The impact of management control systems and managers’ educational background on the effectiveness of public cultural institutions in a post-transition economy

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ABSTRACT
This study examines the impact of management control systems on the effectiveness of public cultural institutions in the context of an emerging economy. Despite studies confirming the possibility of adapting various management control aids to meet the needs of cultural institutions, empirical evidence on the efficiency of their implementation is missing. Using a sample of 57 cultural institutions from Poland, we establish that the implementation of an advanced management control system may enhance the effectiveness of cultural institutions and the likelihood of fulfilment of their mission. In case of public museums, an efficient management control system appears to facilitate the receipt of public funding. In contrast, public theatres, which seemingly enjoy greater financial flexibility, are seen to primarily use management control aids to foster the growth of non-subsidy financing. The implementation of advanced management control systems in public cultural institutions is found to positively contribute to the fulfilment of their mission, even as it improves the self-assessment of their financial standing. The effectiveness of the sampled cultural institutions is found to be related to the educational background of their managers; further, economic/managerial education enhances the likelihood of fulfilment of the institutions’ mission.

1. Introduction
In most European countries, a non-negligible part of public funds is allocated to finance cultural infrastructure (Last & Wetzel, 2010). Marco-Serrano (2006) shows that the budgetary support for cultural institutions has been growing steadily after WWII. Relying on data from 24 European countries, the Council of Europe/ERICarts (2014) reports that after 2010, the average public spending on the cultural sector equals 1.54% of the total public budgetary allotment, and amounts to 0.56% of the GDP.
Taking into account the growing allocation of public funds to the cultural sector, the performance management of cultural institutions has become an important praxeological issue. To promote the implementation of the best managerial practices and reward efficiently managed institutions, policymakers need an effective system of performance appraisal that addresses the specific requirements of cultural institutions (Last & Wetzel, 2010). In this context, the implementation of benchmarking models suitable for non-profit organisations has attracted considerable attention from the research community. The application of such models is expected to allow the managers of public institutions as well as policymakers to identify the sector’s best practices and prepare guidelines for the efficient allocation of scarce financial resources (Last & Wetzel, 2010).

The researchers in the field of cultural economics and management underline the importance of the implementation of effective management control systems aimed at monitoring and assessing the performance of cultural institutions (Heilbrun & Grey, 2001; Stanziola, 2008). Owing to the specificity of the social mission of cultural institutions, it may be especially difficult to assess whether the allotted financial resources are being used appropriately. The factors deciding the rationality of cultural projects, such as client satisfaction, public support for the cultural project and the possibility of symbiotically combining for-profit and non-profit activities, are significantly different from those conventionally used for investment project appraisal (Bendixen, 2010). Basso and Funari (2004) note that, just like any other business, cultural institutions use a combination of production resources (labour, capital, etc.) to deliver cultural services. Therefore, it is important to introduce a management control system to ensure that these resources are being used optimally. Connolly, Conlon, and Deutsch (1980), Amenta (2010), Throsby (2003a) and Paulus (2003) postulate that the performance record would have direct repercussions for the institution’s financing, thereby rewarding the most effectively operated institutions. These authors also propose the design of performance appraisal systems that meet the needs of cultural institutions.

The literature has focussed on methodological issues, paying scant attention to the problem of measuring the impact of implementation of management control systems on the performance of cultural institutions. To fill this gap, this study verifies whether the implementation of a management control system positively contributes to the effectiveness of public cultural institutions. Our findings, which are based on relevant fieldwork and quantitative analysis, point to the positive association between the comprehensiveness of management control systems and the effectiveness of public cultural institutions. We conclude that the implementation of a comprehensive performance management system may alleviate the shortcomings of unidimensional financial analysis that is currently the performance appraisal tool most prevalent in Poland’s cultural sector. We demonstrate that the presence of an advanced management control system is positively associated with the likelihood of fulfilment of the cultural institutions’ mission – something frequently ignored in unidimensional financial performance appraisal. Further, it is also positively associated with the financial standing of these institutions; this may be particularly important from the standpoint of the optimisation of the resources allocated to this sector.

Further elaborating upon the role of management control systems in the fulfilment of cultural institutions’ mission, we provide evidence that the positive association
between a management control system and institutions’ effectiveness is amplified by the degree of complexity and sophistication of the system. In fact, we convincingly demonstrate that the more comprehensive management control systems may be contributing to an improvement in the effectiveness of cultural institutions. These findings point to the incompleteness of the current managerial guidelines regarding performance management of cultural institutions; they tend to be unidimensional and prioritise the financial aspects of cultural institutions’ efficiency over the indicators of qualitative performance management that may be difficult to track and operationalise. In fact, we show that expanding the managerial perspective to incorporate the correlates of mission fulfilment into the performance scorecard may ameliorate the institutions’ outcomes even in purely financial terms.

While the managers of cultural institutions frequently claim to invest a significant effort into developing a sound management information and control system, it is also commonly stated that a lack of appropriate executive training may inhibit the elaboration and implementation of a well-defined controlling and performance appraisal scorecard. Casual empiricism suggests that the implementation of a well-rounded management control system is contingent on the availability of well-educated and trained managerial resources. The authors of this paper have not found any study that verifies whether the educational background of the managers of cultural institutions impacts their effectiveness. We also did not find any empirical study analysing the impact of the advancement of the management control systems on the self-assessment of the financial standing of cultural institutions. Therefore, to establish whether the success of a management control system hinges upon the educational and stewardship background of the institutions’ management, we verify whether the cultural institutions managed by executives educated in economics/management exhibit higher effectiveness.

In the present work, cultural institutions are defined as legal entities whose operational activities are directed towards the creation, maintenance and dissemination of cultural goods and services. These institutions include theatres, opera houses, philharmonics, orchestras, movie theatres, museums, libraries, art galleries and arts centres. In accordance with the data of the Central Statistical Office of Poland (2018), most cultural institutions are under public ownership (e.g. 85% of theatres and museums). The prevalence of public institutions in this sector has led to the wide use of a particular set of performance measurement indicators. This study shows that most institutions predominantly rely on economic indicators, which primarily measure the financial effectiveness of subsidy allocation. Only about 55% of the cultural institutions covered in the present study declared that they had implemented management control systems to monitor the fulfilment of strategic and operational goals, as well as promote client and employee satisfaction. In view of the specificity of operational activities of the cultural institutions, the predominant reliance on economic performance indicators does not seem to be conducive to monitoring the fulfilment of these institutions’ mission. The authors of the present study, therefore, question whether the application of a management control system well-suited to the particularities of cultural institutions may enhance their effectiveness by facilitating the fulfilment of their primary operational goals and statutory mission, as defined by the regulator.
To elucidate the link between the quality of management control systems and effectiveness of public cultural institutions, the empirical part of the present study first identifies performance management instruments and management control indicators currently utilised by cultural institutions in Poland. Second, we correlate the complexity of the management control systems in the sampled cultural institutions with their effectiveness and financial standing. Finally, the study establishes whether the successful implementation of an effective management control system is contingent upon the educational and business background of the institutions’ managers. This comprehensive analysis not only demonstrates the rationale for implementing an elaborate management control system, but also identifies the resources that play a decisive role in maximising the benefits from the implementation. Thus, our goal is to present convincing evidence on the benefits of comprehensive multidimensional management control systems in terms of fulfilling cultural institutions’ mission, as well as the amelioration of their financial standing through monitoring and management of both financial and non-financial performance indicators.

An additional contribution of this study arises from the fact that the fieldwork has been conducted in the public sector of a post-transition economy. While being less comprehensively studied owing to access barriers and regulatory hurdles, the public cultural sector of post-transition economies faces a number of idiosyncratic problems, which have been chosen as the focus of the present study. For example, the cultural sector in Poland is heavily regulated and largely dominated by publicly owned entities (Central Statistical Office of Poland, 2018). As a result, the overwhelming majority of cultural institutions rely on budget subsidies as their primary source of financing; the non-subsidy operational revenues constitute a minor part of the disposable financial resources of cultural institutions. The latter fact may potentially skew operational decision making and shift performance priorities towards the monitoring of subsidy allocation even at the expense of fulfilling the institutions’ mission. We demonstrate that despite relative progress being made over the past decade, public cultural institutions exhibit staggering inertia and reluctance to implement comprehensive management control and information systems; this may possibly have adverse repercussions for their performance. The authors of the present study primarily analyse the status quo in performance management in the cultural sector to help formulate guidelines for the improvement of management control systems in public cultural institutions.

This paper is organised as follows. First, we present a review of literature on the problem of defining and measuring the effectiveness of cultural institutions in Section 2. Section 3 presents the methodology and results of the empirical study. A discussion of the results conclude the paper.

2. Effectiveness of cultural institutions: literature review

Owing to the specificity of the operational activities of cultural institutions, the measurement of their effectiveness poses several practical challenges. The primary task of cultural institutions is to fulfil their mission of creating, preserving and disseminating cultural goods and services, rather than maximising the financial payoff or value generated from them. For example, Paulus (2003) notes that museums perform three
essential functions – research, communication, and preservation of heritage. When allocating their limited pool of funds, the managers are confronted with a trade-off between these three functions. Throsby (2003b) focuses on the difficulties related to the measurement of cultural value generated by cultural institutions. Cultural value is multifaceted and may be analysed from the aesthetic, spiritual, social, historical or symbolic perspectives. Owing to their complicated nature, cultural projects may not always be evaluated by using the conventional methods of investment project appraisal, that is, the net present value or the internal rate of return (Throsby, 2003b). McCarthy, Ondaatje, Zakaras, and Brooks (2004) highlight the fact that cultural institutions generate a range of benefits that are not always easily operationalizable or quantifiable. They distinguish between the following groups of effects created by cultural institutions – cognitive, educational, therapeutic, social and economic.

The literature tackling the issue of performance appraisal in cultural institutions confines itself to a discussion of the general tenets underpinning the system of managerial control and governance.

Byrnes (2009) proposes a comprehensive approach for the appraisal of operating activities of cultural institutions. Among other things, Byrnes (2009) formulates the principles of budgeting in cultural institutions; proposed cost classifications; and suggested a methodology for investment project appraisal tailored to the context of the cultural sector. Gerald (2006) formulates some principles of strategic planning, reporting and budgeting in museums. Studies on issues related to the implementation of management control systems in cultural institutions largely agree that performance appraisal should encompass the variety of intangible benefits generated by cultural institutions and should be tailored to their specific operational context (Ginsburgh & Throsby, 2006; Heilbrun & Grey, 2001; Wnuczak, 2014, 2017). However, Stanziola (2008) notes that the methods commonly used for evaluating cultural institutions’ activities frequently ignore the educational, cultural and social benefits generated by the cultural infrastructure.

Researchers in the area of performance appraisal of cultural institutions recognise that a management control system that suits the needs of a cultural institution should be multi-dimensional. Tackling the problem of performance management in cultural institutions, Cameron (1981) and Connolly et al. (1980) propose multi-criterion systems of performance appraisal that show an organisation’s ability to procure funds, as well as allocate them in a way that meets competing purposes. Kanter and Summers (1987) show that the effectiveness of non-profit institutions should be monitored by using both short- and long-term measures. The Wavell et al. (2002) state that the key component in a system suitable for the appraisal of cultural institutions’ performance is the correct selection of criteria for performance measurement. Wavell et al. (2002) Council suggested criteria that reflected the impact of cultural institutions on social cohesion and integration, learning, and the economy. A similar framework for performance management of museums was suggested by Paulus (2003), which appraises the following dimensions: economy, capital, effectiveness, and efficiency. Relying on empirical data, Wavell, Baxter, Johnson, and Williams (2002) establish that the performance indicators used to monitor cultural institutions should cover the visitors’ engagement; enthusiasm; and satisfaction, as compared to their expectations; the
indicators should also encourage them to learn. Kushner and Poole (1996) postulate that the evaluation of the effectiveness of the cultural institutions should be based on the following criteria: the satisfaction of the visitors, donators and volunteers; accomplishment of the artistic goals; and the identification and procurement of human and financial resources. Alternative performance indicators were suggested by Schuster (1997), Gilhespy (1999), Cowell (2007) and Wavell et al. (2002). Fox (2006), Kaplan (2001) and Wnuczak (2015) propose the possibility of using the balanced scorecard for strategic performance management in cultural institutions.

The specificity of operational activities and objective functions of cultural institutions are considered to preclude the possibility of benchmarking and comparative performance analysis of multiple institutions. Barrio, Herrero, and Sanz (2009) note that the performance indicators suggested in the literature frequently allow only unidimensional comparison between institutions and preclude any possibility of ranking the analysed institutions. Frontier techniques (Basso & Funari, 2004; Mairesse & Van Den Eeckhuysen, 2002; Paulus, 2003; Pignataro, 2002; Taalas, 1998) solve this problem by creating complex indicators synthesising all aspects of the institutions’ performance. These techniques comprise parametric models such as stochastic frontier approach (SFA), thick frontier approach (TFA) and distribution free approach (DFA) (Borkowski, Dudek, & Szczęsný, 2004), and non-parametric models such as data envelopment analysis (DEA) and free disposal hull (FDH) (Charnes, Cooper, & Rhodes, 1978). DEA is frequently used for performance appraisal of museums (Barrio et al., 2009), orchestras (Luksetich & Hughes, 1997) and libraries (Noh, 2011).

The literature also suggests the evaluation of the rationality of cultural projects through the use of cost-benefit analysis (CBA) as a technique that complements multi-dimensional performance appraisal; CBA shows whether the implementation of the project contributes to the well-being of the community (Baker et al., 1998). It may be used for measuring the value of services provided by public libraries (Holt et al., 1999) and other cultural projects. The application of CBA requires the evaluation of the benefits generated by cultural institutions. The travel cost method (TCM) and zonal travel cost model (ZTCM) may be used for this purpose (Bedate et al., 2004; Clawson & Knetsch, 1966). Alternative methods for the evaluation of benefits generated by cultural institutions are the hedonic price method (HPM) (Moorhouse & Smith, 1994) and contingent valuation methodology (CVM) (Portney, 1994).

Another approach for measuring of effectiveness of cultural institutions consists of analysing the impact of the cultural organisations on regional economic development. An example of such research is the study by Plaza (2000), who analyses the impact of the Guggenheim museum in Bilbao (Spain) on the local tourism sector. Greenhalgh, Landry, and Worpole (1993), McClure (2002) and Proctor, Usherwood, and Sobczyn (1996) study the influence of tourism on regional economic development. UK’s South West Museum Council (2000) study the impact of tourism on local employment and wages. Holt, Elliott, and Moore (1999) investigate the impact of the demand for cultural services on local economic growth.

The literature on the effectiveness of cultural institutions offers many models and tools for improving the management of these organisations. However, studies analysing the outcomes of implementing these models are scarce. Performance
appraisal in the cultural sector remains an important issue from both the methodo-
logical and business perspectives. This study, therefore, attempts to contribute to the
discussions on this issue.

3. The impact of implementation of management control systems
on the effectiveness of public cultural institutions: the empirical study

3.1. The definition of effectiveness of public cultural institutions

The managerial effectiveness of a company is typically defined as its ability to deliver
what it is expected to deliver with engagement of minimal resources (Drucker, 2006).
This definition may be difficult to operationalise in the context of cultural institu-
tions. In addition to preserving the cultural heritage (Paulus, 2003), cultural institu-
tions perform many functions, such as cognitive, educational, therapeutic and social
(McCarthy et al., 2004). These functions need to be performed by taking into account
the economic rationality and efficiency of allocation of available resources. Therefore,
ethe effectiveness of cultural institutions should be assessed on the basis of economic
rationality of the undertaken projects rather than by conventionally using the finan-
cial bottom line (Ziębicki, 2007). Taking into account the specificity of cultural insti-
tutions, their effectiveness may be defined as their ability to attain their goals and
accomplish their mission by making optimal use of the economic resources available;
in turn, their mission may be defined as the procurement and dissemination of public
goods and services, as well as the preservation of cultural heritage (Wnuczak, 2014).

Managerial practices in public cultural institutions in Poland are shaped by the
Public Finance Law of 2009 and the Act on Organizing and Conducting of Cultural
Activities of 1991. The former assures the transparency of allocation of budgetary
resources by establishing the rules of financial discipline and internal audit in public
institutions; further, it lists the regulatory requirements regarding business transac-
tions and resource allotment within public cultural institutions. The latter Act speci-
fies the legal forms of cultural institutions, rules to be followed for executives’
nomination, and manner in which business activities should be conducted by public
cultural institutions. Since 1999, public cultural institutions have been run and
financed by local public authorities, that is, county and voivodeship administration.
The rigidity of the regulatory framework, as well as the predominant dependence of
public cultural institutions on budgetary subsidies, has had profound consequences
for the development of management control systems in public cultural institutions; it
has led them to focus primarily on quantitative economic performance indicators
tracking the allocation of the budgetary subsidy. The present study intends to demon-
strate that the elaboration of a more comprehensive management control system that
goes beyond economic performance indicators may enhance both the effectiveness
and financial standing of public cultural institutions.

3.2. The goal of the study and the selection of the research sample

The data for the analysis were collected through surveys of the managers of public
cultural institutions in Poland, conducted between January and October of 2012. The
The final sample comprises 57 public cultural institutions, which represent 6.5% of the population (the public record indicated that there were 882 public museums and theatres in Poland in 2012). It is worth noting that the fieldwork in the public cultural institutions was complicated by regulatory hurdles and the reluctance of institutions’ executives to share information on the managerial practices prevailing in their institutions. As a result, the process of completing the qualitative part of the study in accordance with the applicable regulatory framework took a substantial amount of time. The prolonged data collection period helped in increasing the response rate and assured the representativeness of the research sample. The proportion of the institutions in the present research sample – 30 museums, 24 theatres and 3 concert halls – replicates closely, their proportion among the public cultural institutions in Poland.

The questionnaire distributed among the managers of public cultural institutions consisted of three parts. The first part focussed on basic company data: the type of institution; the supervisory authority; the types of products and services offered by the institution; its revenue and costs; the value of public subsidies; and the number of clients and employees. The second part of the questionnaire was designed to evaluate the sophistication of the management control systems implemented in the studied institutions. This part related to the ways of elaborating, measuring, and implementing the institution’s strategy; the system of indicators used for the purpose of performance management; the procedures related to the preparation and approval of the budgets; the ways of monitoring the budget targets; the cost documentation and analysis; and the organisation of the reporting system. This part featured a total of 23 questions; each offered four options describing the degree of complexity and sophistication of the management control systems. The managers were asked to choose the option that most accurately described the institution’s internal practices. The formulation of the options to the survey questions led to a better evaluation of the management control systems in the studied organisations. Relying on the answers from the questionnaires, we elaborated a marking system for evaluation of the management control system in the given organisation. Each description of the management control system was assigned a particular number of points: three points meant that the institution implemented the most advanced management control techniques in the given area, whereas a score of zero meant that the institution did not use the given instrument of management control at all. The answers to the three yes/no questions were encoded by assigning three points for the positive answer and zero points for the negative answer. One of the questions had three answer options, which were encoded on a scale of 0–2 points. Thus, each surveyed institution could get a maximum score of 66 points. The quantitative analysis of the obtained answers helped to operationalise the degree of sophistication of the management control system implemented in the sampled institution. The resulting nominal variable ‘MCS’ allowed us to test for the influence of management control systems on the effectiveness of cultural institutions. The combined data from the first and the second part of the questionnaire made it possible to study the determinants of the application of management control systems in Polish cultural institutions.

The responses of cultural institutions’ managers provided in the second part of the questionnaires allowed the identification of the tools of management control and
The research methodology and empirical results

To verify the research hypotheses, we use cross-sectional linear regression analysis and multinomial probit models.

The cross-sectional linear regression analysis is used to verify the impact of management control systems on the effectiveness of the studied public cultural institutions and to confirm the association between their effectiveness and the educational background of their managers. Cross-sectional OLS techniques were deemed to be well-suited to the
analysis of the present database: the distributions of the variables featuring in the regressions have been checked for normality; further, the nominal variables have been scaled to allow for application of linear regression analysis. The explained variable is the share of the non-subsidy revenue in the total sales budget of the institution (variable ‘NSR’). We expect the entities that implemented more complex and more comprehensive management control systems to be better managed, and, as a consequence, possessing a relatively higher capability to generate non-subsidy revenue. In addition to the independent variable ‘MCS’, which reflects the complexity of the management control systems, the base econometric model (IA) features the following independent variables, which may impact the share of non-subsidy revenue in the entities’ total revenue:

1. Museum – the binary variable that indicates whether the studied entity is a public museum;
2. Theatre – the binary variable that indicates whether the studied entity is a public theatre;
3. LnR – the natural logarithm of the entity’s total revenue. The variable is included as a proxy for the institution’s size, which may have a significant influence on the institution’s ability to generate non-subsidy revenue;
4. CentGov – the binary variable that indicates whether the institution is being managed, supervised, and financed by the central government (as opposed to being managed, supervised, and financed by local authorities);
5. Education – binary variable that indicates whether the institution’s manager has an educational background in economics/management.

The analysis of the correlation matrix eliminated the possibility of encountering multicollinearity problems.

To check whether the impact of the management control systems on the share of non-subsidy revenue in the total revenue differs across different types of cultural institutions, we introduce interaction terms. The variable ‘Museum*MCS’ (‘Theatre*MCS’), which is the product of the dummy variable ‘Museum’ (‘Theatre’) and the nominal value ‘MCS’, should show how the implementation of a more sophisticated management control system may contribute to the museum’s (theatre’s) capacity to generate non-subsidy revenue.

Whenever the model disturbances are found to have unequal variances across the observation points, we use White heteroscedasticity-consistent standard errors to assess the statistical significance of the empirical models. A summary of the empirical tests is presented in Table 1.

Model IA, reported in Table 1, confirms the statistical significance of all independent variables except the one approximating the complexity of the management control system. The size of the institution, measured by the value of its revenue, as well as the entity’s classification as a theatre are positively and significantly associated with the regressand. The impact of the ‘Theatre’ dummy is attributable to the specific nature of the business operations of these institutions. Being managed by the central government is negatively and significantly associated with an entity’s ability to generate non-subsidy revenue; this finding is consistent with the common perception about
centrally managed cultural institutions are more reliant on budgetary financing than the institutions managed and financed by the local government.

That the complexity of the management control system does not significantly affect the entity’s ability to generate non-subsidy revenue contradicts the previously advanced hypothesis regarding a positive association between the advancement of management control systems and cultural institutions’ effectiveness. A further in-depth study suggests that the strength and direction of this relationship may depend on the type of cultural institutions in question. The inclusion of the interaction terms ‘Museum*MCS’ and ‘Theatre*MCS’ allows us to study the impact of management control systems on the institutions’ ability to generate non-subsidy revenue after paying consideration to the specificity of each type of institution. In case of museums (Model IIA), the complexity of the management control system is found to negatively impact the institutions’ ability to generate non-subsidy revenue; this finding may suggest that museums implementing advanced management control systems would have an advantage over their non-implementing counterparts in procuring public funds. A comprehensive management control system may help to present the entity’s activities in a way that shows the need for financing through public budgets.

Model IIIA, featuring the interaction term ‘Theatre*MCS’, shows that the complexity of the management control systems has a positive and significant (at the 10% level) influence on a theatre’s ability to generate non-subsidy revenue. Because public theatres face more pressure than public museums to generate non-subsidy revenue, they may primarily use their management control systems to improve their market positioning. The introduction of the interaction term ‘Theatre*MCS’ into the model specification causes the dummy variable Theatre to lose its statistical significance; this latter suggests that the significance of the variable Theatre in model IA was primarily

Table 1. Determinants of the share of non-subsidy revenue in the total revenue of the sampled cultural institutions.

| Independent variables | Model IA            | Model IIA           | Model IIIA          |
|-----------------------|---------------------|---------------------|---------------------|
| Constant              | -0.577***           | -0.745***           | -0.605***           |
| (0.134)               | (0.147)             | (0.119)             |
| Museum                | 0.051*              | 0.192**             | 0.057**             |
| (0.028)               | (0.076)             | (0.028)             |
| Theatre               | 0.120***            | 0.123***            | -0.009              |
| (0.031)               | (0.030)             | (0.069)             |
| MCS                   | 0.001               | 0.002               | -0.002              |
| (0.001)               | (0.001)             | (0.001)             |
| LnR                   | 0.045***            | 0.054***            | 0.054***            |
| (0.009)               | (0.009)             | (0.009)             |
| CentGov               | -0.054**            | -0.039              | -0.039              |
| (0.026)               | (0.025)             | (0.025)             |
| Education             | 0.043**             | 0.032**             | 0.032**             |
| (0.014)               | (0.016)             | (0.016)             |
| Museum*MCS            | -0.003**            |                     | 0.003*              |
| (0.002)               |                     |                     |
| Theatre*MCS           |                     |                     |                     |

R²                      | 64.70%              | 68.03%              | 67.96%              |
F-Statistic             | 14.97 [0.000]***    | 14.60 [0.000]***    | 14.54 [0.000]***    |

Source: Authors’ Own elaboration.
Notes: The heteroscedasticity robust standard errors are provided in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. For F-statistic, the p-values are reported in parentheses, below the test statistic.
because of the entities with relatively more complex management control systems. The overall results indicate that the lack of an advanced management control system may reduce the ability of the public theatres to generate non-subsidy revenue.

Our empirical results show a positive association between the degree of complexity of management control systems and cultural institutions’ effectiveness. Further analysis of the association between the quality of management control systems and the effectiveness of public cultural institutions was conducted using probit models.

The preceding econometric models (IA, IIA and IIIA) revealed a statistically significant association between an institution’s ability to generate non-subsidy revenue and its managers’ educational background in management/economics. The obtained empirical results allow us to postulate that the cultural institutions managed by executives with educational background in management/economics exhibit higher effectiveness. The initial analysis of the results of the data collected from the questionnaires suggest that executives with managerial educational background are more likely to apply advanced budgeting techniques and operational controlling tools to enhance the efficiency of financial decision making. They are also more likely to establish targets for the cost of optimisation and effectiveness of subsidy allotment through an analysis of quantitative performance indicators including budget variances, donation flow and customer base dynamics. Overall, one may reasonably conclude that an acquaintance with the analytical framework of financial decision making is likely to enhance the effectiveness of managerial practices in the public cultural sector.

To assess the impact of the management control systems on the effectiveness of the cultural institutions, we estimate probit models, with the explained variable measuring the accomplishment of the institutions’ mission (Model IB). At the initial stage of empirical analysis, we assume that the institutions implementing advanced management control systems would exhibit higher effectiveness in fulfilling their mission. Therefore, we expect the managers of the institutions with more complex management control systems to better evaluate the accomplishment of the institutions’ mission. In this study, the fulfilment of the entity’s mission is assessed by the institutions’ management on a six-point scale ranging from 0 (institution does not fulfil its mission) to 5 (institution fully accomplishes its mission). After further analysis of the distribution of survey results, we encoded all 5 grades as 1 (the institution fulfils its mission) and all remaining grades as 0 (the institution fulfils its mission insufficiently). The models feature the same control variables as the previous models except for the sector dummies (variables ‘Theatre’ and ‘Museum’). Thus, we assume that perceptions of the mission being accomplished does not depend on its industry.

The results of the estimated probit model are presented in Table 2. The independent variables are jointly and separately significant at the conventional levels of significance, thereby allowing valid statistical inference.

The analysis of the empirical results suggests that the complexity of the management control systems positively and significantly (at the 5% significance level) influences the ability of cultural institutions to fulfil their mission. Because the assessment
of the effectiveness of cultural institutions consist the evaluation of mission accomplishment with the most rational use of financial resources, one may cautiously conclude that the institutions that fulfil their mission are managed more effectively.

Because empirical evidence suggests that the management control systems may enhance the institution’s ability to accomplish its mission, one may infer that the management control tools improve the quality of organisational management.

To verify whether the complexity of management control systems is positively associated with the institutions’ financial standing, the explained variable in the probit model is substituted with the self-assessment of the institution’s financial standing. We hypothesise that the complexity of the management control systems impact the self-assessment of the institutions’ financial standing. The institutions’ financial standing was assessed on a 6-point scale ranging from 0 (very poor financial condition) to 5 (excellent financial standing). The analysis of the distribution of survey responses suggested a further recoding of the multinomial variable into a binary variable, where the responses 3, 4 and 5 were encoded as 1, while the responses 0, 1 and 2 were encoded as zero.

The vector of control variables features all the variables used in the preceding models, except for the share of non-subsidy revenue in the institution’s total revenue and ‘CentGov’. The models feature the interaction terms ‘Theatre*MCS’ and ‘Museum*MCS’ to separately estimate the impact of management control systems on the self-assessment of the entity’s financial standing, depending on its industry classification.

The empirical results presented in Table 3 point to the joint and separate statistical significance of the explanatory variables. The models possess satisfactory econometric properties.

In model IC, the following four control variables exhibit statistical significance at the conventional levels: ‘MCS’, which approximates the complexity of the management control system; ‘LnR’, which approximates the institution’s size; the dummy variable ‘Theatre’; and the interaction term ‘Museum*MCS’. The variable ‘LnR’ is statistically significant at the 1% level; this suggests that institutions with larger

| Table 2. Determinants of mission accomplishment by the analysed institutions. |
|---------------------------------|-----------------|
| Independent variables         | Model IB        |
|--------------------------------|-----------------|
| Constant                       | −10.714***      |
|                                | (4.549)         |
| NSR                            | −0.749          |
|                                | (2.783)         |
| MCS                            | 0.0647**        |
|                                | (0.0270)        |
| LnR                            | 0.497           |
|                                | (0.327)         |
| CentGov                        | −0.709          |
|                                | (0.737)         |
| Education                      | 0.988*          |
|                                | (0.565)         |
| Chi-squared                    | 26.361 [0.0002]** |

Source: Authors’ own elaboration.
Notes: The heteroscedasticity robust standard errors are provided in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The table presents the maximum likelihood estimates for a binary probit regression.
revenue budgets assess their financial standing to be relatively better than their counterparts.

Greater sophistication of the management control systems translate into a better self-assessment of the financial standing of public museums (the relationship is significant at the 10% level). This finding accords with that obtained from the cross-sectional analysis, which revealed that advanced management control systems facilitate the procurement of public funding by public museums. In turn, a better flow of public funds should improve the self-assessment of their financial standing. The empirical result confirmed a significant (at the 5% level) and negative impact of the sophistication of the management control systems on the self-assessment of the financial standing of public theatres. The difference in the results obtained for public theatres and museums may stem from the different features of the operational activities of these institutions. The operational activities of public museums are guided by strict regulations that limit the scope of the management’s influence on the attractiveness of the museum’s market offer and, as a consequence, on its financial standing. Therefore, it may be the case that public museums use management control systems to increase the inflow of public funds. In the case of theatres, the situation looks different; the activities of theatres are not regulated as strictly as those of public museums. Theatres have greater flexibility in designing their programmes, promotional campaigns, and various initiatives aimed at attracting new clients. In this context, public theatres may have limited ability to procure additional public financing because the decision-making unit within the public sector may insist that the theatres become more reliant on non-subsidy funds. Therefore, one may cautiously conclude that the management control systems lead to a better assessment of the theatres’ financial standing, while simultaneously accentuating the importance of existing financial problems. This may lead to the empirically observed negative impact of the

Table 3. Determinants of the self-assessment by the studied institutions of their financial standing.

| Independent variables | Model IC | Model IIC |
|-----------------------|----------|-----------|
| Constant              | −14.874* (7.646) | −29.349*** (10.200) |
| NSR                   | −6.097 (4.926) | −5.168 (4.956) |
| MCS                   | −0.134* (0.071) | 0.1677 (0.109) |
| LnR                   | 1.380*** (0.489) | 1.533*** (0.547) |
| Education             | −1.991 (1.250) | −3.915* (1.946) |
| Museum                | −3.176 (2.714) | −0.661 (1.235) |
| Theatre               | 2.997* (1.589) | 11.800** (5.212) |
| Museum*MCS            | 0.208* (0.124) | | |
| Theatre*MCS           | | | −0.423** (0.195) |
| Chi-squared           | 44.871 [0.0000]*** | 49.523 [0.0000]*** |

Source: Authors’ own elaboration.
Notes: The heteroscedasticity robust standard errors are provided in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The table presents the maximum likelihood estimates for a binary probit regression.
complexity of the management control systems on the self-assessment of the financial standing of public theatres. At the same time, the empirical results suggest that the complexity of the management control systems impact the self-assessment of the institutions’ financial standing.

4. Concluding remarks

The aim of the present study was to analyse the impact of the management control systems on the effectiveness of the public cultural institutions in Poland. The results of the empirical studies suggest that the implementation of an advanced management control system may positively contribute to the organisational effectiveness of public cultural institutions. In case of public museums, advanced management control may help in increasing of public financing received. The degree of sophistication of the management control systems significantly (at the 5% level) and negatively influences the museums’ capacity to generate non-subsidy revenue; this finding suggests that museums with a better management control systems are more effective in obtaining public financing. In case of public theatres, the lack of an advanced management control system may negatively affect their ability to generate non-subsidy revenue; this suggests that theatres use their greater flexibility in generating non-subsidy revenue to use management control mechanisms that enhance their revenue-generating capacity. Taking into account the specificity of the operational activities of both types of entities, one may conclude that the management control systems positively influence the effectiveness of the public cultural institutions. The empirical results prove that the cultural institutions that use an advanced management control system are more effective in accomplishing their mission. The institutions’ ability to fulfil their mission is found to be significantly (at the 5% level) and positively associated with the complexity of the management control system. The empirical results suggest that the effectiveness of cultural institutions may be enhanced by implementing a more elaborate management control system.

The empirical results also suggest that a cultural institution managed by an executive with an educational background in management/economics exhibits higher effectiveness and a higher likelihood of accomplishing its statutory mission. The literature is mute on the issues related to HR management in the public cultural institutions. Our findings suggest that acquaintance with a conventional toolkit of financial decision making and broad managerial knowledge may be of significant value in public cultural institutions. Executives with business-related educational background may be more likely to implement more elaborate management control systems, which, in turn, may contribute to the amelioration of resource management practices within cultural institutions.

The sophistication of the management control systems is also shown to be positively associated with the self-assessment of the financial standing of the cultural institutions. In case of public museums, the implementation of a more elaborate management control system is found to ameliorate the self-assessment of their financial standing. The opposite is found to be true in the case of public theatres. The difference in the results may be explained by the greater flexibility enjoyed by theatres in
generating non-subsidy revenue than public museums. Public theatres may face greater difficulties when substantiating their need for greater financing through public budgets. The management control tools may help the managers of the public theatres to better monitor and remedy the existing financial problems.

This study contributes to the body of research on the effectiveness of implementation of management control systems in cultural institutions. The empirical findings strongly suggest that there is a significant relationship between the implementation of the management control systems and the organisational effectiveness of cultural institutions.

Despite its novelty and the coverage of a post-transition economy by relying on a hand-collected database, the present study faces several limitations. In particular, the time lag between the completion of qualitative analysis and data processing may result in a divergence between the reposted results and the current status quo in the industry. However, we estimate that the likelihood of this occurring is quite remote owing to the general inertia of managerial practices in the studied sector, as well as the rigidity of the regulatory framework shaping the reporting and internal procedural requirements applicable to public cultural institutions. Second, the studied research sample constitutes 6.5% of the population of public sector cultural institutions in Poland. Despite the fact that the sample structure is broadly representative of the population structure, the results may not be easily generalisable owing to the limited sample size. Third, the application of quantitative techniques to the analysis of data obtained by qualitative research methods poses some methodological challenges. In particular, some of the variables used in the quantitative analysis are the result of subjective evaluations of mission fulfilment and financial standing of the sampled cultural institutions. While considerable effort was invested to make sure that the managers of the studied institutions were truthful in their reporting, the subjective element cannot be entirely removed from the analysis. Finally, the studied research sample manifests substantial heterogeneity in terms of classes of institutions subject to qualitative evaluation; this is likely to impede a comparative analysis across constituent entities.

Further studies should focus on homogenous research samples of cultural institutions belonging to the same class/category. Each class of institutions possesses unique business features requiring a customised approach to the design of management control systems. The assessment of the institutions’ need for an elaborate management control system may differ depending on institutions’ specificity. Follow-up studies may inquire into the impact of management control systems on the efficiency of resource allocation within cultural institutions, with the aim of identifying areas requiring remedial action or optimisation.

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