PRACE NAUKOWE UNIWERSYTETU EKONOMICZNEGO WE WROCŁAWIU
RESEARCH PAPERS OF WROCLAW UNIVERSITY OF ECONOMICS AND BUSINESS

2019, vol. 63, nr 10

ISSN 1899-3192
e-ISSN 2392-0041

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CRITERIA AFFECTING THE AUDIENCE NUMBERS IN PERFORMING ART ORGANIZATIONS

KRYTERIA WPŁYWAJĄCE NA POZIOM LICZBY WIDZÓW W INSTYTUCJACH WYSTAWIENNICZNYCH

DOI: 10.15611/pn.2019.10.08
JEL Classification: H2, H7, H18

Summary: The problem is finding the optimal and efficient model of public funding. The development of an objective theatre funding model is a major challenge for both the entities developing as well implementing the cultural policy. The aim of this article is to identify the criteria/measures having the potential effect on the increase of the audience numbers in individual theatres in Poland. This aim is implemented using Multi Criteria Decision Making (MCDM), the result of which is to achieve full distribution of a set of variants (individual theatres) in accordance with the monitored criteria (audience numbers in a theatre). Our research found the important role of both financial and non-financial indicators among which technical indicators are essential. On this basis, the need to develop optimal allocation of public funds between theatres in terms of their technical capabilities or infrastructure should be considered.

Keywords: cultural economics, effectiveness, MCDM methods, performing arts organizations.

Streszczenie: Znalezienie optymalnego, wydajnego modelu finansowania publicznych usług kulturalnych jest problematyczne. Wypracowanie obiektywnego modelu finansowania teatrów stanowi ogromne wyzwanie dla podmiotów zarówno kształtujących, jak i realizujących politykę kulturalną. Celem artykułu jest wskazanie kryteriów i miar mających potencjalny wpływ na kształtowanie się liczby widzów w poszczególnych teatrach w Polsce. Cel osiągnięto za pomocą modelu wielokryterialnej analizy wariantów. Badania dowiodły istotnej roli kryteriów zarówno finansowych, jak i pozafinansowych, wśród których podstawową rolę odgrywa kryterium techniczne. Na tej podstawie należy rozważyć konieczność tworzenia optymalnego podziału środków publicznych między teatry z uwzględnieniem ich możliwości technicznych czy infrastrukturalnych.

Słowa kluczowe: ekonomia kultury, efektywność, MCDM, instytucje kultury, instytucje wystawiennicze.

1. Introduction

On the economic grounds, culture is treated instrumentally as a specific kind of activity carried out for a defined purpose. The purposes are different depending on the cultural policy of a given country or region, however the operation of cultural institutions is justified as "investment in people" (Kietlińska, 1995, pp. 19-20). Beyond the economic categories, culture is perceived as an intangible good (Trzeciak, 2011, p. 163). Consideration of culture in terms of intangibility creates a risk that no physical results of cultural activity can be observed. Therefore, the authors of this study concentrate on the economic aspects (Trzeciak, 2011, p. 10).

The authors focus on studying the efficiency of cultural services based on public drama theatres in Poland as cultural services in Europe. The problem of cultural service funding is the subject of many discussions and studies. On the one hand, this stems from their role assigned by the states (Baumol and Bowen, 1966, p. 62) and the European Commission, and on the other, results from the instrumental treatment of culture and − as seen from another angle − from its public funding (the Act on organizing and running, 1991).

The problem of finding the optimal and efficient model of public funding with regard to cultural services takes account of different ways of funding (Amans, Mazars-Chapelon, and Villesèque-Dubus, 2015. p. 70) and various models of budgets. The artistic activity of cultural institutions is the subject of many studies. In the early eighties (Hansmann, 1981, p. 341) noted that there was no coherent set of criteria that one could apply to determine the correct amount and structure of grants awarded to the institutions of culture falling under the so-called performing arts category (Hansmann, 1986, p. 35). Despite this fact, performance indicators as a measure of activity in artistic organizations were still being examined (Bovaird, 1981, p. 50; Gilhespy, 1999, p. 125) attempted to formulate a model measuring the performance of arts organizations. In the studies performed, the so-called policy matrix of arts organizations with a set of preferred indices were specified. The indicated policies included the following: access maximization, frequency maximization, diversity/multiculturalism, economy maximization, education, excellence, innovation, revenue maximisation, service quality maximisation, and social cohesion. A significant part of the proposed fields is rather a set of political objectives that are not always in the area of interest to the managers of cultural organizations. In 2001 the latter (Gilhespy, 2001, pp. 48-57) assessed the appropriateness and sensitivity of performance indicators for the purposes connected with attendance (access and presence maximisation).

The authors of this paper took drama theatres in Poland as an example of cultural services. Theatres, museums and opera houses are an example of the second system among the four levels (Trzeciak, 2011, p. 13) of cultural content communication and it consists in the direct contact of creators and institutions providing cultural services to recipients (Trzeciak, 2011, p. 13). The theatre as a unit of creative culture differs

drastically from units reproducing culture such as museums and galleries. This is principally due to the creative and multidimensional structure of theatre productions that trigger opinions and discussions much more widely than the plays themselves. The differences are also connected with costs generated by the human factor and the effects which often have a non-measurable dimension at the level of education or promotion. Adopting drama theatres as the subject of research allows to minimize the objections regarding the funding of commercial cultural services. This also applies to the activity of privately-owned theatres, where frequently the repertoire offered is: 'lighter', and focused on wider market demand and thus on more revenue (Tobias, 2004, p. 109).

Theatres in Poland are mainly funded by statutory grants from their organizers – local self-government (municipal or provincial) or (less frequently) the Ministry of Culture and National Heritage. In this regard, the performing arts institutions in Poland present the model of funding culture from the budget (state or local budgets) which is widespread in Europe (Gałecka and Smolny, 2017a, pp. 1-12). The system of performing arts organizations (PAO) funding in Poland does not provide objective rules and criteria for the award of statutory grants, there are no performance indicators and designated level of co-funding (Gałecka and Smolny, 2017b, pp. 196-213). The level of grant depends mainly on the organizer (Gałecka and Smolny, 2017a, pp. 1-12).

The lack of objective criteria for the award of statutory grants that constitute an average of approximately 70 % revenue (Gałecka and Smolny, 2017a, pp. 1-12) of the annual budget for public theatres in Poland is a real research problem and justifies the search for measures and indicators of the optimal model in cultural service funding. Development of such a model is difficult due to the multiplicity of the criteria to be taken into account, which in turn creates the need to use the models which take account of several measures. This "multi-criteria nature" is characteristic of almost any decision-making situation. The purpose of these methods is to determine the optimal models suitable for specific institutions in practice (Świętochowska, 2017, p. 65). The multi-criteria analysis serves to compare the purposes of different measures (Keeney and Raiffa, 1993; Zavadskas, Turskis, and Kildienė, 2014, pp. 165-179).

In the literature, a premiere (production), theatrical performance (play) and the cultural experience of the audience are considered to be the theatre service unit (Throsby, 1994, p. 9). To measure the quantitative effects, the most frequently proposed indicators are: 1. The number of premieres (productions). 2. The number of performances (shows). 3. The potential audience numbers. 4. The audience numbers (Trzeciak, 2011, p. 164). Obviously, it is impossible to measure the effects of theatre activity in quantitative terms only − the literature repeatedly stresses the importance of the qualitative criteria (Schwarz, 1987, p. 10). The qualitative research is based on indicators commonly recognized as subjective, therefore requiring additional considerations. The scope of research is too wide to cover the qualitative and

quantitative criteria in one study. Therefore the subject of these considerations will only be the quantitative dimension analysed in terms of the audience numbers. This indicator is recognized in the literature (Throsby and Withers, 1979, p. 15; Throsby, 1994, p. 9; O'Hagan and Neligan, 2005, pp. 36-37; Hansmann, 1986, p. 22; Heilbrun, 2003, pp. 91-93) and is a continuation of the authors' previous investigation concerning the indicator of "usage of seats" (Gałecka and Smolny, 2018, p. 42). According to Throsby and Withers (Throsby and Withers, 1979, p.17), the production function of the theatre has a different form in the short and in the long run. In the short run, the audience numbers at the performance of a given play (production) determined by the length of exploitation of a given play is a function of the number of performances (Throsby and Withers, 1979, p. 17).

In the long run, the figures depends not only on the number of performances of a given play but also the number of premieres (productions) in a season, the number of seats available and the quality of performances. The audience numbers as an indicator of theatre performance is taken into account in practice due to the objective of PAO activity such as the "dissemination of culture" (the Act on organizing and running). A non-profit theatre will maximise the audience numbers with the quality level of productions accepted by the theatre in its repertoire and with certain budget restrictions (Heilbrun, 2003, p. 22; Throsby and Withers, 1979, p. 17). In the literature, there is also an indicator/concept of "usage" as a function of the number of services or the number of tickets sold (Throsby and Withers, 1979, p. 17). The audience size indicator is an absolute nominal indicator. The authors previous studies pertained to relative indicators – the level of the usability of a seat occupancy rate in the theatre. Using another indicator and other methods, the authors tried to indicate the most important factors affecting the activity level of theatres as cultural institutions and at the same time to find the best variant among the investigated institutions. Theatrical services as public services are a group of activities that are not easy to assess on the basis of the traditional measures of efficiency and effectiveness. For many years the production volume of the public services was estimated on the basis of investment, which means that the larger the budget expenditure, the greater the production or benefits for consumers. However, some years ago it was speculated that this was not the case (Tanzi, 1994, pp. 5-37). The efficiency of public services is important from the point of view of its end-users (Gadrey, 2002, pp. 26-53).

2. Material and methods

The aim of this article is to identify the criteria/measures having the potential effect on the increase of the audience numbers in individual theatres in Poland. This aim is implemented using Multi Criteria Decision Making (MCDM), the result of which is to achieve full distribution of a set of variants (individual theatres) in accordance with the monitored criteria (audience numbers in a theatre). Many important technical aspects of MCDM are associated with the classical works in the field of economics,

in particular: welfare economics, the theory of utility and the theory of social choice focused on voting (Keeney, Raiffa, 1993; Figueira, Mousseau, and Roy, 2005, pp. 133-162). The result in the form of ranking is compared with previous research results of the authors, thus presenting a fuller picture of the whole problem, i.e. to find the optimal, objective criteria of culture funding and finding the best variant of the existing cultural institution in Poland.

The authors also determined three groups among the criteria: substantive, financial and technical, and assumed that technical and financial criteria are a priority − which seems to be logically interrelated, whereas the substantive criteria are of lesser importance.

Hypothesis: among the criteria of culture funding, the technical criteria, such as the number of stages and the number of seats in the audience, and financial criteria which directly or indirectly result from the technical criteria, are of fundamental importance.

The subject of the studies are public drama theatres in Poland, organized by cities with 'powiat'(county) rights (municipal theatres) and self-government provinces (provincial theatres). The data for the purposes of the study were obtained by way of individual queries concerning the financial statements and substantive reports of cultural institutions for the period 2011-2015.

The activity of public cultural institutions through the provision of public goods or promotion of culture comes from the utility function. Currently, the authors are focusing on the artistic activity of theatres in terms of the audience numbers. Due to other factors (different grant amounts, a different number of seats, revenue, stages, etc.) one cannot examine theatres only in terms of one criterion . In the article the authors investigate which of the selected measures are statistically more significant – namely, those that the theatre should pay attention to in order to increase the number of viewers. On the basis of the above, the appropriate technical measures were selected: the number of seats and the number of stages; financial measures: total cost, own income and the level of statutory grant; the substantive measures: the number of performances and premieres. The authors attempted to select the specific criteria in order to ensure that they were symmetrical to each another in terms of quantities. The applied measures are used for the purpose of attempting to answer the question: which criteria affect significantly the audience numbers in the theatre.

For the purpose of the study, a definitive list of variants was selected: 46 municipal and provincial theatres. To carry out the study, the authors determined seven criteria, including financial, technical and substantive indicators. The level of theatre performance was assessed using the Simple Additive Weighting (SAW) method (Churchman and Ackoff, 1954, pp. 172-187; Trzaskalik, 2014, pp. 41-42) and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method. The TOPSIS algorithm is one of the most convenient and most common methods of multi-criteria problem solution. This type of issues may be found in many areas of life, in particular in wider financial and economic planning. In these models of multi--criteria variant analysis, the final m set of variants is given and specified by n criteria.

The aim of the models is to find the best variant, to exclude ineffective variants or to determine a set of variants (Šubrt, 2015). The analysis of data using the multi-criteria method enables to determine the cultural institution that has the best possible set of partial measures in light of the criteria adopted. This research is a continuation of the search for indicators affecting the effectiveness of the theatre operation.

The elements of the model of multi-criteria analysis of variants (Roszkowska and Wachowicz, 2013; Trzaskalik, 2014; Chang and Chiang, 2010) are:

- decision options a_i, $i = 1,\ldots, m$ (professional theatres in Poland),
- criteria f_j, $j = 1,\ldots, n$ used to evaluate the variants,
- evaluation (preference) of variants according to individual criteria $y_{ij,}$ $i = 1,\ldots, m$, $j = 1,\ldots, n$,
- preference of criteria v_j, $j = 1,\ldots, n,$ expressing their importance.

The assessment of weight, regardless of the undertaken subject is always very problematic. The methods to identify the weight of the criteria on the basis of information on their preferences assume that the evaluating person is able to determine the order of importance of the criteria and the relationship between the importance of all pairs of criteria. The most commonly used method is scoring, or the so-called "expert method". In this article, in order to avoid errors connected with the subjective determination of weights, the authors using the correlation indicator investigated the relationship between the audience numbers in a given theatre and other criteria to be included in the study. The participation of individual correlations in the sum of the indicator determined the weights of the measures tested. The weight of the criteria is determined by the statistical method:

$$w_j = \frac{\left|cv_j\right|}{\sum_{j=1}^{n}\left|cv\right|},$$

where: cv_j – correlation coefficient between the number of viewers and other measures.

The method of determining weights is presented in Table 1.

Table 1. Vector of correlation coefficients between the number of viewers and measures resulting from the shares of individual indicators

No. of indicators	Measures	Min/max	Correlation coefficient	Weight	Share
X_1	total costs	D	0.5229	0.1612	0.507
X_2	own revenue	S	0.6839	0.2108	
X_3	statutory subsidies	D	0.4381	0.1351	
X_4	premiers	S	0.2815	0.0868	0.493
X_5	shows	S	0.6648	0.2049	
X_6	places	S	0.5027	0.1550	
X_7	stage	S	0.1504	0.0463	
	total	D	3.2443		

Sources: own elaboration.

The calculations indicate a significant impact of the financial and substantive criteria. The potential audience numbers (Y) are generally affected by the level of own revenues (weight 0.2108) and the number of performances (weight 0.2049). Finally, the equation takes the form of a model:

$$Y = X_1 \times 0.1612 + X_2 \times 0.2108 + X_3 \times 0.1351 + X_4 \times 0.0868 + X_5 \times 0.2049 + X_6 \times 0.1550 + X_7 \times 0.0463.$$

The first group of measures in the present study are financial criteria. The financial criterion covered the measures from X_1 to X_3. The level of own revenues results mainly from the number of (and price) of tickets sold and the activity of the organization in the acquisition of other funding sources. The authors assume that the level of budget funding should be related to the actual audience numbers. The statutory grant contributes to the financial stability of cultural institutions, but on the other hand, the lack of objective criteria for awarding such grant has an adverse effect on the audience numbers. The research showed that a change in the audience numbers in theatres is not followed by any change of the grant awarded (Gałecka and Smolny, 2019, p. 130). As a result, there is a situation that some theatres "play" less frequently, thus predetermining the final audience numbers in the theatre. This is consistent with the theory of performance paradox that refers to the weak correlation between the performance indicators and the performance as such (Meyer and Gupta, 1994, pp. 309-369; Meyer and O'Shaughnessy, 1993, pp. 249-278). The authors consider budgetary transfers as a minimization criterion − the smaller the subsidy, the better the evaluation, therefore they were marked as a destimulant, similarly to the total costs. "Total cost" as a financial category is a natural destimulant − should be minimised not maximised.

The second group of measures is a substantive criterion indicating the level of activity in the investigated cultural organizations. It may be assumed that an increase in the number of performances is followed by the increase in the audience number. The frequency of (X_5) occurrence is closely related to the level of the audience numbers in the theatre. Similarly, new titles (X_4) will attract a bigger number of (regular and/or new) theatre-goers.

According to the authors, the level of budget funding should be related not only to the actual audience numbers but also to the theatre infrastructure. The third group − X_6 and X_7 − is a measure included in the technical criterion on which often theatre authorities do not have a significant impact. These measures often arise from the infrastructure of a given building or its volume without prejudging the number of stages and auditorium seats. Variables $X_{2;}\, X_{4\,-}\, X_7$ were characterized as stimulants (S). Variables X_1 and X_3 were marked as destimulants (D).

The stages of MCDM application using the SAW measure are as follows:

1. Standardization of indexes. There are m theatres and n pieces of indexes in the index system, x_{ij} is the j-th index's value in the i-th theatre. In order to eliminate the influence of index dimension on incommensurability, it is necessary to standardize

indexes using the equations of relative optimum membership degree (Hwang and Yoon, 1981, pp. 30-31).

$$z_{ij} = \frac{x_{ij}}{\max_j x_{ij}}, \ (i = 1,\ldots, m; j = 1,\ldots, n), \text{ to the benefit indexes,}$$

$$z_{ij} = \frac{\min_j x_{ij}}{x_{ij}}, (\min_j x_{ij} \neq 0, (i = 1,\ldots.m; j = 1,\ldots.,n), \text{ to the cost indexes.}$$

After standardization of indexes, the standardized index matrix is $R = [r_{ij}]_{m\times n.}$

2. The aggregate utility function is calculated for each variant, see formula:

$$P_i = \sum_{j=1}^{n} w_j \times v_{ij},$$

where: w_j – weight, $w = [w_1, \ldots, w_n]$, $\sum_{j=1}^{n} w_j = 1$.

3. Lastly, the variants are sorted in a descending order according to their P_i value.

The stages of MCDM application using the TOPSIS measure are as follows.

The full name of TOPSIS is Technique for Order Preference by Similarity to Ideal Solution and is called Ideal Solution for short. The basic thought is to define the ideal solution and negative ideal solution for the decision-making problem, then find a feasible solution and rank the theatres according to the closeness between the feasible solution and the ideal solution, which is made nearest to the ideal solution and furthest from the negative ideal solution. The solution steps of the MCDM application using TOPSIS are as follows:

1. Normalization of the decision matrix. In order to eliminate the influence of index dimension and its variation range on the evaluation results, it is necessary to normalize the original matrix to ensure that all the attributes are equivalent and the same format, then the normalized decision matrix is $R = [rij]_{m\times n}$, which is calculated by:

$$\overline{x}_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} x_{ij}^2}}, \ i = 1, \ldots, m; j = 1, .., n,$$

where: m = number of variants (theaters), n = number of criteria (measures), x_{ij} – the value j-th variable in j-th combination.

2. Determination of the weighted decision matrix. The weighted decision matrix is determined by the normalized decision matrix multiplication with weights of indexes and shown by:

$$v_{ij} = \overline{x}_{ij} \times w_j,$$

where: w_j – weight.

3. Determination of the ideal solution. The ideal solution is composed of the optimal value of every attribute from the weighted decision matrix (V^+), and the negative ideal solution is composed of the worst value of every attribute from the weighted decision matrix (V^-).

$$V^+ = \left(V_1^+, V_2^+, \ldots, V_n^+\right),$$

$$V^- = \left(V_1^-, V_2^-, \ldots, V_n^-\right),$$

where the ideal value and negative ideal value are determined by:

$$V^+ = \begin{cases} \max_i v_{ij}, & \text{the benefit index} \\ \min_i v_{ij}, & \text{the cost index} \end{cases},$$

$$V^- = \begin{cases} \max_i v_{ij}, & \text{the cost index} \\ \min_i v_{ij}, & \text{the benefit index} \end{cases}.$$

4. Calculation of the Euclidean distance from the ideal best. The distance of every feasible solution from the ideal solution and the negative ideal solution is calculated respectively by:

$$S_i^+ = \sqrt{\sum_{j=1}^{m} \left(V_{ij} - V_j^+\right)^2},$$

$$S_i^- = \sqrt{\sum_{j=1}^{m} \left(V_{ij} - V_j^-\right)^2},$$

where ($i = 1, \ldots, m; j = 1, .., n$).

5. Calculation of the relative degree of approximation. The relative degree of approximation is determined by:

$$P_i = \frac{S_i^-}{S_i^- + S_i^+}, \quad (0 \le P_i \le 1; i = 1,2, \ldots, m), \ldots, n.$$

The evaluation object is ranked according to the value of the relative degree of approximation. The bigger the value, the better the evaluation object.

3. Results and discussions

The results obtained using the TOPSIS method and the method based on the SAW are similar. In 2011, in both these methods, six of the same theatres were in the top ten of the classification. The following theatres were ranked high: Teatr Syrena in Warszawa (M), Teatr Wielki im. S. Moniuszki in Poznan, Teatr Polski in Wroclaw, Teatr im. Juliusza Słowackiego in Krakow, Teatr Ludowy in Krakow (M) and Teatr Polski in Bielsko-Biala (M). In addition, four of the mentioned theatres were also ranked high in the classification using other (although similar in their structure) methods (Gałecka and Smolny, 2019, p. 131). The ranking of theatres is presented in the table − six best and three worst positions − additionally the theatres occurring repeatedly as model theatres from previous studies are marked (Gałecka and Smolny, 2019, pp. 119-136). The indicators of selected theatres (top and bottom) in 2011 presented in Table 2.

The four selected theatres occurring repeatedly in the rankings show the following common characteristics: the percentage of own revenues of less than 50% in total revenue, more than one stage, quite a high number of seats in the audience and a large number of premieres.

This translates into a positive verification of the hypothesis that primarily technical and financial criteria are of importance in the funding of theatres. This makes it possible to conclude that funding of theatres should be linked to the technical characteristics of the theatre not only due to generating costs but primarily because of the "production" potential of these theatres. In addition, the results show what type of theatres is most "productive" − a theatre with at least two stages with the number of seats ranging from 380 to 580.

The data analysis from 2015 indicated changes in the classification of theatres based on the SAW and TOPSIS methods, and the results are similar. Several theatres improved their position, whereas some of the theatres were ranked at a lower level than in 2011. Teatr im. Juliusza Słowackiego in Krakow was in the top position of the ranking. It is worth noting that in this theatre, the number of stages increased and consequently so did the number of seats for the audience. The final effect of these changes is also a higher audience numbers in relation to 2011. This confirms the earlier conclusion on the importance of technical criteria. A high position was maintained by such theatres as: Teatr Polski in Wroclaw and Teatr Ludowy in Krakow. The ranking of the theatres is shown in Table 3.

In relation to 2011, Teatr Dramatyczny im. A. Węgierki, Teatr Nowy im. T. Łomnickiego in Poznan and Teatr Ateneum im. S. Jaracza in Warszawa (M) improved their positions. Such an upgrade among the above theatres resulted primarily from the increase in the number of performances that consequently resulted in increase audience numbers. In addition, at Teatr Dramatyczny im A. Węgierki a significant cost decrease was noticeable. In turn, a decrease in the classification with regard to both methods is visible for Teatr Syrena in Warszawa. In general, this theatre was not in the top ten (ranked 17th). One important reason was ceasing the use of one stage, and consequently a decrease in the number of seats in the audience. Technical changes influenced the reduction in the number of performances that were an important indicator in the classification (weight 0.20). Together with the decrease in the number of performances also the proceeds from own revenues decreased. The decrease in the number of productions also affected negatively the classification of Teatr Stefana Jaracza in Lodz, Teatr Powszechny im. Z. Hübnera, Teatr Rampa na Targówku, and Teatr im. A. Mickiewicza in Częstochowa. In the last two theatres, a decrease in the number of productions was followed by an increase in the final audience numbers. This largely resulted from the number of stages and seats in the audience. The appropriate stage management may, despite a decrease in the number of productions, lead to an increase in the total audience numbers. Abandoning the use of one − often small – space /stage may not only lead to cost reductions, but even contribute to the growth in the audience numbers. A given show may be performed

Table 2. Measures characterizing selected PAO in 2011

Theatres	Total costs	Own revenue	Subsidy	Premiers	Shows	Viewers	Places	Stage
Top of the classification								
Teatr Syrena in Warszawa (M)	8 449 133	3 895 847	4 100 000	4	283	75 733	386	2
Teatr Wielki im. S. Moniuszki in Poznan	29 949 091	7 578 871	21 733 515	11	207	84 670	938	2
Teatr im. Juliusza Słowackiego in Krakow	12 173 200	3 701 901	7 289 300	6	331	84 482	559	2
Teatr Ludowy in Krakow (M)	7 138 599	2 230 580	4 496 000	5	433	73 771	492	3
Teatr Polski in Wroclaw	14 362 174	3 578 991	5 640 988	5	290	52 369	1 091	3
Teatr Polski in Bielsko-Biała (M)	5 580 539	2 169 397	3 382 000	8	265	54352	500	2
Bottom of the classification								
Teatr Wielki in Lodz	35 363 353	4 089 052	29 554 469	4	116	111 249	1 270	1
Teatr im. J. Osterwy in Lublin	7 699 900	1 106 400	6 613 000	4	172	40 366	311	1
Teatr Ochoty in Warszawa (M)	2 093 308	309 483	1 294 000	1	42	2 869	192	1

Sources: own elaboration based on annual reports and the results of surveys of individual theatres.

Table 3. Measures characterizing selected PAO in 2015

Theatres	Total costs	Own revenue	Subsidy	Premiers	Shows	Viewers	Places	Stage
Top of the classification								
Teatr Syrena in Warszawa (M)	7 810 802	2 398 030	4 001 200	1	238	64 310	300	1
Teatr Wielki im. S. Moniuszki in Poznan	29 406 481	6 314 883	19 951 650	8	169	90 942	938	2
Teatr im. Juliusza Słowackiego in Krakow	18 055 017	5 381 084	9 554 580	6	333	97 994	809	3
Teatr Ludowy in Krakow (M)	8 183 225	2 563 321	5 398 300	6	494	80 600	492	3
Teatr Polski in Wroclaw	18 034 116	4 687 704	5 838 800	4	280	71 431	1 101	3
Teatr Polski in Bielsko-Biala (M)	6 626 838	2 841 751	3 500 000	6	231	50 496	552	3
Teatr Powszechny in Lodz (M)	9 481 535	2 817 835	5 150 000	12	354	134 000	573	1
Teatr Dramatyczny im. A. Węgierki	6 150 939	1 626 454	4 488 700	9	366	26 627	680	3
Bottom of the classification								
Teatr Wielki in Lodz	38 077 496	4 256 971	29 000 000	4	90	86 454	1 074	1
Teatr im. J. Osterwy in Lublin	7 946 951	1 395 409	6 521 700	4	176	34 233	311	1
Teatr Ochoty in Warszawa (M)	2 638 732	534 847	2 020 000	3	109	5 800	76	1
Teatr Nowy in Warszawa (M)	10 774 620	2 101 006	7 501 200	4	77	11 541	344	1

Sources: own elaboration based on annual reports and the results of surveys of individual theatres.

in a large space with a much bigger audience thus achieving the so-called economies of scale. The unit cost per performance is reduced alongside the increasing scale of the project. Fixed costs are spread over more production units. Therefore, among the funding criteria of culture, one should take into account technical criteria such as the number of stages and the number of seats in the audience.

Based on the repeatedly obtained results of the study according to the various methods applied by the authors, one can observe similar characteristics of the model entity as before – the low own revenue at a level of less than 50% of total revenues, the large number of premieres (six per year), and several stages − unless one stage offers many seats to the audience and at the same time gives many performances.

The research enabled the authors to note that a substantial number of the theatres ranked highly in the classification includes large theatres having two or more stages. Most of them are located in large cities and capitals of provinces. This result seems to be logical because in the creative process besides the motivation to create, the infrastructure and resources are also necessary (Castaner and Campos, 2003, p. 44). Some researchers claim that the scope and type of artistic activity is a function of resources of the town/city in which this activity is carried out (Evans, 2000, p. 248), but this does not mean that small theatres should not carry out artistic activities. The classification is however a derivative of the criteria adopted and weights applied. The performed studies suggest that not only the distribution of public funds between theatres but also the classification of theatres should be made on the basis of the technical criterion (large and small ones separately).

By comparing the results of research using Z. Hellwig's (1968, 1969) method and the currently used methods of SAW and TOPSIS, it can be noted that the Hellwig method more often selects theatres from outside the smaller towns (Gałecka and Smolny, 2018). In view of the above, the authors believe that the Hellwig method performs better in theatre modelling as it also gives opportunities to smaller units located in smaller towns taking into account qualitative indicators such as creativity, repertoire diversification etc. This may indicate that the relative indicator – seat occupancy rate – is generally a better indicator than the absolute one such as the audience numbers.

4. Conclusion

The development of an objective theatre funding model is a major challenge for both entities developing as well as those implementing the cultural policy. The uncritical and superficial use of indicators in isolation from the sense and purpose of the specific institutions not only can prevent an appropriate evaluation of their work, but also can be a very dangerous tool for the commercialisation of their activities (Świętochowska, 2017, p. 69). Therefore, in order to optimize the allocation of public funds between cultural institutions, several criteria should be considered simultaneously. The paper presents basic financial, technical and substantive

measures. They do not constitute a comprehensive directory and should therefore be continually expanded to include as many factors as possible which characterise cultural organizations.

Varied artistic activity in individual theatres indicates the need to use external incentives to motivate the theatre authorities to intensify its operations in order to disseminate cultural services. Such an incentive and motivator may include objective criteria for allocation of the statutory grant. An increase in grants that bears no relation to the objective criteria will not have a positive impact on the increase of cultural service accessibility for the audience.

The classification of theatres presented in the article shows clearly that the position of various theatres in this type of breakdowns may be significantly changed within a relatively short period of time. The theatres that originally had a low position in the ranking may improve it and vice versa − the necessity to close a stage or stages made the theatre lose its high position. Several stages in one facility enable theatres to diversify their repertoire while maintaining performance and in light of this research it appears to be a precondition for their high performance (efficiency) if the large audience numbers are considered as such.

The authors research shows that the artistic activity of theatres is dependent on the technical criteria such as the number of stages or the number of seats as well as the substantive ones, namely the number of premieres, the number of performances. Small theatres, because of their capabilities, are not able to provide access to the same audience numbers as large theatres. Yet it is worth asking: should they "play" more frequently? In reply to this question, an important role is played by both the financial and substantive criteria.

The conducted studies bring one closer to formulating a theatre funding model which intuitively is sensed by anyone potentially interested in the efficiency of cultural public services, namely that the theatre should be subsidised but at the same time it should give many performances on different stages. The audience should be large enough so that the high costs of the organization of at least several premieres per year were spread between the theatre-goers.

In addition, the results show what type of drama theatres is most "productive", i.e. a theatre with at least two stages with the number of seats for the audience ranging between 230 and 500. A wide range of performances indicates that this factor can easily be changed − which should be maximized when considering technical conditions and obviously costs in total.

The research found an important role of both financial and non-financial indicators, among which technical indicators are essential. The studies clearly indicate that large theatres with many stages have greater opportunities due to the audience numbers criterion. An increase in their activity gives them a major advantage over the small theatres. On this basis, the need to develop optimal allocation of public funds between theatres in terms of their technical capabilities or infrastructure should be considered. This means that when creating the funding model for theatres

Table 4. Classification of municipal and regional public drama theatres in 2011*

No.	TOPIS	Theatres	SAW	Theatres
1	0.6010	Teatr Syrena in Warszawa (M)	0.4145	Teatr Wielki im. S. Moniuszki in Poznan
2	0.6006	Teatr Polski in Wroclaw	0.3892	Teatr Współczesny in Warszawa (M)
3	0.5843	Teatr im. Juliusza Słowackiego in Krakow	0.3729	Teatr im. Stefana Jaracza in Lodz
4	0.5665	Teatr Ludowy in Krakow (M)	0.3545	Teatr Ludowy in Krakow (M)
5	0.5527	Teatr Wielki im. S. Moniuszki w Poznaniu	0.3441	Teatr im. Stefana Jaracza in Olsztyn
6	0.5514	Teatr im. A. Mickiewicza in Częstochowa (M)	0.3327	Teatr im. Juliusza Słowackiego in Krakow
7	0.5500	Teatr Polski in Bielsko-Biała (M)	0.3225	Teatr Powszechny im. Z. Hübnera in Warszawa (M)
8	0.5483	Teatr Nowy in Warszawa (M)	0.3199	Teatr Syrena in Warszawa (M)
9	0.5422	Teatr Polski in Szczecin	0.3183	Teatr Polski in Wroclaw
10	0.5383	Teatr Rampa na Targówku in Warszawa (M)	0.3135	Teatr Polski in Bielsko- Biała (M)
....				
37	0.4675	Teatr Scena Prezentacje in Warszawa (M)	0.2178	Teatr Współczesny in Wroclaw (M)
38	0.4645	Teatr im. A. Fredry in Gniezno	0.2145	Teatr Miejski im. W. Gombrowicza in Gdynia (M)
39	0.4613	Teatr Żydowski im. E., R. i I. Kamińskich in Warszawa (M)	0.2145	Teatr Wielki in Lodz
40	0.4602	Teatr Ósmego Dnia in Poznan (M)	0.2095	Teatr Ochoty in Warszawa (M)
41	0.4567	Teatr Ochoty in Warszawa (M)	0.2088	Teatr Nowy in Warszawa (M)
42	0.4527	Teatr im. J. Osterwy in Lublin	0.2025	Teatr Dramatyczny im. J. Szaniawskiego in Walbrzych
43	0.4516	Teatr Dramatyczny im. J. Szaniawskiego in Walbrzych	0.1904	Teatr im. A. Fredry in Gniezno
44	0.4425	Teatr Studio im. S. I. Witkiewicza in Warszawa (M)	0.1901	Teatr Żydowski im. E., R. i I. Kamińskich in Warszawa (M)
45	0.4372	Teatr Wierszalin in Suprasl	0.1825	Teatr im. J. Osterwy in Lublin
46	0.3773	Teatr Wielki in Lodz	0.1810	Teatr Studio im. S. I. Witkiewicza in Warszawa (M)

*Only top 10 and bottom 10 presented.

Sources: own elaboration.

Table 5. Classification of municipal and regional public drama theatres in 2015*

No.	TOPIS	Theatres	SAW	Theatres
1	0.6727	Teatr im. Juliusza Słowackiego in Krakow	0.5278	Teatr im. Juliusza Słowackiego in Krakow
2	0.6677	Teatr Polski in Wroclaw	0.5180	Teatr Dramatyczny im. G. Holoubka in Warszawa (M)
3	0.6444	Teatr Ludowy in Krakow (M))	0.5162	Teatr Polski in Wroclaw
4	0.6436	Teatr Ateneum im. S. Jaracza in Warszawa (M)	0.5013	Teatr Wielki im. S. Moniuszki in Poznan
5	0.6434	Teatr Powszechny in Lodz (M)	0.4776	Teatr Ludowy in Krakow (M)
6	0.6269	Teatr Nowy im. T. Łomnickiego in Poznan	0.4595	Teatr im. Stefana Jaracza in Olsztyn
7	0.6265	Teatr Polski in Bielsko-Biała (M)	0.4534	Teatr Powszechny in Lodz (M)
8	0.6110	Teatr Dramatyczny im. A. Węgierki	0.4519	Teatr Dramatyczny im. A. Węgierki
9	0.6057	Lubuski Teatr im. Leona Kruczkowskiego in Zielona Góra	0.4425	Teatr Ateneum im. S. Jaracza in Warszawa (M)
10	0.6013	Teatr Dramatyczny im. J. Szaniawskiego in Plock	0.4393	Teatr Nowy im. T. Łomnickiego in Poznan
....				
37	0.5031	Teatr Scena Prezentacje in Warszawa (M)	0.2822	Teatr Miejski im. W. Gombrowicza in Gdynia (M)
38	0.5029	Teatr Ochoty in Warszawa (M)	0.2796	Teatr Żydowski im. E., R. i I. Kamińskich in Warszawa (M)
39	0.5028	Teatr Żydowski im. E., R. i I. Kamińskich in Warszawa (M)	0.2784	Teatr Współczesny in Wrocław (M)
40	0.5021	Teatr im. A. Fredry in Gniezno	0.2737	Teatr im. St.I. Witkiewicza in Zakopane
41	0.5006	Teatr Współczesny in Wroclaw (M)	0.2562	Teatr Łaźnia Nowa in Krakow (M)
42	0.4981	Teatr Wierszalin in Suprasl	0.2427	Teatr im. J. Osterwy in Lublin
43	0.4956	Teatr Ósmego Dnia in Poznan (M)	0.2321	Teatr Dramatyczny im. J. Szaniawskiego in Walbrzych
44	0.4945	Teatr Nowy in Warszawa (M)	0.2321	Teatr Ochoty in Warszawa (M)
45	0.4860	Teatr Dramatyczny im. J. Szaniawskiego in Walbrzych	0.2245	Teatr im. A. Fredry in Gniezno
46	0.3731	Teatr Wielki in Lodzi	0.2209	Teatr Nowy in Warszawa (M)

*Only top 10 and bottom 10 presented.

Sources: own elaboration.

one should take into consideration the division of theatres into small and large ones including the number of stages, the number of seats for the audience. In the literature, views concerning the artistic activity of large or small theatres are diverse. On the one hand, Rosanne Martorella (1977, pp. 358-362), Paul Di Maggio and Kristen Stenberg (1985, pp. 108-120) suggest that larger organizations are less creative than small ones, on the other, J.L. Pierce (2000, p. 49) argues that large organizations can afford to experiment in art. Supporters of the former group claim that large institutions have more resources and stable revenue, but their creativity is hampered by the reluctance to change, especially when previously they gained recognition among their recipients and are seen as reliable (Nohria and Gulati, 1996, p. 1245). As regards small theatres, the revenue is significantly lower, which substantially affects their artistic activity. In small theatres, even if they 'play' very often, personnel costs (associated with the number of performances) will not have any effect on the financial results because the proceeds from tickets are not able to cover them, which seems to be consistent with the cost 'disease'. Personnel costs constitute the largest part in the overall costs and they grow in line with the number of performances. Paradoxically, for the theatre that wants to save money, the primary means to do so should be a decrease in the number of performances.

The solution to the problem of cultural institution objective funding may be a division of the statutory grant into two parts: flat-rate and per-consumer funds. According to Throsby and Withers (1979, pp. 22-23), if a theatre received grants per every theatre-goer, then it would be more eager to expand the number of services in accordance with the set objective of its activities − which is to maximize the audience numbers. The simultaneous operation of flat-rate grants and per-consumer grants, researchers believe, will limit the risk of shifting the theatre's priorities in favour of the number of services to the detriment of the quality. The authors research shows that the flat-rate grant should be conditional on objective criteria based on the technical and substantive indicators.

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