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Performance Measurement in Education Public Services Based on the Value for Money Concept

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Abstract

The growing interest in the performance of public services by citizens and public authorities force public service organizations to seek justification in the use of public resources. The public also require reassurance that public services provide value for money. This reflects the need for a comprehensive measurement and assessment of performance in the utilities sector. The selection of appropriate performance indicators is a key process in managing and monitoring the performance. However, this requires the participation of those organizations which this measurement concerns. The aim of the study is to present a proposal of possible performance indicators in public grammar schools in Slovak Republic based on the Value For Money concept. This study uses a positive approach and is based mainly on the original survey data from own research. The analysis is conducted by using Delphi method. The outcome of the study, in the form of a proposal for possible performance indicators, is enriched by feedback from education professionals and school heads. The proposal of possible performance indicators can be an initial outline of appropriate performance indicators for the model for measuring and assessing the performance of public grammar schools in the future. It can also be an inspiration for other public service organizations in how to set appropriate performance indicators in relation to their objectives. The total number of performance indicators that will enter into the construction of the model of measuring and evaluating the performance of public grammar schools is 25 indicators.

Keywords

Performance Management, Value For Money, Public Service Organizations, Education, Slovak Republic.

JEL Classification

H75, I21, I22.

Introduction

Performance and quality have been frequently discussed in the public sector in recent decades, not only due to threats in the form of deficit public budgets of public sector organizations, but also by a social order based on increased interest in the quality of public services provided by public sector organizations from the point of view of citizens or clients (Půček, Kocourek a kol., 2004, Dalingwater, 2014). The application of performance management principles as private sector principles to measure the performance of public expenditure at the micro level is addressed not only by scientists but also by public service organizations themselves (Boyne, 2002; Radnor, McGuire, 2004; Emery et al, 2008, Halásková, Halásková, 2017, etc.). The constant pressure from the public forces these organizations to monitor and improve the delivery of public services and to continually increase their performance to ensure long-term existential certainty (Lane, 2000; Brignal, Modell, 2000; Pollitt, Bouckaert, 2000; Barzelay, 2002). These facts require a comprehensive measurement of their performance. Despite this, there are a number of public sector organizations that react very mechanically to performance management in the form of data accumulation and reporting (Caiden, Caiden, 2011; Rowe, 2004). This is mainly due to the fact that it is required, so to speak, from above. The systematic approach to performance management of organizations in the public sector or organizations providing public services requires however the establishment of performance measurement indicators with the involvement of the relevant organizations whose performance measurement is concerned.

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One of the possible tools of a systematic approach to performance management of public service organizations may also be the proposal of possible indicators for measuring performance based on Value For Money (VFM) concept.

The aim of the study is to present a proposal of possible performance indicators in public grammar schools in Slovak republic based on the Value For Money concept. The first section of the study is focused on the theoretical framework of performance parameters of public services and takes a closer look at the concept of VFM. The second section describes the methodology. Third section deals analysis results. The last section comprises the research's concluding evaluations and provides practical implications for policy makers.

Theoretical framework of the Value for Money concept

In general, performance measurement is the implementation of procedures used to demonstrate the organization's economy, efficiency and effectiveness, as well as its efforts to meet its goals. According to Cardy (1999), the interconnection between economy, efficiency and effectiveness indicates that an organization needs to address all three performance parameters in a precise performance measurement. The ultimate effect or quality of the services provided and customer satisfaction are decisive in measuring performance. In the event that the service provided did not meet this objective, such a service is inefficient, although the amount of money spent may have been considerable with a relatively high quality of the service provided. In this context, the concept of VFM is at the forefront. Dramatic changes in public sector management have occurred through the efforts of different countries to apply the VFM concept principles (Smith, 2009; King, 2018). It is therefore about making optimal use of the organization's available resources to achieve its intended results, whereby value for money is not about achieving the lowest price but about the optimal combination of cost and quality. According to Antinoja et al. (2011) it is difficult to precisely define the VFM concept, with the most widespread definition according to them being that the VFM concept is a method that “determines the greatest impact of the money used”. The VFM concept serves to determine whether an organization operating either in the private or public sector has made the most of the services it provides within the resources at its disposal. At the same time, it is not only the cost of producing the service, but also takes into account the combination of costs, resources used, quality, as well as adequacy for the purpose and their timeliness. The VFM concept thus monitors the achievement of the set goals of the organization taking into account other criteria. Some elements may be subjective, may be modified, and are often difficult to measure. At the heart of the VFM concept in public sector organizations is the principle of making the best use of public funds, while public sector organizations should be responsible for managing the resources entrusted to them economically, efficiently and effectively (Kaluganga, Kakwezi, 2013).

The essence of the VFM concept is based on an analysis of three basic efficiency indicators, the so-called 3E, namely economy, efficiency and effectiveness (Nemec, Wright, 1997). In the field of economy, the organization seeks to achieve its goals at the lowest possible level, i.e. minimum costs (expenditure, time, effort). In the area of efficiency, the organization monitors the ratio between inputs and outputs, i.e. the organization's efforts to achieve the best possible input-output ratio. The area of effectiveness for the organization is monitoring the success rate in achieving the set goals, respectively, the extent to which expended inputs and created outputs meet the organization's expected goals (University of Cambridge, 2010). Economy, efficiency and effectiveness need to be examined and evaluated comprehensively. This is precisely because when economy or efficiency is the subject of review and evaluation, effectiveness must also be assessed in a coherent way, as effectiveness is important in a comprehensive evaluation. Likewise, in assessing effectiveness, it is essential to assess both economy and efficiency, because if we want to know how well we achieve our goals, we must also take into account the economical and efficient use of resources. It should also be noted that, although economics, efficiency and effectiveness are studied and assessed in a comprehensive way, they may be in conflict with each other (Otrusinová, Kubíčková, 2011).

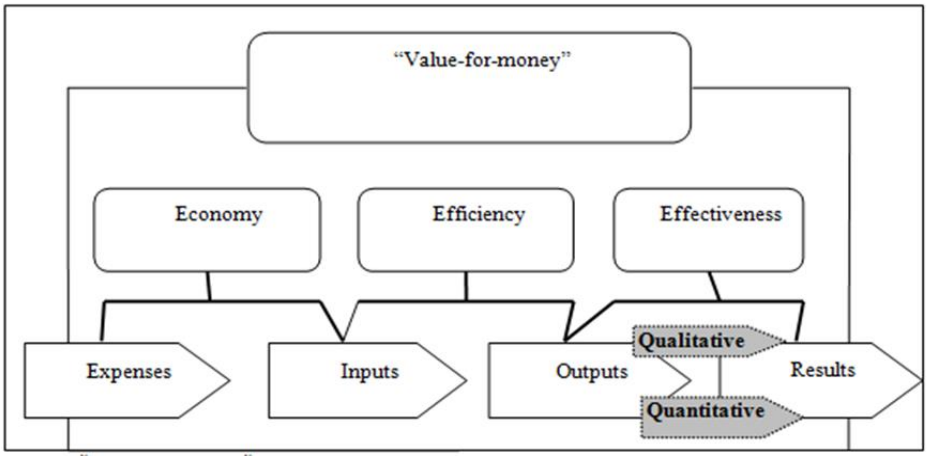

Fig. 1. The concept of methodology of Value For Money. Source: Šebo, Meričková, Štrangfeldová, 2011.

Figure 1 shows us the correlation of economy, efficiency and effectiveness. Economy is related to efficient procurement, efficiency with efficient delivery of outputs and effectiveness with achieving the intended results. This definition includes both a quantitative and a qualitative aspect. Similarly, we can say that while the activity, or project, program etc. can be very inexpensive and works efficiently, if it does not perform as expected, it is not value for money (Jackson, 2012). Thus, the quality of the results is the basis for understanding whether something brings value. Studies conducted using the VFM concept show that this approach can be used in various areas of public services, e.g. in education (Mante, O'Brien, 2002; Garnett, Roos & Pike, 2008; Bradley, Durbin, 2013; Dolton et al, 2014), or in healthcare (Severens, 2003; Smith, 2009; Mawani, 2011; Ariste, Di Matteo, 2017), and many other areas. The VFM concept is therefore a broadly conceived methodology that is able to express the achieved value in a comprehensive way of the organization, the project, program or broadest public expenditure program. Of course, the concept of VFM has its methodological pitfalls. Limitations of the concept of VFM for applications in public services represent the use exclusively among homogeneous services and the need to determine assessment criteria based on the goals and requirements of the client or funding organization (Šebo, Vaceková, 2011). This is where the specificity of public sector organizations comes to the forefront. Therefore, a prerequisite for its successful implementation in public services requires adequate consideration of the specificities of the public sector and public services and the subsequent modification of method for the needs of the public sector. The tasks and objectives of organizations in the public sector are characterized by considerable diversity which largely raises problems in developing performance standards that underpin a functioning and efficient performance measurement and evaluation system. Collecting quality data and performance information is also a problem.

Methodology

The aim of the study is to present a proposal of possible performance indicators in public grammar schools in Slovak republic based on the Value For Money concept. The research subjects are performance indicators identified by Delphi method in public grammar schools in Slovak republic. The main reason we chose the area of education services for the application of the VFM concept from public services is that this area with its performance represents one of the most pervasive problem in the Slovak Republic (OECD, 2017). This fact, supported by demographic development, a counterproductive funding system for education and the consequent oversized system of regional education, gives us scope for introducing performance management elements in regional education organizations. The introduction of a systematic and comprehensive system of measuring and evaluating performance in the field of regional education using well-chosen performance indicators can provide relevant information on the performance status of individual schools.

We have decided to be inspired by the VFM concept, as this method works on the basis of a complex correlation of economy, efficiency and effectiveness, i.e. pursuing the most productive use of resources while achieving set goals, which includes both quantitative and qualitative aspects. Since the VFM concept can be used exclusively among homogeneous services (Estermann, Kupriyanova, Casey, 2018), we have chosen only public grammar schools which are in the trust of a self-governing region. However, the implementation of the VFM concept in the field of education is a complex process in terms of the choice of indicators. This is due to the differences in the educational system of different countries in the form of school types, length of study, form of study, etc., which is then transmitted to the different types of data and indicators that different countries have at their disposal and monitored. In the case of choosing performance evaluation and value for money in terms of education systems (Dolton et al, 2014; Estermann, Kupriyanova, Casey, 2018), it is obviously necessary to use indicators that can be monitored at international level (e.g. education expenditure, expenditure on a particular level of education, PISA results etc.). In the case of higher education (Garnett, Roos Pike, 2008; Coates, 2009), secondary education (Mante, O'Brien, 2002) and the types of schools themselves (Davidson, Miskelly Kelly, 2008; Department of Education and Skills: Value for Money Review of Small Primary Schools, 2013), it is necessary to establish more specific indicators relating to the activities, mission and performance of these organizations, depending on the specificities of each country's education system. From the perspective of the VFM concept, the need to determine assessment criteria based on the goals and requirements of the client, funding organization, etc. is important.

For this reason, we decided to use the Delphi method to compile performance indicators. The Delphi method was realized in 2019. The method is carried out through a thoughtfully chosen system of questions in the research area, which are asked to a selected group of experts, in the form of a questionnaire or personal interview by the survey organiser with individual experts to ascertain their individual opinion, while at the same time the individual survey participants (expert) never come into contact with other experts (Benčo, Pastier, 1996, p. 42). According to Linstone and Turoff (2002, p. 206), the basic characteristics of this method include the anonymity of experts, controlled feedback and statistical determination of the agreement of experts' opinions. The method consists of several steps. Kľučka (2009) defines five steps: (1) defining the problem, (2) the team will provide the initial stimulus in the first round, (3) summarise and draw conclusions from the first round, (4) repeat steps 2 and 3 to until conclusions are reached and (5) termination. The essence of the Delphic method is a logical sequence of steps. During the preparations for the compilation of the questionnaire, we pay attention to the analysis of domestic and foreign literature in order to obtain objective information on performance indicators in education (i.e. the selection of indicators is not subjective,

but is based on a theoretical basis). We will then compile a questionnaire, which we will then submit to selected experts. The number of experts required to perform this method varies in the literature. There are opinions that a large group of experts should be addressed, others that it should be smaller or even midway between these extremes. Egerová, Mužík (2010) state a sufficient number of experts in the range of 15-35. According to Reichel (2009), the number of experts can also depend on the scope of research (usually 50-100 and in the case of large-scale international research also several hundred experts). The object of our research, respectively experts in our case, are the heads or directors of the education departments of individual self-governing region and the management of public grammar schools in the founding competence of the self-governing region.

After the first round, an evaluation will take place in order to "get a picture of the overall variance of the content of the answers to the questions and to get an idea of the prevailing views (Magdolenová, 2007, p. 3). Based on fulfilment of the feedback condition, it is necessary to send the evaluation of the first round back to the experts in order to offer them the opportunity to change their opinion (they do not have to use this option). While the first round is carried out in order to determine the variance of the responses, the second round is focused on their prevalence and convergence. The next rounds shall be carried out in such a number as to achieve a sufficient degree of agreement in the opinions of the experts. Magdolenová (2007) points out that with the achievement of a group consensus of experts, it is forgotten that the majority opinion is not always the best.

An expert is, any individual with relevant knowledge and experience of a particular topic. We have the heads of selected self-government education department and the directors of public grammar school as the experts selected. The main reason for the selection of managers, respectively the directors of the education departments of the individual self-government region and the management of public grammar schools required the need for professional competence, expertise and the necessary experience within the issues related to education services and the field of education.

The questionnaire consisted of 2 parts, formal and informal. The formal part consisted of commenting on the relevance of the proposed performance indicators and the possibility of proposing other performance indicators in order to involve the heads themselves in the process of proposing suitable indicators, or the directors of the education department of the respective self-governing regions. In formal part questionnaire was answered orally and in writing by 6 heads, or directors of the education departments (in informal part questionnaire was answered orally by 6 heads, or directors of the education departments). We questioned the heads of selected self-government education department in the first round and the directors of public grammar school in the second round. Based on the answers to the questions in the first round, the questions in the second round delved deeper into the topic to clarify specific issues of performance indicators in public grammar schools, remove any irrelevant indicators to build consensus on indicators.

A total of 8 regions participated in the Delpi method, of which 6 regions (namely Prešov Self-Governing Region (PSK), Košice Self-Governing Region (KSK), Žilina Self-Governing Region (ŽSK), Nitra Self-Governing Region (NSK), Trenčín Self-Governing Region (TSK) and Bratislava Self-Governing Region (BSK)) provided an opinion on the proposal of possible performance indicators. As the Trnava Self-Governing Region (TTSK) Education Department did not provide a written opinion on the proposal of possible performance indicators, it is not included in the results. We excluded the Banská Bystrica Self-Governing Region (BBSK) Education Department because they cooperated with us in the application of the VFM method for measuring and evaluating the performance of public grammar schools (realized since 2014 to 2016). A total of 52 out of 109 public grammar schools addressed in 7 regions (BBSK, PSK, KSK, ŽSK, NSK, TTSK, TSK) participated in Delphi method. Because the BSK Education Department didn't cooperate in the application of the VFM concept, public grammar schools in the BSK subsequently did not participate in Delphi method. Participation by public grammar school was voluntary in the Delphic method. This also leads in different levels of involvement of individual public grammar schools in self-governing regions.

In our case, the examined performance indicators from the point of view of statistics have the character of ordinal (paired) features.

The evaluation of the results of the Delphic method involves the expression of the value of the normalised discrete ordinal variance, which expresses the variability of the respondents' answers and can take values from the interval <0; 1>. If its values approach 0, the variability of the answers is lower and the respondents agreed to a greater extent when choosing the relevance of the performance indicators. Values approaching 1 indicate greater diffuseness, i.e. that the choice of degrees of relevance for each performance indicator was more diverse. The normalised discrete ordinal variance is determined on the basis of frequency tables by means of statistical programs by means of the following relation:

$$\text{ord(var)} = \frac{4}{K-1}\sum_{i=1}^{K} F_i(1-F_i)\text{ , where} \qquad (1)$$

K – number of categories of ordinal variable
Fi – relative abundance of the i-th category.

After determining the value of the normalised discrete ordinal variance, we can proceed to express the overall relevance of the indicators. In order to quantify the relevance of the proposed performance indicators from the responses received from the education departments of the participating regions and their public grammar schools, we decided to track the number of positive answers to the question of the relevance of each proposed performance indicator. The relevance of the indicator can therefore be expressed as the number of positive responses to the number of regions involved, respectively on the number of public grammar schools which commented on the question of the relevance of a particular indicator. The value of the indicator's relevance therefore ranges from 0 to 1. However, it should be noted that the concept of relevance is introduced only as a reference value for the inclusion of the indicator in the model for measuring and evaluating the performance of public grammar schools. The level of relevance of the indicator can be divided into 3 categories, thus making decision-making easier. The first category represents an interval from <0; 0.5) and includes indicators with below-average relevance. The second category represents an interval from <0.5; 0.75), including indicators with an average level of relevance. The third category represents an interval from <0.75; 1> and includes indicators with an above-average level of relevance. In order to consider including an indicator in the model construction, it must have at least an average level of relevance. In the event that this condition is not met, it is necessary to take into account the significance and coherence of the indicator to other indicators as well as the specificity of the indicator.

After determining the value of the normalised discrete ordinal variance, we can proceed to express the overall relevance of the indicators.

There is a lack of guidance and agreed standards on how to interpret and analyse the results, universally agreed definitions of consensus, and how to select the experts. That could be a reasons of methodological limitations of Delphi methods.

According to results of the Delphi method, the schools also included indicators that cannot be quantified or even monitor such as school climate, class climate and quality of personal and material resources. The choice of the given indicators may be related to the misunderstanding of the VFM concept by director of public grammar school. We consider this to be one of the shortcomings of a given group of experts. The frequent change in the self-government education departments and public grammar school is also a problem. It was not possible to involve new indipendent experts in these organizations in the interviews from a time point of view. The experts' responses in the Delphi process might not be truly independent, especially when the experts involved are in contact with each other.

Results and discussion

Based on the number of positive responses from the education departments of each region, 12 of the 23 performance indicators proposed received above-average relevance ratings. 11 out of 23 suggested indicators received an average relevance rating based on the number of positive answers. None of the proposed performance indicators received below-average evaluation from the education departments of individual regions according to the number of positive answers.

Table 1. Relevance of indicators from the point of view of the education department in selected self-government. Source: Authors.

Area/Self-government	PSK	KSK	ŽSK	NSK	TSK	BSK	Relevance of the indicator
Personnel area							
Average length of teaching practice	Y	Y	Y	Y	N	N	(0.66)
Average age of the teaching staff	Y	Y	N	Y	N	N	(0.50)
Number of teachers	Y	Y	Y	Y	Y	N	(0.83)
Number of pupils	Y	Y	Y	Y	Y	Y	(1)
Material and technical area							
Average textbook equipment in %	Y	Y	Y	Y	N	N	(0.66)
Number of classical classrooms	Y	Y	Y	Y	N	N	(0.66)
Number of vocational classrooms	Y	Y	Y	Y	Y	N	(0.83)
Share of funds from projects per pupil	Y	Y	Y	Y	Y	Y	(1)
Share of capital investments in tangible and intangible assets of the school per pupil	Y	Y	Y	Y	Y	Possibly	(0.83)
Economic area							
Total current costs per employee	Y	Y	Y	Y	N	Y	(0.83)
Total current costs per pupil	Y	Y	N	Y	Y	Y	(0.83)
Pedagogical area							
Number of missed hours per pupil	Y	Y	N	Y	Y	Y	(0.83)
Ratio of admitted pupils to registered applicants for grammar school	Y	Y	Y	Y	Y	Y	(1)
Success rate of university entrance interviews in %	Y	Y	Y	N	N	Y	(0.66)
Average result of testing pupils in written	Y	Y	Y	Y	Y	Y	(1)

Area/Self-government	PSK	KSK	ŽSK	NSK	TSK	BSK	Relevance of the indicator
school-leaving examinations in %							
Average grade of classification of pupils in oral school-leaving examinations	Y	Y	Y	Y	N	Y	(0.83)
Average grade from the annual report card in the 1st year of study	Y	Y	N	Y	Y	N	(0.66)
Average grade from the annual report card in the 3rd year of study	Y	Y	N	Y	Y	N	(0.66)
Number of humanities subjects	Y	Y	N	Y	N	N	(0.50)
Number of pupils enrolled in humanities subjects	Y	Y	N	Y	N	Y	(0.66)
Number of science subjects	Y	Y	N	Y	N	Y	(0.66)
Number of pupils enrolled in science subjects	Y	Y	N	Y	N	Y	(0.66)
Unemployment rate of graduates	Y	Y	Y	Y	Y	Y	(1)

Legend: PSK – Prešov Self-Governing Region, KSK – Košice Self-Governing Region, ŽSK – Žilina Self-Governing Region, NSK – Nitra Self-Governing Region, TSK – Trenčín Self-Governing Region, BSK – Bratislava Self-Governing Region, Y – Yes, N – No

The results therefore show that all proposed performance indicators are relevant from the point of view of the education departments of individual regions and it is therefore appropriate (with possible modification) to monitor them as performance indicators for measuring and evaluating the performance of public grammar schools. Based on the number of positive responses from public grammar schools, 3 out of the 23 performance indicators proposed received above-average relevance ratings (highlighted in green). 12 out of 23 suggested indicators received an average relevance rating based on the number of positive answers (highlighted in yellow). According to the number of positive answers, 8 out of the 23 proposed performance indicators received below-average ratings from public grammar schools (highlighted in red). For below-average indicators, their inclusion or exclusion must also take into account the relevance and coherence of the indicator to other indicators as well as the specificity of the indicator.

Table 1. Relevance of indicators from the point of view of the management of public grammar schools in selected self-government. Source: Authors.

Area/Grammar school	BBSK 12/17	PSK 15/15	KSK 9/19	ŽSK 4/16	NSK 3/15	TTSK 1/16	TSK 8/11	Relevance of the indicator
Personnel area								
Average length of teaching practice	9	12	4	2	3	1	3	34/52 (0.65)
Average age of the teaching staff	5	11	2	1	3	1	3	26/52 (0.50)
Number of teachers	8	10	4	2	2		4	30/52 (0.58)
Number of pupils	8	10	4	2	3	1	5	33/52 (0.64)
Material and technical area								
Average textbook equipment in %	6	10	7	2	2	1	4	32/52 (0.62)
Number of classical classrooms	5	7	2	1	3	1	3	22/52 (0.42)
Number of vocational classrooms	8	15	6	3	3	1	6	42/52 (0.81)
Share of funds from projects per pupil	4	12	5	1	3	0	4	29/52 (0.56)
Share of capital investments in tangible and intangible assets of the school per pupil	8	12	7	3	3	0	4	37/52 (0.71)
Economic area								
Total current costs per employee	10	12	6	3	3	1	5	40/52 (0.77)
Total current costs per pupil	9	13	6	2	3	1	4	38/52 (0.73)
Pedagogical area								
Number of missed hours per pupil	2	10	6	1	2	1	0	22/52 (0.42)
Ratio of admitted pupils to registered applicants for grammar school	5	12	5	2	2	0	4	30/52 (0.58)
Success rate of university entrance interviews in %	8	14	3	3	3	0	4	35/52 (0.67)
Average result of testing pupils in written school-leaving examinations in %	10	12	7	2	3	1	5	40/52 (0.77)
Average grade of classification of pupils in oral school-leaving examinations	8	10	7	1	2	1	4	33/52 (0.64)

Area/Grammar school	BBSK 12/17	PSK 15/15	KSK 9/19	ŽSK 4/16	NSK 3/15	TTSK 1/16	TSK 8/11	Relevance of the indicator
Average grade from the annual report card in the 1st year of study	5	5	3	0	3	1	3	20/52 (0.39)
Average grade from the annual report card in the 3rd year of study	5	4	4	1	2	1	3	20/52 (0.39)
Number of humanities subjects	6	7	3	2	1	0	2	21/52 (0.40)
Number of pupils enrolled in humanities subjects	7	9	2	2	1	0	2	23/52 (0.44)
Number of science subjects	6	7	3	2	1	0	2	21/52 (0.40)
Number of pupils enrolled in science subjects	7	9	2	2	1	0	2	23/52 (0.44)
Unemployment rate of graduates	7	14	4	3	2	1	3	34/52 (0.65)

Legend: BBSK – Banská Bystrica Self-Governing, PSK – Prešov Self-Governing Region, KSK – Košice Self-Governing Region, ŽSK – Žilina Self-Governing Region, NSK – Nitra Self-Governing Region, TTSK – Trnava Self-Governing, TSK – Trenčín Self-Governing Region.

Based on the results of the Delphi method, consideration of the relevance and appropriateness of comments and recommendations and their possible incorporation, we may subsequently modify, retain, or reject or propose new performance indicators. It is necessary to take into account the significance and coherence of the indicator to other indicators as well as the specificity of the indicator in considering the exclusion of an indicator. From the original proposal of possible performance indicators, we excluded the average age of the teaching staff and the average percentage of textbooks. These indicators were criticized by all public grammar schools for their inconsistent reporting. Modification of some indicators was realized by the recommendations from the heads of education departments and the directors of public grammar schools for improved their formulation and understanding. New indicators was created according to proposals and guidelines from the heads of education departments and the directors of public grammar schools. For the field of economy, we have chosen 5 indicators. For the field of efficiency we have chosen 8 indicators. For the purpose of effectiveness, we have chosen 12 indicators.

Table 2. Development of proposed indicators in the area of economy, efficiency and effectiveness. Source: Authors.

Area	Indicators	Modification	Final form of indicators
Economy	Number of teachers	No modification	Total current costs per teacher
	Total current costs	New indicator	
	Number of non - teaching staff	New indicator	Total current costs per employee
	Number of pupils	No modification	Total current costs per pupil
	Amount of funds from projects	New indicator	Share of funds from projects per pupil
	The amount of capital investment in the tangible and intangible assets of the school	New indicator	Share of capital investments in tangible and intangible assets of the school per pupil
	Average number of pupils per teacher	New indicator	Average number of pupils per teacher
	Number of classical classrooms	New indicator	Number of pupils per classical classroom
	Number of vocational classrooms	New indicator	Number of pupils per vocational classroom
Efficiency	Average length of teaching practice	No modification	Average length of teaching practice
	Number of teachers with 1. attestation exam Number of teachers with 2nd attestation exam	New indicator	Proportion of teachers with 1st and 2nd attestation exam for the number of teachers
	From economy: number of teachers, number of non-teaching staff	New indicator	Share of teachers in the number of employees
	Number of submitted projects for 1 school year	New indicator	Number of submitted projects for 1 school year
	Number of currently ongoing projects in 1 school year	New indicator	Number of currently ongoing projects in 1 school year
	Number of missed hours per pupil (for the whole school year)	No modification	Number of missed hours per pupil (for the whole school year)
Effectiveness	Number of applications received for grammar school Number of newly admitted pupils	New indicator	Ratio of admitted pupils to registered applicants for grammar school
	Number of graduates in a given school year Number of pupils admitted to a university	New indicator	Number of pupils admitted to a university to the number of graduates in a given school year
	Number of successful graduates on the 1st exam sitting (regular sitting)	New indicator	Number of successful graduates on the 1st exam sitting to the number of graduates in a given school year
	Number of successful graduates on the 2nd exam sitting (repeat exam sitting)	New indicator	Number of successful graduates on the 2nd exam sitting to the number of graduates in a given school year

Area	Indicators	Modification	Final form of indicators
	Average result of testing pupils in written school-leaving examinations in %	No modification	Average result of testing pupils in written school-leaving examinations in %
	Average result of testing pupils in oral school-leaving examinations in %	Modification of formulation	Average grade of classification of pupils in oral school-leaving examinations
	Average grade from the annual report card in the 1st year of study	Modification of formulation	Average grade from the year-end report in the 1st year of study
	Average grade from the annual report card in the 3rd year of study		Average grade from the year-end report card in the 3rd year of study
	Number of humanities subjects Number of pupils enrolled in humanities subjects	New indicator	Number of registered pupils for humanities subjects to the number of humanities subjects
	Number of science subjects Number of pupils enrolled in science subjects	New indicator	Number of registered pupils for science subjects to the number of science subjects.
	Unemployment rate of graduates	Modification of formulation	Unemployment of graduates as of 31.12. of the given school year

The resulting aggregate selection of performance indicators were adjusted on the basis of formal interviews with self-government and grammar school managers.Naturally, the proposal of possible indicators and the model of measuring and evaluating the performance of public grammar schools do not have the possibility to exhaustively cover all areas that the departments of education and grammar schools face. However, the design of possible indicators also took into account aspects of regional education in the Slovak Republic (financing of grammar schools, method of graduating from grammar schools, some problems of regional education, etc.), habits and length in monitoring indicators and availability and validity of necessary data, or indicators. However, the model should be a first step towards starting to monitor individual indicators related to the situation of public grammar schools (of course, not only the performance indicators presented), which will help to create a database with data, explore and design new indicators and monitor the situation of individual grammar schools within the field of economy, efficiency and effectiveness. The given model should represent only a certain methodological basis for further solution of the given problem.

Due to the high level of incompleteness of the submitted data, we decided not to include in the construction of the model of measuring and evaluating performance the indicators Share of funds from projects per pupil, Share of capital investments in tangible and intangible assets of the school per pupil, Number of submitted projects for 1 school year, Number of currently ongoing projects in 1 school year, Number of successful graduates on the 2nd exam sitting (repeat exam sitting), Average grade from the year-end report in the 1st year of study, Average grade from the year-end report card in the 3rd year of study, Number of registered pupils for humanities subjects to the number of humanities subjects, Number of registered pupils for science subjects to the number of science subjects and Unemployment of graduates as of 31.12. of the given school year.

Our resulting aggregate selection of performance indicators includes 25 indicators. We could compare our selection of performance of indicators with indicators using by INEKO (Institute for economic and social reform) in Slovak republic. INEKO uses 45 indicators for school evaluation such as number of pupils, number of teachers and total costs per pupil, average grade of classification of pupils in oral school-leaving examinations, number of pupils admitted to a university, number of pupils admitted to a university to the number of graduates in a given school year and proportion of teachers with 1st and 2nd attestation exam for the number of teachers, respectively qualification of teachers. In the case of foreign studies devoted to the evaluation of value for money in the field of education, we can, as in the case of domestic studies, compare only the agreement in the selection of certain indicators. These are general indicators such as total costs per pupil, average number of pupils per teacher, qualification of teacher (Davidson, Miskelly, Kelly, 2008; Department of Education and Skills, 2013; Machin, McNally, Wyness, 2013), number of pupils admitted to a university, number of pupils admitted to a university to the number of graduates in a given school year (Bruneforth et al., 2015; Nusche et al., 2016). However, some studies emphasize the appropriateness of monitoring school added value (Davidson, Miskelly, Kelly, 2008; Muriel, Smith, 2011; Santiago et al., 2016; OECD, 2017) as an interesting indicator for area of effectiveness. The measurement of the added value has been carried out only since 2015 in schools, and only for a certain subject (Slovak language and literature) in Slovak condition. The choice of the VFM methodology is highly subjective and therefore it is necessary to adapt the methodology to the peculiarities of the education system.

Conclusion

The aim of the study was to present a proposal of possible performance indicators in public grammar schools in Slovak republic based on the Value for Money concept. For the application of the VFM concept, we chose the area of education services, because this area with its performance represents one of the most pervasive problem in the Slovak Republic. The implementation of a system of measuring and evaluating performance in the field of regional education can encourage system accountability to ensure both efficient and effective utilization of resources, and

bring the delivery of educational services into public sector accounting, underscored by a concern to ensure that such services represent 'value for money'.

But, a number of conceptual and practical problems are associated with the choice, design and use of performance indicators in education services. However, find value for money in education and schools are hard to compare between different countries. The problem is precisely the differences in education and school systems of different countries in terms of types of schools, length of study, forms of study, etc. This is then transferred to the collection of different types of data and the production of indicators that different countries have available and are monitoring. Thus, when selecting indicators, each country is guided by its own education and school system, and of course differences will also be found in the way the indicators and information are collected by the country in order to monitor them. After implementation of Delphic method, we can conclude that the drafting of possible performance indicators, after incorporation of relevant comments obtained through method, may constitute an initial outline of appropriate performance indicators for the model for measuring and evaluating performance of public grammar schools. In our case, the experts were managers of education departments in selected self-government regions and grammar schools. The main reason for the selection of managers, respectively the directors of the education departments of the individual self-government and the management of public grammar schools required the need for professional competence, expertise and the necessary experience within the issues related to education services and the field of education. The addressed management of the education departments of individual self-government and public grammar schools represents experts in these areas.

For the field of economy, we have chosen 4 indicators - total current costs per employee, total current costs per pupil, share of funds from projects per pupil, while the ratio of capital investments in tangible and intangible assets of the school per pupil remains for further assessment.

For the field of efficiency we have chosen 8 indicators - average number of pupils per teacher, number of pupils per classic class, number of pupils per vocational class, average length of teaching experience, proportion of teachers with 1st attestation exam, proportion of teachers with 2nd attestation exam, the number of projects submitted per school year and the number of ongoing projects per school year.

For the purpose of effectiveness, we have chosen 12 indicators for the time being: number of missed lessons per pupil, ratio of admitted pupils to enrollment at secondary school, success rate of admission interviews to universities, average result of testing pupils in written school leaving exams in percent, pupil average grade in oral school leaving exams, average grade from the year-end certificate in the first year of study, average grade from the year-end certificate in the third year of study, number of subjects of humanities orientation, number of pupils enrolled for humanities subjects, number of natural science subjects, number of pupils enrolled in natural science subjects and unemployment of school-leavers as of 31.12. of the school year.

All proposed indicators are relevant, timely, reliable and valid – in terms of their capacity to inform the processes of strategic decision-making resulting in measurable improvements of educational service outcomes.

This proposal of performance indicators can also serve as an inspiration for relevant public sector organizations in establishing relevant performance indicators in consideration of their objectives. Of course, we realize that the proposal of possible indicators does not have the possibility to cover all areas that the education and grammar schools are dealing with. However, the proposal is intended to be an initial step in order to follow individual indicators, to create data banks, to search for new indicators and to monitor the situation of individual grammar schools in terms of economy, efficiency and effectiveness. The presented proposal is supposed to be a methodological basis for further necessary solutions of the given issue.

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