The view of the citizens of Bucharest over the concept of smart city

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Abstract: *The concept of smart city has become more and more important and "useful" in recent years because of the negative effects on the environment and human health. Thus, researchers have sought to find solutions to improve housing in increasingly urbanized cities. This article brings to the reader a certain structure in terms of analyzing the concept of smart city, as well as the dissemination of the most important factors to consider when a city moves from its original state to a sustainable and intelligent governance of the city. Smart City Governance aims to create new forms of human collaboration by using ICTs to achieve better results and more open government processes. This article highlights the fact that public administration and intelligent governance is a matter of complex processes of institutional change and we should recognize the political nature of the visions of socio-technological governance.*

***Keywords**: smart city, sustainable management, urban city*

Introduction

More than 50% of the world's population lives in cities (UN, 2015) and this presents different challenges for managing a city: fighting environmental damage, managing waste efficiently, managing resources in a natural sustainable way, infrastructure improvements, etc. Cities should provide protection and be more eco-friendly, but also integrate people with different backgrounds (ethical, religious, socioeconomic). Charles Landry (2006) said local politicians and city leaders should not strive to have the best city in the world, but for the world. Thus, the more a city answers and solves social problems on a broader scale, the more efficient and intelligent it will be. On the other hand, city managers ought to realize that only technology or digitalization by itself will not make a city smarter: building a smart city requires a political understanding of technology, a process approach to manage the emerging smart city and a focus on both economic gains and other public values (Previtali and Bof, 2009).

In this paper we aim to observe the reaction of the citizens of Bucharest to the concept of smart city, as well as the solutions proposed by them for a better governance of the city.

Theoretical background of the research

After the first characterization of the smart city concept by Hall et al. (2000), in the years to come, a vast literature has emerged, each author attempting to characterize the concept of smart city from the perspective of his profession, but a generally accepted definition still does not exist (Cocchia, 2014). So, the concept of smart city is a configuration of urban and metropolitan contexts based on a set of common features related to improving the quality of life of citizens, given that urban development policies are often addressed by urban managers dealing with the problems of a smart city.

After analyzing the characteristics that a smart city should have in its structure, we find common dimensions: the technological dimension, based on the use of infrastructure; human dimension, based on people, education and knowledge; institutional dimension, based on governance and policies (Nam and Pardo, 2011). We could add here that there is also an ecological dimension or environmental dimension, based on the efficient use of natural resources. In an overcrowded city, it is important to maintain the green spaces and not damage precisely the source from where we get our clean air. By the integration of technology with natural environment, a Smart City is considered an effective one in its processes in every activity in order to achieve sustainable development, safety, security, health and all the necessary actions necessary for its inhabitants with the aim to increase the quality of life in its essence. According to one author, Mohanty (2016) considers a Smart City to be „a place where traditional networks and services are made more flexible, efficient, and sustainable with the use of information, digital and telecommunication technologies, to improve its operations for the benefit of its inhabitants. Smart cities are greener, safer, faster and friendlier." We can outline from his definition that the construction of a Smart City it's a long process which involves the public management to act as a system which implements procedures and be mindful and innovative. The approach to smart cities has evolved through

an emphasis on one or more elements that favor the digitization process. However, only integrating all areas of intervention based on ICT contribution can help cities achieve sustainable economic growth and better quality of life for urban stakeholders (Anthopoulos and Tougountzoglou, 2012). The increasing number of smart cities initiatives can be linked to the integration of new technologies, in particular ICT and data management, extending from the acquisition of basic data to data processing and interpretation (Kirwan, 2015). The technological elements needed to implement intelligent initiatives include the implementation of necessary hardware (sensors, wireless equipment, etc.) and software (artificial intelligence, expert systems, etc.) to create a "physical-digital environment of intelligent cities" (Schaffers et al., 2011, p. 435; Li et al., 2015). Organizational and management concerns are not to be neglected when talking about IT initiatives; they are the key to success or can lead to a failure in IT projects. (Pardo, T. A & Gil-García, J. R.,. (2005); Scholl, H. J., et al. (2009).

Research objectives and methodoly

The purpose of this paper is to highlight the opinion of the citizens of Bucharest on the concept of smart city in accordance with the reality in the city of Bucharest. More specifically, this research has looked at four areas that are directly linked to the main goal: how do citizens quote the city's qualities/ services, how satisfied they are with these services, which solution they think is the most appropriate or in agreement with the reality of the city of Bucharest and what solutions are proposed for a better management, efficiency of the city. To see these results, we chose the questionnaire method, the number of those surveyed being 52, with different education background and ages. Thus, we consider that the significance of the research is assured from a scientific perspective and that the responses and conclusions that are generated are relevant for the whole population in Romania, both academic and non-academic readers. Another fact that supports this statement is the correct distribution of the research sample, from a statistical perspective, taking into account multiple criteria: age of the citizens, level of studies, employment status. There is a limitation of the research from the point of view of the number of respondents which completed the questionnaire.

Results

The first area to be analyzed within the current research refers to the age of respondents. This criterion is needed in order to see the perception of citizens depending on their age difference. From all the people questions, 6 persons are within the age of 19-22 years old (11.5%), the second category is with the age between 23-26 years old with 24 persons questioned (46.1%), the third category is within the age between 27-30 years old with 12 persons questioned (23.07%) and the fourth category are the persons over 30 years old with 10 persons questioned (19.2%). The second category and third category are the most relevant with the current research. Further, we will analyze the opinions of the respondents over few important questions and compare the categories to see if there are differences or share the same mentalities. Between the respondents there are a handful of persons which reside outside of Bucharest. We will see below the opinions of their cities.

We will see in the first chart, the difference from the education status perspective of our respondents. As we can see form the

*Chart 1. Education level of citizens of Bucharest*
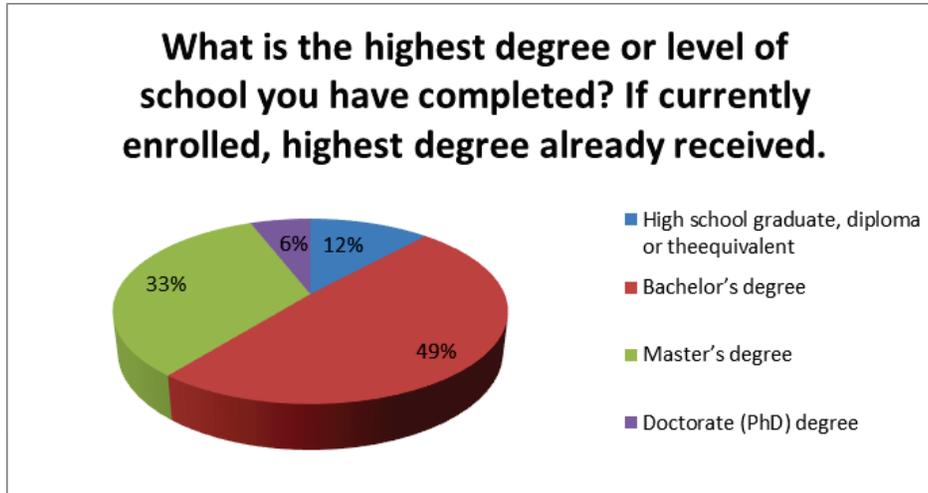
Source: own processing of collected data

above chart, 49% of respondents have the bachelor's degree, 33.3% completed a master's degree, 11.7% have a high school diploma or equivalent and 5.9% completed the PhD studies.

After we have determined that almost 90% of the respondents have at least higher education, we will analyze, in the following graph, their occupational status.

*Chart 2. Employment level of citizens of Bucharest*
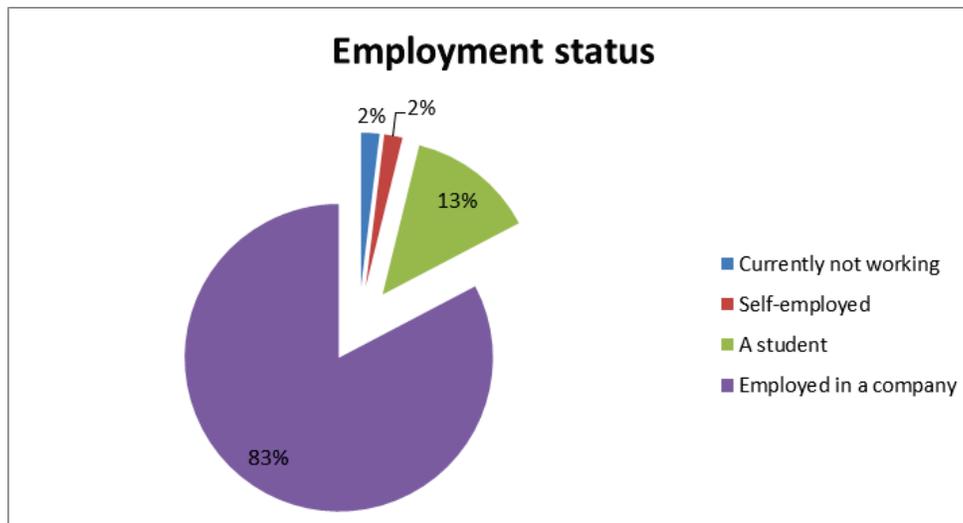
Source: own processing of collected data

43 of the respondents (82,6%) are currently working in a company, 7 respondents (13.2%) are currently enrolled for superior studies and for the rest of categories we have 1 respondent (2%) who is self-employed and 1 (2%) who currently is not working. One can see that, for the present analysis, there is a positive development towards higher education.

In the continuation of the study, we will proceed to analyze the qualities of the city of Bucharest from the perspective of the citizens who live here.

Chart 3: The level of satisfaction of the public services (different cities)
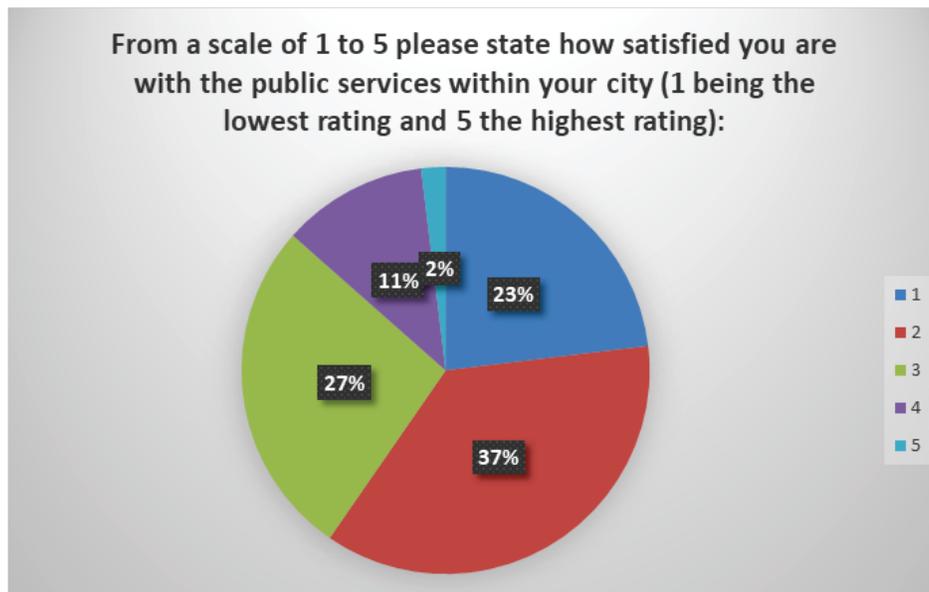
Source: own processing of collected data

The results are related with the whole package of public services from the point of view of accessibility, efficiency, ease of usage, etc. in terms of the drivers arising from the literature. The results show a strong level of cohesion in how people approach smart cities. 12 respondents (23%) rated their city with 1, being the lowest grade, 19 of them (37%) rated their city with the qualifying 2. We can see from the chart that more than half of the respondents are unsatisfied with the public services provided by their cities. 23% of the persons questioned are neutral, that means that they have little to complain about the public services provided by their cities, 11% said that are very satisfied with the public services provided by their cities and 2% rated their cities with the grade 5, that means that their cities have nothing to improve on their public services and reached the concept of smart city.

In the next chart we will take in consideration the answers of persons which are from Bucharest. Therefore, from 52 persons questioned, 37 of them are from Bucharest and we divided the respondents into 3 age categories (23-26 years, 27-30 years and over

30) to compare the degree of satisfaction between them. The question is From a scale of 1 to 5 please state how satisfied you are with the public services within your city (1 being the lowest rating and 5 the highest rating).

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Chart 4: The level of satisfaction of the citizens of Bucharest
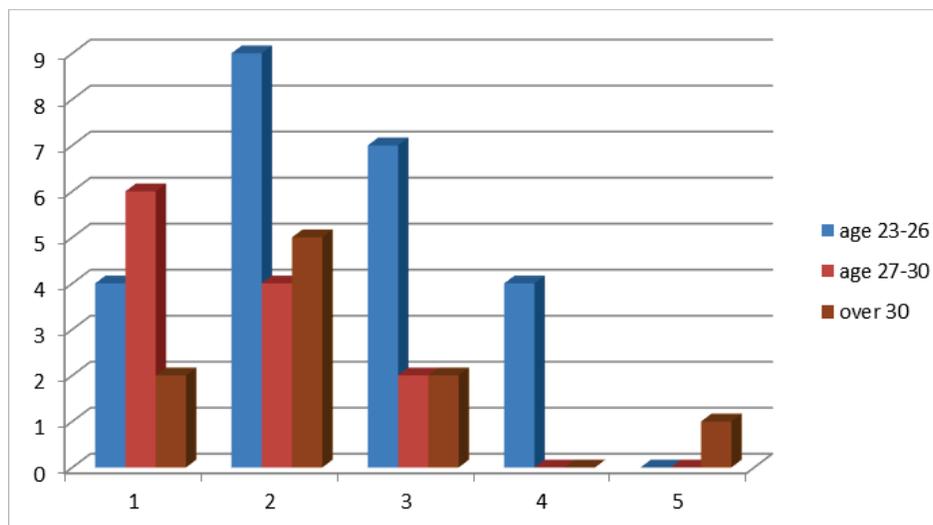
Source: own processing of collected data

As we can see from the charter, more than half of the citizens are unsatisfied with the public services from Bucharest (21% of the respondents graded with 1 and 37% of the respondents graded with 2). No person from 19 questioned graded the city of Bucharest with 5 and just 2 persons (10%) graded with 4. This raises concerns regarding the efficiency and the public management handled by the local authorities.

From the above chart we can see the dissatisfaction of the respondents in regard with the public services from Bucharest. Neither of the 12 persons questioned rated the public services provided by the municipality of Bucharest with 4 or 5, whereas more than half are totally unsatisfied by the public services provided by the municipality of Bucharest. In total from the 12 people with the age between 27-30 years old from Bucharest, 10 persons chose to give the lowest ratings for the public services and 2 persons are neutral.

Although, there aren't many people questioned in ''over 30'' category, we can see certain similarities between the category of 27-30 years old and this category. Neither of these 2 categories chose to grade the public services with 4 or 5. More than half of them are unsatisfied and 1 person chose to grade with 3.

If we make a comparison between the third charter and the last one, we can see a level of dissatisfaction with the public services from cities where people are from. Further in this paper we will analyze the qualities found in the cities where people questioned are from, and afterwards, more specifically from Bucharest.

Chart 5: Multiple choice : qualities of the city where the people questioned are from
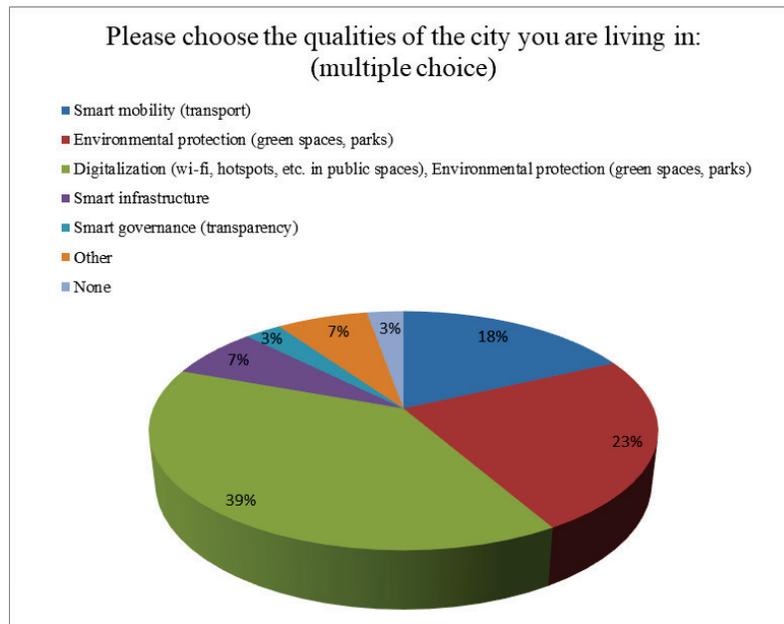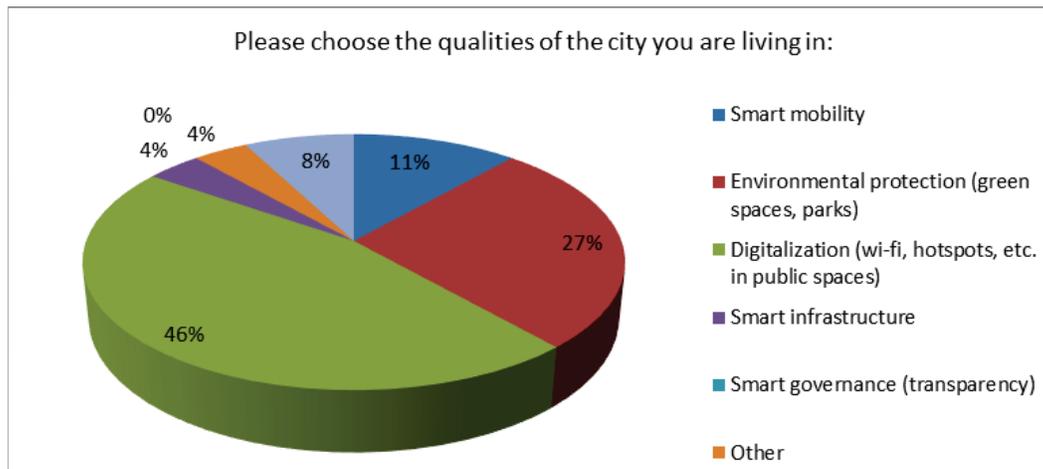

Source: own processing of collected data

In the above chart, another question was to choose qualities of the city the respective respondent is from. It had multiple choice criteria, so as we can see more of them, precisely 39% of them, stated that the city he/she is from has the digitalization quality, 23% of them said, that in their opinion, local authorities handled well the environmental issue. We know that this is a problem in urban areas, so we will see below how the citizens of Bucharest chose the qualities that this city have. Smart mobility was the third quality chose by the respondents with a percentage of 18%.

*Chart 6: Multiple choice: qualities of the city of Bucharest (23-26 years old)*

Source: own processing of collected data

The differences between the 5th chart and this one are very slim. The first quality chosen by the citizens of Bucharest, in their opinion is digitalization with a percentage of 46%. The second quality chosen is environmental protection with a percentage of 27%.

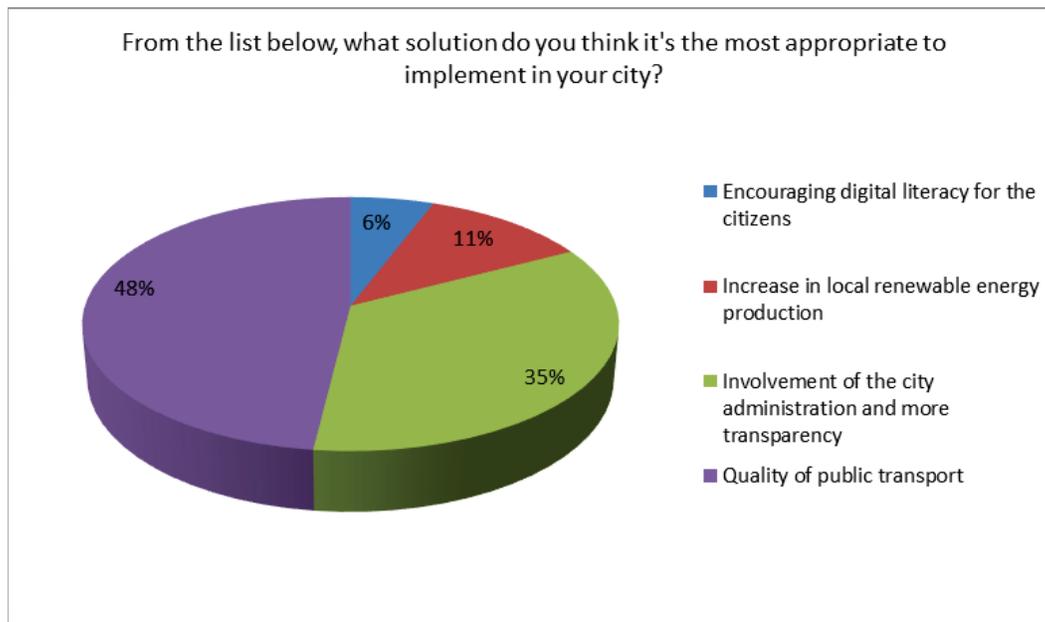*Chart 7: Multiple choice : qualities of the city of Bucharest (27-30 years old)*
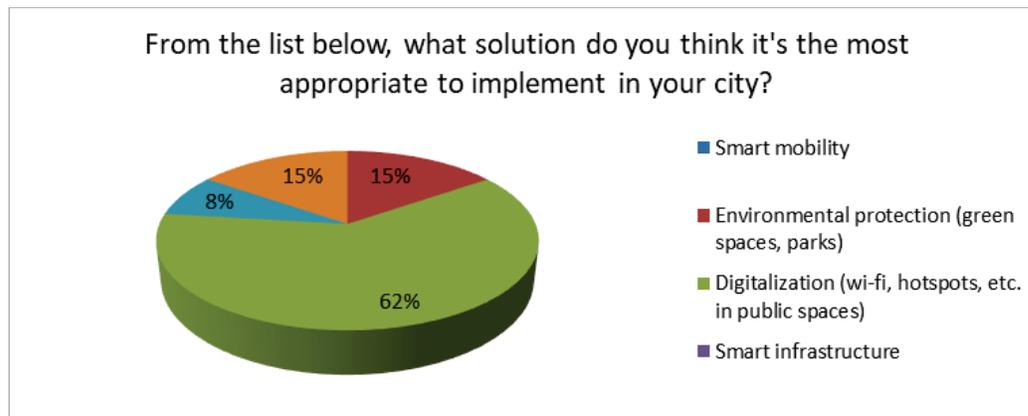
Source: own processing of collected data

Because of the age appropriateness, there aren't differences in the choices of the respondents. We can see a pattern here between the citizens of Bucharest that the only quality that Bucharest has is digitalization.

We will not add a third chart to this question as there are few respondents with the age over 30 years old and we can assume that doesn't bring a conclusive analysis to our research.

For a better view of the opinions of the people questioned, we will add a third important question to our paper imported from the questionnaire: From the list below, what solution do you think it's the most appropriate to implement in your city? We will see first how the 52 persons responded to this question, and then we will make other 3 charts dependable on their age, but not their location.

*Chart 8: Respondents choosing the most important quality that should be implemented in their city*

Source: own processing of collected data

48% of them said that public transport should be improved and upgraded. 35% of them consider that the involvement of the city administration should have more transparency in the communication with its citizens. As we saw above, digitalization is already a quality in cities of Romania, so only 6% of them consider that city's administration should encourage digital literacy for its citizens. The 6% of 52 persons questioned are the ones with a high school diploma or a bachelor's degree.

Chart 7: Multiple choice : qualities of the city of Bucharest (27-30 years old)
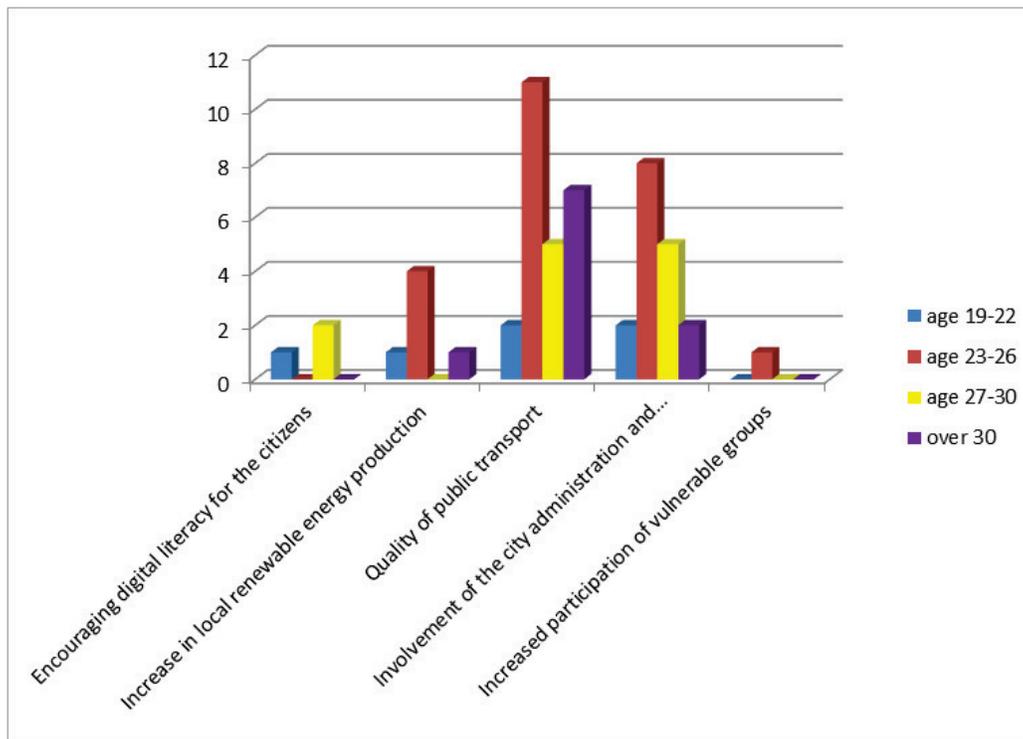
Source: own processing of collected data

The category with the age between 19 and 22 years old said that it's important to focus on the involvement of the city administration and have more transparency and at the same time it's important to upgrade the quality of public transport.

We can see a difference between the first category with the ag between 19-22 years old and the category of 23-26 years old. 60% of them consider that the city administration should get involved in upgrading the quality of public transport, but as a second choice, 24% of them say that local authorities should focus more on increasing the renewable energy production. To be in alignment with other countries who are distributing their attention to alternative resources, many considers that we also need on doing so.

50% of the people questioned consider that the public management and local authorities need to be more involved in their communication with the public. Unlike the other 2 categories, here we can see a major difference in the mentality of adults – they put more importance on the effectiveness which should be dealt the communication with them – either it is on digital networks or face-to-face, people should get easy access and be dealt their problems fast, because many of them said they have to get one day unpaid from work in order to resolve their issues with public authorities/administration.

It's understandable that many people chose to implement in their city the public transport. The city of Bucharest has the highest percentage of congestions taking into consideration other big cities in Europe. Many of the respondents said that there isn't a schedule of the trams/buses, all the public transport either we talk about subway or buses are

full of people at peak hours and the people questioned said they're always late because they have to wait for another bus/tram/subway to arrive when has more space and safe for them to travel to their destination.

From the charts above, we can see from the questionnaire that most of the respondents stated that there should be an improvement at the public transportation level. We can assume that by increasing the quality level of transportation, more people would leave their personal cars at home and take the bus instead. Another category that should not be neglected is the involvement of the city administration and more transparency. The people questioned agree that institutions should have a better relationship with its citizens.

Conclusions

In researchers' opinion, cities are the social vital component of societies. Successful cities attract investments, businesses and people who can put in practice new ideas and innovation resulting into growth and prosperity. As the UN forecasted a few years ago, cities are only going to be more crowded and if we don't act and manage the natural resources with alternative resources that are healthier for us, we will not proceed on the path of sustainability; on the contrary, we will face social and ecological challenges. In order to manage and govern territorial systems, we have to overcome the traditional solutions and go forth by making the city an intelligent one. A smart city does not mean just a label attached to it, it has a deeper meaning in improving the quality of life, a strong attention t sustainability, combining innovation with technology and rising to the

potential where the approach to the problems are long-term solutions. In this paper it is presented not empirical research and a practical perspective. We saw that the level of satisfaction of public services in the cities of Romania, especially in Bucharest are unsatisfactory, marked by the people questioned with 2 (37% overall, see chart 3), from a scale of 1 to 5, where 1 is disappointment towards the public services and 5 very pleased with the public services provided by the city' administration. Also, we can conclude from the charts that many people would like to see an improvement of the public transportation. By having this quality in a city, the city's managers can be assured that people would leave their personal cars at home and would travel by bus/tram/subway more frequently. This will result in fewer traffic jams in the city center. Finally, the links and hypothesis emerged in this paper can be further investigated, as sustainability management is a popular topic in the recent literature about management and intelligent government of a city.

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