Does excellence matter? National quality awards and performance of Czech municipalities*

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Abstract

The purpose of this study is to discuss the influence of excellence in the use of performance management and quality improvements tools on performance of Czech municipalities, and especially their cost efficiency. Municipalities' performance is analyzed using data envelopment analysis focused on inputs. A quasi-experimental design is utilized and excelling municipalities are compared with two control groups. The first is represented by municipalities that use excellence models and quality improvement tools but have not been awarded a national excellence prize; the second by municipalities which do not use them. The results do not indicate any significant difference between the three groups of municipalities. This means that the excellence in utilization of performance management and quality improvement tools does not produce performance approaching that of cost efficiency.

Keywords: public management, performance management, municipalities, Czech public administration

1. Introduction

This research is focused on the performance management and quality management practices of Czech municipalities. The aim of the research is to verify, on the sample of Czech municipalities, whether the municipality achieving excellence in the use of performance management, quality improvement and benchmarking tools achieves better performance than the municipalities that do not use these tools. The paper also focuses on a specific country – The Czech Republic represents a post-transition country. It still holds true that the effects of tools linked to New Public Management (NPM) have received less attention in the available literature. The Czech Republic also represents a country with a rather fragmented administrative system with more than 6 200 municipalities which challenges the evaluation of performance of public administration at the

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national level. Also, it is a country where research on public management is rather underdeveloped and public management as an academic discipline has started to evolve only recently (e. g. Nemec et al. 2012).

The benefit of this study is that there seems to be no such real-life performance study in the context of performance and quality improvement tools in any Central or Eastern European country. There is stream of polemic literature dealing with impact of New Public Management (NPM) tools including the performance management and quality management tools in the Central and Eastern European environment. The defense of the functionality and positive effects of these tools has been covered by Dann and Pollit (2014) or Drechsler and Randma Liiv (2016).

This study raises empirical arguments that support a rather pessimistic view. Most of the studies carried out have been based on perception-based research (Psomas et al. 2017) and some studies also point to problematic quantification of the effects of using these performance management tools as well as quality management tools (Plaček/Půček/Jetmar 2015). This study is based on data on public administration, allowing the elimination of the bias resulting from the perception-based approaches. The results of the research may be inspirational for similar investigations and subsequent comparisons. The research does not only benefit the field of public management but also has an impact on operational research, where there is a very strong current dealing with the determinants of municipal efficiency which, according to previous surveys, did not uncover excellence in using performance management and quality management tools (Cruz / Marques 2014); (Narbon-Perpina / DeVitte 2017, a, b) when examined as a possible determinant of efficiency.

The analysis can also produce a public policy effect. To achieve the public sector quality reforms' goals, there are considerable funds from national budgets and EU funds for which the implementation of the reforms can be intensively co-financed. It is therefore important to verify whether these expenditures have produced real results. Also, local governments in the CEE region spend a significant amount of the total public spending. In the case of the Czech Republic, for example, these expenditures are around 11 % of GDP. It is therefore important to constantly seek ways to ensure a more efficient use of costs regarding these resources.

The paper is structured in the following way. In point two, the basic starting points for the use of performance management in the public sector are defined. In the point 3, the context of Czech municipalities and summarize the situation in use of performance management tools in the Czech Republic are outlined. Based on the synthesis of the previous two chapters, a conceptualization of the hypothesis is constructed in point four. Point 5 is dedicated to describing the methods used to achieve the goals. In point 6, the results are presented, which

are subsequently discussed in the context of current research. The final section summarizes the main conclusions of the article and presents ideas for further research.

2. Performance management in the public sector

According to last bibliographical analyses (e. g. Osborne 2017; Corrado/ Massimo/Fabrizia, 2016), performance management is still one of the most popular topics of research focusing on public management and public administration.

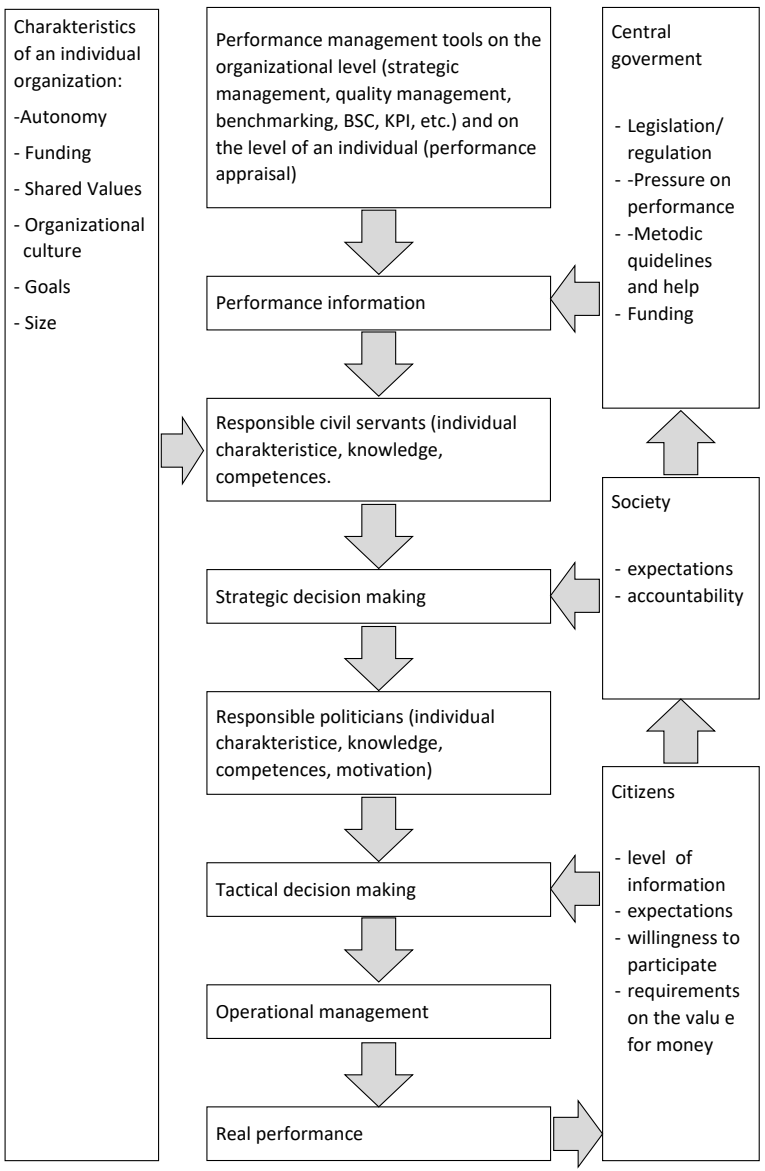
Performance management is action based on performance measures and reporting, which results in improved behavior, motivation, and processes while promoting innovation. The key aspects of performance management are deciding what to measure, how to measure it, interpreting the data, and communicating the results (Fryer/Antony/Ogden 2009).

Performance management instruments have been implemented in public administration on various levels and various results as a consequence of reformers linked to New Public Management (NPM) (e. g. Pollitt/Bouckaert 2011; Osborne 2017; Corrado/ Aria/Sarto 2016; Walker/ Boyne / Brewer 2010; Talbot 2007). Part of these reforms focused on the implementation of performance management tools, typically used by the private sector, in the public sector. These include benchmarking, Common Assessment Framework, Balanced Scorecard, ISO certification, and many more.

Performance management faces various challenges and barriers while producing various paradoxes. For instance, the literature discusses barriers like finding the optimal autonomy of organizations and management (Grossi/Hanse/Johanson 2016), the quality and the experiences of management itself (Propheter 2016), inadequate motivation and activities of management to use performance data (Kroll/Vogel 2014), goal ambiguity of public sector organizations and limitations of their measurement (Rainey 2009; Rainey/Jung 2010), difficulties to define exact goals of organizations and measure them (Barbato/ Turri 2017; Walker/Boyne/Brewer 2010; Propper/Wilson 2003), intended and unintended consequences of performance management implementation and the performance paradox (Pollit 2013; Van Thiel/Leeuw 2002), cream skimming and parking (Koning/Heinrich 2013) and the manipulation of data (Kalgin 2016). Additionally, there is an ongoing discussion about the possibilities of managing the performance of an organization as a whole or if it is more appropriate to focus on performance of individual employees – organizational performance and individual performance have been separated and their relationship has been studied (see e. g. Walker/ Boyne/Brewer 2010). In last decade, the potential of big data for performance management has also been discussed as well as the related problems of data misinterpretation and attribution problems (Lavertu 2014).

Based on the performance management literature, a general performance management model for local authorities can be depicted as outlined in the following Figure 1.

Figure 1: General performance management model for local authorities



Source: Authors

It is clear from the figure that the resulting improvement in performance depends on a large number of factors. First of all, it is the process of implementing performance management; performance information is used for realistic decision-making at the operational, tactical, and strategic levels. This influences the individual characteristics of policy makers and officials and the relationships between them. The results are also affected by the organization's internal environment such as organizational goals, available resources, size, autonomy, and more.

The external environment is made up of citizens and society, their pressure on accountability, the provision of public goods and services of the highest quality, and on the delivery of value for money by the public sector. This pressure can be weakened by factors such as fiscal illusion. Social demand is reflected in the behavior of the central government. The central government can determine strategies for implementing performance management, creating conditions such as providing resources, or methodological assistance. Finally, it can make the use of performance management tools obligatory.

3. Performance management in Czech municipalities

As in other countries, municipalities represent the front line of public authorities in the Czech Republic. Another reason to study them is due to their share of public finances. Revenues of municipalities are dramatically affected by the share of taxes conferred to them by the so-called budgetary allocation of taxes. Local government revenues in the Czech Republic amounted to 11.2 % of GDP (compared to the average 10.9 % of GDP and 9.9 % of GDP in the Eurozone (Eurostat 2016). Local government revenues in the Czech Republic consist mainly of shared taxes. In average, the highest share is the value added tax. Local governments also spend 10.2 % of GDP in the Czech Republic (Eurostat 2016). The EU-wide average was 10.8 % of GDP in 2016, the share of the Eurozone countries was 9.7 % (Eurostat 2016). These expenditures are realized in order to carry out the general mission of the local government as defined in the Act on Municipalities (128/2000) as follows: The municipality takes care of the comprehensive development of its territory and the needs of its citizens; in the performance of its tasks it also protects the public interest. In practice, they are responsible for economic affairs within their territories, public utilities (water, electricity, transport), some social services and primary education.

In the Czech Republic, there is another rather specific reason why to research municipalities – the structure of municipalities and the above-mentioned rather high fragmentation of municipalities as well as the large number of small municipalities with less than 1000 inhabitants as is presented in the following table.

Table 1: Structure of municipalities in the Czech Republic by population

Size Category of Municipality	No. of Municipalities	Population	Population share in %
Up to 199 inhabitants	1449	180 093	1.7
From 200 to 499 inhabitants	1997	651 475	6.2
From 500 to 999 inhabitants	1378	973 247	9.2
From 1000 to 1999 inhabitants	745	1 042 569	9.9
From 2000 to 4999 inhabitants	417	1 262 911	12.0
From 5000 to 9999 inhabitants	141	964 031	9.1
From 10 000 to 19 999 inhabitants	69	970 075	9.2
From 20 000 to 49 999 inhabitants	44	1 324 522	12.6
From 50 000 to 99 999 inhabitants	12	874 462	8.3
Over 100 000 inhabitants	6	2 310 458	21.9

Source: (Czech Statistical Office 2016)

From the table above, it is clear that in terms of the number of municipalities and the shares of the population, population has a major role to play in populations of up to 10,000. This phenomenon is the result of decentralization in the 1990 s. According to the latest OECD study (2016), the high number of municipalities in the Czech Republic, where more than one-quarter have fewer than 200 inhabitants and two-thirds of municipalities have fewer than 1000 inhabitants, causes significant losses in efficiency in the provision of public goods and services. As an example, the administrative cost per capita for municipalities between 100 and 200 inhabitants was 50 % higher than administrative costs for municipalities with 1,000 and 2,000 inhabitants.

In the Czech Republic, the central government plays an important role in determining the standards of public service quality provided by local governments. Yet, it has avoided being highly directive and top-down in its approach to quality management in public administration. No quality instrument is obligatory for self-governments (municipalities and regions) and their practices of performance and quality management are mostly voluntary. However, more regulation can be found in some areas, for example in e-government where the government is trying to standardize the management of public administration information systems and requiring public authorities to work with 'long-term' management, specifically with information strategies and with the subsequent documentation in order to guarantee the quality (and security) of management (as specified in Act 365/2000). Social services represent a more regulated area where legislation (particularly Act 108/2006) anticipates that inspections of the providers are focused on the quality of services being provided.

The Ministry of the Interior has the general task to promote and coordinate the use of quality management and performance schemes by public authorities. Support for quality management tools in municipalities is implemented through the official National quality policy, first adopted in May 2000. The aim of this policy, which has been revised and amended several times, has been to support the quality of public administration performance, reduce administrative and regulatory burdens, introduce quality into the services of offices, expand quality and its management in public administration, introduce accreditation methods, publish examples of good practices, implement voluntary activities in improving quality in public administration, and voluntary quality programmes at the local level. This quality policy has been always complemented by programmes of public administration reform. Both the last programmes (Smart Administration Strategy prepared especially for the EU´s programming 2007–2013 and the Strategic Framework for Public Administration Development in the period 2014–2020) anticipate larger diffusion of quality and performance management in Czech public administration and also the establishment of a national system for monitoring and evaluating quality and performance in public administration. Related practices have been intensively co-funded from EU funds, but no analysis on their real effects has been prepared by central government bodies, nor by academics.

Within the National quality policy, the Czech National Quality Awards initiative has been developed with an aim to promote the spread of quality in public administration and to show cases of good practice. These awards were adopted by the Government in 2001. Since 2006, this award has been separately specified for private sector and public sector organizations (from 1995 to 2006, a similar award existed only for private sector organizations). A similar platform is used for awards from the Ministry of the Interior for quality and innovation in public administration.

In case of public sector organizations, particular excellence in the use of the following methods and tools have been awarded: the Common Assessment Framework (CAF), the European Foundation for Quality Management (EFQM), ISO norms 9001, benchmarking and the Balanced Scorecard, and Local Agenda 2121. These methods are among the most frequently used tools used by Czech self-governments (municipalities and regions) according to available studies (the Ministry of Interior 2016; Špaček 2015 and 2016). They also have received the largest attention in terms of guides prepared for their implementation on the national level. Available studies indicate that the CAF was implemented in about 60 self-governments, Local Agenda 21 is used by more than 80 self-governments, benchmarking by more than 70 municipalities, and the ISO norms by more than 30 self-governments. Particularly larger cities and regions have implemented quality management tools. However, there is no exact list which informs about public authorities and the methods used as the use of quality and

performance management tools is rather voluntary. Therefore, the list of public authorities which have obtained the national excellence award is a good starting point when outlining diffusion of the tools in public administration.

4. Conceptualization of the hypothesis

In order to define a hypothesis, literature on performance management in public administration was reviewed, including the sources dealing with its practices in Czech public administration. Available studies on performance management in Czech public administration are often rather descriptive and based mainly on qualitative research. They focus on application of strategic management and its issues (Půček/Špaček 2014; Špaček 2014), quality management (Špaček 2015), performance appraisal (Špalková/Špaček 2015), or benchmarking (Plaček/ Půček/Jetmar 2015; Nemec/Meričková/Ochrana 2008; Nemec /Meričkova / Šumpikova 2011; Vrábková 2012). Their findings are in compliance with conclusions of foreign studies that can be summarized, for instance, by the following statement of Barbato/ Turri (2016): "*Performance measurement and quality improvement tools are likely to be adopted in a formal and ceremonial fashion and in a context characterized by a bureaucratic administrative tradition."* (Nemec /Meričková/ Ochrana, 2008) stated that the potential of new instruments brought by post-communist public administration reforms was not fully utilized in the Czech context. (Plaček / Půček/ Jetmar, 2015) pointed to the opinion of Kuhlman/ Jakel (2013) that the real effects of quality management had not yet been measured. This still holds true, because no studies are available and the report on quality management in Czech public administration, recently published by the Ministry of the Interior, deals with diffusion of methods, rather than with their effects.

Considering the pessimistic conclusions on effects of performance and quality management in the literature, we stated the following hypothesis for our research:

Municipalities achieving excellence in performance management and quality improvement tools are not more efficient than municipalities not achieving excellence in using these tools.

This hypothesis is also supported by overall evaluations of current situation of administrative reform in the country, as referred to as "frozen public administration reform" (Ochrana et al., 2017). It is also in compliance with the main points of the theory of the Neo-Weberian state (e. g. Randma-Liiv, 2008) which is discussed with regards to CEE countries and points out, for instance, that implementation of NPM tools often faced problems that underlying concepts and ideologies were not fully understood, while competences in public administration for important changes were often lacking and still needed to be built and developed. The lack of administrative capacity was emphasized also by (Dann /

Pollit, 2014) who also point to a lack of resources. A pair of the most important causes can undoubtedly be the formal (in name only) implementation of these instruments and corruption in the public sector (Nemec / Meričková / Ochrana, 2008). (Plaček/Půček/ Jetmar

2015), link these factors to the start-up conditions which include the system of fiscal federalism, territorial fragmentation, the level of democracy, and the quality of bureaucracy. In these areas, the Czech Republic is still dealing with the heritage of communism.

5. Methods used

5.1 Performance analysis

For the performance analysis, Data Envelopment Analysis was chosen as the main method. There has been a rapid increase in the use of this performance analysis tool in municipalities (Emrouzejad / Yang 2018); (Narbon-Perpina / De-Vitte 2017, a, b). "*This method is suitable for evaluating the efficiency, performance, or productivity of homogeneous production units – i. e., units that produce identical or equivalent effects, which we will refer to as outputs of this unit. Outputs are, by their nature, maximizing; their higher value results in higher performance of the tracking unit. To produce effects, the production unit utilizes inputs which are minimized by their nature, the lower value of these inputs leads to higher performance of the monitored unit (*Borůvková / Kuncová 2012:75*)." " The DEA method estimates the production units, whose input / output combinations lie at the efficiency boundary, are efficient units as it is not anticipated that there could actually be a unit that achieves the same outputs with lower inputs or higher outputs with lower inputs* "(Borůvková / Kuncová, 2012: 75). When using the DEA method, a constant return model from scale or a model with variable returns of scale can be used.

This model calculates constant returns of scale; here the Charnes Cooper and Rhodes Model (CCR). This model was first introduced in 1978. With this model, it is possible to determine the amount of inputs needed to make the inefficient unit effective. The technical efficiency factor is defined as the ratio of weighted sum of outputs and weighted sums of inputs. The scales must be determined so that the technical efficiency factor is from 1: 0. A unit with a technical efficiency ratio equal to 1 is efficient, a coefficient less than 1 points to an inefficient unit and determines the amount of input reduction required to ensure unit efficiency. For simple cases, the CCR can be represented graphically. The CCR model sets the input and output weights for each unit so that the unit maximizes its technical efficiency factor and the following conditions are met: (1) The balance must not be negative. (2) When using this set of weights, no technical efficiency factor may be greater than one.

The intuition of this model is as follows:

$$maximize\ z = \sum_{i=1}^{r} u_1 y_{iq} (1)$$

For the for the condition $\sum_{i=1}^{r} u_1 y_{ik} \leq \sum_{j=1}^{m} v_j x_{jk}\,,\ k = 1,\ 2, \ldots,\ n$ (2)

$$\sum_{j=1}^{m} v_j x_{jg} = 1$$

$$u_1 \geq 0,\ i = 1,\ 2, \ldots,\ m,$$

$$v_j \geq 0,\ j = 1,\ 2,\ \ldots,\ r\,.$$

where g represents the unit being evaluated, y_{ig} are the outputs of the unit q, x_{jg} are the inputs of the unit q, u_i and $v_j$are the weights of the individual inputs and outputs. The constant yield model was selected as it considers the influence of management over variable yield variants.

The second model calculates variable returns of scale. This model is called The Banker Charnes and Cooper Model (BCC). The model was first introduced in 1984. Its intuition is as follows:

$$To\ mazimize\ z = \sum_{i=1}^{r} u_i y_{iq} + \mu (3)$$

$$for\ the\ condition\ \sum_{i=1}^{r} u_i y_{ik} + \mu \leq \sum_{j=1}^{m} v_j x_{jk},\ k = 1,2, \ldots, n (4)$$

$$\sum_{j=1}^{m} v_j x_{jq} = 1$$

$$u_i \geq 0,\ i = 1,2, \ldots, m,$$

$$v_j \geq 0,\ j = 1,2, \ldots,\ r,$$

$$\mu\ arbitrary$$

The choice of variables is based on the approaches of (Štastná / Gregor 2015) and (Narbón – Perpiňa / De Vitte 2017 a) etc.

Inputs:

Current expenditures – the amount of current expenses used to ensure the running of the municipality. This includes, for example, employee wages, office costs, repair and maintenance of municipal property. This indicator of input is shown in the following studies: (Štastná / Gregor 2015); (Narbón – Perpiňa / De Vitte 2017); (Storto 2017).

Outputs:

Population – we see this variable as a proxy capacity indicator for which the municipality must provide public goods and services. This indicator is used in studies (Narbón – Perpiňa / De Vitte 2017); (Storto 2017).

Area of municipality – works as an indirect approximation due to the difficulty of quantifying the supply of public services and facilities (Narbón – Perpiňa / De Vitte 2017)

Number of business entities – we use it as a proxy variable in the need to offer infrastructure to companies. The use of this variable is described, for example, by (Narbón – Perpiňa / De Vitte 2017).

Population growth by migration – In this case, the quality dimension is considered; this indicator has an analogy in voting with feet (Tiebout1956), meaning that citizens move to cities with a higher quality of life.

Our study uses also the Malmquist Index (MI), which evaluates changes in productivity of DMU (decisive unit) between two periods of time. MI has the capacity to distinguish between the impacts of technical efficiency (TE) improvements and technical (technological) change (TC). When interpreting the Malmquist total factor productivity, one must consider all of its components greater than one to indicate improvement or progression, whereas the values less than one refer to the deterioration of regression.

The financial data for this analysis was drawn from the official website of the Ministry of Finance http://monitor.statnipokladna.cz/, where one can find information on the economy of all municipalities in the Czech Republic. Data are available only for the period of 2010–2016. Further data on socio-economic variables was obtained via datamining with the Czech Statistical Office server which contains data on Czech municipalities from the last survey that took place in 2016.

5.2 Quasi experimental design

A quasi experimental design was used in order to overcome some crucial methodological problems. As outlined above, there are not exact data available on the use of performance and quality management tools in municipalities in the Czech Republic. This raises problems in trying to compare performance of municipalities experiencing new tools and methods with municipalities without any of such experience. In order to cope with this, based on the literature review, the following three groups of municipalities were identified:

1. The group consisting of municipalities that are considered as excellent because they were awarded the national quality prize multiple times.

2. The second group consists of municipalities that are registered in available lists of users of some performance and quality management systems and tools (control group nr.1). These lists are fragmented in various sources – there is a database of municipalities participating in the called Benchmarking Initiative (only larger municipalities participate), there is an incomplete list of CAF users available on the web pages of the EIPA and there is a list of self-governments working with the Local Agenda 21 available. We consolidated these databases into one and identified 123 municipalities that have implemented some quality management tools.
3. The third group of municipalities is represented by those on which there are no data about their experience with any performance or quality management tool (control group nr. 2). The risk in this group is the fact that there may be municipalities in this group which do use performance management tools.

It is thought that this is the only possible way how to compare the performance of municipalities which employ methods of performance and quality management and municipalities which do not employ such methods in the Czech Republic.

A quasi experimental design was then used utilized in order to identify a comparison group that is as similar as possible to the treatment group in terms of baseline (pre-intervention) characteristics. „The comparison group captures what would have been the outcomes if the programme/policy had not been implemented (i. e., the counterfactual). Hence, the programme or policy can be said to have caused any difference in outcomes between the treatment and comparison groups“ (White / Sabarway 2014:1).*“Quasi-experimental methods can be used retrospectively, i. e., after the intervention has taken place (at time t+1) (White / Sabarway 2014:2).“* Perfect matching would require each individual in the treatment group to be matched with an individual in the comparison group who is identical on all relevant observable characteristics such as age, education, religion, occupation, wealth, attitude to risk, and so on.

In the study, propensity score matching was used as a matching method. “*In this method, an individual is not matched on every single observable characteristic, but on their propensity score – that is, the likelihood that the individual will participate in the intervention (predicted likelihood of participation) given their observable characteristics. Propensity score matching ensures that the average characteristics of the treatment and comparison groups are similar, and this is deemed sufficient to obtain an unbiased impact estimate*“ (White / Sabarway 2014: 4).

In the research, the treatment group is represented by municipalities that were awarded a national prize for quality in public administration since the beginning of the national quality competition (2005) through 2014 – in total 50 municipalities were awarded. From the rest of 6 208 municipalities two control groups

were created – one consisting of those with experience with some quality / performance tools (123 of such municipalities could be identified based on available data) and the second represented by municipalities without such experience (6 085 municipalities).

Logistic regression analysis methods were then applied where the dependent variable y was dichotomous (binary, 0 or 1). As explanatory variables, the following indicators were used: number of inhabitants, share of inhabitants with university education, number of economically active inhabitants, municipality with extended scope, municipality with authorized authority. The group of indicators was determined by findings presented in the study of Plaček /Půček / Jetmar (2015) who concluded that number of inhabitants / size of municipalities had a significant influence on the participation of a municipality in a benchmarking initiative. The above-mentioned authors also talked about the impact of the range of activities the municipality has to conduct. Municipalities in the Czech Republic are also required to perform state administration tasks within their 'delegated responsibilities'. This is called 'the joined model' and it is visible particularly in the structure and tasks of the main executive bodies of municipalities – their municipal offices. According to the amount of state administration they perform, there are various categories of municipalities in the Czech Republic. Three main groups of such municipalities are usually differentiated – Type I municipalities (more than 5 660), 388 Type II municipalities (municipalities with authorized municipal offices, 'obce s pověřeným obecním úřadem'), 205 Type III municipalities (municipalities with extended responsibilities, 'obce s rozšířenou působností', 'ORPs'). All municipalities of type III also perform the responsibilities of the lower grade municipalities in addition to the responsibilities allocated to type III municipalities.

In order to deal with the various structure of municipalities in Czechia and to consider the variety of complexity of public management of Czech municipalities, originally we also decided to work with explanatory variables that would include number of employees, number of partially budgeted organizations of municipalities (´příspěvkových organizací´) and the situation when municipalities are further subdivided into districts. A correlation analysis for these variables was then carried out with other explanatory variables used in the matching model and identified rather strong statistical dependency of variables on the number of inhabitants. Correlation coefficients for the number of partially budgeted organizations was 0.9654, for the number of employees of a municipality it was 0.9765 and for sub-divided cities it was 0.6953. Inclusion of these variables into the logistic regression would bias the findings due to the reason of multicollinearity. Therefore, it was decided not to include the variables into the model in the end.

The logistic regression equation that was actually used is as follows:

$$P[Y(PP, UE, TP, ES, AM) = 1] = \frac{e^{\beta_0+\beta_1 \cdot PP+\beta_2 \cdot UE+\beta_3 \cdot TP+\beta_4 \cdot ES+\beta_5 \cdot AM}}{1 - e^{\beta_0+\beta_1 \cdot PP+\beta_2 \cdot UE+\beta_3 \cdot TP+\beta_4 \cdot ES+\beta_5 \cdot AM}}$$

(3)

Functional variable names: Share of inhabitants with university degree (UE), Productive population (PP), Number of residing inhabitants (TP), Municipal with extended scope (ES), Municipal with authorized authority (AM).

The first table presents differences in the variables in the evaluated cities and the rest of the municipalities in the Czech Republic.

Table 2: Input differences between awarded cities and control groups before completion of matching.

	Means Treated Municipality	Means difference for municipalities that use excellence models and quality improvement tools. but have not been awarded (control group nr. 1)	Means difference for municipalities which do not employ excellence models and quality improvement tools (control group nr.2).
Distance	0.2191	0.1746	0.2134
Municipal with authorized authority	0.9778	0.3594	0.9221
Municipal with extended scope	0.9333	0.3952	0.907
Number of inhabitants	25245.6889	10377.4605	23924.04
Share of inhabitants with university degree	0.119	0.0175	0.0457
Productive population (PP),	16356.76	6779.4932	15497.84

Source: Authors

The next table presents the values of the variables after completion of matching.

Table 3: Summary of Matching Results

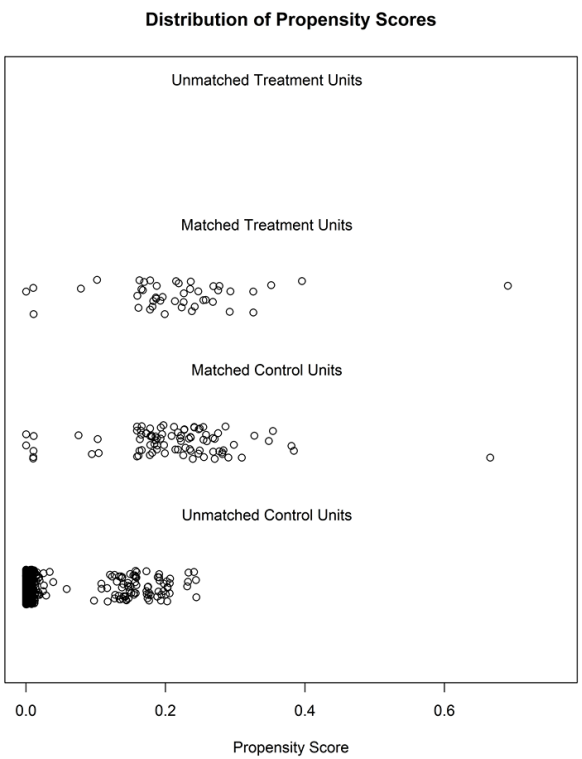
	Means Treated Means	Means difference for municipalities that use excellence models and quality improvement tools. but have not been awarded (control group nr. 1)	Means difference for municipalities which do not employ excellence models and quality improvement tools (control group nr.2).
Distance	0.2191	0.0147	0.0072
Municipal with authorized authority	0.9778	0.0000	0
Municipal with extended scope	0.9333	0.0227	0

	Means Treated Means	Means difference for municipalities that use excellence models and quality improvement tools. but have not been awarded (control group nr. 1)	Means difference for municipalities which do not employ excellence models and quality improvement tools (control group nr.2).
Number of inhabitants	25245.6889	4111.7500	-621.7
Share of inhabitants with university degree	0.119	0.0026	-0.0005
Productive population (PP),	16356.7556	2654.4318	-354.656

Source: Authors

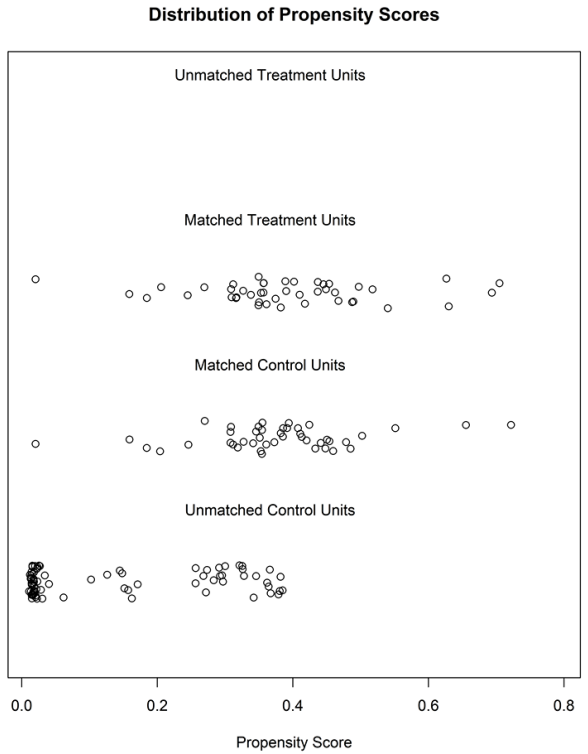
The following illustration shows a graphical representation of the use of matching.

Figure No. 1: Distribution of Propensity Scores for control group nr. 1



Source: Authors

Figure No. 2: Distribution of Propensity Scores for control group nr. 2



Source: Authors

Data on all municipalities were ordered according to a probability rate estimated on the basis of previous logistic regression. Data with the same rate of probability were ordered randomly. In the following step, for every municipality that received a national prize a similar municipality from a control group was matched. The ratio of 1:1 as assigned to a municipality from the control group 1 due to a small number of these municipalities. During the final matching with the control group 2 (municipalities that has not implemented any quality/performance management tool) the ratio 1:2 was assigned in order to guarantee that covariates are balanced across treatment and comparison groups in the matched or weighted sample.

The standard T-test variant was utilized to compare the average technical performance.

6. Results and discussion

The following table presents the descriptive characteristics of the achieved efficiency of the evaluated group of cities and the control groups for period 2010 -2016.

Table 4: Descriptive statistics of DEA's results for awarded cities and the control group

Descriptive statistics	DEA with constant yields from the range			DEA with variable yields from the range		
	Awarded municipalities	Control group of municipalities nr. 1	Control group of municipalities nr. 2	Awarded municipalities	Control group of municipalities nr. 1	Control group of municipalities nr. 2
Average	0.638630035	0.486946623	0.653759106	0.766309191	0.641167725	0.776461834
Minimum	0.478963126	0.09192582	0.369104374	0.51346918	0.152669594	0.435107979
Maximum	0.909618423	0.941235573	1	1	1	1

Source: Authors

When comparing municipalities that were awarded the prize with municipalities that use excellence models and quality improvement tools, but have not been awarded (control group nr 1), one can see that they are not statistically significantly more efficient (when working with a model with constant return) (p value of T-test was 0.633132936). The same applies to findings in situation when variable returns of scale are applied (p value of T test was 0.872526268).

It is clear from the table that awarded municipalities do not also achieve a higher cost efficiency than the group of municipalities, which do not employ excellence models and quality improvement tools (control group nr.2). This fact was confirmed by the t-test of mean values. For DEA results with constant yields from the p-value of the T-test (0.460735541), for the model with variable yields from the range, the p-value of the T-test (0.678965).

Comparisons between municipalities that use excellence models and quality improvement tools but have not been awarded (control group nr 1) and those on which the data indicate no implementation of quality/performance management tools (control group nr. 2) show interesting findings. Municipalities that do not work with new tools received statistically significant higher values of relative efficiency, both in case of the use of DEA with constant returns (P value was 0.0002124) and in case of use of DEA with variable returns of scale (P value was 0.0231532).

Therefore, the presented hypothesis is not rejected.

Another interesting view is provided by the Malquist Index.

Table 5: Average Malquist Index values for awarded and unawarded cities

Malquist index	Awarded city		Control group nr. 1		Control group nr 2	
	Technical efficiency (TE) improvements	Technological change (TC)	Technical efficiency (TE) improvements	Technological change (TC)	Technical efficiency (TE) improvements	Technological change (TC)
DEA (CCR)	1.304162257	1.149046163	1.166841433	1.015327792	1.265721998	1.148217336
DEA (BCC)	1.304162257	1.149046163	1.166841433	1.015327792	1.265721998	1.148217336

Source: Authors

In case of the Technical efficiency (TE) and Technological change (TC) index, values show that all three monitored groups experienced improvement. The award-winning group of municipalities experienced greater improvements in terms of technical efficiency compared to both the control groups of municipalities.

These findings can be determined by the methods used and the selection of parameters entering the model (Perpiña / De Witte 2017 a). (Narbón Perpiña at al. 2017); (Šťastná / Gregor 2015) draw attention to the problem of complexity in the concept of efficiency measurement in municipalities. Another constraint may be the concept of excellence in using performance management and quality improvement tools as a determinant of efficiency, since other determinants, which could be identified by second stage DEA, may have a much greater influence by using Tobit or censored regression (Perpiña / De Witte, 2017 b). Due to the lack of relevant data, however, the quasi-experimental design from the second stage DEA had to be abandoned.

Another drawback can be caused by the situation when no precise data on municipalities implementing new tools are available. The list was verified with findings of the Ministry of the Interior and consulted the list with the Ministry. This drawback was addressed by matching between the treatment group and the control group nr. 1 using the ratio 1:1. This could bias the findings as well.

If the limits of the methods used are not considered, there are few explanations that have the basics in former studies that were carried out in the Czech Republic (e. g. Plaček/Půček / Jetmar, 2015; Nemec/ Meričková / Ochrana 2008). Their study confirms that the potential of performance management tools is not being utilized and that they can be used rather formally. Additionally, the motivation for implementation of new instruments can be the exhaustion of all subsidy resources. (Plaček / Půček / Jetmar 2015) describe this problem in the case of benchmarking. Their analysis shows that often, municipalities participating in the benchmarking project report only fictitious benefits – for example, municipalities reported improvements in terms of internal processes in the form of employment savings. In reality, these savings were not caused by reduction of em-

ployees due to greater efficiency, but it was only a consequence of retirements or maternity leaves. Also, most of the available analyses on benefits of new tools (or their effects in general) are perception-based and are not linked to hard data. In the same study, the authors rely on the conclusions (Kuhlman / Jakel 2013), where they state that this negative state is caused by the large number of small municipalities where these municipalities lack the resources and capacities to properly implement these tools. A role is also played by the political cycle where, according to (Placek / Půček / Jetmar 2014) a large number of the improvement projects were cancelled after the arrival of the new political leadership. Fiscal federalism also has an important role to play. The Czech Republic has a mixed system, where municipalities receive a very small share of operating resources in the form of local taxes. Thus, the inhabitants are not confronted with the real price of public goods and services. This results in less pressure from citizens on politicians and officials to increase efficiency.

Other explanations can be provided by (Špaček / Gatarik 2017) who state that cities use tools to assess the performance of an individual rather than an institution meaning that the tools are not used for assessing organizational performance, or their assessment is not linked to appraisals of employees either. Another problem which is seen is the absence of knowledge management. Cities collect information about performance and do not use them for decision making in reality. This may also be due to the separation of individual actors in the performance management process (Favoreu / Carassus / Gardey 2015).

Regarding a comparison of these findings with foreign studies focused on the areas of the CEE, (Dan 2015) evaluates the impact of selected tools and policies of New Public Management in Estonia, Romania and Bulgaria and claims that efficiency gains have been made in all countries surveyed.

Another study by (Dan/ Politt, 2015) reviewed empirical studies across the CEE region over the past 10 years. (Dan / Politt 2015:1305) claim that *"NPM policy has not always been successful to the extent expected and promoted, but there is enough evidence to show that some of the central ideas in NPM have led to improvements in public service organization or provision across different organizational settings. An adequate degree of administrative capacity, sustained reform over time and a 'fitting context' are the main factors that can tip the scale for the success of these management instruments."* The last study (Randma-Liiv/ Drechsler 2017) opposes this conclusion remarking that NPM was conceived as something of a house-cleaning concept; *"it was a reform movement within a well-functioning, if too expensive and bureaucratic (sic!) system. The problem for CEE was that there was no house to be cleaned, but rather one to be built, if 'house' is the metaphor for the public sector as such. To start cleaning before building may be putting the cart before the house, and that is one of the key in-*

sights regarding the transferability of NPM coming from the CEE experience." (Randma-Liiv / Drechsler 2017: 5).

The comparison of the situation in the Czech Republic with the more advanced countries of the European Union with a similar fragmentary structure of local governments, namely Spain and Italy, is rather fascinating. These countries also have a public administration system based on a legal tradition. According to Brusca (et al. 2017), the use of performance improvement tools with local governments in both countries is mandatory. According to the author's conclusions, the use of performance management tools in these countries is also in the embryonic phase. The adoption of these tools is significantly influenced by the size of the municipality and the presence of professional managers. The use of these instruments makes sense especially in the area of accountability. (Raharjo at al. 2015) describe a cross-case study of two different excellence models, the Common Assessment Framework (CAF) in Italy and the Swedish Institute for Quality (SIQ) model for performance excellence. According to their conclusions, there is a need for excellence models being adapted specifically for the public sector; from this study, no support for such a sector-specific model is shown.

7. Conclusion

This article deals with the impact of excellence in the use of performance management and performance improvement tools on the actual performance achieved by Czech municipalities. It is based on more robust empirical data compared to available studies that have been dealing with effects of quality/ performance management implementation in the Czech Republic but were perception-based.

The research presented may enrich the existing theory in two directions. It describes the impact of excellence performance management and performance improvement tools on the actual performance of municipalities. The analysis of the influence of this tool in the theory is missing and a quasi-experimental design has been presented as a tool for comparing the performance of municipalities. More research would be needed in order to confirm the findings for other CEE countries with similar historical legacies and recent transformation history (Nemec/De Vries/2015); (Nemec/De Vries 2018).

The results show that the excellent municipalities do not perform better compared to the two control groups of municipalities (municipalities that works with new instruments of which the practice was not awarded a quality prize and municipalities that have not implemented any of the tools according to the available data). These results can be caused by several factors. As negative factors, the formal implementation of these tools to draw funds, the lack of knowledge management, i. e. that information regarding performance is not used for managerial decisions, and the effect of starting condition remains can be seen. The low level

of bureaucracy, the political cycle and the frozen reform efforts act as a barrier to the successful implementation of these instruments.

In our opinion, the way to improve this situation does not lead administratively to political measures in the form of mandatory use of these instruments. Improvements can be brought about by better educating politicians and officials which will help to raise awareness of the use of these tools and their correct implementation. However, the most important thing is pressure from citizens to provide more efficient public goods and services as well as the publication of performance indicators. Measures to increase this pressure could involve government information campaigns aimed at the public.

The limitations of this approach are known. It is taxing to cope with the complexity of the activities performed by municipalities. In this approach, a cost-efficiency model was used which focuses on minimizing inputs. Given the problems with available data, very limited variables in the approach which describe the quality of life in the community were included. This data is inaccessible in the Czech Republic. Also, there is no exact list with municipalities that have implemented new tools, which brings difficulties for any comparison, working with quasi-experimental design and creation of necessary control groups.

This research opens further avenues of exploration in several areas. In public administration, this involves the adaptation of performance and quality improvement models to the specific conditions of the Czech Republic. In the field of operational research, the creation of the so-called second stage model on a larger sample, where it would be possible to check the effects of the variable of the achievement of excellence on the performance of municipalities measured with the assistance of nonparametric methods using regression analysis.

It would also be advisable to formulate a hypothesis within the Czech research environment which would need to be verified by future qualitative research. This hypothesis does not see the situation as negative as the above-mentioned study. It assumes that within the results of the existing system of fiscal federalism, where the conditions for voting with feet are not met, municipalities, thus, do not compete. There may be an organic spillover of good practice between municipalities. Therefore, municipalities with worse performance are learning informally and taking good practice from municipalities achieving excellence and the resulting differences are eliminated.

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