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Valuation Model of Heritage Assets in a Public Museum – A Transdisciplinary Approach

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Abstract: *The new public management account requires an opening balance sheet which needs to depict all assets and capital. This is also true for heritage assets in public museums. However, there exists neither in Germany nor generally an accepted international valuation approach, while at the same time there is a cut for public budget. As a result, the communes must decide on which area of responsibility to allocate financial resources and in what amount. With regard to museums, it means to define the tasks according to the strategic target planning, and to consequently derive the portfolio of the museum.*

The following article aims at designing a model for the challenge described. This is based on a trans-disciplinary approach and builds upon an extensive literature study, qualitative expert interviews and an evaluation in three existing museums. The focus is on the question of how art and cultural objects can be valued for

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accounting purposes. It is important to value the assets not only according to economic criteria but, due to the special task of museums, to also assess assets after their social benefits.

Introduction

As a part of the reform of the municipal budget and accounting in Germany, and in response to increasingly tight budgets, local authorities need to decide which area and which product is equipped with financial resources in what amount. So far, a reduction of the budget is mainly made in the field of art and culture, as these tasks are the so-called voluntary tasks of a local authority. This reduction is based on no discernible criteria and arbitrary.

Art and cultural objects (in the following heritage assets) are not detected predominantly in the municipal balance sheet. There is also no investment planning, plus there is no information available about how high the annual expenditure on restoration and conservation should be. Art and Culture is responsible for a special social significance. Therefore, a decision on preservation and restoration must not take place according to purely economic considerations. The instruments of business for the control and management are therefore of limited use. Furthermore, there are no information available that helps one to decide which heritage assets to preserve if the budget is limited. For this reason, strategic management, the establishment of portfolio management and economic museum management, at the same time as ensuring sustainability for society, are sliding into focus of the manager. From this problem the following specific research questions are addressed:

1. Which economic valuation models for Heritage Assets are used both in Germany and internationally?
2. How to determine the amount of financial resources needed for preserving heritage assets?
3. How can heritage assets be valued in terms of their benefits for society?
4. How could a practical modeling approach look like?

Research Methodology

The article is based on a transdisciplinary approach. Transdisciplinarity connotes a research strategy that crosses many disciplinary boundaries to create a holistic approach. It applies to research efforts focused on prob-

lems that cross the boundaries of two or more disciplines, and can refer to concepts or methods that were originally developed by one discipline, but are now used by several others. Transdisciplinarity arises when participating experts interact in an open discussion and dialogue, giving equal weight to each perspective and relating them to each other. This is difficult because of the overwhelming amount of information involved, and because of incommensurability of specialized languages in each field of expertise. To excel under these conditions, researchers need not only in-depth knowledge and know-how of the disciplines involved, but skills in moderation, mediation, association and transfer. The paper is based on a qualitative research designing collaboration with experts from different knowledge areas. A combination of different research processes (database research, library research, general internet research, contact to appropriate institutions, interviews with experts, collecting print materials, literature evaluation, academic monitoring) was employed for designing and carrying out a model for valuation approach.

The starting point for developing the model was an extensive study of literature on the issue of economisation of art and culture (compare Gottschalk, 2006; Snowball, 2008; Throsby, 2001, 2003, pp. 275-281, 2007, 2012; Chiaravalloti, 2014), and on the topic of valuing and accounting for heritage assets. The study was established for Germany, in which the range of valuation methods applied to art and cultural assets was compiled (Stein & Franke, 2008, pp. 270-275). Subsequently, a literature review for international comparison of valuation and inventory policies was conducted (compare Glanz, 2011; Held, 2011, pp.16-18; Berit *et al.*, 2011). In addition, the author was able to refer to her own model for establishing a valuation of science, research and research transfer, which was developed in 2003 (Stein, 2003, pp. 167-173).

The theoretical starting point for developing criteria to evaluate the benefit of art and culture as a benefit to society was derived firstly from the extensive literary research on the models used by insurance companies and auction houses (Heuer, 2008, pp. 689-691), research on the topic of transferring art, economics and science (compare Heid & John (Ed.), 2003; Trossen & Bockemühl, 2003) and the theoretical considerations and models on valuing intangible assets for accounting purposes (compare Dillerup *et al.*, 2005; Dillerup & Hannss, 2006; Scholz, 2005), which can be taken into account when considering the valuation of art and cultural assets. Theoretical considerations on social sustainability in the context of valuing the benefit of art and culture were implemented in Spangenberg (2003) and Jörisen *et al.* (1999).

In order to develop the planning model and in particular the criteria regarding valuation of benefits, three different museums and institutions were analysed directly using the qualitative methods according to Mayring (2010). Two different forms of interview (narrative and problem-focused interviews) were conducted with experts (artists, museum directors, auditors), and museum users were actively observed. An interview template was drawn up in advance for the problem-focused interview. The results of the expert survey were then incorporated into a model which was directly evaluated under the auspices of the project. The final planning model was then established using the method of benefit analysis. The indicator model was established according to the procedure for conducting a benefit value analysis.

Art and cultural objects have different benefits for an individual and for the society as a whole. The impacts on the society as a whole can be described as "social values", which according to the model suggested here can be allocated to various categories. In part, literature on the problems related to the economisation of art and culture (Candela & Scorcu, 1997, pp. 175-182). Gottschalk (2006); Snowball (2008); Throsby (2011) and the models used by insurance companies and auction houses were used to determine these categories (compare Chanel *et al.*, 1996, 1996a; Heuer, 2008, pp. 689-691; Frey, 2011; Renneboog & Spanenjers, 2009).

This was the basis upon which the questionnaire for the expert survey was drawn up.

The expert survey in the project was conducted as a guided interview in five content-specific stages.

1. In the first stage, the target system was established in the form of individual indicators (categories).
2. In the second stage, a scale of every indicator was developed in line with the German school grade system (marks 1-5 where 1 is the best).
3. This scale was then described individually for each criterion.
4. In the fourth stage, the indicators were weighted (total 100%) and also formulated in a catalogue form for each artistic genre.
5. In the fifth stage, the total value per indicator must be calculated and the points per genre are added up to form a ranking.

In order to prevent misunderstandings and incorrect interpretations, the questionnaire was discussed with every single expert. The following people participated in the survey: Five museum managers, four independent artists (sculptor, graphic artist, stage/set designer, painter) which did not come from the German federal state and have had no connection to the project, four scientists, twelve museum curators and three auditors from two independent auditor companies.

The starting point for the case study which was used for the evaluation process was a project by the author in the years 2010 to 2012 on introducing the new budgeting and accounting policies for a major German city, in particular for its museums. The city has seven municipally-owned museums which contain around 1.6 million heritage assets.

Literature Review: Valuation Model in Germany, International Approaches and Intellectual Capital as the Theoretical Starting Point

New public management accounting requires the opening balance sheet, in which all assets and capital values have to be mapped. This includes the heritages assets in public museums. There exists neither in Germany nor a generally accepted international valuation approach. The following article outlines a model which is also a proposal for the assessment of heritage assets and can be understood as a default setting for IPSAS. The starting point is the question about the general balancing of art in the context of the importance of art in society and the ensuing responsibilities of museums.

With the advancement of New Public Management and the associated introduction of commercial accounting in public authorities, municipalities in Germany are faced with the task to create financial statements, balance sheets and profit and loss accounts regularly in the future. This is necessary for providing transparency for the conservation of equity and therefore to attest the preservation of fixed assets.

A significant number of cultural assets which do not exist in companies in a comparable form shall be initially assessed. Therefore, there are no proven valuation practices which can be used. Similar to established solutions in the industry, one has to develop appropriate valuation models that need to serve specific purposes. This is especially true for many artefacts, cultural heritage and collections owned by the municipalities.

The practice for the financial valuation and balancing of Heritage Assets is highly heterogeneous nationally but also internationally. At the international level, the term "Heritage Assets"(Cultural Property) in the International Public Sector Accounting Standards (IPSAS) 17 is defined as, PROPERTY, PLANT AND EQUIPMENT" and therefore can be seen as assets. In principle, the term heritage assets apply for fixed assets if they have „...cultural, environmental or historical significance..."(IFAC-IPSASB (2001), IPSAS 17, p. 424). This standard was set for the public administrations in December 2001 issued by the International Accounting Standards Committee (IASC).

However, already in 2001 while publishing the first version of IPSAS 17, it was clear that "Heritage Assets" had far more relevance for the government sector than initially thought and so should be considered even more also due to the fact that there was no standard valuation model in practice.

In 2005 the "standard setters" of the United Kingdom of Ireland offered to the Accounting Standards Board (ASB), meaning the IPSAP to develop a discussion paper for worldwide consultation the Accounting Standards Board (ASB). It was realized as follows in 2009. ([http://frc.org.uk/Our-Work/Publications/ASB/FRS-30-Heritage-Assets-\(June-2009\)-File.pdf](http://frc.org.uk/Our-Work/Publications/ASB/FRS-30-Heritage-Assets-(June-2009)-File.pdf)):

1. "Financial Reporting Standard (FRS) 30 'Heritage assets' applies to all heritage assets that are held and maintained by an entity principally for their contribution to knowledge and culture. Heritage assets can have historical, artistic, scientific, geophysical or environmental qualities.
2. Assets that are used by an entity in its operations should be accounted for as operational assets in accordance with FRS 15 'Tangible fixed assets', notwithstanding historical or other heritage qualities. 3 The FRS sets out new disclosure requirements for the reporting of heritage assets, which apply whether or not they are reported in the balance sheet. Where heritage assets fall within the scope of FRS 30, the disclosure requirements of FRS 15 do not apply.
3. The FRS retains the recognition and measurement requirements in FRS 15 which require heritage assets to be reported as tangible fixed assets in the balance sheet where information is available on cost or valuation. There are, however, some relaxations to the measurement requirements of FRS 15 to encourage the reporting of heritage assets in the balance sheet at valuation. The main features of this standard are as follows.
 - (i) The disclosures should apply to all entities that hold heritage assets, regardless of whether these assets are reported in the balance sheet. These disclosures will provide information about an entity's total holding of heritage assets and the entity's stewardship of these assets.
 - (ii) The disclosures should make clear the accounting policies adopted for an entity's holding of heritage assets and the extent to which these assets are recognised in the balance sheet. The disclosures should provide readers with an understanding of the asset values being reported as well as the entity's policies for managing its total holding of heritage assets.

- (iii) The accounting in respect of the recognition and measurement of heritage assets should follow the requirements of FRS 15, as supplemented by the requirements of this standard.
- (iv) To encourage a valuation approach, the FRS allows entities to use internal valuations without the need for a full valuation every five years”

But, as for today (2014), there are no adopted proposals which may relate to the fact that heritage assets in PS-SAS 17 (Property, Plant & Equipment) are tangible assets are not issued in terms of a carve-out, which means that they are excluded from the rest of the content of the standards. They are subject to certain special rules, e.g., they are not conclusively defined. In addition, they often are owned by commonwealth and are not or rarely kept because of their economic potential. In some countries, such as in Germany, it is prohibited for the community to utilize on the heritage assets from an economic point of view, for example to reduce liabilities. Anyway, in practice cultural assets are seen from an economic perspective rather than in terms of their societal benefit. In a national context, there is a general discussion in literature and public about the benefit of balancing heritage assets having found no settlement yet (Vorstand des Sächsischen Museumsbundes e.V., 2009). Nevertheless, in practice heritage assets are inventoried, valued and they are part of the opening balance sheet. Nonetheless, there is no defined, comparable and uniform approach applying for each communes and states. In science, speaking of economics and cultural science it does not seem to be an important topic leaving practitioners with the dilemma to utilize on the Handelsgesetzbuch (HGB) and to orientate on generally accepted accounting principles (GAAP). They do not challenge the purpose of balancing, its benefit and the actual approach. Conservators and curators question the benefit of balancing heritage assets, but financial departments maintain their claim.

Accounting Practices in Germany

Since the introduction of accrual accounting for municipalities, there has been intense work on valuation principles and valuation approaches that serve for balancing in communes. These are largely based on commercial law as a reference model, with modifications for local needs. In particular, the high workload, which is connected with the initial inventory and assessment for the opening balances, requires a pragmatic approach in the creation of local opening balances. In terms of the accounting of heritage assets, the currently published valuation standards have a wide range of

valuation methods. For example, the state of Brandenburg determines in its directive (Review Policy-Bewert, 2009) on the assessment of municipal assets and communal liabilities that "Historic buildings and listed buildings with a residual value of € 1, are to be reported. Portable artifacts such as paintings and sculptures are generally measured at their acquisition cost. If this cannot be determined, alternatively, the insurance value, possibly also existing value valuations may be used. Alternatively, a residual value of 1 € is to be set. It is not to make any depreciation (III.A2.11). In a supplement to the Directive of 2009 the problem for the high cost of valuation is stressed (<http://www.doppik-kom.brandenburg.de/cms/detail.php/bb1.c.191223.de>).

In the guidelines for evaluation and assessment of the fixed assets of Rhineland-Palatinate, for moveable heritage assets, it is referred „...to empirical values from purchases or sales or to select from list prices of comparable assets in accordance with a need for adaptation to the particularities of being valued asset ...". The law on new municipal financial management of municipalities in the state of North Rhine-Westphalia (Municipal Financial Management Act NRW-NKFG NRW) of 16th, November 2004 determines in § 55 special valuation rules: "(3) Significant movable assets in terms of cultural maintenance should be valued with their insurance value, if insured, or otherwise be valued similar to the insurance value. Other artifacts, exhibits and other movable cultural objects can be recognized with a sentimental value. (4) Monuments, which are not used as a building or part of a building, and archaeological monuments are to be set with a sentimental value." "Property and equipment are to be reported in addition to their value - cultural monuments include the construction and archaeological sites that do not belong to the buildings." ([http://www im.nrw.de/bue/doks/nkfg_begrueendungen.pdf](http://www.im.nrw.de/bue/doks/nkfg_begrueendungen.pdf), p. 81)

The Society for municipal consulting and community development mbH (Gesellschaft für Kommunalberatung und Kommunalentwicklung mbH-GeKom), simply recommended the use of empirical value if no acquisition and production costs for the assets can be evaluated and determined.

The most advanced is the State of Hesse (see: Ritchel, 2008). Here, a model was developed that suggests valuation rules for different types of museum collections (Old Masters, arts and crafts and archaeological objects, natural history collections and libraries). A valuation purpose is not known so the valuation approach is based on acquisition costs, the fair value or the sentimental value. The costs of maintaining and operating the museums are to be booked as expenses. Following the procedure, the objects are divided into subject categories (A-C) and each subject group is further divided into three value groups. For each subject category, a fiction-

al financial value is set. Objects in the group “A”, each with a high individual value must be valued at their estimated fair value. The value of group “B” is divided into six subgroups, and contains objects with "intermediate single value" (value between lower limit of “A” and the upper limit of “C”). The financial value declared for each “B”-object is equivalent to the average of the subgroup. Value Group “C” contains objects with low single value (a maximum of 475.00 Euro). In asset accounting, they are recorded with 1.00 Euro.

Taking all examples into account, it can be summarized, that there is no uniform valuation approach regarding heritage assets. Currently, opening balance sheets are created in different municipalities and if open for public one once again can see that different valuation approaches are applied varying from the greatest activation approach estimated by experts to a minimal classification using the sentimental value of 1.00 Euro.

The different economic valuation approaches in Germany can be summarised in the following figure, compiled by Stein & Franke (2008).

Table 1. Economic Valuation for Art and Cultural Heritage in German Municipalities

Acquisition and Production Costs	Market and Compare Values	Insurance Values / Appraised Values	Fair Value (Present Value)	Permanent Valuation
<p>In many years of proven commercial practice, the approach of assets is initially recognized at acquisition and production costs (AHK in German) This fundamental valuation principle also applies to art objects and cultural heritage.</p>	<p>The approach of market data and expected results may be useful for cultural goods that exist in large numbers. For one-time or historically valuable assets, the approach does not lead to any solution as these goods are not traded on the market for good reason, and thus there are hardly any market and benchmarks. For the evaluation of collectible items market and benchmark data are very helpful.</p>	<p>Insurance values appear generally suitable as an evaluation approach. The insurance values, underpinned by opinions, can - if no serious value changes have occurred in the meantime - be included in the opening balance sheet. However, is important to remember that these are usually based on a self-assessment of the insured (with interest in a high premium).</p>	<p>A pragmatic solution generally is the approach to conservatively estimated fair values. Condition for this is that similar assets in similar condition or which are new to the market can be procured. If the replacement prices are used for new assets as the basis, an appropriate aging and usage-based discount must be made. This review approaches are suitable for industry-ally produced, available in large</p>	<p>The tax law allows for certain assets for reasons of simplification group reviews. An individually assessable item is grouped together and evaluated with an average value approach. This is useful in the communal area for larger collections. The tax law also allows evaluating certain assets of fixed assets and raw materials and supplies at fixed values, if they have a constant value and outs are</p>

Table 1 continued

Acquisition and Production Costs	Market and Compare Values	Insurance Values / Appraised Values	Fair Value (Present Value)	Permanent Valuation
	In terms of a diligent evaluation, - similar to the comparative value method of calculating the value of land and formed from the available comparative prices, averages should be formed and any outliers up or down. shall be excluded.		numbers assets or recoverable assets, such as buildings used for agricultural purposes. These criteria apply to works of art /cultural objects usually too rare, so the approach of fair values cannot be used due to a lack of tangible valuation basis.	are replaced regularly. However, the assets may be only of secondary importance, and the stock may only slightly change in size, in its value and its composition. For objects of art and cultural heritage, the permanent valuation therefore offers less.

Source: own research.

Economic Valuation of Heritage Assets in the Anglo-Saxon Set of Rules

Also looked at internationally, no uniform practice with regard to both the question of capitalization requirements as well as the value base itself can be found. A comprehensive study was created by Glanz (2011, pp. 39-45).

Basically, heritage assets are treated according to IPSAS as tangible assets, while not being subject to the appropriate specifications. Since for each balance sheet item a monetary value is attached generally, this criterion should also apply to heritage assets. Notably, it is contested, primarily by cultural scientists, that there exists such an evaluation opportunity because the objects d'art and collections serve for common good. However, their contribution for good is only visible for experts leading to the fact that they do not underlay or fit in the monetary evaluation framework. Publications on this issue can be found in the literature. Both, meaning and purpose of accounting of works of art, the attempt of evaluating these, as well as the costs linked with trying are perceived as exaggerated.

"The evaluation of art cannot be done by market value." (see: Vorstand des Sächsischen Museumsbundes, 2009). Decisions of stakeholders should not depend on the financial performance of the heritage assets, accountability may also be made in a form other than the balance sheet. For heritage assets, even accountants doubt the practicability of an assessment of herit-

age assets. It is the reliability of the financial value and also the relation between the costs and the benefits of the accounting of heritage assets that raise questions (IFRS-RK, QC35ff.).

For the set of rules of Anglo-Saxon Provenienz, frameworks (RK) are preceded. However, IPSAS-RK is only at the planning stage (<http://www.ifac.org/Public-Sector/ProjectHistory>), so, the IFRS RK is still relevant. The definition of assets, nonetheless, was extended in IPSAS 1 with the alternative "service potential". After that, one speaks of an asset in accordance with IPSAS, if the object has no future economic benefit, but can be used for services in accordance with the objectives of the legal entity (IPSAS 1.11).

International Approaches: The fact that museums as well as collections have cultural, heritage, scientific and educational values is widely appreciated. However, accounting standard setters in Australia and New Zealand have recently advocated that public arts institutions bring their collections to account as assets for financial reporting purposes. There are no similar requirements in the US, European Union (including the UK) and Canada; nor has the International Accounting Standards Board made such a recommendation. From surveys of current accounting practices, it is apparent that, by and large, arts institutions in the English-speaking world do not report their collections for financial reporting purposes. The papers by Carnegie & Wolnizer (1995; 2008) demonstrate that it is not technically proper to recognise cultural, heritage and scientific collections as assets for financial reporting purposes.

Berit *et al.* (2011) examine the norms and practices for infrastructure, art and heritage assets in six cities, across three European countries, to determine how the national norms of accrual accounting compared with each other, and with IPSAS, and how the practices in each city compare with the norms. They identify significant diversity between actual practices and the norms imposed by national policy-makers or set by IPSAS. Given that a longstanding concern of the literature has been on whether these kinds of assets should be included in governmental balance sheets and operating statements at all, it is striking how often the question was settled in practice by excluding art and heritage assets, even when this meant non-compliance with national norms. In our three countries, it is clear that comparability of the financial statements between countries was not a concern of policy-makers, and comparability between cities within each country not a concern of preparers.

A conceptual framework of heritage economics has been published by Throsby (2012).

The paper by Turskis *et al.* (2013) discusses the meaning and nature of urban cultural heritage, and the available methods for its valuation in the perspective of sustainable city development. From this perspective, decision-making problems of renovation often involve a complex decision-making process in which multiple requirements and conditions have to be taken into consideration simultaneously. In project development it is hardly possible to get exhaustive and accurate information. As a result, the situations occur, the consequences of which can be very damaging to the project. Sometimes the loss is related to symbolic values that the public perceive as disregarded by the project, despite the overall improved conditions. This paper presents the multiple criteria assessment of alternatives of the cultural heritage renovation projects in Vilnius city. The model consists of the following elements: determining attributes set affecting built and human environment renovation; information collection and analysis, decision modeling and solution selection. The main purpose of the model is to improve the condition of the built and human environment through efficient decision making in renovation supported by multiple attribute evaluation. Delphi, Analytic Hierarchy Process (AHP) and Additive Ratio Assessment (ARAS) method with the grey criteria scores (ARAS-G) methods, considering different environment factors as well as stakeholders' needs, are applied to solve problem.

In the article by Chiaravalloti (2014) you will find a review of financial and management accounting literature on the arts and cultural sector. The objective of the article is to understand to what extent this literature is able to offer a critical perspective on the study of performance evaluation practices in arts and cultural organizations, as it is currently missing in the arts management literature. Adopting a critical perspective means shifting the focus of research from the technicalities of evaluation rules and procedures to their embodiment by the different organizational and societal actors of the arts and cultural sector.

The cited approaches provide a section on the discussion of the problem in the literature.

The Theoretical Approach The valuation principle under which an asset is recorded in the balance sheet and the valuation approach which is considered "correct" depends on the purpose of the accounting. The problem of determining the economic benefit of property, plant and equipment in the balance sheet, as required in the International Public Sector Accounting Standards (IPSAS), is nothing new. The first approaches which can be incorporated into considerations on the valuation of art and cultural assets can be found in the valuation of intangible assets. On this premise, art can also be regarded as an intangible asset.

So far there is no uniform definition for the term "intangible assets". In a German context, this also includes intellectual capital. Intellectual capital or intangible assets are divided into the areas of human, relationship and structural capital (Dillerup *et al.*, 2005, p. 58). The monetary valuation of intellectual capital enables income and the related expenses to be connected in excess of the controllability of this capital via key ratios, indexes and indicators and therefore allows economic efficiency to be determined in dealing with this capital. This can also be transferred to art and cultural assets. In order to assess whether the "right" intangible assets are built up in the "right" proportions and to the "right" extent, valuation methods for intellectual capital are required. They can be divided into the following categories (Dillerup & Hannss, 2006, p. 20):

Cost-based valuation methods

They regard the value of individual intangible assets solely as a successful result of building up potential in the past. E.g. employee knowledge is determined on the basis of the costs spent to gain qualifications.

Market-oriented valuation

This is based on customary market prices or sector-standard multipliers. Employee knowledge can thus be measured on actual staff costs if they are paid appropriately for their know-how.

Success-oriented valuation procedures

They determine the value of an asset by means of the potential that may be leveraged from it. The maximum achievable value of a valuation unit is calculated on this basis. It may only be achieved if the potential built up in the form of intangible assets is optimally combined and implemented.

It must be pointed out that there are many adversaries to the assessment problem. For reflections on this problem (see: Held, 2011).

Results: Indicator Model for Benefit Valuation and Economic Valuation for Asset Preservation

Table 2 shows the general structure upon which the planning model to be created is based. The model is based on a balanced scorecard. The balanced scorecard was developed in the practical project. That is not the subject of the article.

Table 2. Structure of the Planning Model

City					
Vision		Mission		Model	
Culture	Economy	Security	...	...	...
Cultural Concept (Strategic Goals)	Economic Concept (Strategic Goals)	...	....	....	...
Culture					
All Museums	Theatre	...	....	...	...
Museums					
Mission/ Tasks	Strategic Goals (BSC)	Collection	Valuation	Preservation Costs	Social Benefits
Strategic basis		Budgeting and Accounting		Management/Portfolio Management	

Source: own illustration.

Art and cultural assets can be described as property, plant and equipment of the museums, which enable these institutions to fulfill their tasks: collecting, storing, researching, exhibiting and communicating. The employees of a museum hold the primary responsibility for completing its tasks. However, the governing body, which is expressly obliged in accordance with the ICOM Code to take responsibility for the functionality of the museum – including for its material and financial basis (ICOM Germany, Ethical Guidelines for Museums 2010).

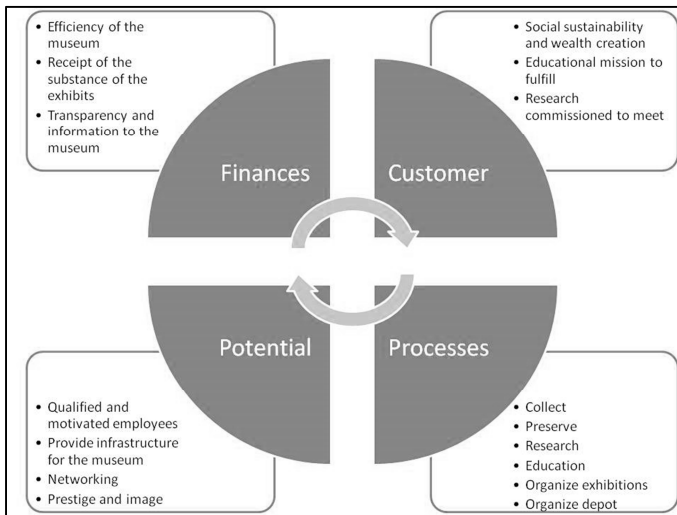
The storage obligations always result in acquisitions becoming part of the collection in the long term. This also means that acquisitions are only acceptable if they can be stored and treated appropriately. Museums also collect art for the future. They keep testaments to history, culture, art, nature and technology for future generations. Storage is one of the key tasks of a museum's work. All the tasks are basically of equal ranking, but in the event of a conflict, storage is given priority, as it is focused on the long term and it is the only task which preserves the museum's objects, i.e. the materials it needs to fulfill its research, exhibition and communication tasks. Notwithstanding the knowledge of the perishability of all the artifacts

and many natural monuments, contemporary museums have to do everything possible within the budgetary context to preserve their pieces as far into the future as possible. They are forbidden from doing anything that harms, damages or destroys them. Accordingly, museums' activities also include ensuring security by means of inventarisation and documentation, protecting from theft, environmental damage, deterioration, fire and force majeure and providing regular monitoring and care for conservation purposes.

“A museum's most important task is to store its collections for the future and to use them to develop and share knowledge, with the aid of research, educational work, permanent and special exhibitions and special events” (ICOM Code of 2001, paragraph 2.9). Research in a museum depends on the obligation to collect and the objects themselves and is the basis for exhibitions and the museum's educational activities. The results are available to the expert community and the general public. Communication work (education) is also based on the collections, which are opened up to all visitors and groups together with the background information and inter-relations by means of various offers and methods.

A balanced scorecard has now been drawn up in cooperation with the museum managers on the basis of these general tasks.

Figure1. Balanced Scorecard (BSC) for a Museum



Source: own research.

Table 3 also shows the strategic goals for the museums and their key indicators for measuring the effort and success. Every museum would then have to build up its own balanced scorecard based on the cultural conception of the city.

Table 3. Strategic Goals for Museums

Tasks perspective – Museum's specific task	
<i>Strategic goals</i>	<i>Key figures</i>
Cultural destination for the city -promote tourism- Improvement in the city's image Economic factor for the city - Cultural developments for the residents	Amount of tax income Number of tourists Tax income Political/cultural/social image of the residents
Financial equality or surplus	Key figures of the balance sheet
Preservation costs of cultural assets	Preservation status
Market perspective – Target groups	
<i>Strategic goals</i>	<i>Key figures</i>
Tourists to increase internationalisation/nationalisation	Number of tourists/country
Increase level of education and culture	Number of pupils/students
Fulfil the research task	Number of researchers
Location factors for economic concept	Number of companies
Increase identity with the city	Number of residents
Increase customer satisfaction (per target group)	Satisfaction index
Create a permanently used offering	Repeat visitors
Process perspective – Depending on cultural concept	
<i>Strategic goals</i>	<i>Key figures</i>
Attract projects with research institutes	Number/volume of projects
Conduct projects with schools	Number/type of projects
Develop marketing and sales concepts	Degree of implementation
Build up economic planning process Preservation costs - Storage planning Restoration planning/ Investment planning Portfolio management	Degree of implementation
Plan and conduct exhibitions	Number of exhibitions
Potential perspective	
<i>Strategic goals</i>	<i>Key figures</i>
Employee portfolio	Researchers/educators/administration/artists
Employee potential	Education level Satisfaction/motivation Level of sickness Fluctuation
Infrastructure for the exhibitions For the store For research (library)	Financial resources/condition upon receipt

Source: own research

On the basis of the strategic goals and the tasks of the museum, institutionalised in the form of the balanced scorecard, a planning model could now be established, helping to operationalise strategic goals and to make the tasks measurable. This included the portfolio management model presented here to value heritage assets for the balance sheet, to determine the preservation costs and to assess the benefits as the foundation of the museum's portfolio.

Process to determine the societal benefit of heritage assets

In the first stage it should be worked out which categories generally may apply for the valuation of goods of art. In the context of the assessment procedure of the intangible assets it made sense for the evaluation of art and cultural objects to use criteria and indicators for assessing and to e.g. build a matrix-pricing model. The following requirements were to be placed on the evaluation criteria:

- No criteria in which the goods of art differ only insignificantly,
- Each criterion only contains one state of affair,
- The criteria are mutually not overlapping.

The indicator model was established according to the procedure for conducting a benefit value analysis. Art and cultural objects have different benefits for the individual and for the society as a whole. The impacts on society as a whole can be described as "social values", which according to the model suggested here can be allocated to various categories. In part, literature on the problems related to the economisation of art and the models used by insurance companies and auction houses were used to determine these categories.

First, the experts were asked if they would follow the idea of social value, or rather the idea of market value. The following people participated in the survey: Five museum managers, four independent artists (sculptor, graphic artist, stage/set designer, painter) which did not come from this German federal state and have no connection to the project, four scientists, twelve museum curators, three auditors from two independent auditor companies. Here, the survey of 28 experts showed that 17 experts would prefer a mixed form. Four experts initially wanted a model that assessed the market value only, but with a very subjective reasoning from the perspective of a ranking. After extensive discussion in each four-to-one meetings, however, this was withdrawn when the expert was able to free themselves from the subjective influence. Seven experts wanted to introduce a review "only" after the so-called social values. Table 4 presents the results of the survey.

Table 4. Expert Survey

Criterion	Accepted (Number) N= 28	Rejected (Number) N = 28	Newly added (Number) N = 28	In a scale of 1-10, how important you will find this criterion 1 very important; 10 not important										
				1	2	3	4	5	6	7	8	9	10	
Optional value	14	14				12		2				10	2	2
Existential value	21	7		4	11		6			4	3			
Legacy value	25	3		19	3	1		2		2	1			
Prestige value	15	13		1			12	12		2	1			
Educa- tional value	21	7		10	2		9		1	1	5			
Authentici- ty	15	13					7	5	3		9	2	2	
Condition upon receipt	19	9		3		2		7		5	2	2	7	
Signature	14	14		1		1	1	11			9		5	
Market freshness		25	3			2	1				2	2	21	
Market demand	15	13		1				9						
Market- frequency (Compara- son object)		21	7	1			1	5			2		19	
Trends	10	18		1		2			2	5	5		13	
Value in use		23	5			2	2	1					23	
Compara- son value (money)		25	3	1				2					25	

Source: own research.

After analysing the interviews, the following indicators were incorporated into the model:

Optional value: the key here is that an offering can be used by an individual and that this option is available at will and as required.

Existential value: This value can be found, for example, in historical buildings. They have a value simply by their existence.

Legacy value: The problem of generation fairness is referred to here and means the obligation to maintain works of art for the subsequent generations, even if they cannot express their appreciation at the current time.

Prestige value: This ensures that cultural identity is reinforced.

Educational value: Artistic activities do not only support cultural integration, they also promote the creativity and establishment of aesthetic and other criteria.

These social values serve as a foundation and the legitimation of public finance. On the other hand, some art and cultural objects have intrinsic value-added factors, which play an important role in market-oriented activities, in the knowledge that the municipal objects d'art may not be sold to generate extraordinary income. These market factors may be:

Authenticity. The fact that authenticity of a painting is a key aspect determining its value seems to be commonplace. At this point there will be no discussion on the issue of how authenticity (and expertise) can be documented.

Condition upon receipt. The condition upon receipt is one of the value-added factors of a work of art (which, by the way, the large auction houses use in their valuations). This, however, cannot be checked without the need for extensive technology. It should therefore be used here as a weighting factor in accordance with a condition of receipt model.

Signature: If in a booming art market you hear from time to time that people base their purchases more due to the name than to the quality, this is an argument in favour.

Quality (who judges this) and provenance (in the opinion of experts, the provenance of a work of art can increase the sale price by up to 30%) are not incorporated as criteria here, however market freshness and marketability, market demand and trends are taken into account. The latter are among the traditional value-added factors on the buyers' market. Since it is cited repeatedly as an important argument in the valuation of artists and also plays a role in determining insurance sums, this criterion was also integrated into the weighting.

In order to prepare a scoring model, the final criteria compiled from the first part of the analysis are divided below into five descending rankings (scale of 1-5 according to the German school mark system). This step was no longer conducted using a questionnaire but was discussed individually with the experts. For this purpose, a template was drawn up (justification for the weighting criteria), which should be used as a decision aid for every genre of art. The illustration only shows an excerpt from the valuation catalogue. The justifications for the points were established in accordance with the „normal production cost procedure” as well as the procedure for valuing property, plant and equipment.

Table 5. Excerpt from the Catalogue, Scale and Justification

Point Allocation					
Social Value					
Optional Value					
Category	Available to everyone	Only temporarily available to everyone	Access is planned	Is perhaps planned	Is in the store
Description	The object is shown in the museum/or art is displayed in a prominent location in a public place (city)	The object is or was only to be seen in certain exhibitions or art in a public place is not on display in a prominent location	The object is planned for public exhibitions; scientists have permanent access	It is under consideration in which exhibition the object should be displayed: The object can be used by scientists for research	The object is permanently in the store and is not available even to scientists
Point allocation	5	4	3	2	1
Existential Value					
Category	Only existing object	There are only very few individual objects	There are many objects	There are very many objects	There are countless examples of the object
Description	It is proven in documents/papers that the object is unique	It is generally well-known that there are only very few of these objects; this may be documented	There are numerous examples of these objects in the store and in other museums	It is generally well-known that every museum of this type has a lot of these objects	The entire store is full of them or of similar objects (e.g. clay fragments), in addition it is well-known that this object is just as frequent in other museums.
Point allocation	5	4	3	2	1

Source: own research Held (2011, pp. 46-50).

In the next stage, it was necessary to weight every criterion for a specific category of art. Existential, educational or prestige value, for example. "Old Masters" have a completely different significance than "technical and physical" genres or "geological-paleontological and mineral collections". To this end, the experts were shown one suggestion per category of art for

the importance of the individual criteria, derived from their own specifications, which was then refined and backed up in intensive discussions.

Table 6 uses the example of the botanical collection to illustrate how the individual weightings are to be justified. Each genre of art can be rated accordingly with a maximum of 50 points.

Table 6. Categories and Weightings for Objects of the Botanical Collections

Social Value	Weighting in %	50	40	30	20	10
Optional value	5%	2.5	2	1.5	1	0.5
Existential value	15%	7.5	6	4.5	3	1.5
Legacy	15%	7.5	6	4.5	3	1.5
Prestige	5%	2.5	2	1.5	1	0.5
Education	30%	15	12	9	6	3
Market Value						
Authenticity	0%	0	0	0	0	0
Condition upon receipt	30%	15	12	9	6	3
Signature	0%	0	0	0	0	0
Market demand	0%	0	0	0	0	0
Total	100%	50	40	30	20	10

Source: own illustration Held (2011, p. 51).

Botanical collections have a high educational value. The focus here is on research and also university education, therefore the educational value is placed at 30% and the optional value at 5%. Existential value and legacy are each integrated at 15%, as herbaria, etc. are only interesting as museum objects if these objects are not available in bulk. There may certainly be prestigious objects within the botanical collection from a research point of view. Prestige weighting is therefore 5%. Authenticity does not play a role, but the condition upon receipt definitely does (30%). Signature and market demand are non-existent. The botanical collections mainly have a scientific and documentary value. This is evident in the valuations for the two categories existential value and legacy if you regard them e.g. as scientific existential values in your analysis. It reflects the international, national, regional and local scientific importance of a collection, for example.

This opinion is of course highly subjective and reflects expert opinion here. Of critical importance here is that the experts of another museum in another federal state are of a completely different "opinion", therefore the point rankings cannot be compared, which is offset by the fact that as a holistic model, this model only serves as a ranking for incorporation into

the balance sheet and for decisions about preservation costs. It does not serve to determine the value itself, the preservation cost is taken into account for this purpose.

A catalogue was generated within the model for the following heritage assets: archaeology, old masters, modern, handicrafts & plastic, works on paper, technology and physics, carpets, geological-palaeontological and mineralogical collections, zoological collections, folklore, ethnography & ethnology, libraries and botanical collections.

After the social benefits of the art object have been determined, it is necessary to know the economic value of the art object. Only when both categories: social benefit and net asset value are coupled, can a model be created from a portfolio. Then the preservation costs in Euro can be measured.

Process to determine the financial valuation approach

The theoretical considerations on intellectual capital have been transferred to heritage assets below. The goal is to find a valuation approach which is both suitable for accounting and at the same time can also be taken into account as a basis for operational planning of maintenance expenses for heritage assets.

Success from building up potential in the past is generally measured in accordance with the cost-oriented valuation. Transferred to heritage assets, it is possible to measure the museum's success in fulfilling its tasks here. As a prerequisite for this, it is necessary for the museum to acquire and store the art and cultural assets. They may be interpreted in this context as "resources" for the museum as a company to fulfill its tasks. Derived from these museum tasks, the preservation costs are stipulated as the underlying value base in the valuation model below.

Preservation costs are to be calculated as follows:

One-off acquisition, production or restoration costs + annual maintenance expenses * lifespan without necessary maintenance expenses.

This valuation method is applied in the model below.

Market-oriented valuation. For the valuation of art and cultural assets, this valuation method comes into force upon sale of the objet d'art in the form of market and comparative figures, list prices or negotiable figures.

However, as this is expressly not permitted, this method will not be pursued.

In accordance with the success-oriented valuation method, the value of an asset is determined on the basis of the potential that may be leveraged from it. This potential is to be described here as benefits of art and culture.

What is art "worth" and what potential may it have, how can this potential be measured and used as a valuation approach? This idea can only be transferred to the art and cultural assets if it is possible to make the benefit of art for society measurable. This, in turn, requires a social target which must be operationalised.

The manifold potential of art, for instance, for the full range of corporate tasks and corporate contexts (in business) has not yet been fully and exhaustively researched (see, for example, the research project "Business culture through art"); however, it is undisputed that art has opportunities which have so far hardly been noticed, not to mention researched, to develop the "how" of perception and thus also the capabilities for perception-led management.

Art promotes personal development with regard to aesthetic skills and perception and provides a social transfer service. "People talk about transfer art when artistic-aesthetic strategies have the goal of critically communicating practical needs to science, art and politics - and conversely communicating and integrating knowledge and experience of these subsystems into society. Art can therefore play a key role in the knowledge and know-how transfer in one of the most important areas of our so-called knowledge society." (Heid/John, 2003, p. 8). According to this, in addition to reflecting ourselves, art is also a reflection of our society and plays the part of a driver for the future.

In order to determine a valuation approach for each objet d'art (group or collection), the valuation approach in line with the cost-oriented valuation method was used as a basis. Subsequently every objet d'art can be assigned a value derived from one-off acquisition and/or production costs (APCs) or restoration costs plus the annual expenses implicitly required to maintain the object d'art. The following cost positions (from cost and activity accounting and accounting) are to be determined for the maintenance costs:

- Costs implicitly required for preservation, such as air conditioning/storage/security/insurance.
- Lifespan of the respective objet d'art for which the item would exist without maintenance expenses.

Within the project it was therefore also necessary to establish cost and activity accounting for the museum which allowed costs to be allocated directly to the cost units, i.e. the objets d'art and the projects (exhibitions).

The valuation approach can now be determined as follows, in accordance with the examples using notional approaches.

Example: "Specimen of a Buffon's Macaw"

- APCs: the acquisition costs could no longer be determined, but the costs to restore the specimen could. They amounted to EUR 1,500.
- Annual maintenance expenses for security and storage (they do not include the representation costs for presentation in an exhibition): EUR 500,
- Lifespan without maintenance expenses: > 100 years. The lifespan of a specimen mainly depends on the preparation methods and the tanning of the skin. A lifespan of several hundred years is more than probable in this case. Therefore a maximum lifespan of 100 years is entered here. The following value is therefore calculated:

Buffon's Macaw: EUR 1,500 + EUR 500 * 100 years = EUR 51,500

The valuation for the balance sheet is therefore EUR 51,500. The annual maintenance expenses for planning preservation costs: EUR 500.

Example: "Books before 1830 made of paper"

- APCs can no longer be determined
- One-off restoration costs: EUR 300/storage costs: EUR 200
- Lifespan at 20°C and 50% humidity: 50 years old
- A standard lifespan for paper is stipulated in DIN-ISO 6738.
- The American standard for durability is called ANSI-Norm Z 39.48. The international "DIN-ISO 9706" also gives a statement on durability.
- In accordance with this information, book is therefore to be entered at the following valuation:

Book made of paper: EUR 300 + EUR 200 maintenance expenses* 50 years = EUR 10,300

Since the budget for preservation costs only suffices for a certain proportion of the objects d'art, there will be a portion that is only entered into the balance sheet at an average value for storage/security.

In the last stage of the process, the respective objet d'art is recorded in a list (database) and allocated to its value category, which is determined from the points calculated. In addition, the annual preservation cost is to be allocated to every objet d'art. On the basis of this information, the museum management can decide whether it will be included in the portfolio to be kept. Furthermore, based on this information an investment plan to cover preservation costs can be drawn up. The figure 2 shows an example of this as an Excel file.

Figure 2. Pragmatic Calculation of Points, the Preservation Cost and the Balance Sheet Value

Botanical collection		Outcome:		Value group	Half points are rounded up					
Facility:	Museum NN			41						
Description:	Naturkunde			Carrying amount	4150					
Inventory no.	00011345			Number	7					
Master data no.	156897			Carrying amount per group	29.050					
Number of objects (only in B-Kategorie)	7									
APC/donation with receipt	400									
Maintenance expenses (accounting)	250									
Lifespan	15									
		Points allocated per category								
Category	Weighting in %	50	40	30	20	10	Outcome column			
Social value										
Optional value	5%	2,5	1	2	1,5	1	0,5	2,5		
Existential value	15%	7,5	1	6	4,5	3	1,5	7,5		
Legacy	15%	7,5	1	6	4,5	3	1,5	7,5		
Prestige	5%	2,5	1	2	1,5	1	0,5	2,5		
Education	30%	15	1	12	9	6	3	15		
Market value										
Authenticity	0%	0	0	0	0	0	0	Please enter precisely one *1* per line		
Condition upon receipt	30%	15	1	12	9	6	3	6		
Signatur	0%	0	0	0	0	0	0	Please enter precisely one *1* per line		
Market demand	0%	0	0	0	0	1	0	0		
Total	100%	50	40	30	20	10		41		
Instructions on filling out the table:										
Fill in all fields highlighted in orange										
All the fields highlighted in light green will be filled in automatically										
In the "Points allocated per category" column, please enter a points value for each in the form of a 1 in the column next to the points value. Please note: 1 may only be allocated once per category.										
								Value group	Range lower limit	Range upper limit
								A1	50	50
								A2	49	49
								A3	48	48
								A4	47	47
								A5	46	46
								A6	45	45
								A7	44	44
								A9	43	43
								A10	42	42
								A	41	41
								B1	36	40
								B2	31	35
								B3	26	30
								B4	21	25
								B5	16	20
								B6	11	15
								B7	0	10

Source: own project.

In this example, the calculation of preservation costs was imported into the file. In this case it amounts to EUR 4,150.00. Since this is a group of 7 objects of equal value, the balance sheet amount is calculated at EUR 29,050.00 The points total is 41 points and was therefore allocated to the

value category "A", which means that this object is now part of the portfolio.

By linking this database with the inventory file and the museum software, a pragmatic solution for accounting, documenting inventory and for planning can be created at the same time. The museum thus has not only provided evidence of its accounting, but has also gained a controlling instrument to manage the annual maintenance expenses.

Conclusions

In line with the reform of the municipal budget and accounting, all German communes face the task to balance and inventory their assets which contain heritage assets, too. The current valuation in practice however only measures the economic value. Therefore, the approach does not match with the sense and purpose of accounting in communes.

In this paper, a model was developed, starting from strategic planning and based on a Balanced Scorecard, which enables heritage assets to be valued with regard to their social benefit. Also their annual maintenance expenses can be calculated. Both aspects are required to determine with the aid of a portfolio management, the heritage assets that need to be maintained with the limited resources, in order to fulfill the museums' goals and tasks. Here, the author implies the general possibility for balancing heritage assets. The starting point is the question regarding the purpose of balancing in the public sector. Notably there are four reasons: 1) to maintain the financial value of one's asset 2) to assure transparency for relevant stakeholder and the citizen being the shareholder. 3) to assure inter-generative justice and 4) to protect sustainability. The citizen being the shareholder has the right to be kept informed about the actual value of assets and liabilities. Also, he has the duty to then derive respective actions. What is more, information are needed about the amount of financial resources needed to maintain heritage assets. The question then arises how substantial information really are if the balance sheet depicts heritage assets with an sentimental value of 1 Euro. Therefore, in this model heritage assets are perceived as fixed assets but they have an intangible value which is also considered when balancing.

Taking its cue from the methodology to value intangible assets, a model approach was chosen which focuses on cost-oriented valuation. The model to establish rankings/priorities was defined in accordance with the basic model of a benefit value analysis by means of an expert survey and evalu-

ated in terms of the criteria to determine the social value of non-profit heritage assets in a practical project.

To determine the criteria an extensive literature review was conducted. In addition, the study is based on an extensive study on the evaluation approaches in Germany and on international practice. Thus, the research questions could be answered. Which economic valuation models for Heritage Assets are used both in Germany and internationally? How to determine the amount of financial resources needed for preserving heritage assets? How can heritage assets be valued in terms of their benefits for society? How could a practical modeling approach look like?

The author is well aware that the criteria to value heritage assets, their ranking in line with the German school mark system (grades 1-5 where 1 is the highest) and justification, along with the assessment of the weightings per art genre, are subjective and are conducted by selected experts. The model should therefore also serve as a case study with potential for discussion.

This article and the model is based on a transdisciplinary approach. Transdisciplinarity arises when participating experts interact in an open discussion and dialogue, giving equal weight to each perspective and relating them to each other. This is difficult because of the overwhelming amount of information involved, and because of incommensurability of specialized languages in each field of expertise. To excel under these conditions, researchers need not only in-depth knowledge and know-how of the disciplines involved, but skills in moderation, mediation, association and transfer.

The model is very complex and despite this, cannot guarantee certain results or provide specific probabilities. This is the most important methodical limitation. Furthermore, the answers from the experts surveyed and the stakeholder representatives only ever portray an excerpt of the objective reality, they are often even subjectively influenced.

Additional research is required in the context of this article, not only with regard to the valuation of art and cultural assets as a prerequisite for portfolio analysis, but also much wider ranging, on the issue of operationalisation of the benefits of art and cultural assets in general. This in turn depends on the definition of society's goals with regard to sustainability, increasing wealth and social progress.

The problem of determining benefits and measuring benefits for art and cultural objects can be compared to the issue of measuring educational and research services, for example at a university. Ten years ago, the author developed a model to measure output and a discussion model to measure outcome impacts for this purpose and drew on this for the new model. This

is also so far only determined subjectively and related to the specific benefits for universities. The discussion on this and on measurement in general is a long way from being concluded. Nonetheless, the result of this case study provides a complete valuation catalogue for all categories of cultural assets. The different categories are: archaeology, old masters, modern, handicrafts & plastic, works on paper, technology and physics, carpets, geological-paleontological and mineralogical collections, zoological collections, folklore, ethnography & ethnology, libraries and botanical collections. The model was applied for seven museums and 1,6 billion goods of art. By linking the valuation catalogue with the inventory database and the museums software as well as the calculation sheet as shown in figure 9, a pragmatic solution approach could be designed for balancing and for stocktaking simultaneously.

The museum does not only have found a way to attest balancing but also obtained a controlling instrument for the control of museums tasks as well as for the determination of the annual expenditures for maintaining heritage assets.

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