

Research paper / Оригинальная статья
<https://doi.org/10.51176/1997-9967-2023-3-207-225>

МРПТИ 06.56.31

JEL: H10, H19, H70



Revitalization of Civil Participation of the Population in the Activities of Local Self-Government Bodies

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For citation: Ydyrys, S.S., Tubekova, D.O., & Nakhipekova, S.A. (2023). Revitalization of Civil Participation of the Population in the Activities of Local Self-Government Bodies. *Economics: the strategy and practice*, 18(3), 207-225, <https://doi.org/10.51176/1997-9967-2023-3-207-225>

ABSTRACT

Civil participation of the population in Kazakhstan is considered one of the most important factors in the development of local government system, while the actual level of participation remains at a low level. The forms of manifestation of civil and social participation of the population in the realization of citizens' rights to governance are limited, and social passivity is a characteristic feature for residents of local regions. The relevance of the research work is determined by the need to activate the civil participation of the population in the activities of Local Self-Government Bodies in Turkestan as a typical representative of a small urban district. The primary purpose of the research work is to find and substantiate ways to activate the civil participation of the population in the activities of Local Self-Government Bodies in Turkestan. Research methods such as Descriptive analytics (Nearest Neighbor Analysis), Diagnostic analytics (Pearson's R - Spearman Correlation) and Predictive analytics (Neural Networks - Multilayer Perceptron) were used. Statistical and Analytical research was carried out using SPSS and R statistics software. A sociological survey was conducted among residents of Turkestan, and other materials were collected from such sources as the results of structural appeals of citizens to the administration of Turkestan and the results of the activities of the administration of Turkestan in the field of working with citizens' appeals. As a result, the main causes of problems of civil activity of the population in Turkestan were identified and the "Solution Tree" method was used to solve the main problems in this region.

KEYWORDS: Economy, Local Government, Local Referendum, Strategy, Chi-Square Test Statistics, Neural Networks Analysis

CONFLICT OF INTEREST: the authors declare that there is no conflict of interest.

FINANCIAL SUPPORT: the study not sponsored (own resources).

Article history:

Received 11 May 2023

Accepted 12 July 2023

Published 30 September 2023

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Жергілікті өзін-өзі басқару органдарының қызметіне халықтың азаматтық қатысуын жандандыру

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Дәйексөз үшін: Ыдырыс С.С., Түбекова Д.О., Нахипбекова С.А. (2023). Жергілікті өзін-өзі басқару органдарының қызметіне халықтың азаматтық қатысуын жандандыру. Экономика: стратегия және практика, 18(3), 207-225, <https://doi.org/10.51176/1997-9967-2023-3-207-225>

ТҮЙІН

Қазақстанда халықтың жергілікті өзін-өзі басқару жүйесінің дамуына қатысуы маңызды факторларының бірі болып саналады, алайда қазіргі таңда елімізде бұндай азаматтық қатысудың дәрежесі әлі күнге дейін төмен деңгейде. Нәтижесінде мемлекеттік басқару құқығын іске асыруға халықтың азаматтық және әлеуметтік қатысуының формалары шектеулі, ал жергілікті тұрғындар үшін әлеуметтік белсенділіктің төмен сипаты көрініс алуда. Зерттеу жұмысының өзектілігі шағын қалалық округтің өкілі ретінде Түркістан қаласының жергілікті өзін-өзі басқару органдарының қызметіне халықтың азаматтық қатысуын жандандыру қажеттілігімен байланысты. Зерттеу жұмысының негізгі мақсаты Түркістан қаласының жергілікті өзін-өзі басқару органдарының қызметіне халықтың азаматтық қатысуын жандандыру жолдарын іздеу болып табылады. Зерттеу әдістері ретінде: Сипаттамалық аналитикалық зерттеу (Nearest Neighbor Analysis), Диагностикалық аналитикалық зерттеу (Pearson's R - Spearman Correlation, Chi-Square Test Statistics) және Болжамды аналитикалық зерттеу (Neural Networks - Multilayer Perceptron) сияқты зерттеу әдістері қолданылды. Статистикалық және аналитикалық зерттеулер SPSS және R statistics бағдарламаларын қолдану арқылы жүргізілді. Түркістан қаласының тұрғындары арасында әлеуметтік сауалнама жүргізілді, одан бөлек азаматтардың Түркістан қаласының әкімшілігіне келіп түскен құрылымдық өтініштерінің нәтижелері мен Түркістан қаласы әкімдігінің азаматтардың өтініштерімен жұмыс істеу саласындағы қызметтерінің нәтижелері сияқты дереккөздерден ақпараттар алынды. Нәтижесінде Түркістан қаласы халқының мемлекеттік органдардың қызметтеріне азаматтық қатысу белсенділігінің төмен болу себептері анықталды және осы аймақтағы негізгі мәселелерді шешу үшін «Шешім қабылдау ағашы» әдісі ұсынылды.

ТҮЙІН СӨЗДЕР: жергілікті референдум, экономика, жергілікті өзін-өзі басқару, стратегия, Chi-Square статистикалық тесті, Neural Networks талдамасы

МҮДДЕЛЕР ҚАҚТЫҒЫСЫ: авторлар мүдделер қақтығысының жоқтығын мәлімдейді.

ҚАРЖЫЛАНДЫРУ: зерттеуге демеушілік қолдау көрсетілген жоқ (меншікті ресурстар).

Мақала тарихы:

Редакцияға түсті 11 Мамыр 2023

Жариялау туралы шешім қабылданды 12 Шілде 2023

Жарияланды 30 Қыркүйек 2023

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Активизация гражданского участия населения в деятельности органов местного самоуправления

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Для цитирования: Ыдырыс С.С., Тубекова Д.О., Нахипбекова С.А. (2023). Активизация гражданского участия населения в деятельности органов местного самоуправления. Экономика: стратегия и практика, 18(3), 207-225, <https://doi.org/10.51176/1997-9967-2023-3-207-225>

АННОТАЦИЯ

Гражданское участие населения в Казахстане считается одним из важнейших факторов развития системы местного самоуправления, однако фактический уровень этого участия остается низким. Формы проявления гражданского и социального участия населения в реализации права на управление ограничены, а для жителей муниципальных регионов характерна социальная пассивность. Актуальность исследуемой работы определяется необходимостью активизации гражданского участия населения в деятельности органов местного самоуправления города Туркестана, как типичного представителя небольшого городского округа. Основной целью работы является поиск и обоснование путей активизации гражданского участия населения в деятельности органов местного самоуправления города Туркестан. Были использованы такие методы как - Описательная аналитика (Nearest Neighbor Analysis), Диагностическая аналитика (Pearson's R - Spearman Correlation, Chi-Square Test Statistics) и Прогностическая аналитика (Neural Networks - Multilayer Perceptron). Статистические и аналитические исследования проводилось с использованием программного обеспечения SPSS и R statistics. Был проведен социологический опрос среди жителей города Туркестан. После этого были собраны материалы из таких источников, как результаты структурных обращений граждан в администрацию города Туркестан и результаты деятельности администрации города Туркестан в области работы с обращениями граждан. В результате были выявлены основные причины проблем гражданской активности населения города Туркестан и был использован метод «Дерево решений» для решения основных проблем в этом регионе.

КЛЮЧЕВЫЕ СЛОВА: местный референдум, экономика, местное самоуправление, стратегия, статистический тест Chi-Square, анализ Neural Networks

КОНФЛИКТ ИНТЕРЕСОВ: авторы заявляют об отсутствии конфликта интересов.

ФИНАНСИРОВАНИЕ: исследование не спонсировалось (собственные ресурсы).

История статьи:

Получено 11 мая 2023

Принято 12 июля 2023

Опубликовано 30 сентября 2023

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Introduction

In a State governed by the rule of law, the rights and freedoms of citizens are guaranteed by the State. Consequently, the rule of law is the primary condition for the formation and development of a civil society that ensures the participation of the people in the exerting of power. However, the majority of citizens of Kazakhstan have a low level of readiness for mutual assistance, joint reciprocal actions; active participation in public life; and the creation of movements, unions, and associations that provide opportunities to defend their interests and the interests of other people (Artemyev & Aminov, 2016).

The lack of effective mechanisms for involving citizens in Local Self-Government practices reduces the opportunities for the population to express their position, defend their needs and interests, and participate in managing the territory in which they live. Nevertheless, a part of the population expresses its willingness to take part in solving local issues. However, this requires the activation of interaction between local governments and the most proactive citizens. It is necessary to take a number of measures to create a full-fledged information system, informing citizens about the activities of municipal authorities and possible forms and methods of realization of citizens' rights to participate in management.

The relevance of the paper is determined by the need to activate the civil participation of the population in the activities of Local Self-Government Bodies in Turkestan as a typical representative of a small urban district.

The paper's main aim is to find and validate ways to activate the civil participation of the population in the activities of Local Self-Government Bodies in Turkestan. This goal assumes the need to solve the following tasks:

- To analyze the role of civil participation of the population in solving issues of Local Self-Government as the foundation of the capacity of municipal authorities;
- To investigate the forms of public participation in Local Self-Government and methods of its activation;
- To characterize the activities of Local Self-Government Bodies in Turkestan;
- Analyze the social participation of citizens and their participation in the activities of Local Self-Government Bodies in Turkestan,
- To develop recommendations on the activation of civil participation of the population in the activities of Local Self-Government bodies.

The research methods used to achieve this

goal were the traditional analysis of documents and analysis of regulatory support on the subject of the study, as well as statistical and analytical methods. In the process of empirical research, survey methods (questionnaires) were used to develop recommendations for the activation of civil participation of the population in the activities of local governments. The novelty of the paper is as follows:

(1) The paper proposes to intensify the population's involvement in the practice of civic participation in solving issues of Local Self-Government in a mild form through the support of Local Self-Government Bodies for the inclusion of the population in the practice of public participation.

(2) The problems of involving citizens in solving the tasks of Local Self-Government were analyzed not in a large city or megalopolis however in a small city (urban district).

(3) A plan developed to activate civic participation of the population in the activities of Local Self-Government Bodies of a small urban district by convening and holding meetings at a local organs level with active citizens and representatives of Local Self-Government Bodies to establish and strengthen communication interaction between them.

The practical significance of the article lies in the fact that the population's involvement in various forms of social participation at the municipal level will allow citizens to gain experience in participating in valuable and exciting events for them, demonstrating the openness and willingness of residents. Moreover, this allows local authorities to consider the population's opinion to help them solve their problems. In other words, the involvement and support of the social participation of the population by the local authorities will make it possible to increase the level of confidence of the municipal authorities and in a mild form, to involve the population in direct interaction with the authorities, in solving the problems of the territory by joint efforts.

The hypotheses of the paper are:

Hypothesis 1. Social and civic participation of the population in solving issues of Local Self-Government are integral elements of civil society, and this approach improves the work process of local executive bodies.

Hypothesis 2. Involving the population in various types of social participation will gently activate civic participation; increase the level of public confidence in the authorities.

Hypothesis 3. Local referendum, voting, legislative initiative, public hearings, citizens' appeals

to Local Self-Government bodies, municipal elections, citizens' gathering, citizens' rallies, citizens' surveys, as well as other forms of participation and familiarization of citizens with the regulations of Local Self-Government Bodies provide information support for citizens' participation in the activities of Local Self-Government bodies.

Literature review

The study of the problems and prospects for the development of civil and social participation of the population in the processes of state and municipi-

pal administration is determined by the importance and significance of the processes of improving civil society institutions. Civil society is one of the vital and significant conditions for establishing a democratic and legal State (Melas et al., 2023). At the same time, not only groups and communities however also individual citizens can act as a subject of civic activity.

Based on the scale of the goals of civic participation, identifies several types of civic participation (see Figure 1).

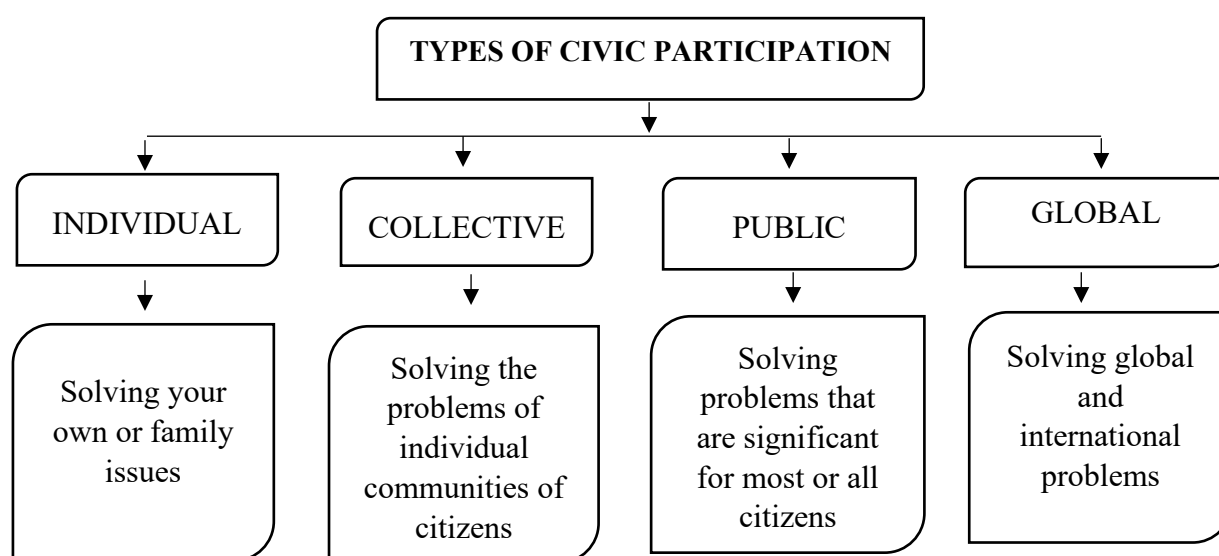


Figure 1 - Types of civic participation according to Anders Melas, Maja Farstad & Svein Frisvoll

Note: author's elaboration based on source Melas et al. (2023)

In addition, it should be emphasized that defining civic participation, identifies in its structure not only behavioral (activity and activeness of citizens to achieve certain goals) however also cognitive (knowledge, skills) and axiological (values, identity) components. This is very crucial because it makes it possible to understand that involvement in the practice of civic activism is impossible without cognitive and axiological components (Özden, 2023).

Unlike Mirai Özden⁴, Shanshan Lian, without specifying the manifestation of citizens' participation in Local Self-Government, classifies these forms according to several characteristics, combining them into five main groups. The specified grouping is shown in Figure 2.

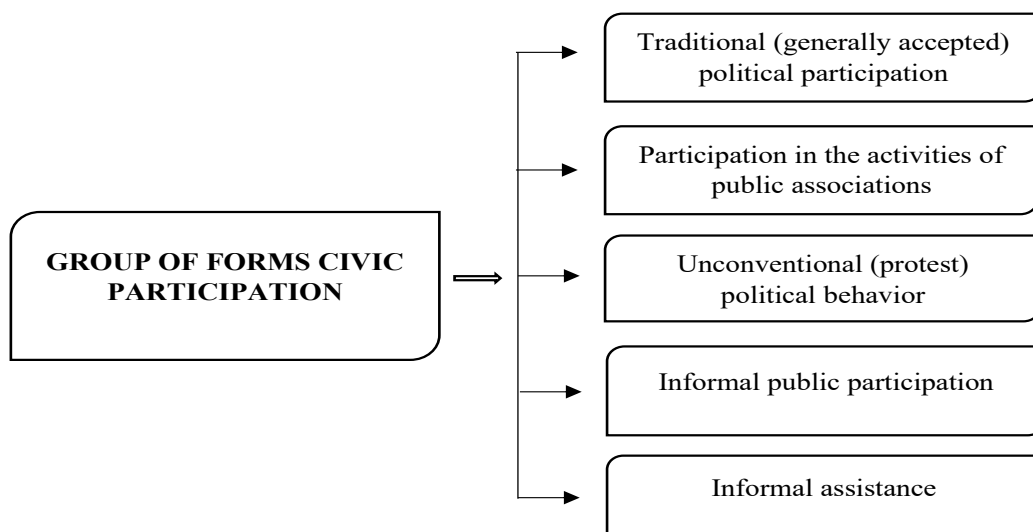


Figure 2 - Forms of civic participation in the opinion of Shanshan Lian

Note: author’s elaboration is based on source Shanshan Lian (2022)

Identifying five forms of public participation in local governments’ activities does not describe the ways and methods of activating such participation (Shanshan Lian, 2022). Maikova and Simonova (2014) do not specify the methods of such activation while talking about its necessity and reflecting the need to improve the quality of infor-

mation support for these processes. In support of their conclusions, the authors fix a number of facts that characterize, in their opinion, the essence of the low level of civic involvement in the processes of Local Self-Government in Kazakhstan. According to Maikov and Simonova, such facts should include those presented in Figure 3.

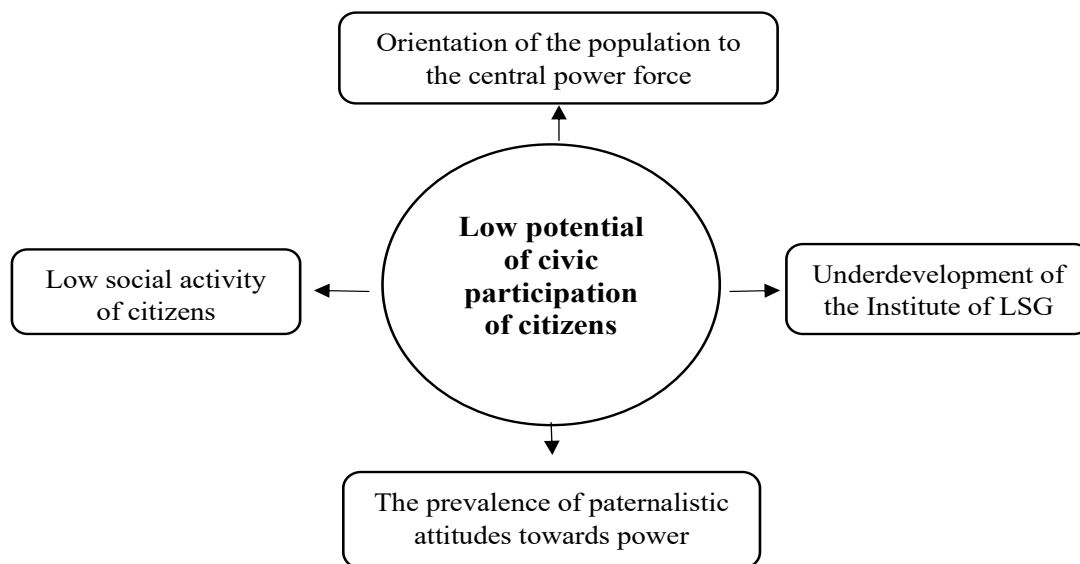


Figure 3 – Characteristics of the low potential civil participation of citizens in Kazakhstan in the practice of Local Self-Government

Note: author’s elaboration is based on source Maikova & Simonova (2014)

Studies conducted by Maykova and Simonova have shown that more than 60% of citizens do not see the difference between Local Government and State Power. The results of these studies confirmed such characteristics of the weak potential of civic involvement in management as paternalistic attitudes and dependent attitudes towards the authorities, and social passivity. Maykova and Simonova noted that most citizens are potentially ready for manifestations of social activity only when their interests are affected, and problems arise that require personal participation to solve. However, Kolesnikova and Ryabova (2016) believed that political parties are an important and integral component of civil society, as a form and instrument of direct participation of citizens in governance, primarily through elections. In the authors' opinion, it is only when parties come to power based on the results of elections that they transform from civil society institutions into the structure of the state.

Research Methodology

This section used different types of analyses, organized as follows: first, we analyzed the descriptive statistics of variables using methods that check the normality of variables. The second step was to create a relationship between variables to check the linearity of variables. This helped choose the type of analysis methods. Our variables have a normal distribution and a direct linear relationship, so we must use parametric analysis tests. After that, analytical and prognostic analyses were carried out to make conclusions and recommendations.

Materials collected from sources such as:

(1) Results of citizens' structural appeals to the Turkestan administration for 12 months of 2022.

(2) The results of the Turkestan administration's activities in the field of work with citizens' appeals from 2017 to 2022 were summed up.

(3) In the process of empirical research, survey methods (questionnaires) were used to develop recommendations for expanding civic participation of the population in the activities of Local Self-Government Bodies. The sociological survey was conducted among the residents of Turkestan and the social survey data was collected from December 2022 to March 2023. The total number of survey participants was 104 people shown in Table 1.

SPSS 23 and R statistics programs were used to view the survey results.

To test the hypothesis, a Statistical Analysis Modeling methodology was used. It checks both

direct and indirect effects, analytical and statistical relationships. This method used in the following three stages: *Descriptive analytics* (Nearest Neighbor Analysis), *Diagnostic analytics* (Pearson's R - Spearman Correlation and Chi-Square Test Statistics) and *Predictive analytics* (Neural Networks - Multilayer Perceptron).

All these methods have shown the existence of a connection between the population and Local Self-Government Bodies and the willingness of citizens to get involved in the practice of civic activism. That is, they are willing to participate in solving the problems of Local Self Government.

Thus, it is evident that there is a need to activate the civil participation of the population in the activities of Local Self-Government Bodies in Turkestan to solve problems relevant to the population. As a priority stage of such activation, we can consider the convening of a conference of active citizens involved in the practice of social participation and representatives of Local Self-Government Bodies to develop an action program.

As a result, the leading causes of the civil activity issues of the Turkestan population were identified and the "Solution Tree" method used to eliminate the main problems in this region.

Table 1 - The main variables used during the survey

Variable		Frequency	Percent
Is it vital for you to participate in meetings and events organized by the Mayor's Office of your place of residence?			
Valid	Yes	86	82.8%
	No	18	17.2%
What is your degree of participation in meetings and events?			
Valid	I do not attend meetings and events at all, and they do not give any result	64	61.5%
	I regularly attend meetings and events, I see results	14	13.5%
	I have not heard about that Akimat holding meetings and events for the population	14	13.5%
	The opportunity to find out information about meetings in advance is low, so sometimes I attend-sometimes not	12	11.5%
Do you know the concept of Local Self-Government?			
Valid	Yes	70	67.3%
	No	34	32.7%
From what sources do you get information about local government services?			
	From the media	68	65.4%
	From participation in meetings and events	22	21.2%
	Such information is not available, I cannot know	12	11.5%
	From relatives, friends and colleagues at work	2	1.9%
Can citizens influence the decision of the authorities?			
Valid	Of course, ordinary citizens can influence the decision of the authorities	58	55.8%
	I doubt it can affect	8	7.7%
	No, just citizens cannot influence the decision of the authorities	16	15.4%
	Maybe it can affect, but I can't say for sure	22	21.2%
How can the population of your residence influence the solution of the problem of Local Self-Government?			
Valid	Through the media	50	40.7%
	Through meetings and events of the local population	32	35.1%
	Through electronic portals	22	24.2%
Evaluate the quality and efficiency of the Akimat's work at your place of residence on a 5-point scale			
Valid	Good, medium degree	22	21.2%
	Satisfactory	44	42.3%
	Very good, in a high degree	8	7.7%
	Unsatisfactory	30	28.8%
Total		104 respondents	100 %

Note: Author's elaboration based on the results of the survey

Analysis and Results

The total population of Turkestan is 254,889 people. The city's administration structure includes branch (functional) and territorial management bodies. The administration structure consists of 20

divisions, including the initial committee, which consists of three departments and 12 divisions. There is also a department of Akim's office, which consists of five sections. The staff of the administration is 95 units.

Table 2 - Results of Activities Administration of Affairs in Turkestan in the field of work with citizens' appeals (the number of appeals)

Results	2017 year	2018 year	2019 year	2020 year	2021 year	2022 year
Of these, written appeals	834	777	969	853	815	661
Contacting through websites	99	91	97	92	86	61
Verbal appeals	480	397	206	292	228	184
The number of appeals of citizens in total:	1314	1174	1175	1145	1043	843

Note: source based on information from the official website of Akim's office in Turkestan (2022)

As can be seen from Table 2, over the past six years, the number of citizens' appeals to the administration of Turkestan has been constantly decreasing. If in 2017 the total number of appeals were 1,314, then in 2022, it was 845, that is, 469 fewer. The dynamics of the number of requests are shown in Figure 4.

In our opinion, the decrease in the number of requests is already an indicator of the problem. First, this decrease explained by the fact that citizens have a falling level of confidence in the municipal government, and they believe that it is

impossible or irrational to solve their problems at the local level. At the same time, the administration does not respond to incoming requests in a timely manner. As a result, in 2022 year 829 of the 845 applications received and answered, seven applications were rejected, and nine applications were in progress. The 296 appeals published on the administration's website are 29.1% of the total number of all appeals and 35.7% of the number of appeals to which response is given. (Official website Office of the Akim of Turkestan city, 2023).

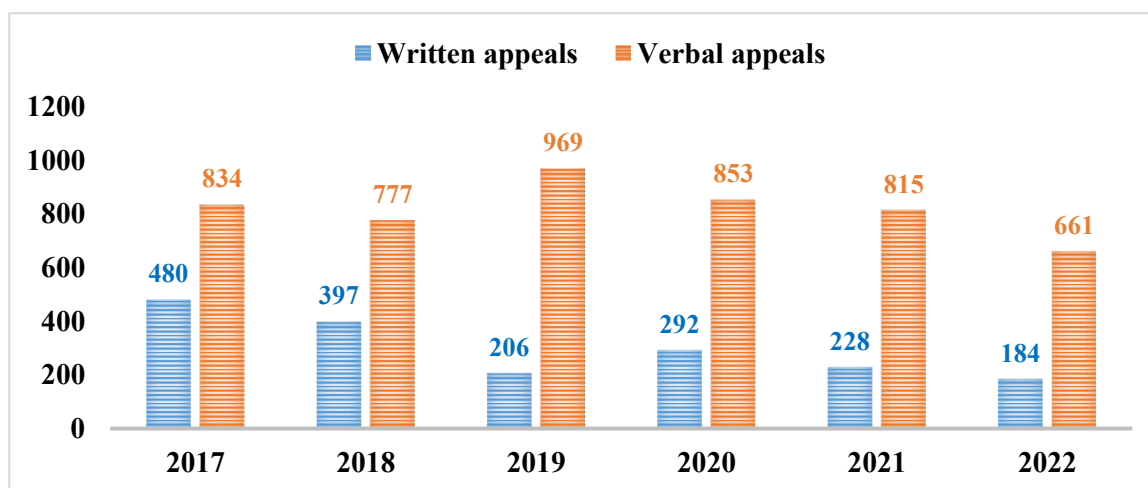


Figure 4 - Dynamics numbers of appeals to the administration in Turkestan for 2017-2022.

Note: source based on information from the official website of Akim's office in Turkestan (2022)

According to the structure of appeals, it concluded that citizens consider the sphere of housing, residential, and communal services to be the most problematic areas. Architecture and construction issues are in the second position. The matters of

law and order, social protection and pension provision, payments and benefits are equal in number and share in the structure of issues. The structure of appeals by topic is presented in Table 3.

Table 3 - Structure of citizens' appeals to the administration in Turkestan for 12 months of 2022 on the subjects of appeals

The subject of the appeal	Number of requests, units	In % of the number of requests
Housing, communal service, gas, roads	394	46.6%
Architecture and construction	69	8.2%
Legality and law order	52	6.2%
Social protection, pensions, payments, benefits	52	6.2%
Ecology and land usage	41	4.9%
Work of Local Self-Government bodies	34	4.0%
Other questions	203	24.0%
Total	845	100%

Note: source based on information from the official website of Akim's office in Turkestan (2022)

According to the survey results, the following outcomes obtained. The composition of the questionnaire consists of two parts: the first part contains general information about the respondents,

and the second part contains essential information. 42% of the participants were women, and 58% were men (Figure 5).

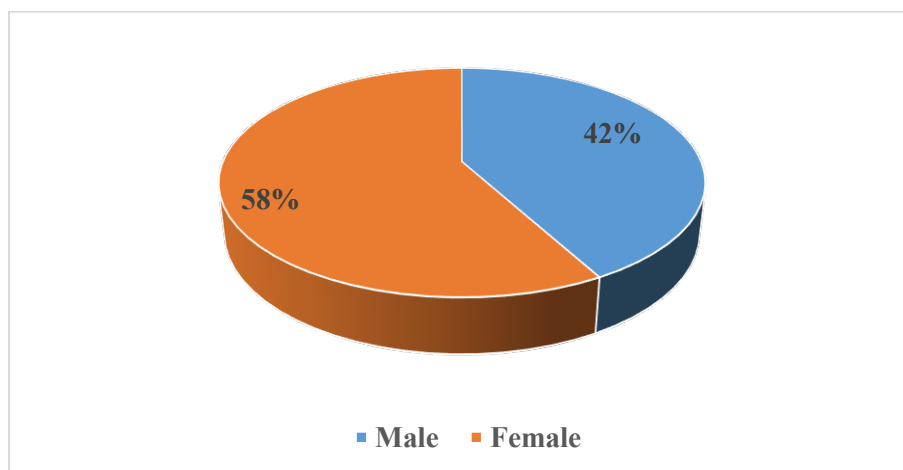


Figure 5 - Number of respondents

Note: author's elaboration based on the results of the survey

According to the survey results, the participants' education level showed the following data. The number of citizens with secondary education was 20%, higher education was 62%, postgraduate education was 16%, and the number of people with no education degree was 2%. By age, a maximum

of 70% of respondents were a group of people aged 20-30 years. 20% were people aged 30-40 years; the minimum number of people aged 40-50 years and over 60 years was 2%, 50-60 years - 6%. This is shown in Figure 6.

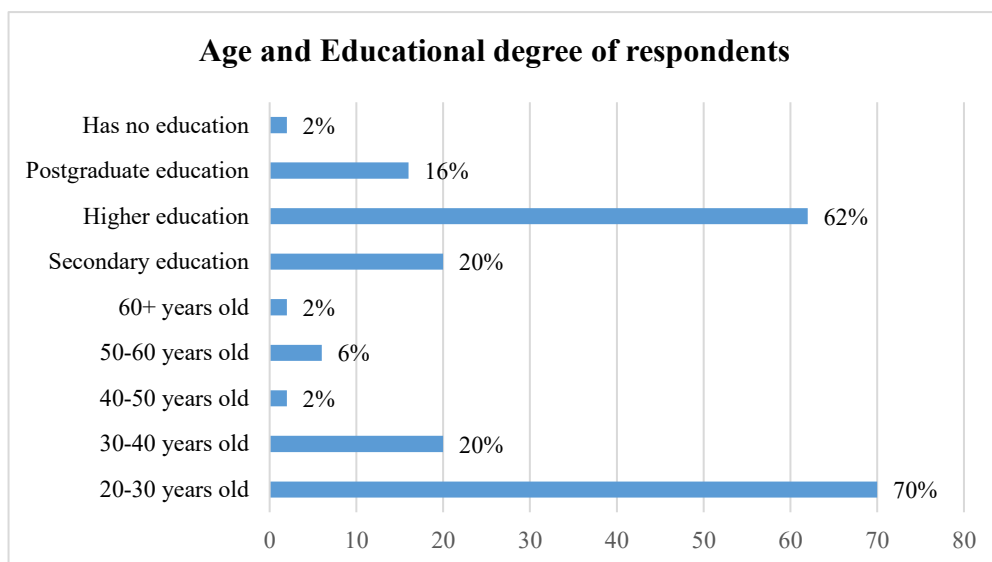


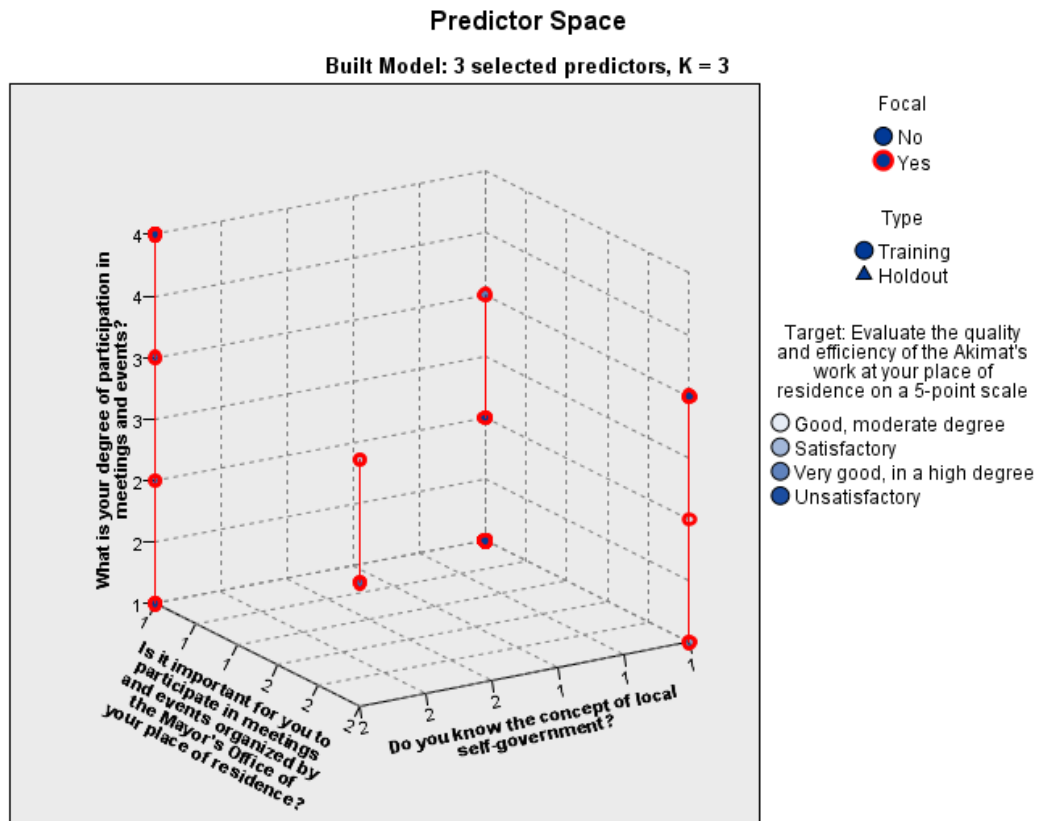
Figure 6 - Age and Educational degree of respondents

Note: Author's elaboration based on the results of the survey

For a deeper study of the survey results, we used the following analyses:

1. The essence of the Nearest Neighbor Analysis Method lies in the compactness variables: if the distance metric between examples is introduced successfully, then similar examples are much more common in one class than in different ones. The Euclidean metric (Euclidean distance) is a metric in Euclidean space, the distance between two or more points of Euclidean space, calculated by the Pythagorean Theorem (Barbini, 2002). Simply put, this is the smallest possible distance

between points A and B. A dot used to describe or show the pattern of settlement using points or dots. A nearest neighbor analysis (NNA) is a descriptive statistics that shows a pattern of locating features by comparing graphically the observed nearest neighbor distance. That is, it describes phenomenon based on its distance from another phenomenon in space.



This chart is a lower-dimensional projection of the predictor space, which contains a total of 4 predictors.

Figure 7 - Nearest Neighbor Analysis chart

Note: Author's elaboration based on the results of the survey

The formula for calculating the Euclidean distance:

$$d(p, q) = \sqrt{\sum_{i=1}^n (q_i - p_i)^2} \quad (1)$$

Another important component of the method is normalization. Min and Max-normalization carried out as follows:

$$x^i = (x - \min[X]) / (\max[X] - \min[X]) \quad (2)$$

As can be seen from the Figure 7, the degree of placement of questions inside the square is close to each other, that is, it does not go beyond the square, which indicates that the questions are close to each other in importance and cover the area of the same sphere. Min Max shows that normaliza-

tion is constant, that is, the variables have a normal distribution, so we used analysis methods for parametric tests. Any calculated value for Rn will fall somewhere between $0 - 2.15$. The smaller is the value the more clustered will be the pattern and the higher the value the more regular will be the pattern. This indicates that an Rn value of 0 will indicate a complete clustering which means that there is maximum aggregation of all the points at one location. 1 indicates a random distribution while 2.15 indicates a regular pattern. In our case of study $Rn = 0$ will indicate a compact distribution, while $Rn = 2.15$ will indicate a complete dispersed situation. In the above example (figure 7) a value of 1.337 indicates a near random situation. However, the term random describes the appearance and not the factors which produced it. Nearest Neighbor Analysis is useful for simple objective comparison. The distribution of questions in the sociological survey

may directly compared with similar patterns with other problems. The value of Rn may fall between 0 to 1 or from 1 to 2.15 which may indicate either approaching cluster or approaching uniform distribution if the value of DE is significantly different from DO . Otherwise, the distribution should considered as random as the difference between observed and expected attributed to the chance factor

only. This situation can answered by inferential statistical methods. If the sets of observations are a sample or treated as such, the probability that the pattern could have arisen by chance and it can established by a statistical test. Therefore, we decided use the next type of statistical analysis to take exact result.

Table 4 - Pearson's R and Spearman Correlation

Pearson's R and Spearman Correlation Coefficients		Value	Asymptotic Standardized Error ^a	Approximate T^b	Approximate Significance
What is your degree of participation in meetings and events?					
Interval by Interval	Pearson's R	.028	.089	.279	0.781^c
Ordinal by Ordinal	Spearman Correlation	.004	.096	.042	0.967^c
Do you know the concept of Local Self-Government?					
Interval by Interval	Pearson's R	-.189	.091	-1.945	0.055^c
Ordinal by Ordinal	Spearman Correlation	-.185	.096	-1.900	0.060^c
From what sources do you get information about local government services?					
Interval by Interval	Pearson's R	-.038	.098	-.387	0.700^c
Ordinal by Ordinal	Spearman Correlation	.030	.105	.303	0.762^c
Can citizens influence the decision of the authorities?					
Interval by Interval	Pearson's R	.000	.092	.000	1.000^c
Ordinal by Ordinal	Spearman Correlation	-.005	.097	-.051	0.960^c
How can the population of your place of residence influence the solution of the problem of Local Self-Government?					
Interval by Interval	Pearson's R	.035	.128	.355	0.423^c
Ordinal by Ordinal	Spearman Correlation	-.074	.107	-.746	0.457^c
Evaluate the quality and efficiency of the Akimat's work at your place of residence on a 5-point scale					
Interval by Interval	Pearson's R	.164	.104	1.681	0.196^c
Ordinal by Ordinal	Spearman Correlation	.150	.100	1.528	0.130^c
Is it important for you to participate in meetings and events organized by the Mayor's Office of your place of residence?					
Interval by Interval	Pearson's R	-.157	.113	-1.586	0.116^c
Ordinal by Ordinal	Spearman Correlation	-.160	.123	-1.623	0.108^c
Number of Valid Cases:		104			
<i>Approximate Significance value: a - not assuming the null hypothesis, b - using the asymptotic standard error assuming the null hypothesis, c - based on normal approximation.</i>					

Note: Author's elaboration based on the results of the survey

2. The Pearson's R correlation is a statistical analysis that measures the Linear Correlation between variables. It has a value between 1.0 is a total positive linear correlation, 0 is no linear correlation, and -1 is a total negative linear correlation. A Pearson's R correlation coefficient between 0 and 0.3 (or -0 and -0.3) indicates a weak relationship between variables, coefficient between 0.4 and 0.6 (or -0.4 and -0.6) indicates a moderate relationship between variables and coefficient between 0.7 and 1.0 (or -0.7 and -1.0) indicates a strong relationship between variables. The formula for calculating the *Pearson's R* correlation as follows:

$$r = \frac{1}{n-1} \sum_{i=1}^n \left(\frac{X_i - \bar{X}}{S_x} \right) \left(\frac{Y_i - \bar{Y}}{S_y} \right) \quad (3)$$

where X_i represents the values of the X variable in a sample, \bar{X} indicates the mean of the values of the X variable, Y_i indicates the values of the Y variable, and \bar{Y} indicates the mean of the values of the Y -variable. S indicates the sum of squares of the x and y variables respectively, and n is the number of observations of X and Y variables.

The t statistic always has the same sign (+or-) as the R -value and it calculated as follows:

$$t = R * \sqrt{(n-2)/(1-r*r)} \quad (4)$$

3. The Spearman's correlation can evaluate a monotonic relationship between variables-Continuous or Ordinal and it based on the ranked values for each variable. The Spearman's correlation coefficient between 0 and 0.3 (or -0 and -0.3) indicates a *weak monotonic relationship* between variables, coefficient between 0.4 and 0.6 (or -0.4 and -0.6) indicates a *moderate monotonic relationship* between variables and coefficient between 0.7 and 1.0 (or -0.7 and -1.0) indicates a *strong monotonic relationship* between variables (Hauke & Tomasz, 2011). The formula for calculating the *Spearman's correlation* as follows:

$$R_s = 1 - \left(\frac{6 \sum d^2}{n^2 - n} \right) \quad (5)$$

According to the survey results presented in Table 4, we saw the following outcomes: all Approximate Values of the *Pearson's R* and *Spearman Correlation Coefficients* gave a positive result. This means that all variables and coefficients have

a positive relationship. As we have already said (between 0 and 1.0 and -0 and -1.0) we can see the Strength of the *Pearson's R* and *Spearman Correlation* coefficients. According to *Pearson's R* and *Spearman Correlation Coefficients* law, the maximum degree of positive correlation should be equal to the effect of 1.0 . The variables formed by the results of our survey gave the following results. Since the results on the following questions are close to 1.0 , we have seen that there is a strong correlation relationship. They are:

- **What is your degree of participation in meetings and events?** - Pearson's R Correlation Coefficients - 0.781^c and Spearman Correlation Coefficients - 0.967^c

- **From what sources do you get information about local government services?** - Pearson's R Correlation Coefficients - 0.700^c and Spearman Correlation Coefficients - 0.762^c

- **Can citizens influence the decision of the authorities?** - Pearson's R Correlation Coefficients - 1.000^c and Spearman Correlation Coefficients - 0.960^c

According to the results of the following variables, it is shown that there is an average relationship between the variables formed by responses close to degrees 0.4 and 0.6 . They are:

- **How can the population of your place of residence influence the solution of the problem of Local Self-Government?** - Pearson's R Correlation Coefficients - 0.423^c and Spearman Correlation Coefficients - 0.457^c

According to the results of the following variables, it is shown that there is an weak relationship between the variables formed by responses close to degrees 0 and 0.3 . They are:

- **Do you know the concept of Local Self-Government?** - Pearson's R Correlation Coefficients - 0.055^c and Spearman Correlation Coefficients - 0.060^c

- **Evaluate the quality and efficiency of the Akimat's work at your place of residence on a 5-point scale** - Pearson's R Correlation Coefficients - 0.196^c and Spearman Correlation Coefficients - 0.130^c

- **Is it important for you to participate in meetings and events organized by the Mayor's Office of your place of residence?** - Pearson's R Correlation Coefficients - 0.116^c and Spearman Correlation Coefficients - 0.108^c

The result of the survey, analyzed in accordance with the *Pearson's R* and *Spearman correlation coefficients* with strong and average relationships between variables, showed us that the population has a high interest in this area and

it is currently a very relevant area. And weak ties indicate that there are some problems in this area. This means that it is necessary to find a solution to these problems. These areas are:

- **Do you know the concept of Local Self-Government?** - it showed that many people here do not know about the concept of Local Self-Government.

- **Evaluate the quality and efficiency of the Akimat's work at your place of residence on a**

5-point scale - this showed the low quality and efficiency of the Akimat's work.

- **Is it important for you to participate in meetings and events organized by the Mayor's Office of your place of residence?**- It showed that the population do not participate much in meetings of local authorities. As a result of this research, we applied the following research method to find out whether the hypotheses which we put forward to accepted or rejected.

Table 5 - Chi-Square Test Statistics

Chi-Square Estimation			
Valid	Chi-Square	df.	Assumption of Significance
Is it important for you to participate in meetings and events organized by the Mayor's Office of your place of residence?	42.706 ^a	1	0.000
What is your degree of participation in meetings and events?	74.154 ^b	3	0.000
Do you know the concept of Local Self-Government?	12.462 ^c	1	0.000
From what sources do you get information about local government services?	98.154 ^b	3	0.000
Can citizens influence the decision of the authorities?	56.308 ^b	3	0.000
How can the population of your place of residence influence the solution of the problem of Local Self-Government?	32.923 ^b	3	0.000
Evaluate the quality and efficiency of the Akimat's work at your place of residence on a 5-point scale	26.154 ^b	3	0.000
<p>a. 0 cells (0.0%) have expected frequencies less than > 0.05. The minimum expected cell frequency is - 51.0. b. 0 cells (0.0%) have expected frequencies less than > 0.05. The minimum expected cell frequency is - 26.0. c. 0 cells (0.0%) have expected frequencies less than > 0.05. The minimum expected cell frequency is - 52.0.</p>			

Note: Author's elaboration based on the results of the survey

4. The chi-squared criterion (χ^2 , Pearson's agreement criterion) is a metric that measures how the Model is comparable to the actual observed data. Calculated using formula as follow:

$$\chi^2 c = \sum (O_i - E_i)^2 E_i \quad (6)$$

The Chi-square criterion provides a way to check how well the sample matches the characteristics of the General Population. We will not use a sample if it does not correspond to the expected properties of the population we are interested in (OTR Kenneth & Ottenbacher J, 1994).

For these tests, Degrees of Freedom used to determine whether a certain Null Hypothesis rejected based on the total number of variables and samples in the experiment. Assumption of Sig-

nificance – should be less than > **0.05**. According to the results of the Chi-square criterion in Table 5, our analysis result showed that all Assumption of Significance is less than > **0.05** and this means that we reject the Null Hypothesis and accept an Alternative Hypothesis. In total, we can say that our Hypothesis 1, Hypothesis 2 and Hypothesis 3 confirmed.

Our goal after accepting hypotheses was to make predictions for the future. That is, we used the following method to see how well the industry we are studying will be significant in the future.

5. A Multilayer Perceptron is a class of artificial biological neural networks of direct propagation consisting of at least three layers: input, hidden and output. The weighted input data summed up and transmitted via an Activation Function,

sometimes called a transfer function. The function determines the threshold at which the neuron activated and the strength of the output signal. Historically, simple systematic activation functions used: if the total input were above the threshold,

for example **0.5**, then the neuron would output a value of **1.0**, otherwise **0.0**. Neural networks used for forecasting. Forecasts made by providing input data to the model and performing a forward pass that allows generating output forecast data. (M.W Gardner, 1997).

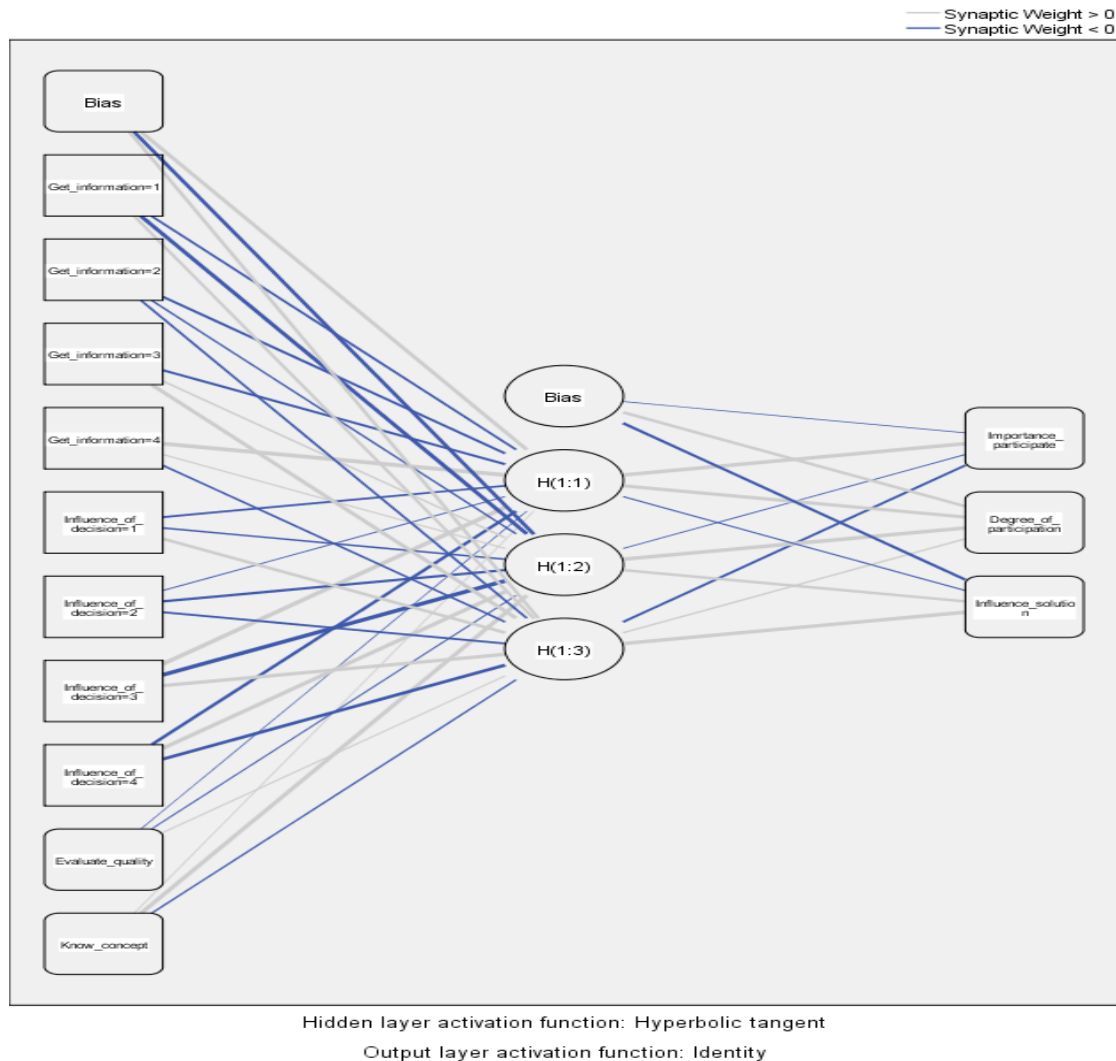


Figure 8 - Multi-layer perceptron

Note: Author’s elaboration based on the results of the survey

$$f(x) = \text{sign} \sum_{i=1}^n W_i X_i - \theta \quad (7)$$

The result of the multilayer perceptron connections is that thin fuzzy lines indicate that the variables are weakly related to each other, while thick clear lines indicate that there is a strong connection. The result of our analysis shows that there are many thick, clearly interconnected lines.

Figure 8 demonstrated the results of the study of neural networks. It clearly shown that there is a close relationship between the variables obtained from the survey results. This is an expression of the high interest of the population in the activities of local authorities and proves that strong ties will be established between this industry in the future. This suggests that in the future, the activity of the population in the field of civic participation of the population will increase.

Discussion

Because of analysis and empirical research, the following facts revealed:

- The mechanism of civil participation of the population in the activities of Local Self-Government Bodies in Turkestan poorly developed,
- A significant number of citizens of the district express their potential readiness for such participation, considering it necessary to improve the system of information interaction with the authorities;
- The attitude of representatives of municipal authorities to civil and social participation of the

population in solving the tasks of the municipality is generally positive;

- A significant role in the activation of civic and social participation is assigned to the direct interaction of representatives of government and Local Self-Government with citizens, especially young people, as well as representatives of existing organized communities of various orientations.

Based on the results of the population's responses to the questions asked in the conducted sociological survey, a conclusion made and we decided to use the "Solution Tree" method to solve these problems (Konstantin S.B, 2013).

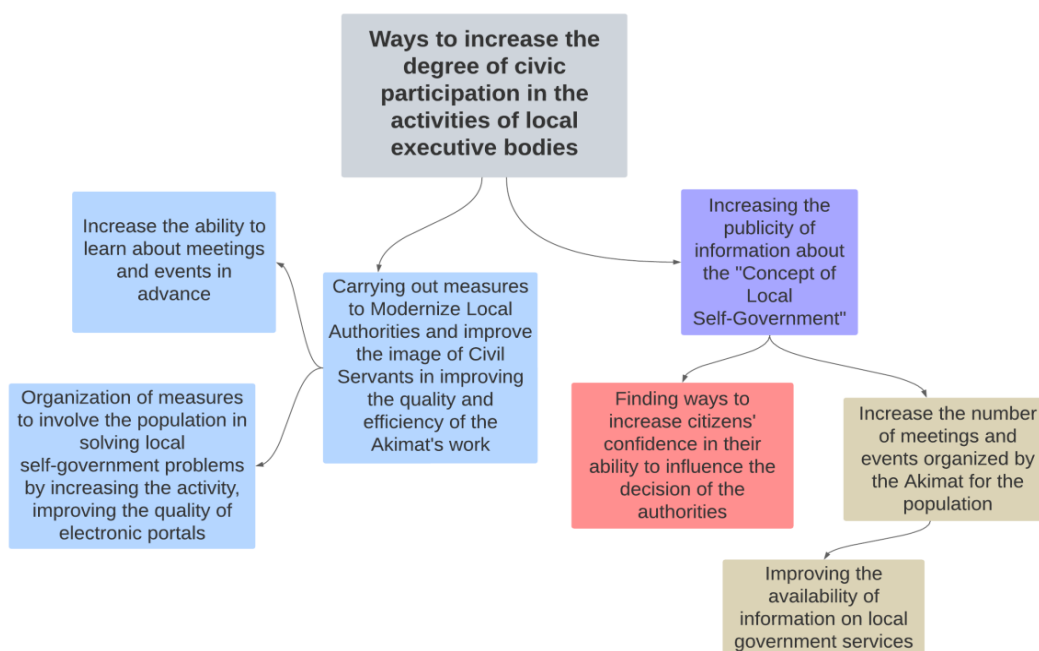


Figure 9 - Solution Tree

Note: Author's elaboration based on the results of the survey

To solve the identified problems, the administration of Turkestan recommended improving the information support of citizens' participation in the activities of Local Self-Government Bodies. Specific measures of such improvement will be the technical refinement of the administration's website, namely the "Appeals" section, as well as more active public coverage of the work with citizens' appeals to local self-government Bodies in print and electronic media.

All these measures will contribute to increasing the information openness of the authorities, and consequently, increasing the loyalty of the population to Local Self-Government bodies. In turn, this increase should also affect the level of civic engagement of the population.

Conclusion

The main purpose of the paper was to develop recommendations on enhancing civic participation of the population in the activities of Local Self-Government Bodies in Turkestan. In accordance with this goal, the theoretical aspects of citizens' participation in the activities of Local Self-Government bodies investigated and statistical and analytical methods of analysis used to identify the main problems in this industry. The actual level of participation of the population in the activities of Local Self-Government Bodies continues to be low. Nevertheless, part of the population expresses its willingness to take part in solving local issues. To do this, it is necessary to form the civic competence of the residents of municipalities, promote the growth of their social cohesion and social identity, and support social participation. The involvement of the population in social participation will allow them to be mildly included in various types of civic participation, taking into account the peculiarities of the current stage of development of civil society in Kazakhstan, in particular, and the low level of trust in the authorities.

Another measure to improve information support for interaction between local governments and citizens is information promotion. Print and electronic mass media should regularly at least once a month, publish statistics of appeals on this issue, indicating the problems that have been solved because of these appeals. All this will contribute to increasing the level of trust in Local Self-Government bodies and more active involvement of citizens in solving the tasks of the city.

The work on improving the information support of citizens' participation in the activities of Local Self-Government Bodies will contribute to increasing the information openness of the authorities, therefore, increasing the loyalty of the population to Local Self-Government bodies.

In turn, this increase should also affect the level of civic engagement of the population. The citizens of the municipality will see the results of their interaction with the authorities and realize that the socio-economic development of the city district directly depends on their participation in the activities of Local Self-Government bodies.

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