

HOW CITIES MEASURE QUALITY OF LIFE – CONCEPT OF THE SECOND STAGE OF THE RESEARCH

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Purpose: The aim of this article is to present the concept of the second stage of research concerning the study of quality of life at the city level and to indicate the cognitive possibilities offered by combining the two stages of research.

Design/methodology/approach: Based on the results of the first stage of research, the assumptions and methodology for the second stage were developed. A concept of a survey carried out among a sample of 84 municipal offices of cities with over 50,000 residents located in Poland is presented. Particular attention was paid to the development of the research tool and the conditions necessary to obtain a high return in the survey.

Findings: The developed concept provides an opportunity to trace the dynamics of phenomena related to the study of quality of life at the city level. It enables comparison of two groups of cities which conduct and do not conduct structured research on the quality of life. It provides information required to explain adverse phenomena related to data collection and processing and their causes.

Research limitations/implications: Limitations resulting from the specificity of the research were highlighted and directions for further research were indicated.

Practical implications: The possibility of practical use of the research results in the context of data acquisition for sustainable development of cities was highlighted.

Social implications: Social implications of the research were indicated. Proper acquisition and utilisation of information obtained from residents should affect improvement of the quality of life.

Originality/value: The article presents a completely new approach to research on the quality of life on the city level. In the first stage, the aim was to investigate whether municipal offices are able to extract data from surveys on quality of life of their residents in order to use them for sustainable development. The second stage involves investigating how the cities process these data and the extent to which they use this information in their office activities.

Keywords: Quality of life surveys, research concept, municipal office, sustainable development.

Category of the paper: Research paper.

1. Introduction

The smart city concept has developed over the years. There are three basic stages in the development of this concept (Borcuch and Pilat-Borcuch, 2016; Beck, 2018; Kubina et al., 2021). In Smart Cities 1.0, the most important was technology and the possibility of its adaptation by the city administration. In Smart Cities 2.0, a superior role was played by city authorities, which tried to implement modern technologies in order to improve the quality of life of residents. In Smart Cities 3.0, citizens are starting to play a key role in the development of cities. Residents should be involved in the city development and provide the necessary information in this regard. There are different forms of residents' involvement, both individual and collective. It is important that the city government creates the right conditions for articulating the needs, expectations, opinions, comments and evaluations of the human factor and encourages their communication at the city level. This information can be used in various areas and fields of the city's functioning. Therefore, two issues arise. The first one is the ability to acquire data; the second is the ability to process data and use them in decision making. The concept of smart city highlights the importance of skilful use of the information obtained for sustainable development. This is reflected in definitions (Caragliu et al., 2011; Albino et al., 2015) and developed models (Giffinger et al., 2007; Lombardi et al., 2011; Airaksinen et al., 2017; Jonek-Kowalska et al., 2018) concerning smart city. Several authors point to the need of obtaining diverse data (Huovila et al., 2016; Bosch et al., 2017a, 2017b; Allam and Newman, 2018; Desdemoustier et al., 2019; Camboim et al., 2019). Data can be collected during various projects carried out by the municipal office. One of many possible sources of data are surveys on the quality of life of residents. There appears to be very little literature on the possibility of collecting data based on quality of life surveys (Noori et al., 2020; Ligarski, 2021). Even fewer publications mention the possibility of using these data for sustainable development of cities (Ligarski, 2021). Thus there is a clear cognitive gap concerning both data acquisition from surveys on the quality of life and their further use for the city's sustainable development. The author has developed a concept of comprehensive research in this regard. This concept presents a completely new approach to research on the quality of life on the municipal office level. In the first stage, the aim is to investigate whether cities are able to extract data from surveys on the quality of life in order to potentially use them for the city's development. The second stage involves investigating how cities process the data and how they use them in practice. Until now, the use of surveys on the quality of life has been limited to assessing the satisfaction of residents and city authorities and, to a limited extent, to calculating certain indicators of city functioning (Inch, 2010; Macke et al., 2018). The developed research concept creates completely new cognitive possibilities. So far the first stage of the research has been implemented, which resulted in three publications (Ligarski and Wolny, 2021a, 2021b; Ligarski, 2021). In this paper, the author intends to briefly summarise the results obtained in

the first stage, highlighting questions and emerging issues that require additional research. Based on this the author wants to present the concept of the second stage of the research which will complement and expand the original research. He also intends to present cognitive possibilities created by combining the two stages of research.

The aim of the paper is to refer to the assumptions and results of the first stage of the research and to present the concept of the second stage concerning the research on the quality of life at the city level and to indicate the cognitive possibilities offered by the two stages of research together.

2. Assumptions and results of the first stage of the research

The following assumptions were made when undertaking the first stage of research into how quality of life can be investigated and how this information can be used for sustainable development of cities. The research was to be nationwide and carried out on a relatively large sample of cities aspiring to introduce the concept of smart city. From among 944 Polish towns with a status of a city, ultimately 84 cities were selected for the research. All cities with more than 50,000 residents were selected, assuming that the largest cities should be interested in the smart city concept and they should have the most information about it. Research questions were formulated, which formed a basis for empirical research. It was decided that the basic research tool would be a questionnaire survey. This required development of own questionnaire. Ultimately, the questionnaire included 29 closed questions and demographics box. Such form of the questionnaire was to make results' comparison easier. In the section with questions there was also "other" option available, where respondents could give their own answer. By design, the survey was anonymous, with the demographics box asking respondents only to select one of the four size groups in which the city falls. Selection of one group to which a city can be assigned due to per capita income and indication of the province where the city is located. By undertaking the research, the aim was to achieve the highest survey return rate possible. Thus a professional organisation was chosen to conduct the survey and the minimum return rate of 80% was indicated. A tender procedure was carried out to select an organisation with relevant experience in carrying out this type of research. The survey was addressed to people in municipal offices that are responsible for conducting research on the quality of life of residents. The survey was conducted in the period from October to December 2020. The survey return rate of 90.5% was achieved. The obtained research results were compiled and statistical analyses were performed taking into account the formulated research questions.

The first surprise after obtaining the research results was to find that only 35 cities out of the group of 76 surveyed municipal offices declared that they conduct quality of life surveys. This means that only 46% of the cities surveyed conduct research on the quality of life of their

residents. In turn, 54% of the cities surveyed do not carry out any structured research on their residents' perceptions of quality of life. Thus, these cities do not acquire data that could be used, upon adequate processing, for the city's development.

In the first publication presenting the research results the authors referred to the concept of research and tried to answer the question why a large number of cities do not conduct quality of life surveys (Ligarski and Wolny, 2021a). In the research questions posed, attention was paid to the knowledge and awareness of those responsible for conducting quality of life surveys at the city level and the organisation of the process. The paper shows that the vast majority of respondents see the need to study the quality of life in their cities. However, the definition of the concept of quality of life and its understanding leaves much to be desired. In some of the municipal offices surveyed, the concept of quality of life was not clearly defined. The lack of basic knowledge regarding the concept of quality of life and factors that influence it significantly limits the employees' activities. If it is not clear what quality of life is and which factors influence it, it is no surprise that the employees have problems with studying this type of phenomena. The office's management should provide and systematise knowledge on quality of life and the factors affecting it. Define the role of research on quality of life and the need to acquire data that, upon adequate processing, could be used for improvements in various areas of the office's operations. Based on the results obtained, it should be concluded that this process did not take place properly in the majority of offices. In the paper (Ligarski and Wolny, 2021a) it was also pointed out that the size of the city affects the definition of the concept of quality of life. Chi-square independence tests showed significant differences between cities qualified to different size groups. This can indicate that the largest cities have prepared their employees better for the quality of life research compared to smaller cities.

The second paper presenting the research results focused on the perception of areas that affect the quality of life (Ligarski and Wolny, 2021b). A compilation of 25 areas developed by the author that may affect the quality of life was used for the research. The paper analyses how cities understand the areas affecting the quality of life, in which areas this research is carried out and whether there is a need to extend it. The relationship between the areas influencing the quality of life, their importance, areas included in the research, and areas which should be expanded upon in the research in the respondents' opinion was also investigated. The results obtained for 35 cities that conduct structured quality of life research were subjected to statistical analyses. Based on the results it was found that cities are aware that the quality of life is affected by many areas, however, they conduct such research only in selected areas and their number is limited. The cities also find it difficult to identify areas that should be added to the current research on the residents' quality of life.

In the third paper presenting the research results the authors tried to answer the question how the cities compile the results obtained from quality of life research and what activities they undertake on this basis (Ligarski, 2021). Information was obtained on how the data are compiled and presented to the various organisational units and employees of the offices.

Who and how analyses the compiled results and what decisions and actions follow. There was also an attempt to estimate the percentage in which an office uses the obtained information and whether this depends on the size of the city. It was found that the research results do not reach all organizational units and employees. There are problems at the stage of results analysis and problems with making decisions and taking actions. Only one third out of 35 municipal offices undertake specific actions resulting from previously conducted analyses. It can be concluded that the offices do collect data; however most of them are not able to use them properly for the city's sustainable development.

3. The concept of the second stage of the research

Knowing the results of the literature research and having the knowledge and experience from the first stage of the research (Ligarski and Wolny, 2021a, 2021b; Ligarski, 2021), it is necessary to conduct further research. The observed cognitive gap regarding the use of information from the quality of life research for sustainable development of cities remains an important issue that requires obtaining information. Obtaining this kind of information should help municipal offices in better organisation of this process and inspire them to actually use the information in various areas of the city's functioning.

When developing the concept of the second stage of the research the following assumptions were made:

1. The research will be conducted on the same sample of Polish cities as in the first stage of the research.
2. The research will use the research questions posed earlier and they will be supplemented by new questions.
3. The main research tool would be a questionnaire survey.
4. The original questionnaire will be used for the research after modification.
5. The survey was intended to achieve a high return rate.
6. The research results will be statistically analysed.

The selected research sample remains the same as in the first stage. This group includes 84 cities in total. These are the largest cities in Poland in terms of number of residents, which can be divided into five size groups. Within this group, there have been slight shifts of cities assigned to the respective size groups due to a decrease in population. This concerns only a few cities and does not affect the research group significantly. Conducting the research in the same cities again also creates new cognitive possibilities. Obtaining information whether and how the perception of studied phenomena changes after one year. The first research was conducted in the period between October and December 2021 and the second is planned for December

2021 – January 2022. It should also be noted that this year was exceptional due to successive waves of coronavirus outbreaks which affected the operation of municipal offices.

As assumed, the research will use research questions developed for the first stage of the research. Additional research questions were also formulated. Answers to these questions will make it possible to compare offices that conduct quality of life research in an institutional way with offices that do not conduct such research. It will also be relevant to find out how the passing time (one calendar year) affected the perception of phenomena concerning the quality of life.

The survey conducted in the first stage of the research enabled obtaining enough information to achieve the research goals. In the second stage of the research, the survey will be the main source of data. This will enable information to be obtained from as many of the surveyed offices as possible. In the times of pandemics a survey is also a safe option for all parties involved in the process.

The research will use author's own questionnaire form in Polish, which was used in the first stage of the research. However, the form will be modified and adapted to current needs. The initial assumption is to use as many questions with answers as possible, so that the results can be compared with the results of the previous research. However, experience from the previous research edition prompts a change in the order of some of the questions. In the first stage of the research only 46% of the surveyed cities conducted structured research on the quality of life. Cities that had not conducted such research did not answer most questions because their order assumed a positive answer to the question concerning conducting research on the quality of life. After changing the questions' order, all surveyed cities will have to answer basic questions. Only the questions concerning collection, processing and use of data will be reserved for cities that conduct quality of life research. It is also intended to introduce new questions to gather information needed to clarify issues that were not investigated in the first stage of the research. The comparison of questions' order in the first and second stage of the research and introduced changes are presented in Table 1.

Table 1.

Compilation of questions' order in the first and second stage of the research, including introduced changes

No.	Numbers of questions in the first survey form	New questions and removed questions	Numbers of questions in the second survey form
1	1		1
2	2	New question 1	New question 1
3	3		2
4	4		15
5	5		16
6	6		3
7	7		4
8	8		5
9	9		6
10	10		7
11	11		8

Cont. table 1.

12	12		9
13	13		10
14	14		11
15	15		12
16	16		13
17	17		14
18	18		17
19	19	New question 2	New question 2
20	20		18
21	21	New question 3	New question 3
22	22	New question 4	New question 4
23	23		19
24	24		20
25	25		21
26	26		22
27	27	Removed question 27	23
28	28	Removed question 28	24
29	29	Removed question 29	25
30			26

Source: Own study.

The survey form used in the first stage of the research included 29 questions. The form used in the second stage of the research includes 30 questions. 26 questions used in the original survey form were implemented in the second form. Four new questions were introduced; three questions concerning office's e-services were removed, ensuring that the survey form is not too long. The original form began with questions about defining the concept of quality of life and awareness of the need to study it at city level. Then respondents were asked about the way of organising this process. The modified form will begin with questions concerning defining and understanding the concept of quality of life in a city, which will be complemented with two issues concerning areas that affect the quality of life. The author of the survey questions identified 25 areas that can affect the quality of life and enabled them to be rated on a five-point scale. Respondents also have the possibility to add another area that, in their opinion, affects the quality of life and to rate it. A summary of those areas in alphabetical order in Polish that appears in the original survey form together with the rating scale is provided in Table 2.

Table 2.

Summary of areas affecting the quality of life together with the rating scale

No.	Areas affecting quality of life	Areas rating				
		1	2	3	4	5
1	a. public administration					
2	b. public safety					
3	c. education					
4	d. waste management					
5	e. water management					
6	f. service and commercial infrastructure					
7	g. climate and geographic location					
8	h. culture and protection of national heritage					

Cont. table 2.

9	i.	housing					
10	j.	leisure opportunities					
11	k.	science					
12	l.	environmental protection					
13	m.	future perspectives					
14	n.	social assistance					
15	o.	entrepreneurship					
16	p.	civil society					
17	q.	sport and recreation					
18	r.	information technologies					
19	s.	transport and communication					
20	t.	tourism and promotion					
21	u.	technical services					
22	v.	working conditions in the city					
23	w.	living conditions in the city					
25	x.	spatial planning and architecture					
25	y.	health					
26	z.	other (additional), please specify					

Source: Own study.

The survey form includes four questions that concern the mentioned areas affecting the quality of life and enable their rating on a five-point scale. The first question asked to identify which of the listed areas affect the quality of life, the second to determine their importance (relevance). The third question asked which of these areas are included in the city's survey and the fourth asked which areas should be added to the survey. In the first stage of the research, these questions were arranged in succession and designed for offices that conduct research on quality of life. In the new form, the first two questions have been moved to the beginning. This modification will enable examining the understanding of areas affecting the quality of life also in offices that do not conduct formal research on the quality of life. These questions will also be a natural extension to the questions on the understanding of the concept of quality in the city. In the rest of the survey form the questions will remain in their original order. A new question will be introduced only after asking a question about which of the areas listed are included in the city's quality of life research. The new question "In your opinion, does the currently conducted research on the quality of life in your city cover all the important areas for the quality of life?" is intended to obtain the opinion of the person in charge of the quality of life research as to whether, in their opinion, all relevant areas have been covered in the currently conducted research in the city. The following two questions included in the second survey form concern the issue of data collection. The following questions were introduced: "When you start collecting data on quality of life, do you know for what purposes this information will be used in the future and to which organisational units it should go?" and "What do you think could be improved when collecting data on quality of life in your city?". These questions are designed to investigate the knowledge and attitude of employees in charge of research to data collection with a view to the future use of the results. This is an important issue which will be elaborated in the second stage of the research. In the rest of the survey form the questions will remain in the same order as in the original form. The three final questions concerning e-services were

removed from the form as they were found to concern additional issues. This also ensured that the form is not too long and its completion does not take too much time. As in the first stage of the research, the research was conducted anonymously. The demographics box asks only to indicate one of the size groups and one of the per capita income groups to which the city can be assigned and to indicate the province where the city is located.

In order to achieve the highest possible survey return rate, a lot of attention was paid to the selection of an organisation which will directly conduct the survey in the municipal offices. A tender procedure was held to select this organisation, with requirements regarding competence and experience in conducting this type of research. The requirements also included a condition that the expected survey return rate should be at least 90%. This procedure led to the selection of a professional organisation that was able to meet the requirements.

The results of the research, once structured, will be statistically processed using IBM SPSS Statistics. The research team is competent in this area and has gathered experience by compiling the results of the first stage of research.

4. Discussion

Seeking to comprehensively investigate how cities conduct quality of life research and how they use this information for sustainable development, the concept of the second stage of the research was presented. This concept complements and extends the first stage of the research thus presenting new cognitive possibilities. After the first stage of the research, various phenomena at office level have been identified. Vast majority of offices recognise the need to investigate the quality of life of residents. However, less than half of the offices surveyed conduct a standardised quality of life research (Ligarski and Wolny, 2021a). The concept of quality of life has not been clearly defined in a large number of offices. This leads to various problems. The second stage of the research is intended to investigate the understanding of the concept of quality of life by people who are or who potentially are to be in charge of conducting such research. This is also to be achieved by examining employees' awareness of which areas affect quality of life and what their importance is. In the first stage the research was conducted on a group of employees of offices which conduct structured research on quality of life (Ligarski and Wolny, 2021b). In the second stage, the research is intended to be carried out on a group of all research participants. The second stage of the research will make it possible to explore the basic issues in two groups of offices, the first – which conducts structured quality of life research, and the second – which does not conduct this type of research. The results obtained will enable comparison of these groups. In the first stage of the research conducted on a group of offices that conduct structured quality of life research, it was found that employees of offices are aware that quality of life is influenced by many areas and are able to assess their

importance. These results are in line with results of other research presented in literature (Macke et al., 2018; Papachristou and Rosas-Casals, 2019; Moeinaddini et al., 2020, Rodríguez Bolívar, 2021). However, it was noted that offices choose only some of the areas affecting the quality of life in their research. When comparing these results with research in literature (Macke et al., 2018; Rodríguez Bolívar, 2021) it seems that the offices do this deliberately. Researches on quality of life are conducted in a limited number of areas and the data thus obtained are fragmented. Obtaining incomplete data will result in lack of sufficient information that could be used for city's sustainable development. Explaining why this is the case inspired the author to introduce new additional questions to the survey form, as detailed in the previous section of the paper. The second stage of the research will seek to explain why there are disturbances at the data collection stage and what the reasons are. This is an important issue that has a significant impact on the subsequent use of information for the development of the city in various areas. If a city is not able to obtain required data, this shortage will influence all subsequent stages related to the processing and use of information. The second stage of the research, by using most of the questions from the first stage, will allow us to determine how perception regarding the quality of life research at the municipal office level changes after one year. It is assumed that it will be possible to identify the dynamics of some phenomena present at a city level. Introduction of additional questions and partial change of question order will make it possible to broaden the investigated issues and will provide an opportunity to explain the causes of the unfavourable phenomena that occur at the level of the quality of life research in cities. The practical implementation of the concept of the second stage of the research gives two possibilities. On the one hand, to trace the dynamics of the phenomena occurring in offices, on the other hand, to compare two groups of offices, conducting and not conducting structured research on the quality of life of their residents.

5. Summary

Seeking to comprehensively investigate the issue of how cities conduct quality of life research and how they use this information for sustainable development, the concept of the second stage of the research was developed. The starting point for the development of the concept was the results of the first stage of research. The paper refers to the assumptions and results of the research. Research achievements documented in three scientific publications are indicated. Moreover, questions and issues that require further elaboration were highlighted. The assumptions of the second stage of the research and the chosen research method were presented. Particular attention was paid to the changes introduced in the survey form. New questions and motives for their introduction to the form were presented. Actions taken in order to ensure high survey return rate were described.

The developed concept of the second stage of the research will enable the completion and extension of the current research. It will provide an opportunity to trace the dynamics of phenomena related to the study of quality of life at the city level. It will enable comparison of two groups of cities which conduct and do not conduct structured research on the quality of life. It should also provide information required to explain adverse phenomena that occur at different stages of data collection, processing, and use, and identify their causes. It can be assumed that the results of the first and second stage of the research will be complementary and will provide a holistic view of the phenomena occurring during quality of life research and use of this information for the city development in various areas. This should inspire municipal offices to use quality of life research as a valuable channel for obtaining data from residents which, upon adequate processing, can be used for the city's sustainable development.

When looking at the possibilities of the two stages of research as a whole, it is also important to note the limitations. The research is a questionnaire-based survey conducted in municipal offices on a group of people responsible for the quality of life research. Thus there are limitations resulting from the nature of conducting surveys. The author of the paper has planned additional case studies in selected offices. They will enable access to a larger group of employees and to records that contain evidence of the activities carried out. This should affect the verification of the obtained research results.

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