

IMPLEMENTING VARIOUS METHODOLOGICAL APPROACHES TO RESEARCH OF QUALITY OF LIFE AS POSSIBLE SUPPORT METHODS OF PUBLIC ADMINISTRATION DECISION MAKING

Jan Mandys

Institute of Public Administration and Law, Faculty of Economics and Administration,
University of Pardubice

Abstract: *Public administration should use a wide spectrum of supportive materials for decision making. This paper tries to outline the possibilities of utilizing methods of Artificial Intelligence (decision trees) at this process, especially at interpretation of the data gained in a public opinion survey and at other types of questionnaire surveys. Satisfaction of citizens (high quality of their lives) should be the result of all the decision making processes.*

Key words: *Public Administration, Empiric Social Survey, Quality of Life, Modeling.*

1. Introduction

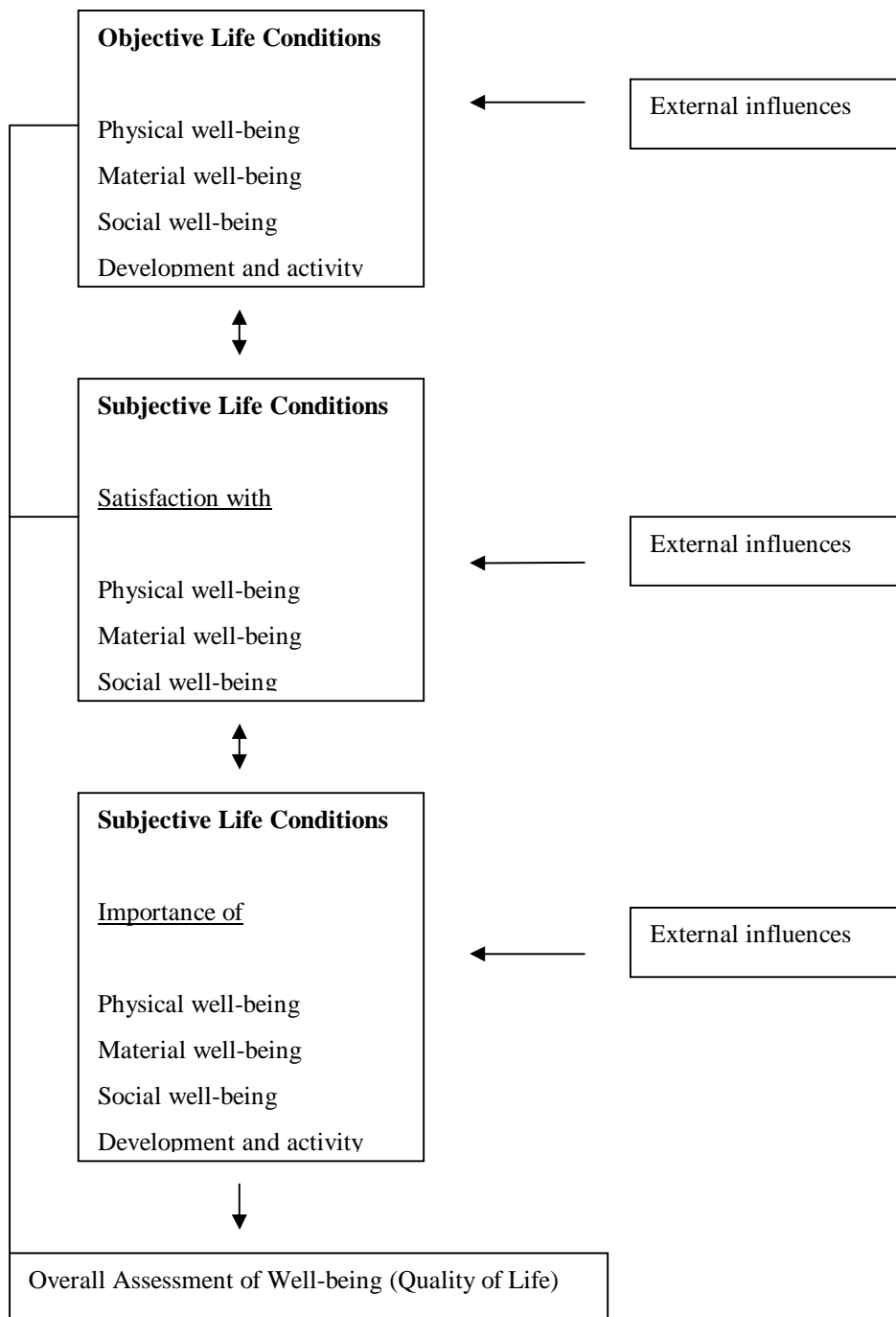
Should we consider quality of life as a unit of measurement of a correct public administration functioning, we have to specify a generally acceptable definition of this problem at first. This brings a lot of questions, for we have to work not only with terms on philosophical, psychological, sociological, economical and health base, but also on a historical base when defining the quality of life.

All the decision making processes which are made by public politics should lean back to relevant entry data. It should never happen that the public administration representatives would follow just their intuition. Hence the aim of this contribution is to describe some of the approaches to establishing the quality of life. On the base of these approaches is, with a practical example of an analysis of needs of aurally disabled persons (the analysis was realized by the University of Pardubice on a demand of Regional authority Pardubice), shown, how to approach to recognition of the quality of life of this specific focus group of social policy.

2. Dilemmas of the term “quality of life“

The quality of life contains data about psycho-social state of individual, influenced by many factors, such as age, sex, education, social status, economical situation, values or well-being of the individual. The quality of life has to be judged as an appraisal of one’s life situation (Philips, D.; 2006). This concept might be found also in other theoretical conceptions. Balegová, O. (2002) distinguishes three epistemological and experimental streams that are used at inquiring and interpretation of this term: social, economical and well-being indicators.

The complex character of this term also is also shown in the following scheme of a quality-of-life model.



Pict. 1: Model of quality of life (Rapley, M.:2003. p. 54)

According to the World Health Organization (WHO) we can speak about four basic dimensions of human life that determines the quality of life. These are fully independent on factors as age, sex, ethnic or disablement (Mühlpachr, P; 2005; s .61):

- physical health and a level of independence – energy and tiredness, pain, relaxation, mobility, everyday life, dependency of medical care, ability to work etc.

- psychical health and mental aspects – self-concept, negative and positive feelings, self-evaluation, thinking, learning, memory, concentration, belief, spiritualism, confession etc.
- social relations – personal relationships, social support, sexual activity etc.
- environment – financial resources, freedom, safeness, accessibility of medical and social care, home atmosphere, opportunities for gaining new knowledge and abilities, physical environment (pollution, noise, traffic, climate) and so on.

Quality of life is influenced by many variables such as psychosomatic state of individual, social relations, culture, value system, one's relation to his aims, expectations, norms and fears, confession and also relation to his key spheres of his living environment. This means that quality of life comprehends in itself the way how a person perceives his own individual place in life (Vařurová, H., Mühlpachr, P.; 2005).

3. Dilemmas at obtaining statistic data about quality of life

In our conditions the quality of life is generally examined by two statistical approaches: inquiring frequency of incidence and index of satisfaction – scale. Data, which are further discussed, are gained within a research of public opinion in the first case and in the second case within questionnaire survey concerning ECI (European Common Indicators). The object of our interest is the indicator A1 – satisfaction of citizens with local community. It is not the aim of this contribution to discuss the approach of every single institution that investigates the quality of life, however, it tries to point out the problems connected with inquiring quality of life with regards to the fact that it does not cover all the accessible methods and approaches in this area. Most often it is the Institute of Sociology of the Academy of Sciences that inquires the public opinions (here we speak about inquiring the incidence of frequency – concretely the results are presented as a relative frequency). The ECI indicators are used by all sorts of citizen initiatives working on sustainable development of regions, municipalities etc.

Both approaches realize the inquiry of interviewees' individual attitudes. In both cases the instrument of data acquisition is a questionnaire. The Institute of Sociology of the Academy of Sciences (AV CR) usually focuses, beside the question of life satisfaction or satisfaction with the place where the respondent lives, on the whole spectrum of questions from political, social or ecological field. The inquiry concerns a representative sample of population and is repeated regularly (which is important to increase the candor of the data as well as its interpretation). A standardized questionnaire exists for indicator A1, which is used in terms of local initiatives and is focused on noticing even a petty aspect of satisfaction within respondents. A questionnaire, thanks also to the attitude scale, reflects better opinions and attitudes of respondents. The questionnaire surveys focused on the indicator A1 are not, however, conducted in the particular localization repetitively, therefore it is not possible to verify, whether the respondents have reflected their long-lasting attitudes or whether they have acted just under the influence of a moment. Another weak point of the initiatives inquiring the A1 indicator is the dissimilarity of the final reports and insufficiency in methodology description (incomplete description, the way of reaching representatively of the experimental sample, how the research was conducted and so on).

Exploitation of the ECI indicators is advantageous as it takes specifics of the particular region in account and due to this fact it is a more suitable method for gaining input data (on which depends deciding of public politics) then a public opinion survey realized by the Institute of Sociology (Academy of Sciences CR). On the other hand, the method used by the Institute

of Sociology (Academy of Sciences CR) has an undeniable advantage for the validity and reliability of the gained data is high.

A questionnaire survey that would be conducted repeatedly appears as a suitable method of gaining data related to quality of life. It would embrace questions concerning not only frequency of incidence, but also index of satisfaction and will be carried out on a regional level, having in mind all the methodological appendages of a sociological survey. The content of a questionnaire should unwind from which dimensions of quality of life needs the submitter (regional management) to involve.

One of inspiring themes might be the WHOQOL 100 questionnaire. This questionnaire should be, in frames of usefulness for deciding process of public administration, modified, so that it would be apparent from the answers of the respondents what is the concrete cause of their satisfaction or dissatisfaction with their quality of life.

Authors of the WHOQOL questionnaire go out from the definition of quality of life which says that quality of life is the way how a person perceives his own position in life (in cultural context, in relation to his/her aims, expectations, interests). WHOQOL 100 contains 24 aspects that are compounded into six domains, such as physical health, living through, level of independence, social relations, environment, spiritualism and total quality of life. The questionnaire is designed for people under 65. For elderly people a modification called WHOQOL OLD is used. WHOQOL distinguishes among components of people with different level of health difficulties and it also distinguishes between men and women. Retested reliability of the domains of questionnaire WHOQOL-100 measured in intervals of two weeks shows the relative stability of statements in this interval. Usage of questionnaire WHOQOL-BREF could be an alternative. This questionnaire is compounded from 24 items categorized into four domains and two spare items evaluating the total quality of life and state of health (altogether 26 items). It is not eligible to use the questionnaire to underpin the influence of momentary state of mind or short-time changes. (Miovská, L.; 2009).

4. Dilemmas of establishing the quality of life of aurally disabled persons in the Pardubice region

At the beginning of creating a methodology of inquiring quality it is necessary to perceive that (any) hearing handicap means that a person will be affected by many serious communicational barriers. These barriers will affect all areas of their life and they will influent them considerably. People with hearing handicap have the same communicational need as all other people. However, much more often they interfere with misunderstandings or reluctance of other people to accommodate communication canals to the needs of the handicapped. In contrast to ocular or other health handicap, the auditory disability is not so visible.

Hearing disablement comprises a heterogeneous group, in which the level and kind of the hearing disablement varies. Horáková, R. (2006) defines three basic categories of persons: deaf, hard of hearing and deaf turned.

Aurally disabled people use mostly following forms of communication: oral methods, sign language (this includes Czech sign language and signed Czech) and lip-reading technique (however, lip-reading is not a substitution of hearing). According to Leonhardt (2001), hearing disability is one of the most wide-spread somatic-functional disability among the population.

One of the few accessible resources of information about people with hearing disabilities in Pardubice region is the final report of the survey of needs of hearing disabled living in the

territory of Pardubice region. This survey was executed by the University of Pardubice in 2009.

Population of aurally disabled is one of the least described target groups of regional social policy. Neither exact estimation of their number nor a list of organizations working with them exists. The executed survey of needs indicates that in the Pardubice region live approx. between 50 and 60 thousand persons with hearing disability. Other qualified estimation submits, that around 200 – 600 deaf people live there. Resulting from the analysis it is necessary to work with two groups of people with hearing disability:

- elderly people of senior age, that are often hard of hearing
- persons with other serious hearing disability without age specification (Mandys, J.; 2009)

This would mean that if we intend to study the quality of life of people with hearing disability, we would study the quality of life mainly among the deaf and deaf-turned people (of all ages) and the quality of life of hard-hearing senior people. In this case it would involve two groups of people. These groups differ in everyday-life problems and also in their experience. Eventual survey and formation of social policy have to take this fact into account.

For the inquiry was used a questionnaire survey that dealt with these basic areas of inquiring:

- identification of respondents (of the target group for improving present social policy): type of hearing disability, technique of communication, sex, education, age, employment, number of children and their health state
- identification of everyday-life problems: communication with administrative departments, accessibility of information, access to medical aid, occupation
- other areas: suitability of educational system, usage of interpreter, interest in interpreter services, usage of social service

The final report indicates that the respondents have understanding problems mainly at communication with administrative departments and public service. However, they have problems also in other situations like shopping and making claims, seeking a job, communication with police, neighbors and neighborhood. Respondents point out that the majority of communication barriers are not caused by their handicap. They are often able to compensate the handicap with other abilities. The barriers are caused mainly by reluctance to understand shown by the other communication partner. The reluctance is mainly given by impatience of both communication partners (Mandys, J.; 2009).

On the base of this result we can assume, that quality of life of people with hearing problems is significantly different from the quality of life of majority population – even without impeaching the attribute of hearing disability.

Statistic elaboration of an analysis (occurrence of absolute and relative frequency, as it is presented in the results of the analysis) makes it impossible to use the modeling method via decision trees (about this method is spoken below) and any appointing of quality of life would be purely on hypothetic base. Anyway, the analysis enables, due to four reasons, creating a base for further real inquiring of quality of life of people with aural handicap in the Pardubice region. The reasons are:

- the analysis defines key areas to which the quality of life is related

- gained experience with communication with target group make any further survey easier and rises validity of gained data
- it is necessary to work with two groups of aurally disabled
- had the questionnaires been repeatedly reevaluated so that the data might have been used in the models of decision trees, it would be possible to create an illustrative model indicating on which aspect we should concern in the survey self.

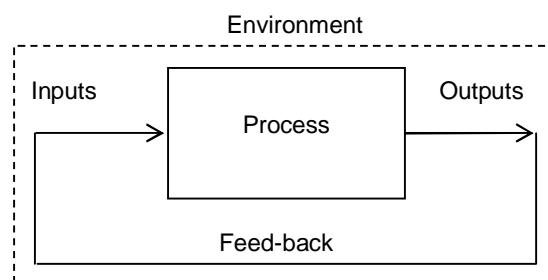
5. Usage of the decision tree method

Aside the classic statistic elaboration, it is possible to elaborate the gained data in the survey of quality of life via the methods of IT and AI. Decision trees represent one of such a method. Decision trees enable to create models of inputs and outputs that can be factually used in public administration's decision making processes and not only on a local level.

Decision tree might be defined as a tree (tree graph), where every non-foliate node represents a test of attribute's value and the branches leading from this node represent the results of the test. Intuitive visual depiction by the tree facilitates better understanding of the results and relations. Tree graphs enable to visually inquire the results and consider the pertinence of a model. Decision trees might be diverted to decision rules. Every path through the tree from the roots to the leaves responds one rule. Non-foliate nodes are conditions; foliate node is the conclusion of the rule. Modeling is widely-spread work cognitive method which is asserted in many areas of social praxis (Křupka, J., Kašparová, M., Jirava, P.; 2009).

Decision tree is undirected, coherent, acyclic, prismatic and node-evaluated graph. Sequence of nodes and paths of graphs is expressed by resolved decision process. Paths represent variants that are the object of the choice of a decision maker. Decision nodes depict that phase of decision making process, when the decision maker has the possibility to make a choice of a variant from a file of designed variants. Decision trees enable not only depiction of consequences of high-risk variants in regard of the chosen evaluation criterion, but also in regard of determination of optimal decision strategy in multi-phase decision processes (Vosejpková, M.; p. 1 - 2).

If we accept the validity of system theory and if we suppose that leading is a dynamic system, then we can use cybernetic principles of leading shown in the picture nr.2. In a process are two components (control component, which is represented by regional management and controlled component, which may be understood as a region) and relationship between these components, which represents a control intervention. Inputs are planned demands to control component and external action at controlled component. Change in quality of life is the output. In the feedback is located a model of satisfaction evaluation as a subsystem of the control system.



Pic. 2: Model of system control according to Norbert Wiesner (Křupka J., Kašparová, M., Jirava, P.: 2009. p. 2)

6. Conclusion

There exist many methodological approaches to measurement of quality of life. The question is, whether the findings should be given to politic representation just in the form of some announcement (rehearsal) or if it is possible to transfer the results of surveys by modern informatics methods to clear decision models. Modern information technologies in combination with classic empiric (sociologic/social) survey may be rational basis for creating public policies.

Despite the multidimensional character of the term “quality of life“we can gain relevant data about this subjective value. Essential condition is to know what exactly we have to inquire (areas like culture, sport, economical situation of household, health, satisfaction etc.) and to use the methods in compliance with principles of scientific knowledge (especially exact description of data gaining, entireness of final survey reports).

In spite of the fact, that modeling techniques can shift the interpretation of statistic data into new level, it is necessary to have in mind that as well as social models, also the final decision models are only a base material which helps the regional management in orientation in situation solving and we cannot judge them as invincible dogmas. It is necessary to consider the specifics of every region and individual needs of the target group on which the policy is aimed.

Acknowledgement

This work was supported by the scientific research project of Ministry of Environment, Czech Republic under Grant No: SP/4i2/60/07 with title Indicators for Valuation and Modeling of Interactions among Environment, Economics and Social Relations.

References:

- [1] BALEGOVÁ, O. Kvalita života jako termín a interpretácia. In *Kvalita života v kontextech globalizácie a výkonovej spoločnosti*. Prešov: Filozofická fakulta Prešovské univerzity v Prešove; 2002, s. 47 – 55. ISBN 80-8068-087-6
- [2] HORÁKOVÁ, R. Úvod do surdopedie. In PIPEKOVÁ, J. (ed.) *Kapitoly ze speciální pedagogiky*. 2. přepracované a rozšířené vydání. Brno: Masarykova univerzita; 2006, s. 127-143, ISBN 80-7315-120-0
- [3] KŘUPKA, J., KAŠPAROVÁ, M., JIRAVA, P. *Modelování kvality života pomocí rozhodovacích stromů*. In *Ekonomika a management (E+M)*. Technická univerzita v Liberci. 2009; s. 15 (in press).
- [4] LEONHARDT, A. *Úvod do pedagogiky sluchovo postihnutých*. Bratislava: Sapiaentia; 2001. ISBN 80-967180-8-8
- [5] MANDYS, J. *Průzkum potřeb sluchově postižených osob na území Pardubického kraje*. Pardubice: Univerzita Pardubice, 2009. podkladový výzkum pro Střednědobý plán rozvoje sociálních služeb pardubického kraje 2008 – 2010. 40 s.
- [6] MIOVSKÁ, L. *Dotazník kvality života WHOQOL-BREF a WHOQOL-100*. Centrum adiktologie. Praha [on line] 2009 [cit. 23-09-2009]. Dostupné na: <<http://www.adiktologie.cz/articles/cz/165/904/Dotaznik-kvality-zivota-WHOQOL-BREF-a-WHOQOL-100.html?acc=enb>>
- [7] MÚHLPACHR, P. Měření kvality života jako metodologická kategorie. In *Kvalita života a rovnost příležitostí - z aspektu vzdelávania dospelých a sociálnej práce*. Prešov:

- Filozofická fakulta Prešovské univerzity v Prešově; 2005. Str. 59 - 70. ISBN 80-8068-425-1
- [8] PHILLIPS, D. *Quality of Life: Concept, Policy and Practice*. London: Routledge; 2006. 276 str. ISBN 978-0-415-32355-0
- [9] RAPLEY, M. *Quality of Life Research: A Critical Introduction*. London: SAGE, 2003. 286 str. ISBN 978-0-7619-5456-9
- [10] VAĐUROVÁ, H., MŮHLPACHR, P. Kvalita života: teoretická a metodologická východiska. Brno: Masarykova univerzita, 2005. 145 s.
- [11] VOSEJPKOVÁ, M. *Uplatnění rozhodovacích stromů při manažerském rozhodování* [on line] 2009 [cit. 27-09-2009]. Dostupné na:
<www.xarqon.jcu.cz/zf/veda_a_vyzkum/svoc_a.../Vosepko.rtf>

Contact address:

Mgr. Jan Mandys
Univerzita Pardubice
Fakulta ekonomicko-správní
Ústav veřejné správy a práva
Studentská 95
532 10 Pardubice
Email: jan.mandys@upce.cz
Phone: 466 036 171