additional information would lead to a better quality of participation (31.3% - absolutely agree; 43.8% - agree; 25% - not sure).

68.8% of respondents trust the results. The most common reasons to trust are official reports of results of projects – 68.8%, opportunity to watch actions of other citizens – 43.8%, putting the results on a vote at Active Citizen – 37.5%.

Active Citizen

44.4% of participants were 35 – 44 years old, 33.3% were older than 45 and 22.2% were in the age between 25 and 34. Most of respondents were male – 66.7%. 77.8% had higher education, 22.2% had middle-professional education. Respondents were employed at private companies – 44.4% and public services – 11.1%. 22.2% were retired and 22.2% were unemployed. All respondents lived in Moscow.

The most common motivating factors were “Feeling of being an active citizen” – 55.6% of respondents, “Chance to get a reward” – 44.4% answers. Solving important problems of the city received only 22.2%.

The most motivating factors were “low social importance of agenda” and “lack of knowledge on a topic of a survey”. Both received 44.4%. “Non-transparent mechanism of results processing” was named only by 22.2% of respondents.

Most of users ignore additional information presented as expert opinion in the beginning of a survey. 22.2% never read the information and 66.7% seldom read it. Only 11.1% of respondents read the expert opinion when the topic of survey is unfamiliar to them.

People can trust results because of “opportunity to check your own vote” – 55.6% and “satisfaction with results” – 44.4%.

“Unsatisfaction with results” is the most common reason to doubt the results of the surveys – 55.6%. 33.3% of respondents also named the reason of the platform being sponsored by government as a cause of lower trust to the results.

Our City

40% of respondents were 25 – 34 years old, 30% were older than 45, 30% were in the age between 35 – 44. 90% of respondents were male. 70% had higher education and 30% had middle-professional education. 30% of respondents were occupied in private companies, 30% - public services, 20% were retired and 20% more were unemployed. All respondents were from Moscow.

The most common factors motivating citizen to participate on the platform were “opportunity to keep the city in a good condition” – 60% and “opportunity to solve problems concerning me myself” – 50%. “Opportunity to see positive results” had 40% of responses.

Among demotivating factors the most popular were: “rejection by moderation” – 80%, “unsatisfaction with results” – 70%. 20% named the “difficult to choose category” and 30% said that moderation is not transparent.

40% of users re-submit their report if it was rejected by moderation. 50% do it sometimes and 10% never re-submit their reports. Main reasons preventing the re-submission are “need to re-submit irritates” – 44.4% and “my report will be rejected anyway” – 33.3%.

70% of respondents read the additional information when they are not sure which category of a problem to choose. 10% read it when they have free time and 20% don’t read it at all. The main reasons for not-reading the information are “don’t want to waste time” – 42.9%. Options “I am confident with my knowledge”, “information is useless” and “I don’t notice it” had 28.6% each. At the same time only 30% of respondents believe that reading the information would decrease chances of rejection by moderation. 40% could not give answer to that question and 30% of respondents disagreed with that statement.

Respondents provided their own comments about how to improve the additional information on the platform:

- 1) “Popup window”
- 2) “It would be better if developers of the platform would pay more attention to the additional information, so themes would match that information. There are many mistakes and mismatches with Moscow laws.”

Criteria Evaluation

Ease of Use

Crowdsourcing Projects

It was impossible to make an evaluation of the ease of use of Crowdsourcing Projects platform, because the platform is only accessible when there is an ongoing project. Unfortunately, in

the period of evaluation of criteria there were no projects done on the platform. That is why it was impossible to access the platform and conduct an experiment of recording of how it is used by actual users.

Active Citizen

Evaluation of Ease of Use for “Active Citizen” platform was done by analyzing the recorded screencasts with actual usage of the platform by citizens.

In total there were 5 screencasts recorded, the length of records and sex and age of citizens of which are as below:

1 min 25 sec, Woman 23 years old

4 min 22 sec, Man 27 years old

2 min 20 sec, Woman 57 years old

51 sec, Man 57 years old

2 min 31 sec. Woman 49 years old.

Respondents could execute 3 types of actions:

1. Participate in voting
2. Judge a fact about Moscow with stars from 1 to 5
3. Read news

The average time spent on action was 38,6 sec. It was noticed that respondents were spending rather long time on choosing action to execute, but it can be explained with the fact, that all respondents were using the platform for the first time. In general, no serious problems with the ease of use of the platform were found.

None of respondents of the questionnaire named “inconvenience of use” as demotivating factor. Ease of Use of the platform was evaluated as high.

Our City

Evaluation of Ease of Use of the “Our City” platform was done in the same way as the “Active Citizen” platform – by recording and analyzing screencasts of actual usage of the platform.

In total there were 5 screencasts recorded, the length of records, sex and age of respondents of which is presented below:

3 min 31 sec, Woman 23 years old

5 min 01 sec, Man 27 years old

5 min 12 sec, Woman 57 years old

2 min 52 sec, Man 57 years old

4 min 09 sec, Woman 49 years old

Respondents were asked to make a report about the pavement been broken near the Moscow State University. The picture for the report was saved on researcher’s device and all respondents were asked to upload it. Respondents were also told the location which should be pointed in the report.

On average respondents spent 4 min 01 sec on making the report. The most difficult step was to choose category for the report. All respondents spent long time on looking for a right category and only one respondent managed to choose the category correctly. Others made a wrong choice and proceeded to pointing the location. Wrong choice of category caused problems with pointing the location in some cases. As the result, 4 out of 5 users made mistakes in the report, what means that it would have been declined by moderation.

The result of the experiment with screencast recording showed that it is difficult to choose category of a problem to report and it leads to increased number of reports declined by moderation.

Efficiency

Evaluation of this criteria means calculating resources (finances, time, labor) spent on producing results through running the platforms for citizen participation. Unfortunately, this time no available data about any financial, time and labor spending on running the platforms was managed to acquire. That is why it is impossible to give any evaluation on this criteria within this study.

Influence

Crowdsourcing

Evaluation of “influence” criteria for Crowdsourcing Projects was done through the review of official results reports, which are available on the platform’s website. In total 14 out of 17 projects have reports on results. Also 14 out of 17 projects have list of implemented ideas and those, which are going to be implemented.

Project	Report	Not Implemented ideas	Implemented ideas	Implementation Rate
Our City	yes	0	50	100%
Our Routes	yes	0	15	100%
My Office of Public Services	yes	0	14	100%
Moscow Standard of Children Leisure	yes	n/a	n/a	n/a
School Managing Councils	yes	n/a	n/a	n/a
Moscow Clinics	yes	2	84	98%
Ecological Strategy	yes	0	32	100%

Moscow Libraries	yes	0	66	100%
Children Clinics	yes	39	99	72%
New Platform	yes	6	24	80%
Active Longevity	no	100	0	0%
Wild Animals	no	52	0	0%
My Mos.ru	yes	97	16	14%
Culture Centers	yes	20	53	73%
Our City 2.0	yes	26	16	38%
Smart City	no	n/a	n/a	n/a
Moscow Museums	yes	56	44	44%
Average Implementation Rate				66%

Table 12: Summary of Ideas Implementation Reports and Implementation Index for

Crowdsourcing Projects

The older projects have a higher value of implementation rate, which is 100% in some cases. Later projects have lower value of implementation rate and the deadline for implementation is not exceeded yet. At the present point the average implementation rate is 66%.

In general the results of the Crowdsourcing Project are being implemented in a while after the project is finished and the influence level is rather high.

Active Citizen

The “Active Citizen” platform has the results reports published on its website. According to the official website statistics, it total there were 4063 (09.07.2019) surveys conducted at the platform. Database of the results includes 2928 (09.07.2019) results. The number of results published is 72% out of the total number of surveys. It is rather high value, however it cannot be taken as a precise implementation rate, because on the platform there are cases, when surveys are

conducted in multiple steps and each of those are counted as a separate surveys. However these kind of multiple surveys have only one result in the end. It makes it possible to conclude, that more than 72% of surveys have following results. For more precise results it is important to have data of tracking each survey to its result, but in this study such data could not be acquired.

Because most of the surveys on “Active Citizens” have a result of actual decision made, it can be concluded that the platform has a rather high level of influence.

Our City

The “Our City” platform has statistics published on its website. At the 8.7.2019 time point, there were 4873486 reports published, 3535381 reports with admitted problems and 3483550 reports with solved problems. It means that 71% of published problems have been solved at the present moment.

From the statistics it is seen that 1338105 reports had passes moderation, but reported problems were not admitted by inspection. It would be helpful to see what kind of reports they were and what are the reasons which didn't allow them to pass inspection. Unfortunately, this study did not collect this data.

To conclude, the “Our City” platform shows rather high rate of problem solving. Even there are questions about why 29% of reports had no problem admitted, the platform has a good level of influence.

Information Support

Evaluation of the “Information Support” criteria was done by reviewing the platform mainly. Some conclusions about the Information Support were also done from results of the screencast recording experiment and questionnaire survey.

From questionnaire surveys it was clear that lack of competence in the topic is a serious issue which is named as the most demotivating factor in Active Citizen (44% of responses) and the second demotivating factor in Crowdsourcing Projects (31,5% of responses).

Crowdsourcing Projects

Crowdsourcing Projects have information about how to use the platform and some introduction into a topic in the beginning of projects. This time because there were no ongoing projects, it was difficult to evaluate whether the information is comprehensive and useful.

From questionnaire survey it was seen, that 43.8% of users have watched the additional information and 31.2% of users have watched it partially. The rest 25% haven't watched the information. The main reasons for not watching the information were : 1) “Didn’t noticed it” (35,4%) and 2) “Don’t want to waste time on it” (27,3%). At the same no respondents disagree that the additional information can increase the quality of participation.

The information at the platform is considered useful by users. The exposure of the information to users can be improved to make it more noticeable and less time consuming.

Active Citizen

On the “Active Citizen” platform the information is presented in a form of expert opinions, which comes right before choice option in most of the surveys. Presented expert opinions usually support different choice options. It can be considered useful for building citizen’s competence in a survey topic.

However, questionnaire results showed that 88.9% of respondents do not read the expert opinions (22.2%) or read it seldomly (66.7%). 11.1% answered that they read the expert opinions when the topic is unfamiliar. The most popular reasons for not reading are “don’t want to waste time”, “it can influence my vote”, “I don’t trust them” and “they are useless”. 44.4% of respondents

don't think that expert opinions can help make a better decision, while 44.4% think that it is useful and 11.2% answered that they are not sure.

Even though lack of competence is a serious demotivating factor, the existing additional information (expert opinions) is not considered useful by citizens.

Our City

The "Our City" platform provides information about each category of problem with description about which kind of problems can be reported within this category and what is considered to be a problems. There is also information about authorities in charge of problems from this category.

From screencast recordings it was seen that only two respondents opened additional information. However, one of them just looked at glance and proceeded to making report. Another one looked at the information properly but only 1 time out of 4 attempts to choose category. It tells that users usually pay little attention to an additional information on the platform.

Interesting fact is that according to the results of the questionnaire survey the most demotivating factor is having the report rejected by moderation (named by 80% of respondents). 70% of respondents read the information when they have troubles with choosing a right category, but only 30% agreed on that reading the information can decrease chances for the report to be rejected.

Although the additional information is aimed on helping users in choosing a category, in fact it is seldom used because people do not consider it useful and do not want to waste time on reading. Information support at the "Our City" platform requires additional improvements.

Representativeness

Crowdsourcing Projects

Representativeness of Crowdsourcing Projects is done from review of number demographics of participants.

Project	Number of Participants
Our City	9635
Our Routes	8093
My Office of Public Services	6677
Moscow Standard of Children Leisure	7211
School Managing Councils	1575
Moscow Clinics	58331
Ecological Strategy	4760
Moscow Libraries	11192
Children Clinics	12555
New Platform	129
Active Longevity	5087
Wild Animals	2836
My Mos.ru	3161
Culture Centers	2365
Our City 2.0	6678
Smart City	3503
Moscow Museums	1647

Table 13: Number of Participants of Crowdsourcing Projects

To conclude, few people actually participate on the platform and representation is low.

Active Citizen

The “Active Citizen” platform has the highest number of participants among the 3 platforms. On 10.07.2019 there were 2272478 users registered at the platform. It is about 16% of population of Moscow. However, most of whole city scale surveys have around 200 thousands votes, that means that only 10% of users are active and the actual part of Moscow citizens voting on Active Citizen is 1,6%. Still it can be considered as a large number of people participating on the platform and representation is high.

Our City

The “Our City” platform has 1430013 users registered, who have published 4876597 reports so far or 3.41 reports per user. Unfortunately, there is no data on number of inactive users (who has never made a report or has no recent reports). However, it still mean that a high part of population of Moscow actively use the platform. Representation is high.

Fairness

Crowdsourcing Projects

The “Crowdsourcing Projects” may have risks of unfairness when ideas are being moderated. 56% of respondents to questionnaire survey named “non-transparent moderation and results processing” as a demotivating factor. It can be considered, that some ideas may be moderated in unfair way and there is a risk of unfairness.

Active Citizen

From review of the platform and results of the questionnaire survey, no sufficient risks for unfairness on the platform were noticed

Our City

There is a possibility that users receive unfair treatment from the authorities, that an intended rejection of the report during inspection or inappropriate or incomplete solving of problem. It is known that 1338105 reports passed moderation but were not admitted as problems. This is where unfair treatment from authorities may appear. Among factors, which demotivate participation, 70% of questionnaire respondents named “dissatisfaction with results”, 10% named “inappropriate reaction” and 10% named “intended falsification and rejection”. It tells that there is a risk of unfair treatment from authorities.

Transparency

Crowdsourcing

68.8% of respondents of questionnaire survey trust the results of crowdsourcing projects. Among factors which can make citizen trust the results, the “official reports” has the most of voices (68.8%). The next one is an “opportunity to watch actions of other users” (43,8%). And, finally, “putting the results on a vote at “Active Citizen”” has 37.5%. Users of the platform trust the results mostly from official reports. However, there are no other mechanisms, which would be control the level of transparency. Official results do not solve the problem of possibly unfair moderation as well (pointed as a demotivating factor). Thus transparency is evaluated as low.

Active Citizen

The “Active Citizen” platform has a number of tools for ensuring transparency:

1. Blockchain

The platform uses blockchain technology for saving the results of voting. Blockchain technology allows to build a decentralized database, which is saved on one server, but on PCs of each independent observer. Blockchain infrastructure of the “Active Citizen” platform includes Module of integration with “Active Citizen”, blockchain network of Higher School of Economics, blockchain network of Department of Information Technologies of Moscow Government, blockchain-network of independent observers and a module of votes processing. It is possible to connect to blockchain network by installing special software and it requires a level of IT literacy, which is higher than average.

2. Mechanism of checking your vote

The platform has a page with a database of all results. When access the page, user can his unique number and a list of surveys. This allows him to find his vote and check it.

3. The results of the surveys are also published at Moscow Open Data portal

(<https://data.mos.ru/>), where anyone can access them.

Among these measures, the opportunity to check you vote is the most trusted mechanism named by 55,6% of respondents of the questionnaire survey. The second popular reason to trust the results was satisfaction with results (44,4%). Also only 22% of respondents named “non transparent results processing” as a demotivating factor.

Transparency of the platform was evaluated as high.

Our City

The main mechanism for ensuring transparency of the platform is automatic publication of reports, which have passed moderation. This mechanism was tested by researcher with actual publishing a report. Publicly of the report increases responsibility of authorities who are in charge of

the problem. The platform also has the mechanism of approve of results (problem being solved) by the citizen, who reported the problem.

However, the non-transparent part of the platform is moderation process. Those reports, which have not passed moderation are not made public, thus there is a risk of unfair moderation.

Transparency of the platform is evaluated as medium.

Citizen Oriented

Crowdsourcing Projects

This criteria is evaluated by comparison of the list of determined problems, which was described in methods part of this study) and results of categorization of crowdsourcing projects.

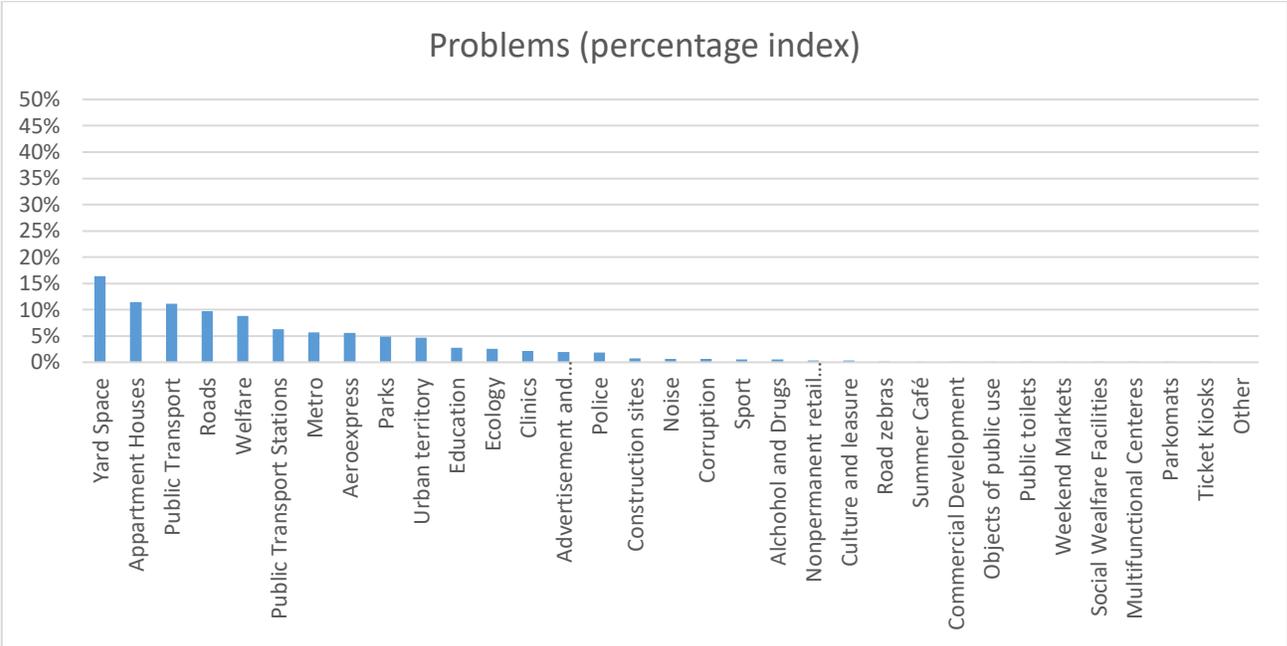


Figure 4: Determined Problems by Importance Index in percent

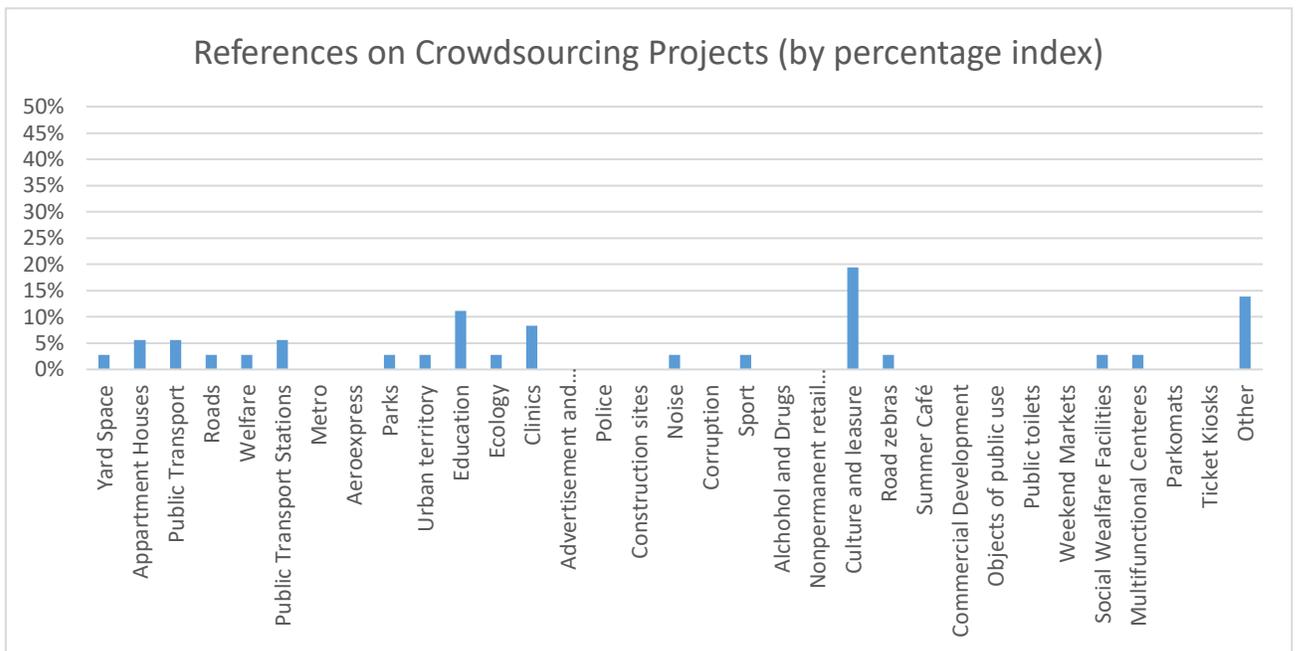


Figure 5: Agenda of Crowdsourcing Projects in percent

From graphs above it can be seen, that there is a mismatch between problems in Moscow and topics of crowdsourcing platform.

The platform has low orientation of needs of citizens.

Active Citizen

The same graphs were built for “Active Citizen” platform.

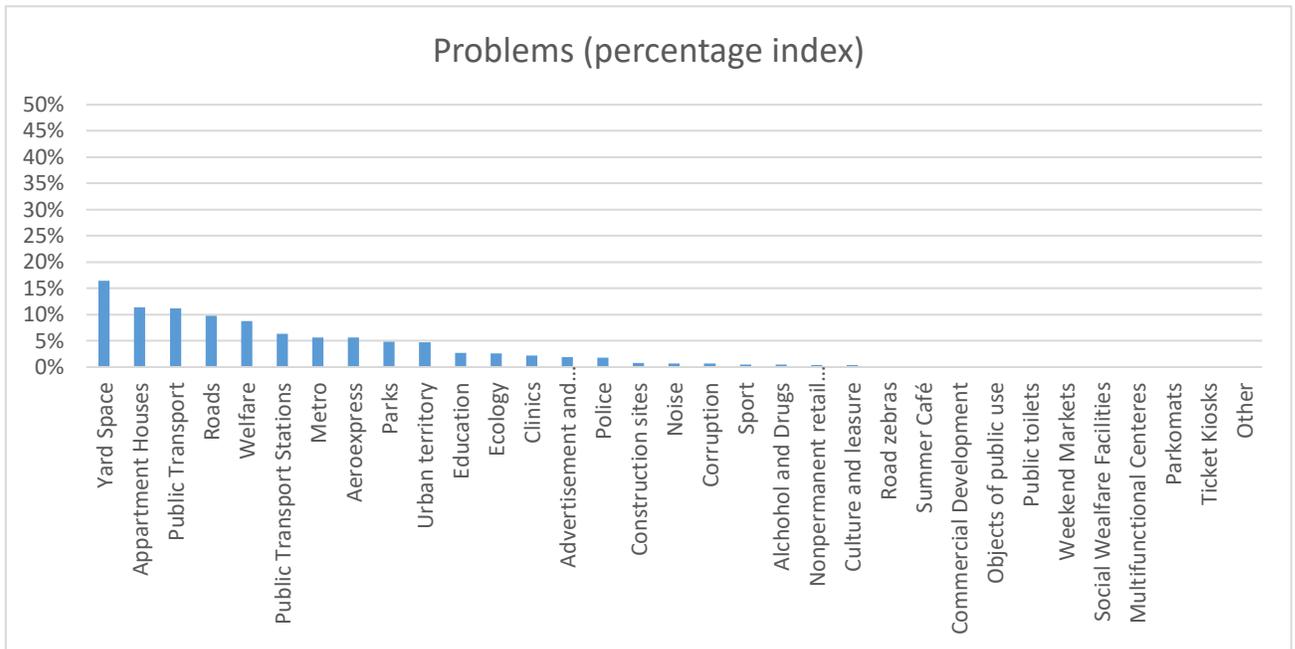


Figure 6: Determined Problems by Importance Index in percent

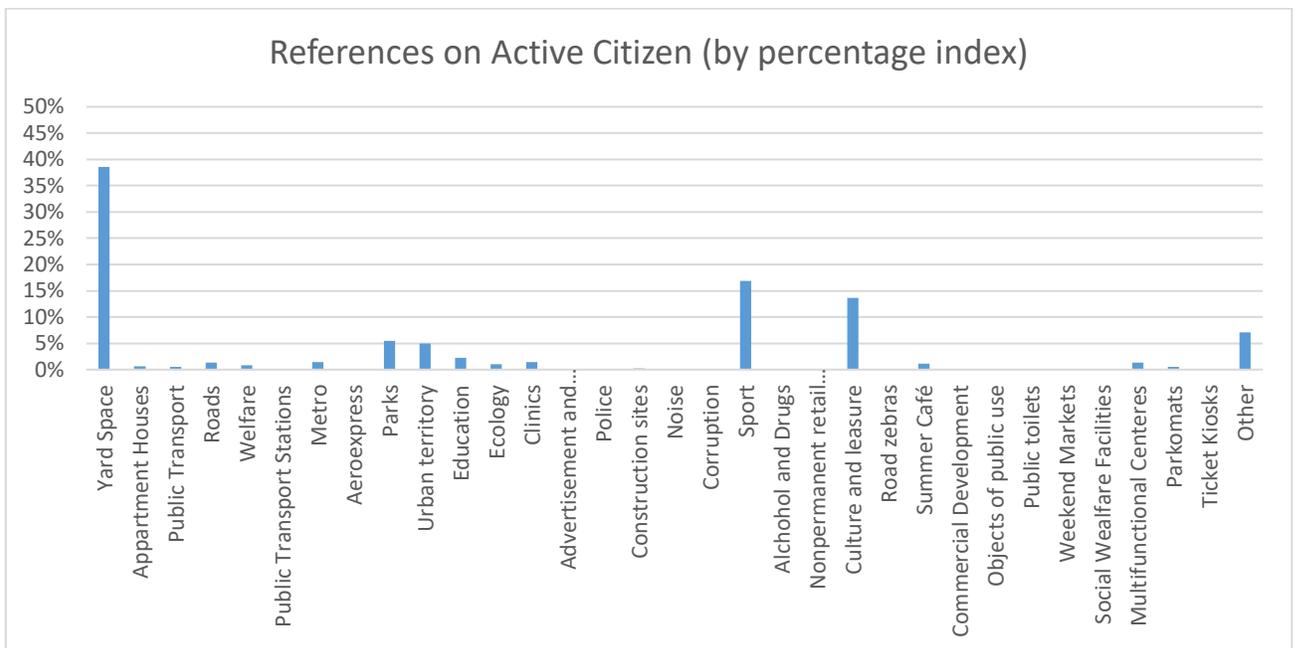


Figure 7: Agenda of Active Citizen in percent

It can be seen, that Active Citizen pays too much attention to yard space problem (38%), sport (17%) and Culture and Leisure (14%), which have only 16%, 1% and 0% accordingly among problems. At the same time, important problems such as apartment houses (11%), public transport

(11%), roads (10%), welfare (9%), public transport stations (6%), metro (6%) and Aeroexpress (6%) have little attention paid at the platform (1% or less). That shows that there is a dramatic mismatch between those problems existing in the city and topics of surveys conducted through the “Active Citizen” platform.

Our City

The “Our City” platform allows users to report on a wide range of problems about physical condition of the city or those problems, which can be specified with location. Among 16 categories of problems derived from surveys by Analytical Center Levada, Our City covers 8 of them. Other problems cannot be assigned with a location and have weak links with physical space of the city. Thus reporting those problems would be difficult through current mechanism of Our City. It allows to conclude, that the platform is targeted at solving problems of citizens.

Summary

Criteria	Crowdsourcing	Active Citizen	Our City
Ease of Use	n/a	High usability	Difficult choice of category
Efficiency	n/a	n/a	n/a
Influence	High	High	High
Information Support	Useful Information, poor exposure	Information isn't useful	Information isn't useful
Representativeness	Low	High	High
Fairness	Risk of unfairness at moderation	Fair	Risk of unfairness at moderation or inspection
Transparency	Low	High	Medium
Citizen Oriented	Low	Low	High

Table 14: Summary of Evaluation Results

DISCUSSION

Originality of the New Evaluation Framework

The new framework has a number of special characteristics which make it original one:

1. SDG 11.3.2 indicator as a basis

The new framework is literally based on SDG, because all criteria are divided into two categories “Regularity” and; “Democracy” which characterize the participation mechanism respectively as the one capable to be long lasting process and produce democratic results.

2. Applicable to ICT based participation

The framework includes “Ease of Use” criteria, which would be important for the participation process which is conducted online and through mobile application or website. With an overwhelming amount of various online services available on a market, ordinary users become very selective to which services to use. As users, they usually give up on using any service if they have any troubles with understanding or using it. That makes the criteria of “Ease of Use” very important in a context when participating citizens are at the same time users of online service.

3. Universal criteria

The new framework was created in the result of selection criteria from a number of frameworks proposed in previous studies. While some of those studies were proposing frameworks, which were design for some particular cases of citizen participation mechanisms (Revyakin, 2018; kipenis, 2015), the new framework was aimed to generalize them and come up with a list of criteria, which can be used for evaluation of a wide range of mechanisms.

The new self-designed framework is an important result of the study, which is scientifically valuable, because it makes a foundation for evaluation of citizen participation projects from the

point of SDG indicators in a situation when there is no current agreement on how to evaluate citizen participation mechanism for urban planning and management.

Analysis of Criteria Evaluation

All 3 platforms of the case study area have been operating for quite long time since 2012 (Our City) or 2014 (Crowdsourcing Projects and Active Citizen). It proves them as capable to be operated regularly. The only criteria form “Regularity”, which has been evaluated positively for all platforms is Influence. With a limitation of that no evaluation was made on Efficiency, it can be said that Influence is the most important criteria for the system to operate for long time. This conclusion can also be derived from questionnaire survey, where people named opportunities to make a change, solve problems or keep city in good condition as the most motivating factors. All of that shows, that actual implementation of results is the most important factor for the system to operate regularly.

Lower transparency may lead to risks of unfairness, as it can be seen from evaluation of Crowdsourcing Projects and Our City. These two platforms include a “moderation” step, which has many doubts from citizens in terms of fairness of the moderation. Some citizen just don’t understand how moderation works, while others say that some sort of falsification occurs at the moderation step. This doubts in moderation has been named as demotivating factors, which can decrease representativeness. The conclusion is that Transparency is a key criteria in “democracy” category of criteria. It may affect both Fairness and Representativeness.

Low score on Citizen Oriented criteria can affect the score of Representativeness, as it happened with Crowdsourcing Projects. It does not happen with Active Citizen, because there is a system of rewards on the platform and it works as motivation factor as well as the opportunity to solve problems.

None of the platforms had a high score on Information Support. The lack of competence was named as an important demotivating factor, however from the results of evaluation it can not be said, that low score on Information Support directly leads to decrease in score of any other criteria. There may be connection with Ease of Use, because poor information support causes problems with difficulty of choice of category. Active Citizen however shows no effect of poor information support on usability of the system, probably because users' actions are limited to just voting. Unfortunately, there is no data on usability of Crowdsourcing Projects. Within this study, it could not be concluded that low Information support leads to lower usability or lower score at any other criteria.

Analysis and Recommendations for Improvements

Crowdsourcing Projects

The "Crowdsourcing Projects" platform had the maximum number of criteria with a negative evaluation result. Only "Influence" criteria was evaluated positively. The criteria of "Representativeness", "Fairness", "Transparency" and "Citizen Oriented" are connected with each other in a complex way.

Low focus on needs of citizens leads to lower representation. Opportunity to make a positive impact on a city is the most important motivating factor for users of Crowdsourcing platforms, but low interest to project topic decreases the motivation. On Active Citizen people have a motivating factor of rewards which compensate a demotivating factor of low social meaning of problems. But on Crowdsourcing Projects there is nothing that would have compensate low interest of citizens in topics of projects.

Problems with transparency may lead to risks of unfairness on the platform. Because the process of moderation, results processing are not transparent and not clear to users, they may doubt fairness of those mechanisms.

The following actions would be recommended:

- 1) Align agenda of the surveys with those problems, which have higher importance to citizens
- 2) Build mechanism to ensure transparency
- 3) Ensure better exposure of additional information on the platform

Active Citizen

Among 3 platforms “Active Citizen” has been positively evaluated at the maximum number of criteria (5). The only negatively evaluated criteria are “Information Support” and “Citizen Oriented”. This result correlates well with responses from the questionnaire survey: “Lack of competence in topic of survey” and “Low social meaning of topic of surveys” has been named the most often (by 44.4% of respondents both) as a demotivating factors. The following actions are recommended for improvement of the platform:

- 1) Align agenda of the surveys with those problems, which have higher importance to citizens
- 2) Develop a mechanism to fill the citizens’ competence gap

Our City

The “Our City” platform has low evaluation on “Ease of Use”, “Information Support” and “Fairness” criteria. “Transparency” criteria has a medium evaluation.

Low usability, which is difficulty of choice of a category of problem, leads to mistakes and rejection by moderation. This is the most important factor, which demotivate citizens to participate (80% of responses). In the result of the experiment conducted as a part of this study, it became clear, that when the report is rejected by moderation, there is always a note with a reason, and, if the reason is a wrong category, the right category is written in the note. Then user is asked to submit a new report with a right category. The questionnaire results showed that 60% of respondents resend reports “sometimes” (50%) or “never” (10%), which is very significant because it is highly possible, that people who answered “sometimes” actually almost never re-submit the report. The main

reasons for not submitting the report again are simply “it irritates” answer or believe that the report will be rejected anyway (44.4% and 33.3%). This situation leads to decrease in level of participation.

On the other hand, additional information, which is proposed for reading right after user chooses a category, is usually ignored and does not prevent mistakes in category choice.

The situation described above also leads to doubts in fairness of moderation process, as people believe that the reason for report rejection is not fair. These doubts cannot be resolved with a present state of the system, because the reasons for rejection by moderation or those reports, which didn't pass moderation, are not made public.

The following recommendations can be done for improvement of the platform:

1. Simplify the process of choosing category
2. Change the way of moderation, which would not reject the report because of wrong category, but will automatically assign a right category to the report, without additional action required from citizens
3. Put more publicity and transparency into moderation process
4. Change the way of how additional information is presented to make it more understandable and useful

Recommendations on building ICT based citizen participation mechanisms

The following recommendations are made from the analysis of results of evaluation of Moscow's experience of running ICT based platforms “Crowdsourcing Project”, “Active Citizen” and “Our City” for citizen participation in planning and management of the city.

Motivate

The main factors of motivation for citizens to participate are:

- 1) opportunity to make a positive impact on a city;
- 2) feeling of taking an active part in life of the city.

That means that people generally have a will to make positive changes in their city and they are ready to be active. One more powerful factor of motivation would be a reward for participation.

It would be important to avoid factors of demotivation, most common of which are:

- 1) Low interest to participation agenda
- 2) Low transparency
- 3) Lack of knowledge about the topic

Provide Information

Citizen need enough information to participate properly, so it would be crucial to provide them with:

- 1) Easy to understand explanation about how to use the platform
- 2) Additional information to introduce people into a topic being discussed on the platform

It is important to not only provide the information, but make it being actually used and considered as useful.

Ensure transparency

Low transparency may damage citizen's trust and motivation to participate, so it is important to build mechanisms, which would ensure high transparency. Effective examples are:

- 1) Mechanism for citizen to check how his actions (votes, ideas, comments etc) are counted and processed
- 2) Official reports on all results of participation
- 3) Realtime publishing of the whole process on website

Combination of multiple mechanisms is more likely to build higher level of trust from citizens.

Simplify

As any other online service, especially website or mobile application, ICT based participation platform should be very easy to use. It is important to simplify the platform itself. As it is seen from examples of Moscow, “Active Citizen” has the easiest interface and only one easy to execute function. This simplicity ensures the popularity of the service.

It is important to avoid any need for unnecessary action by user, as it is in example with Our City platform, when report with a wrong category should be re-submitted by user instead of automatic change of category.

CONCLUSION

In the context of global urbanization and increasing complexity of urban system, this study emphasized how ICT can be utilized for engaging citizens into planning and management of a city, proposed a framework for evaluation of such mechanism and made a pilot evaluation of a case study of Moscow, where ICT based citizen participation is being operating for over 4 years on a large scale. The newly designed framework was applied to 3 platforms in Moscow and the results showed strong and weak points of those systems. The results were analyzed and recommendations for improvement of the case study mechanisms and for building new ones were produced.

Key Findings

The research proposed an original evaluation framework for mechanisms of direct citizen participation in urban planning and management, which is aligned with requirements of SDG 11.3.2 indicator and has criteria of democracy and regularity of the mechanism as the basis of the framework. New framework includes universal criteria, which can be used for evaluation of multiple cases of ICT-based participation mechanisms.

The framework was applied for evaluation of cases in Moscow City, where the platforms for ICT-based citizen participation are being operated. Evaluation allowed to “map” positive and negative factors of the cases platforms and made it easy to analyze correlations between the criteria. Clarified, that Influence is a key criteria to make sure that the mechanism operates regularly. Low transparency lead to risks of low score on Fairness criteria, because it may cause doubts from citizen. Low score of Citizen Oriented criteria can affect Representativeness with low interest of citizens into proposed topics for participation.

From the evaluation results recommendations were provided on measures for improvement of platforms in Moscow, which would increase the score on negatively of neutrally evaluated

criteria. The second part of recommendations was formulated to outline important aspects of the ICT-based participation, which are to be followed when the new such mechanisms are being developed.

This research reached its aim and objectives by building a new method for evaluation ICT-based citizen participation from the points of democracy and regularity and contributed to the progress in achieving SDG by outlining crucial factors for development of citizen participation process and building more sustainable cities and communities.

Future Direction of Research

Due to limitation in time, distance to case study area, the quantity of data required, the scale and scope of this study has been limited. The study focused on evaluation of Moscow case study with its platforms for citizen participation. However, mentality and other national circumstances of Russia, which could play role in effectiveness of the case study mechanisms, were not discussed within this research.

Furthermore, to justify an effectiveness of the new evaluation framework, it would be better to apply it other cases within and outside of Russia. Having other data on other case studies, it would be helpful to determine not only criteria for evaluation, but specific indicators as well.

Talking about evaluation of Moscow case, the quality and quantity of data used for this research was very limited. It is necessary to collect data and evaluate “Efficiency” criteria for all platforms and “Ease of Use” for Crowdsourcing Projects. Experiment with screencast recording can be done with a bigger amount of samples and with citizen, who are active users of the platforms. In the same way, this study had a very limited number of samples for questionnaire survey, because of difficulty in reaching respondents. It would be better to find way of cooperation with Moscow

Government on collection on distribution of the questionnaire within platforms. Also, interviewing the most active users on the Crowdsourcing Projects platform may be useful for further research.

More detailed analysis of data is required for more precise evaluation. It would be interesting to review reports, which have been published at Our City, but had no problem admitted during inspection, to understand reasons for rejection during inspection. It would be useful to track all surveys to its results on Active Citizen.

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APPENDIX 1

Questions of questionnaires are presented below.

Crowdsourcing

I am interested in what motivates citizen to participate on “Crowdsourcing-projects of Moscow Government” platform, what is their attitude to information provided at the platform and degree of trust to the results.

I would be grateful if you would give me five minutes of your time to complete this questionnaire.

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Motivation

1. What motivates you to participate in a project?
 - a. Opportunity to solve important problems in city
 - b. Believe that I can solve my problems
 - c. Interest to new project (crowdsourcing)
 - d. Interest to other citizen's opinion
 - e. _____
2. What DEMotivates you to participate?
 - a. Inconvenience of use
 - b. Non-transparent moderation and results processing
 - c. Lack of competence in project topics for proper participation
 - d. Low social-meaning of project topics to me

- e. Low interest to project topics
- f. _____

Information

- 3. Have you read information about how to use the platform?
 - a. Yes
 - b. No
 - c. Partially
- 4. Why you don't read the information?
 - a. Everything is clear without it
 - b. I don't think that it will be helpful
 - c. I haven't noticed it
 - d. I don't want to waste time on it
 - e. _____
- 5. Do you agree that reading information leads to higher quality of participation on the platform?
 - a. Totally agree
 - b. Agree
 - c. Not sure
 - d. Disagree
 - e. Totally disagree

Trust

- 6. Do you trust the result?

- a. Yes
 - b. No
7. What might make you trust the results
- a. Official reports
 - b. Seeing actual participation of others
 - c. Putting results on voting at “Active Citizen”
 - d. _____

Active Citizen

I am interested in what motivates citizen to participate on “Active Citizen” platform, what is their attitude to information provided at the platform and degree of trust to the results.

I would be grateful if you would give me five minutes of your time to complete this questionnaire.

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Motivation

1. What motivates you to participate in a project?
 - a. Opportunity to make a decision about my city
 - b. Opportunity to solve my problems
 - c. Feeling of being active citizen
 - d. Rewards
 - e. _____

2. What DEmotivates you to participate?
 - a. Inconvenience of use
 - b. Non-transparent results processing
 - c. Lack of competence for proper voting
 - d. Low social-meaning of questions to me
 - e. Low interest to questions asked
 - f. _____

Information

3. How often do you read expert opinion?
 - a. Always
 - b. When topic is unfamiliar
 - c. Sometimes
 - d. Never
4. Why you don't read expert opinions on question?
 - a. It may influence my decision
 - b. I don't trust it
 - c. I feel competent enough
 - d. I haven't noticed it
 - e. It is useless
 - f. I don't want to waste my time on it
 - g. _____
5. Do you agree that reading expert opinion may increase quality of your voting?
 - a. Totally agree
 - b. Agree

- c. Not sure
- d. Disagree
- e. Totally disagree

6. Would you prefer to have additional information in other format? (Please write your idea)

Trust

7. What may make you trust the results of voting?

- a. Using blockchain technology
- b. Result uploaded as open data
- c. Ability to check your vote
- d. Satisfaction with results
- e. _____

8. I may doubt results because of

- a. It being online
- b. It being sponsored by government
- c. Unsatisfaction with results
- d. _____

Our City

I am interested in what motivates citizen to participate on “Our City” platform and what is their attitude to information provided at the platform.

I would be grateful if you would give me five minutes of your time to complete this questionnaire.

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Motivation

1. What motivates you to participate on the platform?
 - a. Opportunity to solve my problems
 - b. Opportunity to keep my city in a better condition
 - c. Satisfaction with results
 - d. Feeling of being active citizen
 - e. Feeling of having control over authorities
 - f. _____
2. What DEMotivates you to participate on the platform?
 - a. Difficult choice of category
 - b. Reports being rejected
 - c. Non-transparent moderation
 - d. Unsatisfaction with results
 - e. _____
3. How often do you resend the report after it being rejected by moderation?
 - a. Always
 - b. Sometimes
 - c. Seldomly
 - d. Never
4. What prevents you from resending the report?
 - a. It takes time
 - b. It is annoying to resend
 - c. I think that it will be rejected anyway

d. _____

Information

5. When do you read additional information?
 - a. Always before reporting
 - b. When I am not sure in a category chosen
 - c. When I have free time
 - d. I read it one time before using the app
 - e. I don't read the information
6. Why you don't read the information?
 - a. I feel confident without it
 - b. I don't want to waste time on it
 - c. It is not helpful
 - d. I haven't noticed it
 - e. _____
7. Do you agree that reading the information may help you prevent rejection of your reports?
 - a. Yes
 - b. No
 - c. Not sure
8. Would you prefer to have that information presented in a different way? (Write your idea)

General Information

1. What is your age?
 - a. Under 18

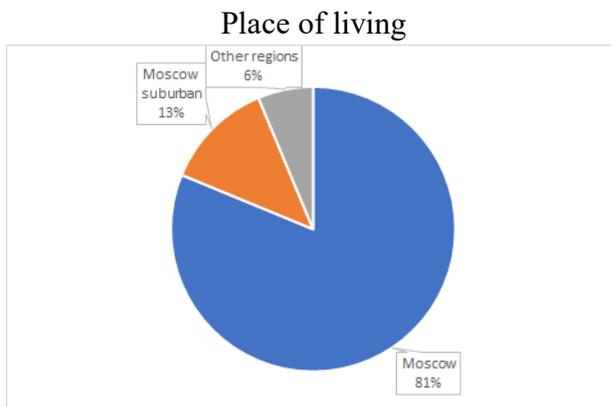
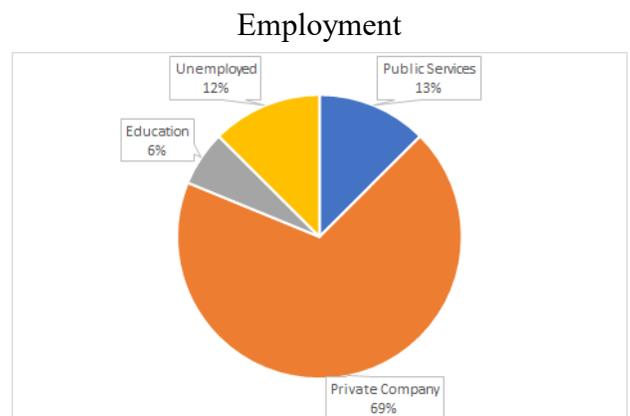
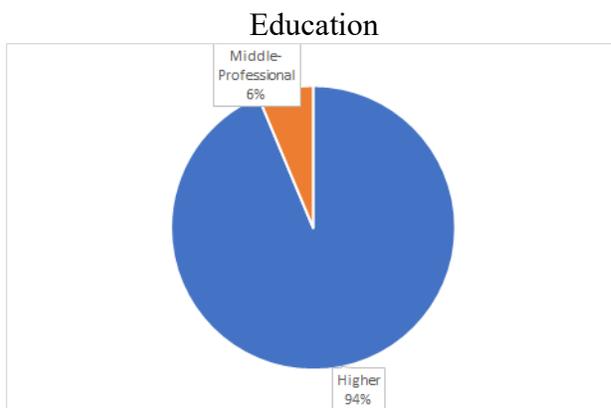
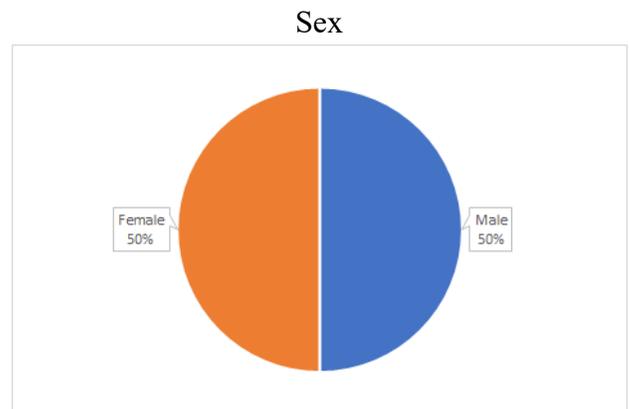
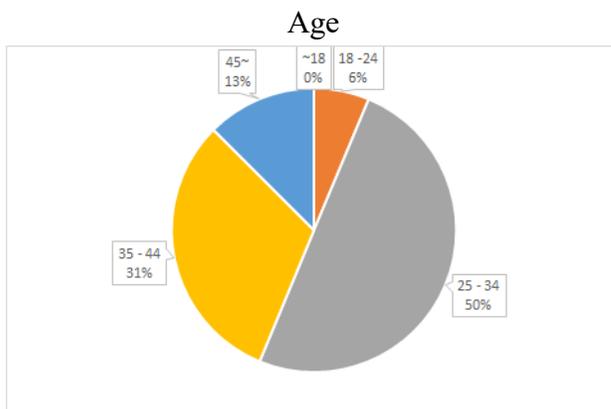
- b. 18~24
 - c. 25~3
 - d. 35~44
 - e. 45~
2. What is your gender
- a. Male
 - b. Female
3. What is your education level
- a. Secondary School
 - b. High School
 - c. Middle-Professional
 - d. Higher Education
 - e. Doctor Degree
4. What is your current occupation?
- a. Public Service
 - b. Private company
 - c. Student
 - d. Education institute
 - e. Culture
 - f. Sport
 - g. Retired
 - h. Non-occupied
5. Where do you live?
- a. In Moscow
 - b. Moscow Suburb

c. Other region of Russia

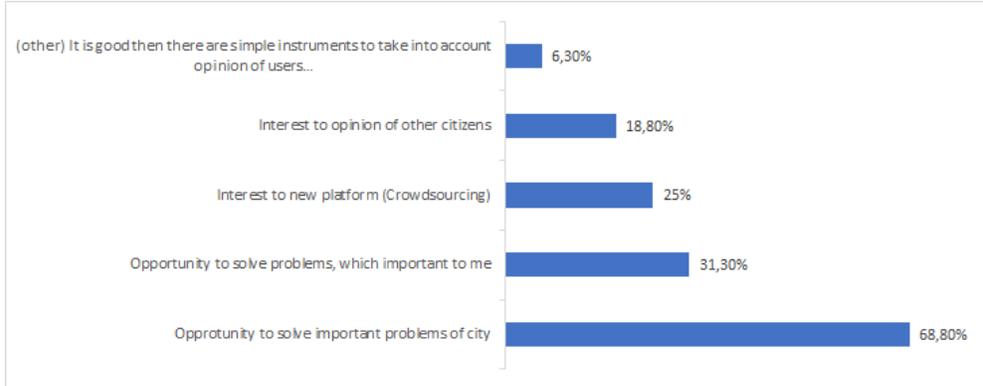
APPENDIX 2

Questionnaire results

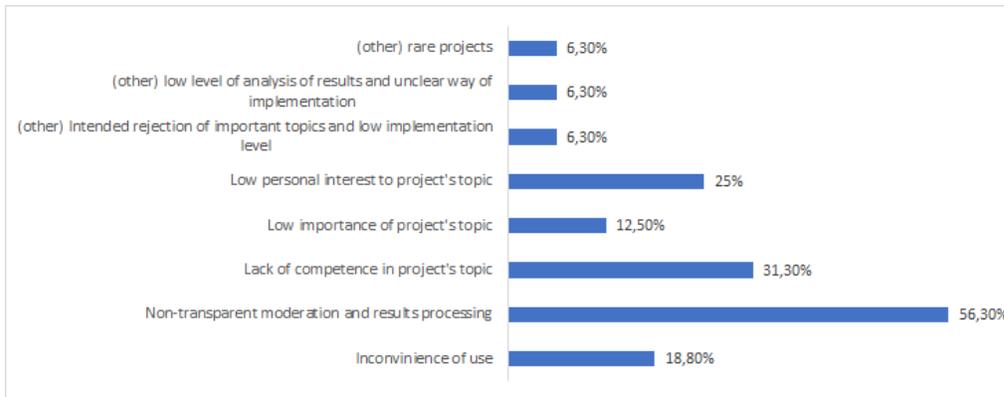
Crowdsourcing projects



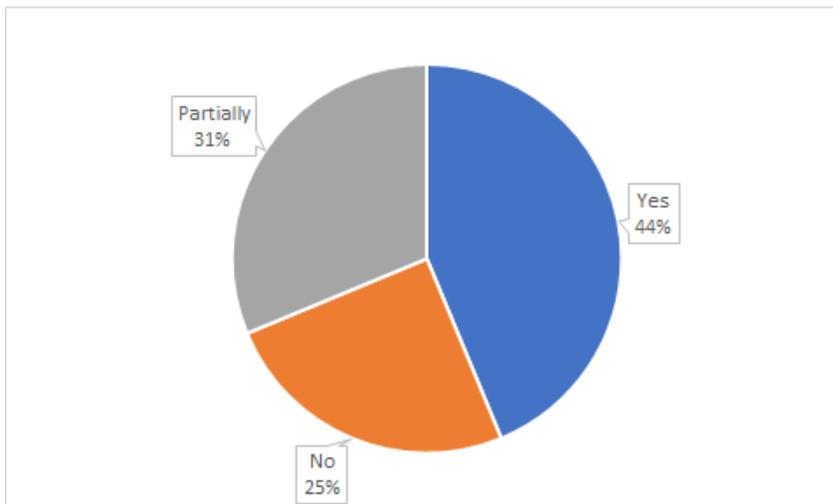
What motivates you to participate?



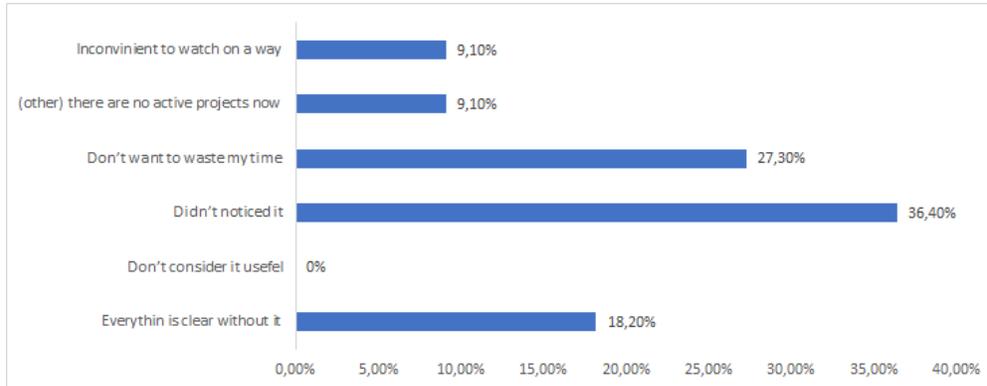
What demotivates you to participate?



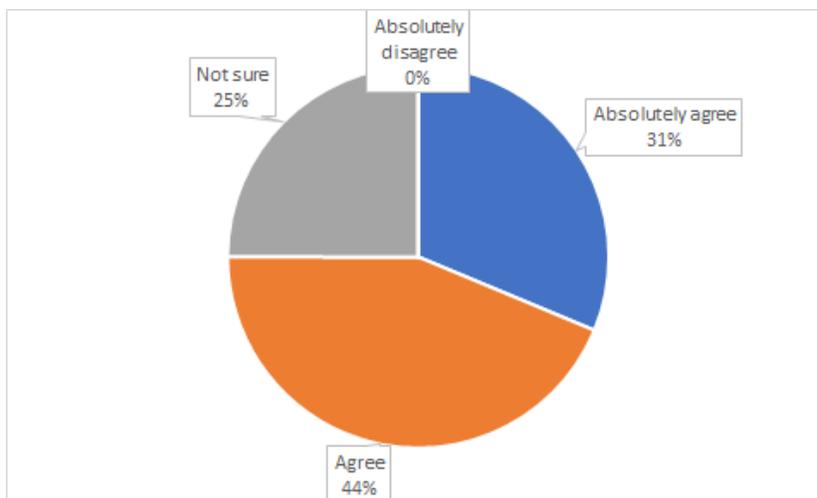
Have you watched additional information?



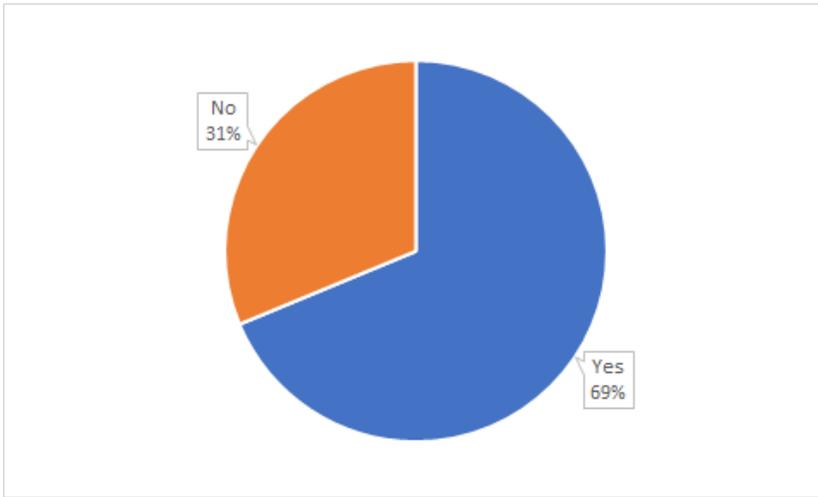
Why didn't you watch the information?



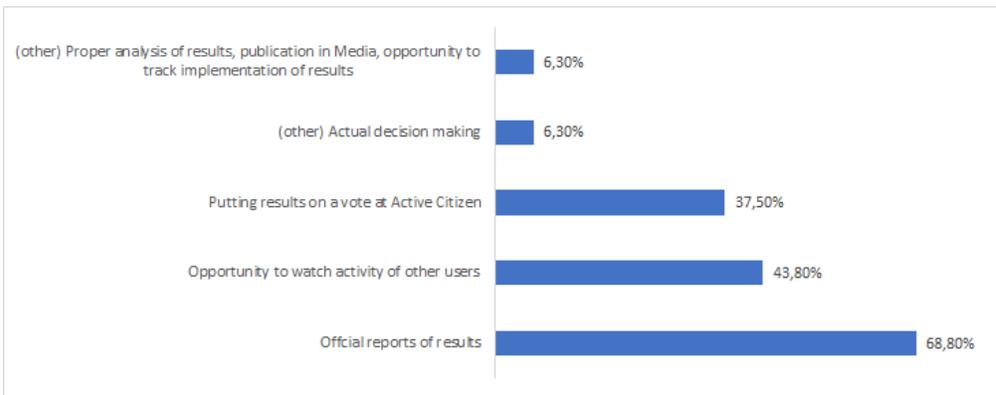
Do you agree that watching additional information may improve the quality of your participation on the platform?



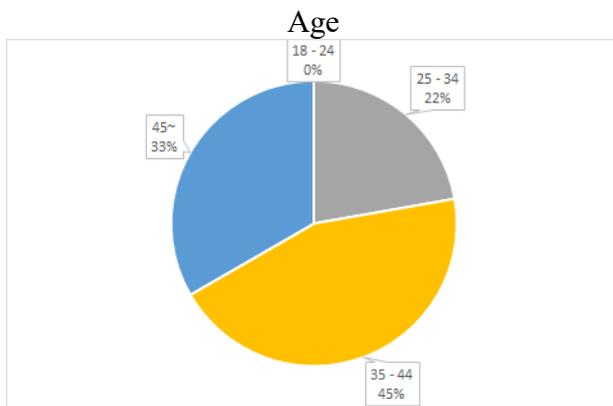
Do you trust the results?



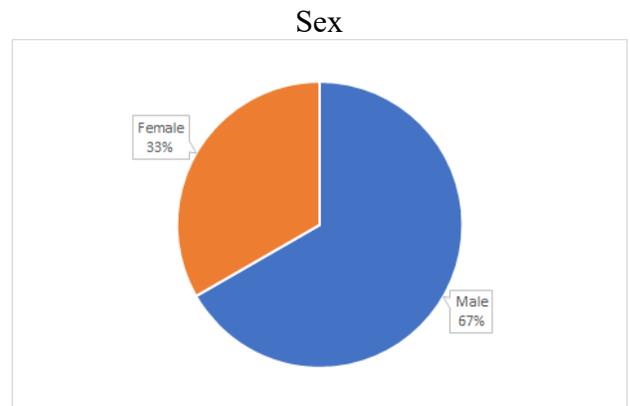
What may make you trust the results?



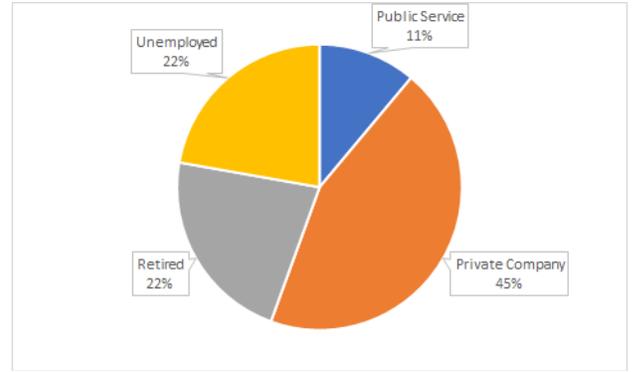
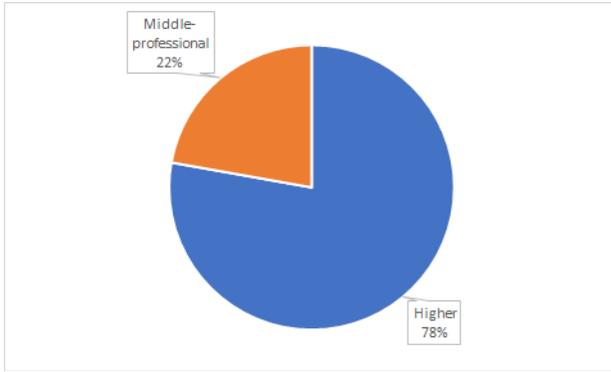
Active Citizen



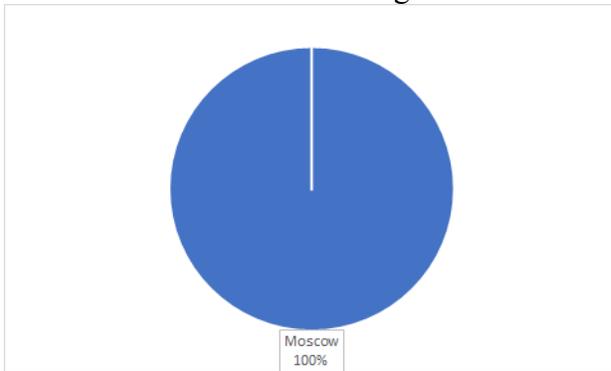
Education



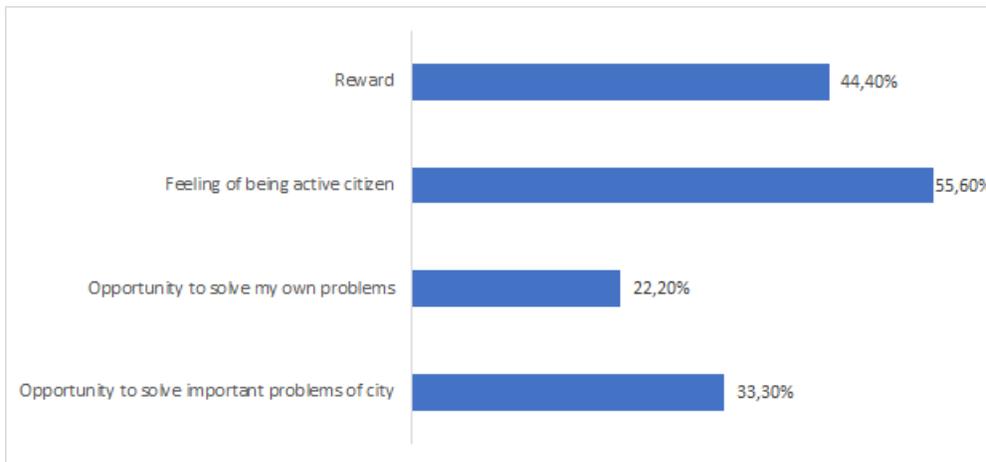
Employment



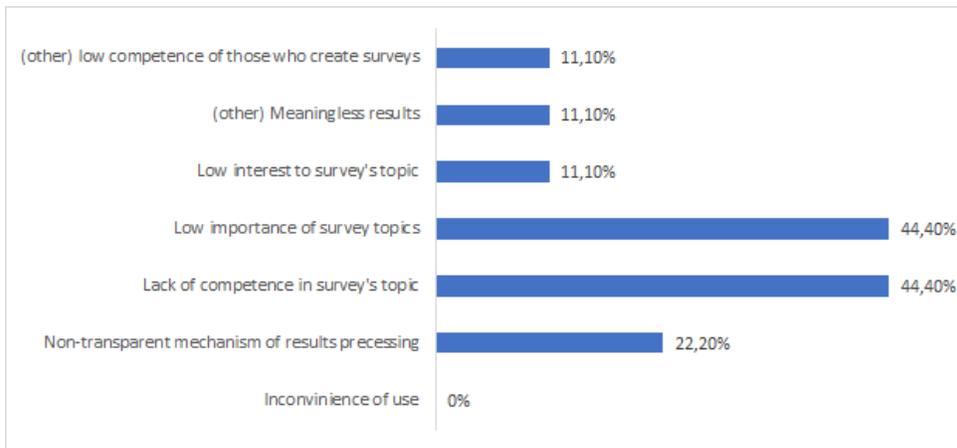
Place of Living



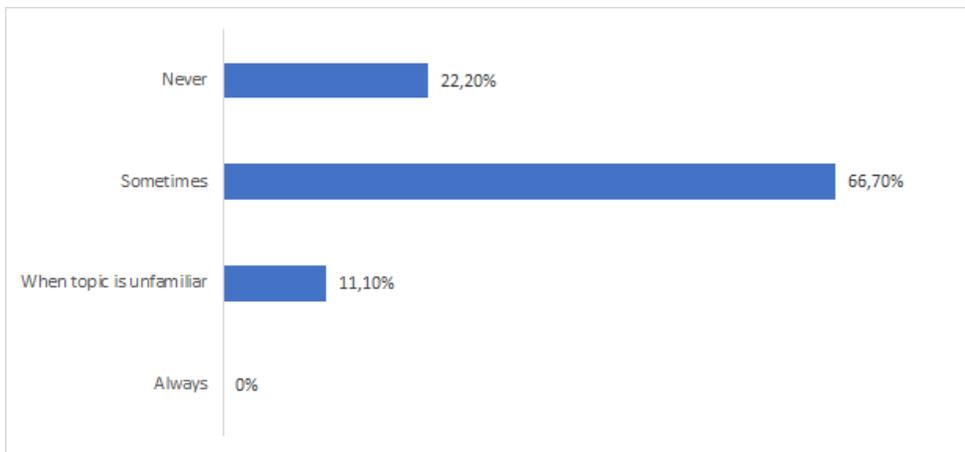
What motivates you to participate?



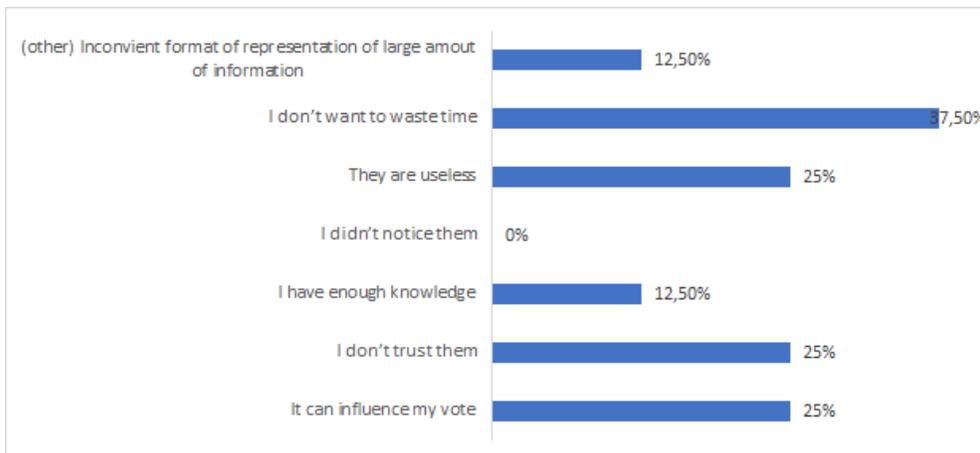
What demotivates you to participate?



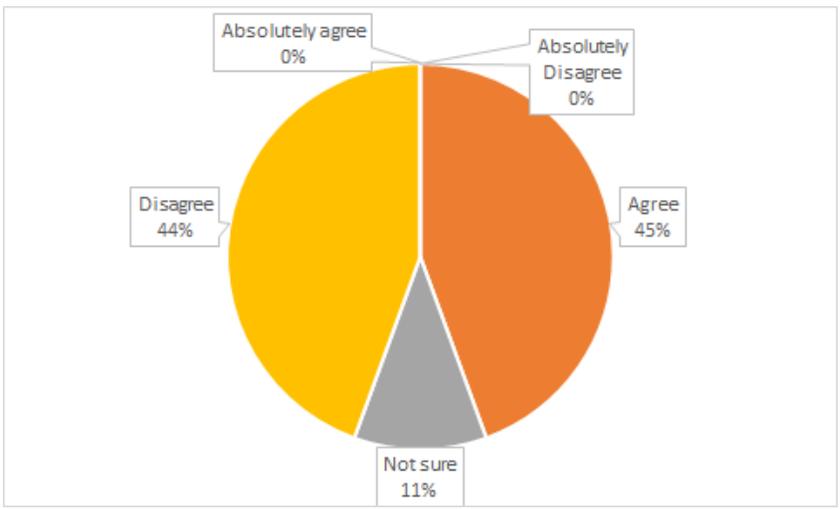
How often do you read expert opinion?



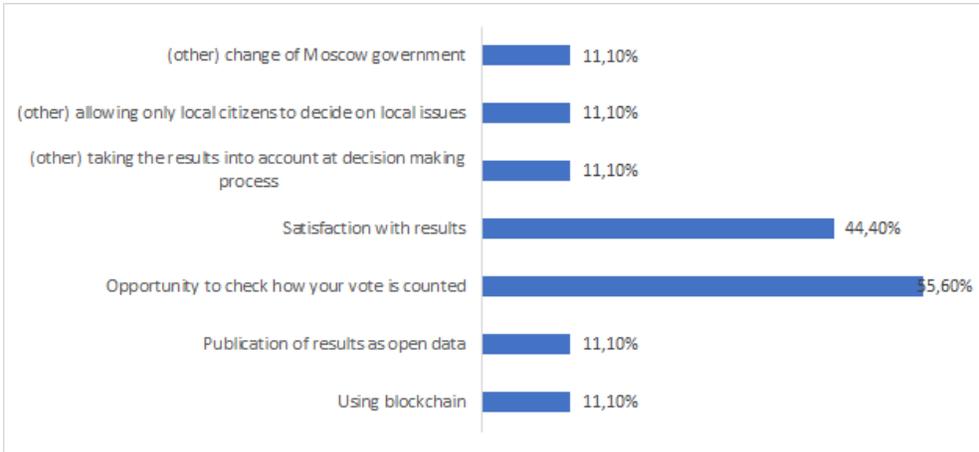
Why do you not read the opinion?



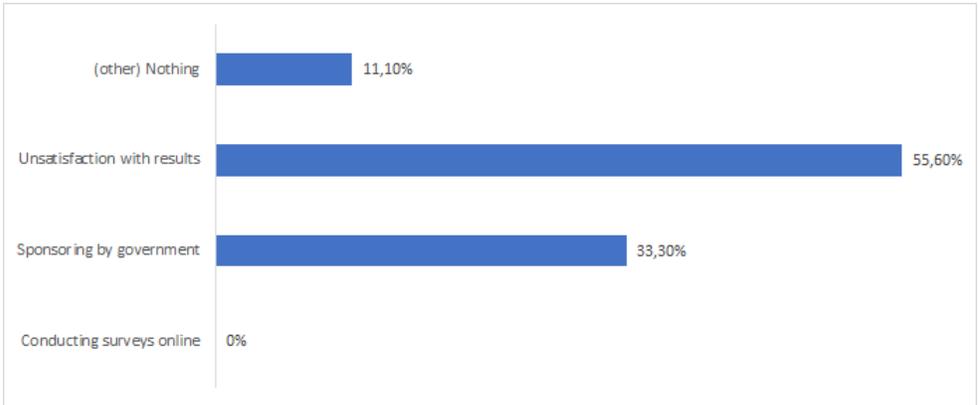
Do you agree that reading expert opinion may help to make a more conscious vote?



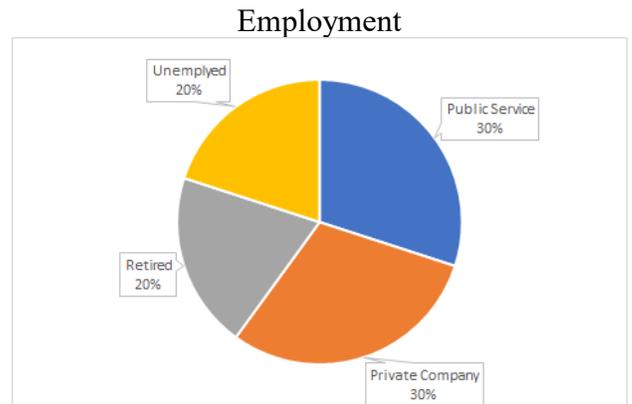
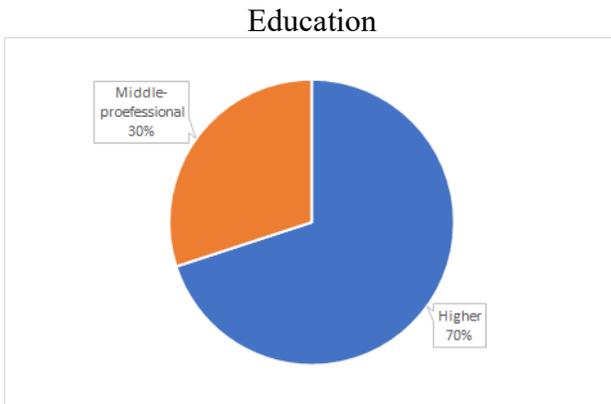
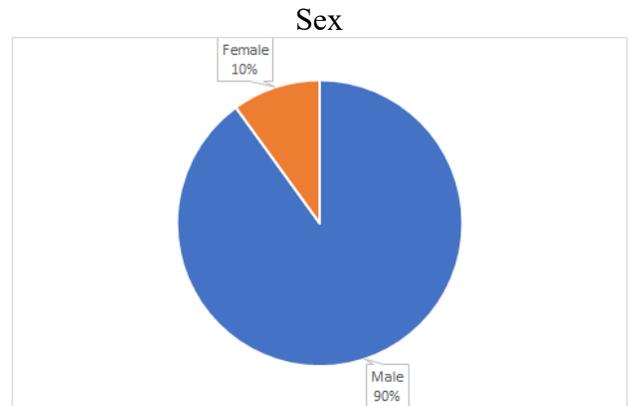
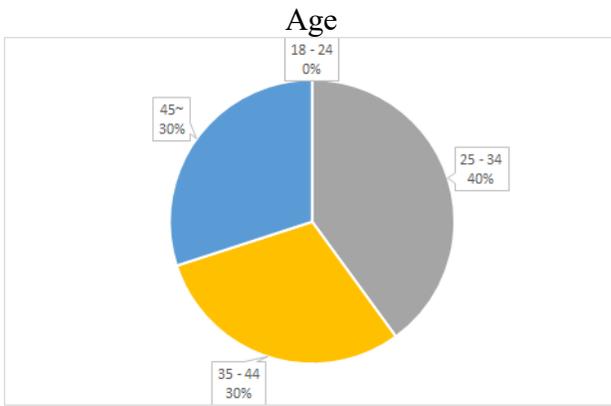
What can make you trust the results?



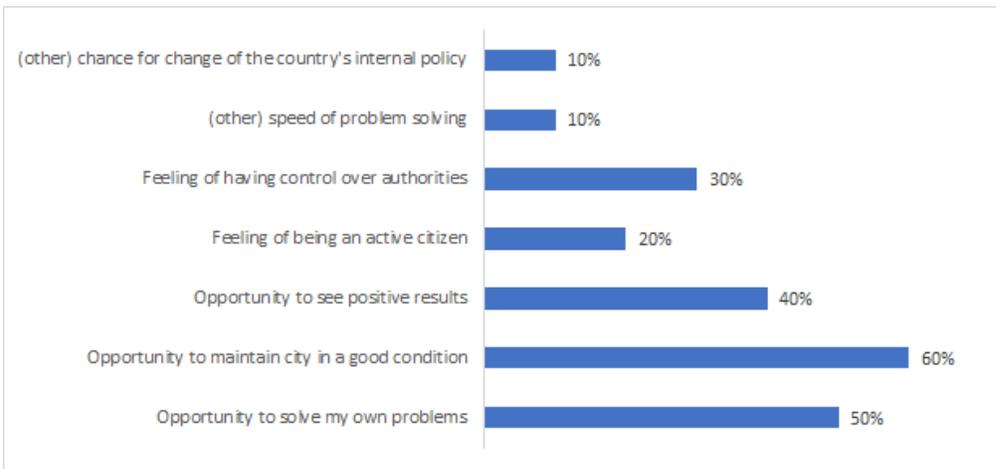
What can lower your trust to the results?



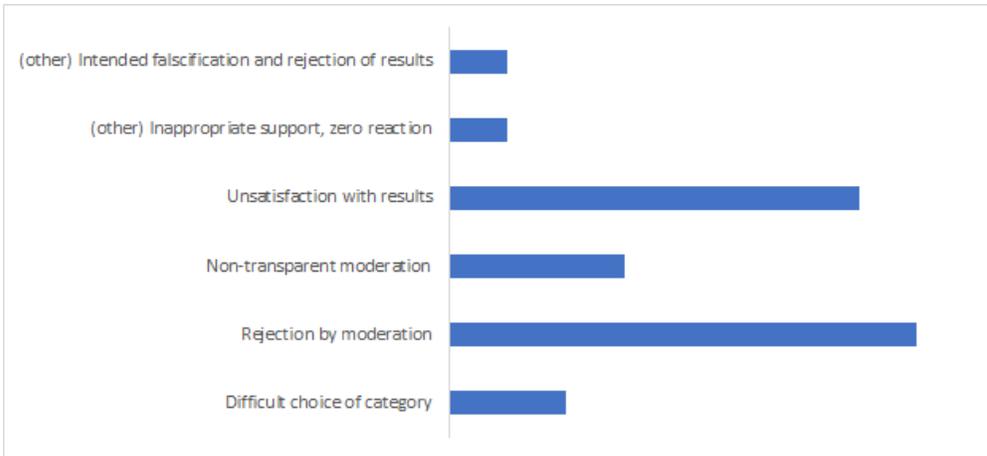
Our City



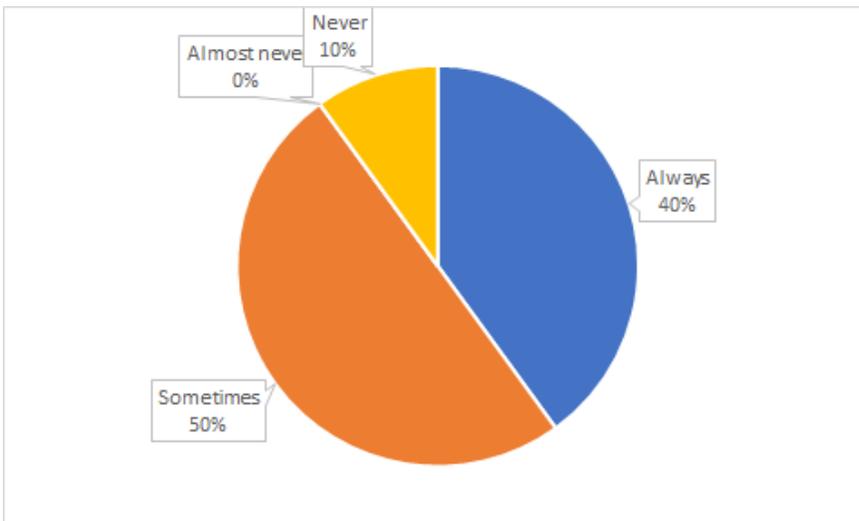
What motivates you to participate?



What demotivates you to participate?



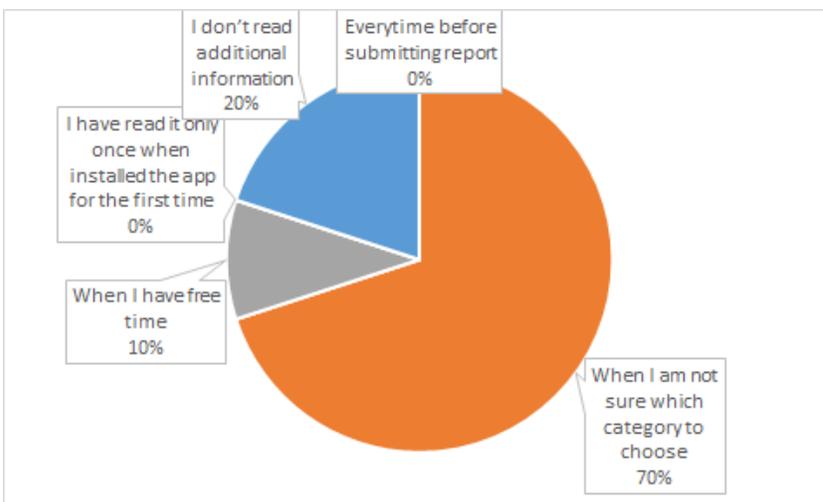
How often do you re-submit report after rejection by moderation?



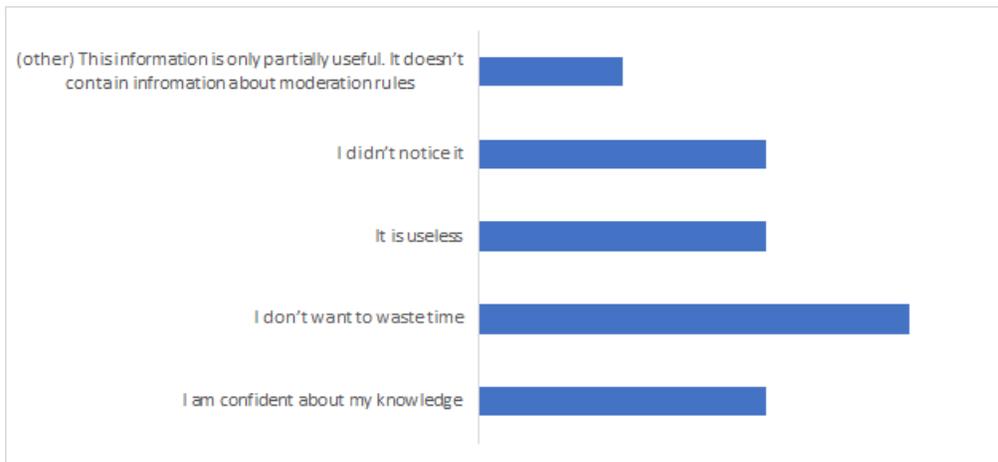
What prevents you from re-submitting report?



When do you read an additional information?



What prevents you from reading an additional information?



Do you agree that reading additional information will decrease chance of rejection of your report by moderation?

