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# Decision-Making Tool for Enhancing the Sustainable Management of Cultural Institutions: Season Content Programming at Palau De La Música Catalana

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**Abstract:** There has been an increasing relevance of the cultural sector in the economic and social development of different countries. However, this sector continues without much input from multi-criteria decision-making (MCDM) techniques and sustainability analysis, which are widely used in other sectors. This paper proposes an MCDM model to assess the sustainability of a musical institution's program. To define the parameters of the proposed model, qualitative interviews with relevant representatives of Catalan cultural institutions and highly recognized professionals in the sector were performed. The content of the 2015–2016 season of the 'Palau de la Música Catalana', a relevant Catalan musical institution located in Barcelona, was used as a case study to empirically test the method. The method allows the calculation of a season value index (SVI), which serves to make more sustainable decisions on musical season programs according to the established criteria. The sensitivity analysis carried out for different scenarios shows the robustness of the method. The research suggests that more complex decision settings, such as MCDM methods that are widely used in other sectors, can be easily applied to the sustainable management of any type of cultural institution. To the best of the authors' knowledge, this method was never applied to a cultural institution and with real data.

**Keywords:** multi-criteria decision-making; multi-attribute utility theory; sustainable cultural management; international artists; music institutions; season programming; creative industries

## 1. Introduction

“Cultural industries” (see United Nations Organization for Education, Science, and Culture (UNESCO) and the United Nations Development Program (UNDP) [1] for a discussion on the historic origins of the concept) broadly refer to “forms of cultural production and consumption that have at their core a symbolic or expressive element” [1] (p. 20). Over the years, they expanded to include a wide range of fields such as, visual and performing arts, publishing, film and audio–visual arts, and music, as well as crafts and design [2], which are not, strictly speaking, industries, but which are similar in their management and advertising [3]. This approach matches well with business management principles, setting issues like efficiency and high standards of quality and performance as primary objectives in cultural institutions' management. A broader term that is often used refers to “creative industries”, which include “goods and services produced by the cultural industries and those that

depend on innovation, including many types of research and software development” [1] (p. 20). In the last years, this concept gave way to a much wider one, the “creative economy” [4], to account for the creative activities not belonging to the so-called “cultural” sphere [1] (p. 20).

In recent years, there has been an increasing interest in the cultural sector due to its important contribution to the economic growth of countries (see Seaman [5] and Throsby [6,7] for a comprehensive discussion of impact measurement indicators and statistics). In a similar fashion, UNESCO and UNDP highlight the fact that the creative economy “is not only one of the most rapidly growing sectors of the world economy, but also a highly transformative one in terms of income generation, job creation, and export earnings” [1] (p. 10); the 3% estimated global contribution to the world’s GDP [8] is clear proof of its strategic importance. In Spain, according to data compiled by the Ministry of Culture and Sports (MCS), in 2019, this sector represented 2.4% of the GDP, reaching 3.2% if one sums up the activities related to intellectual property [9].

Beyond the contribution to achieving countries’ economic and cultural policy objectives [6,10], recent developments [11] also show the role played by cultural and creative industries as an effective means for enhancing sustainable development goals, either at local/regional or global levels (see [12–14] for some examples), as well as sustainable governance mechanisms for the cultural sector (e.g., more participatory cultural policies, defense of artistic freedom, etc.; see also UNESCO [11]).

As a matter of fact, issues like efficient management of cultural institutions and performance measurement have attracted much attention from researchers; substantial progress has been made since the publication of the so-called “Baumol’s cost-disease” paradigm [15]. A good example of this includes the works analyzing the variety and the (in-)appropriateness of the performance measures applied. To name but a few: Some works suggested, for example, the use of qualitative indicators (e.g., efficiency scores and consumer benefits), together with the usual quantitative measures associated with costs, revenues, and numbers of visitors, to compensate each one’s strengths/weaknesses (e.g., Paulus [16]); Turbide and Laurin [17] stress the importance of both financial and non-financial indicators (e.g., audience and personnel satisfaction, competitiveness and image, etc.), which are as important as artistic excellence (see also Hadida [18]). Fernández-Blanco, Herrera, and Prieto-Rodríguez [19] analyzed the economic performance measures applied to cultural heritage institutions, stressing, among other things: The necessity of distinguishing between cultural and performance indicators, where the latter should go beyond merely quantifying accounting data; the lack of accurate measures for outputs; and the fact that many performance indicators are often difficult to apply due to the heterogeneity of cultural (heritage) institutions.

Ensor, Robertson, and Ali-Knight [20] make a comprehensive overview of the research evidence on the key factors for the successful management and leadership of festivals and other similar events. They stress the importance of other criteria, apart from “the needs of the audience”, which have to be taken into account in order for the festivals to be successful (see also [21]). Hadida [18] distinguishes among the commercial, artistic, social, and managerial dimensions of performance, paying special attention to the nature of the relationships among them (e.g., complementary, substitutive, or antagonist). One of the findings of Hadida’s analysis is related to the scarce number of studies combining more than two dimensions, thus stressing the need “to develop more integrative studies of performance” [18] (p. 237). In this line, in a recent work, Velli and Sirakoulis [22] identify three dimensions (financial, audience satisfaction, and artistic quality) of the performance measurement system used by Greek non-profit theatres, with the artistic quality as the main factor of success.

Apart from focusing on issues related to performance indicators, many studies have analyzed the roles of other key factors in the success of cultural institutions, paying special attention to the managerial and organizational initiatives. In this fashion, Colbert [23] pays special attention to the marketing actions undertaken by the director of the Sydney Opera House to develop the strength of its brand along five dimensions: Well-known name, high quality, programming and special events, visitors’ loyalty, and tangible and intangible assets (e.g., architecture, etc.). Mejón, Fransi, and Johansson [24] collect and analyze data on the marketing policies and the structures of the

marketing mixes implemented by private and public Catalan museums; the study highlights the importance of an adequate education and professional training of cultural managers to enable them to design good marketing and communication strategies for the visitors. As a matter of fact, in Spain, for example, most of the professionals working in the cultural and creative industries usually have a degree in humanities, specializing afterwards in management. This could explain why cultural entities do not always have managers/directors specialized in strategic management and decision-making tools, and why the decision-making process is the outcome of a combination of the creativity, intuition, and personal work experience of their directors.

In many countries, studies on cultural management and the preparation of professionals in the field are relatively recent initiatives, with authors like Foord [25] (p. 98) pointing to “the lack of business awareness amongst practitioners” in the cultural sector. For Hewison, Holden, and Jones [26] (p. 117), “effective leadership” is particularly critical in cultural and creative industries, being understood as “the ability to marry rhetorical power with practical innovations so as to create a sustainable, resilient, well-networked organization, capable of growing its own capacity to act, and providing high-quality results for its customers, staff, and funders”. In the same fashion, Pérez-Pérez and Bastons [27] discuss the paradoxical impact of new technologies on the management of cultural institutions, claiming that they actually increase the role of managers (human beings), the survival of the organization in the long-run, and its profitability, which both depend on the leadership of the managers, who are thus challenged to continuously reinforce the mission of the organization.

All in all, the increasing complexity of the performance measurement systems in the cultural industries advocates in favor of using alternative decision-making tools, such as multi-criteria decision-making (MCDM) and multi-attribute utility theory (MAUT), which are widely used in other fields [28,29]. Our main focus here is to verify how the application of MCDM tools could help improve, objectify, and better clarify the work processes and procedures in terms of future decisions in the cultural industries (see also [30]).

To do this, we designed a two-step mixed methodological framework by combining qualitative and quantitative research methods. First, we perform qualitative interviews with professionals in the cultural management field in order to determine the parameters (performance criteria and weights) of the MCDM model. Next, we calculate optimal values of the performance criteria within the framework provided by the MCDA and MAUT with data from the Palau de la Música Catalana (Barcelona). The proposed model allows the calculation of a season value index (SVI) that can be used by cultural managers to optimally match the season’s program with the performance and audience objectives. A sensitivity analysis has shown the capacity of the model to easily adjust to the characteristics and environment of any cultural institution, thus proving its robustness.

Both the methodological setting and the empirical evidence are adding, in our view, to the literature on research methods in cultural management by focusing, on the one hand, on the analysis of a music institution, and, on the other, by providing a decision-making framework that combines technology (e.g., computer software), mathematics and economics (e.g., multiple criteria, utility), and knowledge supplied by human expertise through qualitative interviews.

To the best of our knowledge, there is no paper in the academic literature addressing the application of an integrative research framework that combines specific decision-making tools, such as MCDA and qualitative data, to the strategic planning and management in creative industries—in particular, to music institutions. This analysis is intended to help generate a first registry of empirical evidence that could serve to improve the decision-making processes in the cultural industries in order to achieve financial self-sufficiency and long-term sustainability, and to provide an object of study for the training of future professionals in the field.

Thus, the MCDM methods can be particularly useful in the assessment of the managerial decisions’ outcomes in order to ensure the optimal growth and development of the cultural institution, in this case, by taking into account a whole range of different criteria. Moreover, the criteria used in the analysis can be tackled simultaneously. In the cultural sector, where most of the performance measures rely merely

on economic profitability indicators, the use of this method allows the enlargement of the spectrum of the criteria considered to include others, which are often left aside due to their difficult quantification (e.g., the quality of an artistic event, social commitment with local language and culture, sustainable cultural practices, etc.). Due to their “predictive ability”, MCDM methods can assist cultural managers in the design of sustainable season programs and contingency plans to reduce or avoid risks. Last but not least, MCDM methods make possible a process of individual and collective learning; during the interaction with the MCDM tool, individuals and teams reveal their preferences and choices, learn on a trial–error basis, and eventually agree upon a negotiated outcome [31].

The paper unfolds as follows: In Section 2, the method is presented; Section 3 discusses the empirical parameters of the model; Section 4 is dedicated to the case study of the Palau de la Música Catalana; Section 5 discusses some managerial implications.

## 2. Multi-Criteria Decision-Making Framework: Introduction and Applications

According to Bērziņš [32], decision-making is one of the most important daily tasks of any manager and the main attribute of all the managerial functions at all management levels. In the same vein, Šarka and colleagues [33] mention that decision-making problems have always been especially significant for any state, company, or individual at any level of management, either strategic or functional.

MCDM stands for a set of methods that allow the aggregation and consideration of numerous (often conflicting) criteria, multiple objectives, uncertainty, etc., to choose among, rank, sort, or describe a set of alternatives to “aid” a decision-making process (see, e.g., Mulliner et al. [34]). Intuitively, this kind of tool usually helps to build a “value tree” with a weight assigned to every branch of the tree. With many applications in different industry sectors, MCDM gives support to managers to achieve efficiency and sustainability, contributes to reducing eventual conflicts and arbitrary behavior in the decision-making process, and helps justify results in case of audit controls (see [35] for some examples). MCDM methods allow mathematics to come into place, taking advantage of the development of powerful computer programs. Due to this powerful combination, their use has increased substantially over the last decades [36].

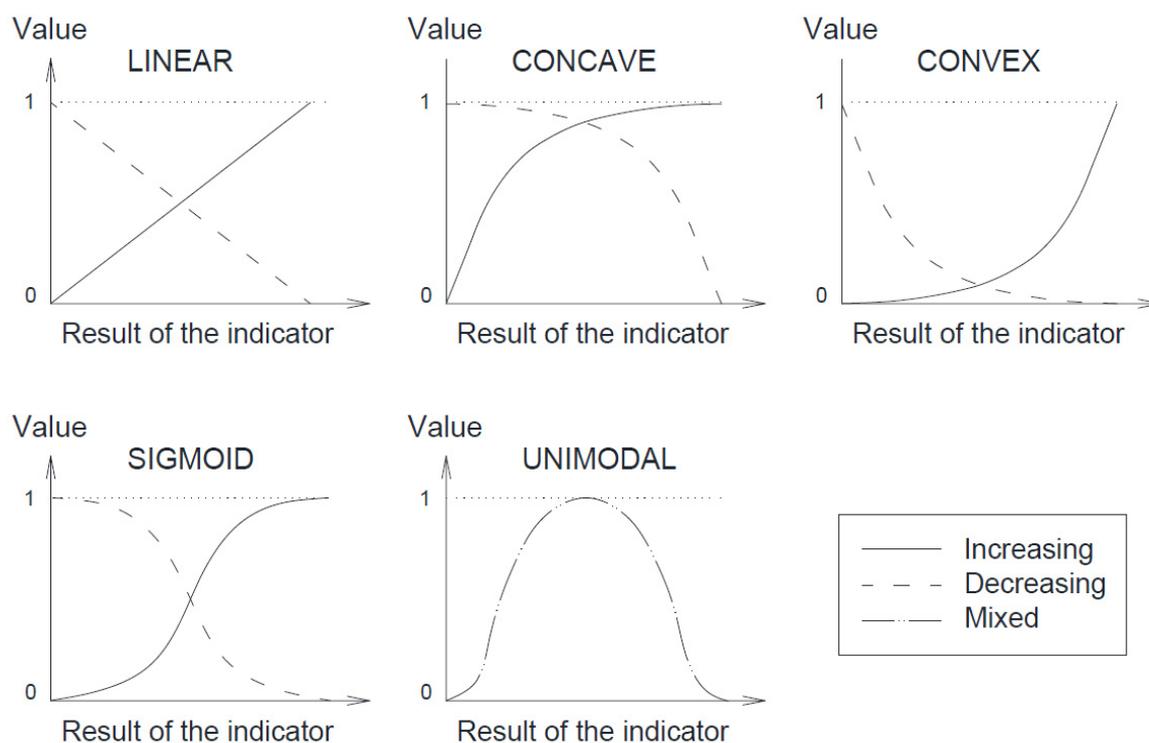
Within the MCDM framework, several methodological approaches have been developed, enlarging the spectrum of the application fields and the complexity of the analyses performed (see [37–40] for various applications). These decision-making tools have already begun to penetrate into many new areas, with applications in public-sector decisions, negotiations, scientific areas, e-commerce, finance, engineering [30], and heritage conservation [41], among others. They could be equally useful in the cultural sector by contributing to improving the clarity of the nature and priority of the different types of processes and indicators involved in the strategic management of (cultural) businesses, given their capacity of enabling managers to plan ahead across various possible scenarios [32]. Much uncertainty still exists about the potential use of decision-making tools in cultural institutions, specifically in the music industry. As stated by Jones and colleagues [42] (p. 138), “managing creative enterprises involves many of the management disciplines, albeit with a specific emphasis, common to any business there are some distinctive challenges”. This is the reason why it is important to improve the decision-making process, and we intend to do this here.

### *Theoretical Model: The Multi-Attribute Utility Theory*

The theoretical framework of this paper builds on the multi-attribute utility theory (MAUT) developed by Keeney and Raiffa [43]. The MAUT was selected over other MCDM methods because it has a solid foundation and has been effectively applied in many areas, such as engineering, investments, and sustainability, among others. The conceptual setting is based on the existence of a utility or value function that represents the utility or value each alternative has for the decision-maker. The utility function integrates the different criteria, generally in conflict, thus reducing the multi-criteria decision

problem to a multi-criteria optimization problem where the preferences of the decision-maker are expressed in terms of their utility.

The degree of fulfilment of the objectives established is characterized by a set of criteria and subcriteria, which represent the aspects to be taken into account when making a decision. The weights represent the relative importance of the different criteria for the decision-maker, while the alternatives are the options being compared. In this research, the alternatives are the possible programming contents of a season. The indicators measure the behavior of the alternatives according to the criteria. The magnitudes of the different indicators cannot be compared directly, because in most cases, indicators measure in different units. To ensure the comparability of the alternatives, it is necessary to use value functions that transform the different measurement units of the indicators into units of value or satisfaction. When one alternative is preferred over another, the value associated with the former is greater than the value associated with the latter. Satisfaction or value is often measured by values between 0 and 1, where 1 corresponds to the maximum satisfaction and 0 to zero/null satisfaction. As shown in Figure 1, the value functions may show varying trends (increasing, decreasing, or mixed) and shapes (linear, convex, concave, or sigmoidal), depending on how satisfaction varies as the indicator varies.



**Figure 1.** Representation of several types of value functions combining different trends and forms (adapted from [44]).

Therefore, when applying the MAUT to the season's programming in music institutions, a Season Value Index ( $SVI_i$ ) of the season  $i$ . can be defined as presented in Equation (1). It is a measure of the overall value provided by a season's program considering all of the relevant criteria to the institution and their importance.

$$SVI_i = \sum_j^n w_j \cdot value_{ij}. \quad (1)$$

where  $w_j$  is the importance or weight assigned to the  $j$  criterion and  $n$  is the total number of criteria. Criteria and a set of reference weights are provided in Sections 3.2.1 and 3.2.2, respectively. The  $value_{ij}$  is the value provided by season  $i$  regarding the criterion  $j$ . The SVI, expressed by a numerical index

between 0 and 1, enables the evaluation and comparison of the success of different programs of a season based on several criteria.

This tool was developed to provide objectivity to the programming within cultural institutions. It is intended to avoid intuition in decision-making in order to make decisions based on data and the degree of priority of each criterion in relation to the set of established criteria.

### 3. The Empirical Parameterization of the Model

#### 3.1. Current State of Decision-Making in the Cultural Sector—Interviews with Experts

The theoretical model proposed here considers data and first-hand information supplied by expert professionals engaged with the Catalan public and private cultural sector. The methodological design of the qualitative research builds on the generic framework offered by Grounded Theory [45], usually recommended when the information about the phenomenon under study is rather scarce. In this fashion, Grounded Theory techniques, such as the constant comparison of the data [46] (p. 337), inductive approach, and open coding to generate concepts from the data [47], are used to disentangle the decision-making process underlying the programming of the artistic season of a music institution. Based on the information provided by the experts interviewed, several key criteria are derived and molded within the analytic framework provided by the MAUT and the MCDA model. Thus, rather than building a new theory from the observed phenomenon, our purpose here is to offer a practical decision-making tool for cultural managers, a tool with the capacity of prediction and control [45,48,49].

Two types of semi-structured and long or intensive interviews [50] were performed to collect the data: (1) Interviews with top managers of some of the most relevant cultural institutions, such as the concert halls of Palau de la Música Catalana and l'Auditori de Barcelona, the opera house El Gran Teatre del Liceu, the international festivals Mercat de les Flors-Barcelona (music, dance, and performing arts), and Castell de Peralada (lyric and dance); and (2) interviews with other professionals, who are knowledgeable of the functioning of the Catalan cultural sector, from institutions such as ARTImetria, National Council for Culture and the Arts (CoNCA), and Universitat Internacional de Catalunya. The combination of both internal and external expertise was meant to ensure a better understanding of the cultural institutions and cultural sector. The interviewer's creativity and initiative was also preserved, especially for the interviews with other experts in the field, allowing the eventual adaptation of the questions (or asking of new ones) in order to obtain more in-depth responses from the interviewees [51] (see also Bakir and Bakir [49]). Given that the Palau de la Música Catalana was taken as a case study, the other cultural managers and experts were also asked about it. Guiding questions included in the interviews (see also [49]) are provided in Table S1 of the Supplementary Materials. From the interviews with the experts, it was possible to extract information regarding the decision-making method currently used in the institutional Catalan cultural framework. In Table 1, the main concepts and criteria extracted from the data with open coding are summarized (see also [49]).

**Table 1.** Main concepts and criteria derived from the data.

Cultural Institution	Concepts and Criteria Derived from the Data on Season's Programming
Palau de la Música Catalana	<ul style="list-style-type: none"> <li>• Private institution; decisions based on experience; the artistic director uses ten criteria               <ul style="list-style-type: none"> <li>• Quality of the show                   <ul style="list-style-type: none"> <li>• Formative value of the show, embedded in the quality</li> </ul> </li> </ul> </li> <li>• Specific department dedicated to analyzing the audiences               <ul style="list-style-type: none"> <li>• Shows must be attractive                   <ul style="list-style-type: none"> <li>• Risk (innovative shows, new creators)                       <ul style="list-style-type: none"> <li>• Singular and unique shows</li> </ul> </li> </ul> </li> </ul> </li> <li>• Local agents should be involved (Catalan artists, the creation of the figure of the “resident creator”)               <ul style="list-style-type: none"> <li>• Prestigious international orchestras                   <ul style="list-style-type: none"> <li>• Cultural Center with educational vocation</li> </ul> </li> </ul> </li> <li>• Social commitment via artistic initiatives for those at risk of exclusion               <ul style="list-style-type: none"> <li>• Great variety of music genres included in a season's content</li> <li>• Efficient management (economic profitability, transparency)</li> </ul> </li> </ul>
L'Auditori	<ul style="list-style-type: none"> <li>• Public (not for profit) institution; most active at national level; extensive programming               <ul style="list-style-type: none"> <li>• Season's content programming is a team task, led by the programming director</li> </ul> </li> <li>• Internal criteria ordered by priority: Eclecticism, quality of the shows, internationality, the audience, educational and formative mission, economic profitability               <ul style="list-style-type: none"> <li>• External criteria: Artists' availability, city's main cultural events, great orchestras' tournaments, etc.</li> </ul> </li> <li>• The criteria are different from those of Palau de la Música Catalana, where economic profitability is more binding</li> </ul>
Liceu Opera House	<ul style="list-style-type: none"> <li>• Various criteria: The title of the opera, the soloists, the budget, and the reference artists of the lyric scene, their availability and repertoire               <ul style="list-style-type: none"> <li>• Economic balance among: Their own productions, new ones, and those contracted from other theatres                   <ul style="list-style-type: none"> <li>• Balanced repertoire: Italian and German opera, bel canto, contemporary music; avoid repetition                       <ul style="list-style-type: none"> <li>• Key criteria: Quality and balance (also for the artists—frontline vs. new ones)</li> </ul> </li> </ul> </li> <li>• The audience: Of great tradition and nostalgic, interested in great voices and great artists</li> </ul> </li> <li>• Season's content at Palau: Centered around frontline artists and orchestras with exclusive performances</li> </ul>

Table 1. Cont.

Cultural Institution	Concepts and Criteria Derived from the Data on Season's Programming
The Castell de Peralada Festival	<ul style="list-style-type: none"> <li>• Season's content (with a backbone of ballet and music) is programmed one year ahead</li> <li>• Relevant criteria: Excellence in quality, reinforcement of the personality of the festival, and making a difference with the competitors (360 festivals, in Catalonia)               <ul style="list-style-type: none"> <li>• Other criteria: Festival's own identity; facilitating the incorporation of scene and theatre directors into opera shows                   <ul style="list-style-type: none"> <li>• Undertake risk: Innovation and modernity must go hand in hand with tradition;                       <ul style="list-style-type: none"> <li>• International projection and audiences</li> </ul> </li> <li>• Economic profitability is not binding: Public pricing strategy, social commitment, and philanthropy</li> </ul> </li> <li>• Aspect to be improved by Palau de la Música: The balance between the time allocated to visitors, artistic productions, and rehearsals                   <ul style="list-style-type: none"> <li>• Decision-making in the cultural sector: Shift towards a more collaborative system (artistic and programming directors working together with the marketing department); increasing importance of efficacy measures, costs, and box office; the artistic director has converted himself into a "fundraiser par excellence", striving to promote the institution and so contributing to increasing its sustainability</li> </ul> </li> </ul> </li> </ul>
Mercat de les Flors Festival	<ul style="list-style-type: none"> <li>• Programming in the cultural sector is not based on objective and measurable methods and criteria</li> <li>• Criteria: Build a loyal audience; experimental shows; the thematic itinerary of the festival; quality—emerging from new thematic threads or new staging proposals; transmitting a new message through the capacity of the show and updating its meaning to reach new audiences; the local artists; new creators</li> <li>• Quality, measured in a romantic sense, consists of the magic emerging from the show, the aesthetic levels given by the work of the artists, etc.               <ul style="list-style-type: none"> <li>• The programming of a season is determined one and a half year ahead</li> <li>• Economic profitability is not binding; the festival a priori fixes the revenues to be obtained and so it has no deficit</li> </ul> </li> </ul>
Universitat Internacional de Catalunya	<ul style="list-style-type: none"> <li>• Very few cultural institutions make programming decisions based on explicit criteria; "decision trees" are used to a great extent, but the underlying criteria are neither disclosed nor measured, analyzed, or explicitly compared               <ul style="list-style-type: none"> <li>• Good decisions are based on "good work", "good knowledge", and "good will" of people</li> </ul> </li> </ul>
ARTImetria	<ul style="list-style-type: none"> <li>• No knowledge about any cultural institution using a parameterization method to automate multi-criteria decision-making               <ul style="list-style-type: none"> <li>• Difficult to parameterize the quality</li> </ul> </li> <li>• Main criterion for any cultural institution: The audience (loyal and occasional); only few cultural institutions have marketing departments specialized in analyzing the audience               <ul style="list-style-type: none"> <li>• Other criterion: The budget</li> </ul> </li> </ul>

Table 1. Cont.

Cultural Institution	Concepts and Criteria Derived from the Data on Season's Programming
CoNCA	<ul style="list-style-type: none"> <li>• Trend towards a dual responsibility in the decision-making process (like in France or UK): The artistic director and the manager; in Spain and France, the artistic director has greater decision-making power, although exceptions exist (e.g., Liceu Opera Theatre, where the general director has a managerial profile)             <ul style="list-style-type: none"> <li>• Main criteria: The artistic concept, which is fundamental in the programming of a season's content, and the budget                 <ul style="list-style-type: none"> <li>• Not-for-profit institutions must have well-defined objectives in order to establish quality standards</li> </ul> </li> </ul> </li> <li>• Palau de la Música Catalana: Quality should be the main programming criterion (the standard must be fixed by the artistic director, keeping in mind that it is about high culture); promotion of local artists and creators; transversal repertoire; the audience; educating the audience through music</li> <li>• Quality can be parameterized by establishing benchmarks (top artists, top orchestras, feedback from the audience, reviewers, how much artists get paid, etc.)</li> </ul>

As can be noticed from Table 1, all of the participants interviewed agreed in signaling that no standards, tools, or standardized and consolidated decision-making processes are applied in the cultural sector's management, and that most of the decisions made are based on the intuition and experience of the (artistic) managers:

“In the field of culture, traditionally, there have been no scientific approaches. The decisions were made based on experience rather than reflection and rigor backed by results. Certainly, we must have a scientific knowledge of music or of the professional environment: Musicians, orchestras, the agencies that represent these artists... But it is also true that, so far, there are no manager associations” (Víctor García, former Artistic Director of Palau de la Música Catalana).

Regarding the internal organizational process around the programming of the content of a season, as well as the specific criteria applied by each institution, the interviews revealed no common standards. Although each institution had some more or less defined criteria and evaluation procedures, no one was aware of the existence of any specific decision-making tool applied in any of these cultural institutions in terms of parameterization and multi-criteria analysis. Overall, in the Catalan music sector (this also applies to the rest of Spain), programming decisions are generally made according to the experience and intuition of the person in charge of making that decision, usually a great connoisseur of the subject.

In this context, the Palau de la Música Catalana was found to be a special case, with ten well-defined criteria that were used to decide which concerts to include on a program and which ones to discard: Quality, audience, attractiveness, dose of risk, singularity, locality, internationality, education, social commitment, and efficient management (these criteria are described in detail in the next section). In the case of L'Auditori, the programming director explains that he must discuss and agree on the content of the season with the technical directors of the Barcelona Symphony Orchestra and the National Orchestra of Catalonia, as well as the Symphonic Band, and, at the same time, keep the program sufficiently eclectic to please all types of audiences: “The mission of L'Auditori [as a public institution] is the dissemination of music, and this governs the criteria under which a season is designed” (Robert Brufau). In contrast, the Liceu Opera House follows a pattern according to which each season should include some of the titles best known by the public (such as Mozart's 'The Marriage of Figaro'), as well as some other styles, trying not to repeat operas during a period of at least five years. For the Castell de Peralada Festival, the main goal is to offer performances that can be distinguished from the rest of the more than 360 annual festivals organized in Catalonia. The planning priority for the Mercat de les Flors Festival is the thematic line that forms the backbone of the content of the shows to be exhibited during a certain season.

Concerning the issue of economic performance, the interviews have shown a general awareness of the importance of cultural value vs. economic profitability:

“It is important to free ourselves from the stigma of profitability per person in purely economic terms when we speak about a cultural value. The danger of looking for economic profitability in a musical program is that we would necessarily tend to simplification and pop. We cannot live only on the symphonies of Beethoven or Bach's Mass” (Robert Brufau, L'Auditori).

As the purpose of the interviews was to select a set of relevant criteria to be used in the design of a season's content (see Table 1), it is important to note that the procedures being applied (e.g., strategic plans, program contracts, etc.) allow for the analysis of the quantifiable results obtained after one or several specific seasons or projects. Thus, in the cultural sector, the results are measured after completing the season's program, and the potential explanatory causes of the results obtained are analyzed and applied to future seasons' programming. Hence, once the results of a season are known, the objectives that need to be further pursued (e.g., revenues, audience, quality, etc.) are established. However, the respondents pointed out the lack of a procedure that relates the extent to which each objective is achieved with the degree of interest each objective has for the institution. Thus, while some

objectives would be a priority for a public institution, they would not be for a private one, and vice versa. When an institution has a great variety of shows to choose from, as well as different objectives to be achieved and different priorities, the difficulty of choosing a show is much greater. In short, the MAUT, which requires a mathematical tool that can specify the importance of the criteria and the value of the different alternatives available to make efficient decisions, could be very useful in the creative industry in choosing the contents to be included in a season's program.

### 3.2. An MCDM Tool for Season Programming in Cultural Institutions

#### 3.2.1. Criteria

Following the qualitative interviews presented above, in this section, we describe the criteria identified as relevant for the programming of a season's content. More specifically, ten criteria were selected—the ones employed by Víctor Garcia, the former Artistic Director of the Palau de la Música Catalana (see also Cabré, [52]). The criteria were used to design and evaluate the 'Palau 100' program scheme of the Palau de la Música Catalana. Next, we give below a brief description of each criterion.

1. **Quality:** Condition of superiority or excellence by which the value of a particular good is judged. This is measured by the musical trajectory of the artist, their contribution to the musical market, national or international recognition, and participation in major festivals, as well as the level of technical difficulty required by the repertoire presented by the artist and, lastly, prizes in relevant international festivals.
2. **Audience:** Opinions, interests, musical or artistic tastes, or hobbies of the audience targeted by each artistic action proposed by the institution, considering that a balance in the programs should be maintained in order to increase and diversify the institution's audience.
3. **Attractiveness:** The event presented should arouse interest in the group and contain a discourse that is sufficiently provocative or eloquent to motivate public attendance at events.
4. **Dose of Risk or Risky Programming:** Beyond pursuing excellence, with unique and extraordinary artistic events involving consecrated international artists, the Palau de la Música Catalana is also committed to promoting and projecting the emerging local talent, Catalan composers, new creators, and minority genres that have not yet established themselves as recognized artists in the artistic market, but are on track to achieve this and become part of the Catalan cultural heritage.
5. **Singularity:** The distinctive quality for which the Palau is completely exceptional and original, which means that it is different from other institutions within the domain of classical music through the programming of activities and artists that no other institution includes in its programming.
6. **Locality:** Work with local agents of the territory. The institution must function as a cultural platform in which the local talent of the city of Barcelona is promoted, working with groups, orchestras, or musical associations as a strategy of inclusion and promotion in the job market.
7. **Internationality:** To design actions, projects, and shows with personality. That is, to go beyond expectations or present certain elements that are sufficiently attractive to the public, especially to foreign audiences. This requires international orchestras, which may bring visibility and prestige not only nationally, but also internationally.
8. **Education:** Generate awareness of cultural activity through training activities in order to build an audience with vocation and criteria, as well as a strategy of audience replacement in years to come.
9. **Social Commitment:** Generate activities within the program that facilitate access to members of social groups that are displaced and disadvantaged as a social inclusion strategy from the institution.
10. **Efficient Management:** The adequate, optimal, and efficient management of the economic, administrative, organizational, logistic, and functional resources of an institution with a view towards achieving sustainability over time.

A key feature of the MCDM method is adaptability, since the criteria described here can be easily adjusted to different institutions or case studies within the cultural sector or to any other specific project according to its objectives or preferences. This mechanism is very versatile when making evaluations, since it allows the creation of scenarios in which one can add or remove a criterion or change its weight value.

### 3.2.2. Weights

The weights assigned to the criteria described above are presented in Table 2. These weights were assigned by Mr. García according to the values and mission of the Palau de la Música Catalana when defining the content of a season. Thus, greater weights (25% and 15%) were assigned to criteria considered as fundamental, an intermediate weight (10%) to those with an intermediate value, and a low weight (5%) to those that are less relevant, but that must still be considered.

**Table 2.** Criteria and weights for the Palau de la Música Catalana.

Criteria	Weights
Quality	25%
Audience	15%
Attractiveness	15%
Dose of risk	10%
Singularity	10%
Locality	5%
Internationality	5%
Education	5%
Social commitment	5%
Efficient management	5%
Total	100%

### 3.2.3. Indicators

Indicators are the way of evaluating the performance of a season's content regarding the different criteria. The indicators of the criteria, from 1 to 9 (from quality to social commitment), are defined as a percentage scale ranging from 0% to 100%. Those with a 0% score correspond to a season program that does not comply at all with the criteria established, and a 100% score corresponds to those that fully comply with them. Some clear guidelines on how to evaluate each indicator should be established, indicating what circumstances have to occur in order to assign a specific ranking (between 0% and 100%) based on the results of the analysis of objective data. That is to say, if the institution has data on, for example, the attractiveness (number of tickets sold) of past performances, these data can be analyzed and correlations between attractiveness and other variables, such as number of people performing, style of the performance, etc., can be discovered. This data gathering and analysis is beyond the objectives of the paper.

In order to assess the indicators' result for the whole season, including all of the shows, the indicators will be firstly assessed for each show of the season individually. Then, the indicators' result for the whole season will be calculated as the arithmetic mean of the indicators' result of all the individual shows of the season, as presented in Equation (2), where  $i$  is one of the shows of the season and  $n$  is the total number of shows in the season.

$$\text{Indicators' result of a season} = \frac{\sum_1^n \text{Indicator's result of show } i}{n} \quad (2)$$

In the case of criterion 10, efficient management, the indicator is defined as the profit (margin) of the season, that is, the sum of the economic results of each show, whether positive (profits) or negative (losses).

### 3.2.4. Value Functions

The value function transforms the units of the indicators—in this study, percentages (%) and monetary units (€)—into units of value or satisfaction ranging from 0 (null satisfaction) to 1 (maximum satisfaction). From the possible forms of the value function shown in Figure 1, the increasing linear value function was adopted for the criteria 1–3 and 5–9, which means that the higher the result of the indicator, the higher the value. The value function for these criteria is defined in Equation (3) and Figure 2. The result of each indicator is divided by 100 to obtain the value.

$$\text{Value} = \frac{\text{Indicators' result of a season}}{100} \quad (3)$$

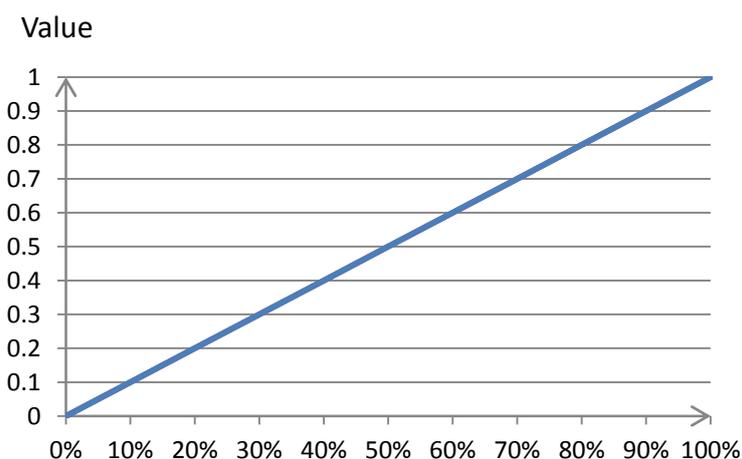


Figure 2. Value function for the criteria 1–3 and 5–9.

The criterion 4, dose of risk, does not follow the previous pattern. A result of 0% for the indicator of risk means that all of the shows of the season have a null dose of risk, whereas a 100% dose of risk in a season means that all of the shows of the season have the maximum risk. Neither of the two situations provides the highest value. According to the Palau de la Música, their programming is mainly traditionalist, and the optimal dose of risk for a season is around 40%. Therefore, the unimodal value function, as defined in Equation (4) and Figure 3, is appropriate.

$$\text{Value} = \begin{cases} \frac{\text{Dose of risk of the season}}{40}, & 0\% \leq \text{Dose of risk of the season} \leq 40\% \\ -\frac{\text{Dose of risk of the season}}{60} + \frac{5}{3}, & 40\% < \text{Dose of risk of the season} \leq 100\% \end{cases} \quad (4)$$

With respect to criterion 10, the value function has to transform the season's profit into units of value or satisfaction. According to the Palau de la Música, it is assumed that the maximum losses allowed per season are −500,000 euros and the maximum profit allowed per season is 3,000,000 euros. Establishing a maximum economic margin enables sustainability of programming. Thus, the situation of having an extremely positive economic margin at the expense of serious damage to the rest of the indicators is avoided, which surely leads to a loss of audience in the following seasons and, consequently, to the following seasons not being economically sustainable. Season programs that would produce margins higher or lower than the limits are initially discarded and not considered in the analysis.

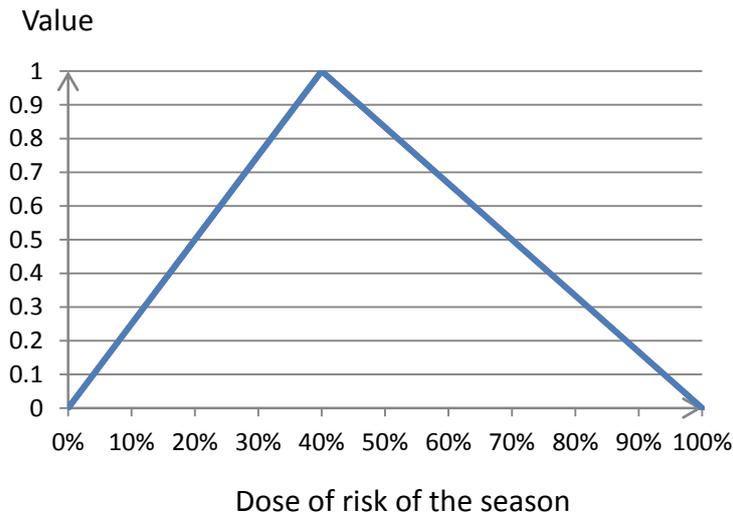


Figure 3. Value function for criterion 4, dose of risk.

Taking into account these allowed margins, the value function for the sustainable management criterion is defined (Equation (5) and Figure 4). It is considered that the maximum value or satisfaction (1) is obtained when the margin of the season coincides with the maximum margin allowed. The minimum margin allowed per season provides the minimum value or satisfaction (0). The intermediate margins, between the minimum and the maximum, provide intermediate satisfactions according to a linear function. Null profits provide a value > 0. For other margins allowed, the value function could be easily defined according to them.

$$\text{Value} = \frac{\text{margin of the season in } \text{€}}{3500000} + \frac{1}{7} \tag{5}$$

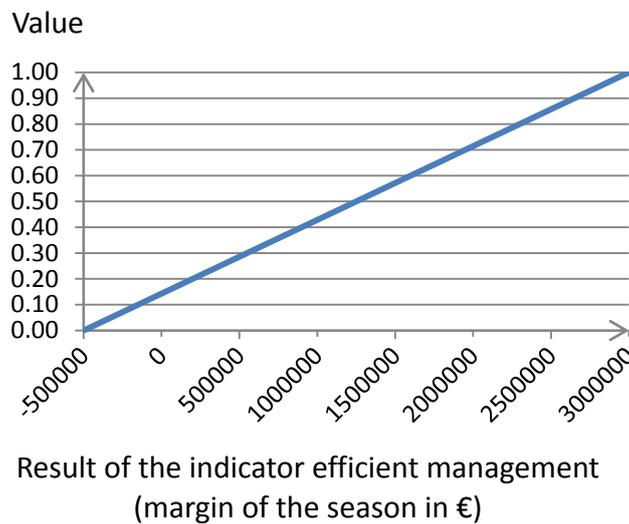


Figure 4. Value function for criterion 10, efficient management.

#### 4. Case Study of the Palau de la Música Catalana

##### 4.1. Evaluation of the 'Palau 100' Programming Season 2015–2016

The data used to test the model belong to the so-called 'Palau 100' programming scheme, covering the season 2015–2016. 'Palau 100' was implemented with the purpose of becoming a 'label' of excellence by gathering together, each season, the best artists, musicians, and orchestras of the world. A brief description of the programming corresponding to the 'Palau 100' season 2015–2016 is presented in Table 3.

**Table 3.** 'Palau 100' program for the 2015–2016 season.

Performances of the 'Palau 100' Program, Season 2015–2016			
1	Daniel Barenboim	25	Les Arts Florissants
2	London Philharmonic Orchestra	26	Queyras and Melnikov
3	Cecilia Bartoli	27	Pablo Ferrández
4	Jean-Christophe Spinosi	28	Belcea Quartet
5	Christian Zacharias	29	Cuarteto Quiroga and Javier Perianes
6	Gustavo Dudamel	30	Pavel Haas Quartet
7	Mitsuko Uchida	31	Mark Padmore and Paul Lewis
8	Royal Concertgebouw Orchestra	32	Alexander Demidenko
9	Nikolai Lugansky	33	Iván Martín
10	Katia and Marielle Labèque	34	Anna Gourari
11	Budapest Festival Orchestra	35	Rudolf Buchbinder
12	Marc Minkowski	36	Khatia Buniatishvili
13	Vladimir and Vovka Ashkenazy	37	Grigory Sokolov
14	Wiener Philharmoniker Orchester	38	Sir Andrés Schiff
15	Anna Netrebko and friends	39	Luis Fernando Pérez
16	Xavier Sabata	40	Benjamin Grosvenor
17	Juan Diego Flórez	41	Lars Vogt
18	Rolando Villazón	42	Daniel Barenboim
19	Magdalena Kožená	43	Orquestra Montsalvat
20	Matthias Goerne	44	Jordi Savall
21	Cor de Cambra del Palau	45	Benjamin Alard
22	Evgeni Koroliov	46	Miloš Karadaglić
23	Sir John Eliot Gardiner	47	Anne-Sophie Mutter
24	Isabelle Faust	48	Ensemble Intercontemporain

The ten qualitative criteria extracted from the analysis of the interviews with the experts are used as parameters of the MCDM model. The weights used to rank the criteria are provided by the former artistic director of the Palau de la Música Catalana, Mr. García. Table 4 presents the individual evaluation of all the events included in the 2015–2016 season program regarding each one of the 10 criteria presented in Table 2 above by means of the indicators defined in Section 3.2.3. Mr. García did the evaluation based on data of that season; in further implementations, the assessment could be carried out by the different members of the team responsible for programming, either individually or by means of seminars. The result of the indicators for the whole season was calculated according to Equation (2).

Table 4. Indicator results for the 'Palau 100' 2015–2016 season.

Criteria	Weight	Performance															
		(1) Daniel Barenboim	(2) London Philharmonic Orchestra	(3) Cecilia Bartoli	(4) Jean-Christophe Spinosi	(5) Christian Zacharias	(6) Gustavo Dudamel	(7) Mitsuko Uchida	(8) Royal Concertgebouw Orchestra	(9) Nikolai Lugansky	(10) Katia and Marielle Labèque	(11) Budapest Festival Orchestra	(12) Marc Minkowski	(13) Vladimir and Vovka Ashkenazy	(14) Wiener Philharmoniker Orchester	(15) Anna Netrebko And friends	(16) Xavier Sabata
Quality	25%	100%	100%	100%	100%	100%	100%	100%	100%	75%	100%	100%	100%	100%	100%	100%	85%
Audience	15%	75%	75%	65%	100%	100%	100%	100%	100%	80%	90%	30%	90%	80%	90%	90%	50%
Attractiveness	15%	90%	40%	78%	100%	90%	100%	98%	98%	90%	99%	70%	100%	60%	70%	100%	40%
Dose of risk	10%	60%	50%	5%	70%	5%	80%	0%	70%	87%	5%	80%	20%	0	100%	80%	
Singularity	10%	100%	100%	90%	70%	70%	100%	100%	100%	70%	100%	100%	90%	100%	100%	90%	
Locality	5%	0%	100%	0%	100%	0%	0%	0%	0%	50%	0%	100%	100%	0%	0%	50%	90%
Internationality	5%	100%	100%	100%	100%	100%	100%	100%	100%	50%	100%	100%	100%	100%	100%	100%	50%
Education	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Social commitment	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient management	5%	−15,000	−45,000	3000	0	42,000	−58,000	25,000	−75,000	−75,000	−75,000	−75,000	−75,000	15,000	−75,000	Cancelled	−30,000

Criteria	Weight	Performance															
		(17) Juan Diego Flórez	(18) Rolando Villazon	(19) Magdalena Kožaná	(20) Matthias Goerne	(21) Cor de Cambra del Palau	(22) Evgeni Koroliov	(23) Sir John Eliot Gardiner	(24) Isabelle Faust	(25) Les Arts Florissants	(26) Queyras and Melnikov	(27) Pablo Ferrández	(28) Belcea Quartet	(29) Cuarteto Quiroga and Javier Perianes	(30) Pavel Haas Quartet	(31) Mark Padmore and Paul Lewis	(32) Alexander Demidenko
Quality	25%	100%	100%	100%	75%	80%	100%	100%	90%	100%	100%	100%	95%	100%	100%	100%	
Audience	15%	100%	90%	95%	60%	60%	90%	99%	90%	90%	65%	90%	65%	70%	95%	80%	
Attractiveness	15%	100%	70%	90%	80%	70%	95%	100%	80%	85%	90%	80%	85%	85%	85%	75%	
Dose of risk	10%	5%	0%	90%	95%	80%	10%	10%	90%	5%	50%	5%	30%	50%	30%	20%	
Singularity	10%	100%	60%	10%	100%	100%	80%	5%	90%	50%	20%	95%	100%	95%	70%	40%	
Locality	5%	100%	30%	0%	0%	100%	0%	50%	0%	80%	0%	100%	0%	0%	0%	0%	
Internationality	5%	0%	70%	100%	100%	10%	100%	50%	100%	100%	100%	100%	30%	100%	100%	100%	
Education	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Social commitment	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Efficient management	5%	0	−14,000	−15,000	10,000	−20,000	20,000	0	12,000	10,000	40,000	12,000	5000	8000	3000	0	10,000

Table 4. Cont.

Criteria	Weight	Performances																Result of the indicator
		(33) Ivan Martin	(34) Anna Gourari	(35) Rudolf Buchbinder	(36) Khatia Buniatishvili	(37) Grigory Sokolov	(38) Sir Andrés Schiff	(39) Luis Fernando Pérez	(40) Benjamin Grosvenor	(41) Lars Vogt	(42) Daniel Barenboim	(43) Orquestra Montsalvat	(44) Jordi Savall	(45) Benjamin Alard	(46) Miloš Karadaglić	(47) Anne-Sophie Mutter	(48) Ensemble Intercontemporain	
Quality	25%	100%	95%	100%	95%	100%	100%	95%	95%	90%	100%	85%	100%	100%	95%	100%	100%	97%
Audience	15%	95%	80%	95%	80%	100%	95%	90%	70%	70%	95%	90%	95%	70%	50%	100%	60%	83%
Attractiveness	15%	90%	75%	80%	100%	100%	85%	95%	65%	85%	100%	95%	90%	60%	30%	100%	40%	83%
Dose of risk	10%	15%	10%	10%	5%	2%	25%	30%	45%	45%	80%	60%	20%	40%	45%	65%	100%	39%
Singularity	10%	60%	35%	50%	99%	100%	100%	45%	100%	90%	100%	70%	100%	100%	100%	100%	100%	81%
Locality	5%	100%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	0%	0%	30%
Internationality	5%	0%	100%	100%	100%	100%	100%	0	100%	100%	100%	100%	0	100%	100%	100%	100%	83%
Education	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Social commitment	5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient management	5%	10,000	8000	20,000	25,000	42,000	30,000	10,000	7000	10,000	−45,000	5000	15,000	3000	Cancelled	10,000	−25,000	−307,000 €

The resulting values, weighted values, and SVIs are presented in Table 5. They were calculated according to Equation (3) for the criteria 1–3 and 5–9, Equation (4) for the criterion 4 (dose of risk), and Equation (5) for the criterion 10 (efficient management). Finally, the weighted value was calculated by multiplying the value by the corresponding weight, and the SVI is the sum of all the weighted values, as described in Equation (1).

**Table 5.** Season Value Index (SVI) for the ‘Palau 100’ 2015–2016 season.

Criteria	Weight	Result of the Indicator	Value	Weighted Value
Quality	25%	97%	0.97	0.242
Audience	15%	83%	0.83	0.125
Attractiveness	15%	83%	0.83	0.124
Dose of risk	10%	39%	0.98	0.098
Singularity	10%	81%	0.81	0.081
Locality	5%	30%	0.30	0.015
Internationality	5%	83%	0.83	0.041
Education	5%	100%	1.00	0.050
Social commitment	5%	100%	1.00	0.050
Efficient management	5%	−307,000 €	0.06	0.003
TOTAL	100%			SVI = 0.829

As previously explained, the resulting SVI must be between 0 and 1, with 0 indicating the minimum satisfaction and 1 indicating the maximum satisfaction. In this case, the resulting SVI is 0.829, which shows that the 2015–2016 season is highly satisfactory according to the criteria and priorities established by the Palau de la Música Catalana.

The season’s program for 2015–2016 achieved an excellent performance regarding quality, the criterion considered to be the most important by the Palau de la Música, which reaches a value of 0.97 out of 1, almost the maximum. This means that it would be very difficult to improve the quality with a different season program. The other two most important criteria, audience and attractiveness, with a weight of 15% each, achieved a very good performance, too, with a value of 0.83 each. The following criterion in importance, dose of risk, with 10% of the weight, obtained a result of the indicator for season 2015–2016 of 39%, very similar to the optimal 40% benchmarking. It also has, therefore, an excellent satisfaction performance with a value of 0.98 out of 1. The criterion of singularity, with 10% of the weight, also had a very good performance with a value of 0.81. Lastly, the least important criteria, each accounting for a 5% of the total weight, exhibited good performance values, too: Education and social commitment each had a value of 1. This means that all of the shows of the season included educational activities and people belonging to socially disadvantaged groups. The criterion of internationality obtained a high value (0.83), while the criterion of locality obtained a low value (0.30), which could be improved by including local agents in more shows. The 2015–2016 season ended with losses of around 307,000 €, with the criterion of efficient management being the one with the lowest performance, with a value of only 0.06. The bad performance of this criterion has a limited impact on the global SVI, which is high (0.829). This is due to the low weight of the criterion of efficient management in the programming of the season.

#### 4.2. Sensitivity Analysis

To assess the robustness and stability of the tool developed, a sensitivity analysis was performed considering different alternative scenarios of the programming of the season of the Palau de la Música Catalana. For this purpose, the initial weights assigned to the different criteria (see Table 2) were taken as a starting point and, afterwards, some variations were introduced in the weights of several criteria to test how these changes would affect the resulting SVI. In the case of the indicators, no changes were

applied given that the content of the season's program did not vary. Hereafter, we briefly explain the results obtained for each alternative scenario tested.

#### 4.2.1. Sensitivity Analysis 1: Internationality

The sensitivity analysis 1 (or scenario 1) assigned greater importance to the criterion of internationality, that is, to the quota of international artists in order for the institution to gain visibility worldwide. Hence, a weight of 20% (greater than the original one of 5%) was assigned to this criterion, while the weights of the remaining criteria were redistributed so that they maintained the same proportions as those corresponding to the original weights (Table 2), and the sum of the weights of all the criteria was 100%. As presented in Table 6, the SVI estimated for this scenario was 0.828, almost the same as in the original setting. This means that if the Palau de la Música Catalana were to prioritize internationality, a season program like the one scheduled in 2015–2016 would still be a very good choice according to the SVI coefficient.

**Table 6.** Results of the sensitivity analyses.

Criteria	Value	Scenario 1: Internationality		Scenario 2: Locality		Scenario 3: Audience, Dose of Risk, and Singularity	
		Weight	Weighted Value	Weight	Weighted Value	Weight	Weighted Value
Quality	0.97	21.05%	0.204	22.38%	0.217	19.22%	0.186
Audience	0.83	12.63%	0.105	13.42%	0.111	<b>20.00%</b>	0.166
Attractiveness	0.83	12.63%	0.105	13.42%	0.111	11.53%	0.095
Dose of risk	0.98	8.42%	0.083	8.95%	0.088	<b>15.00%</b>	0.148
Singularity	0.81	8.42%	0.068	8.95%	0.072	<b>15.00%</b>	0.121
Locality	0.30	4.21%	0.013	<b>15.00%</b>	0.045	3.85%	0.012
Internationality	0.83	<b>20.00%</b>	0.165	4.47%	0.037	3.85%	0.032
Education	1.00	4.21%	0.042	4.47%	0.045	3.85%	0.039
Social commitment	1.00	4.21%	0.042	4.47%	0.045	3.85%	0.039
Efficient management	0.06	4.21%	0.002	4.47%	0.002	3.85%	0.002
TOTAL:		100%	SVI = 0.828	100%	SVI = 0.774	100%	SVI = 0.839

#### 4.2.2. Sensitivity Analysis 2: Locality

To simulate a scenario 2 in which the Palau de la Música Catalana assigned more importance to the participation of local artists (criterion 6), the weight of the locality criterion was increased from 5% (original weight) to 15%. The rest of the weights were redistributed accordingly to preserve proportionality with the original ones and thus ensure a total sum of the weights of all the criteria of 100%. As shown in Table 6, the SVI resulting from this scenario was 0.774, lower than the original one. As expected, by increasing the importance of a criterion with a bad performance (low result of the indicator) for the season analyzed, the new SVI returned a lower coefficient. The estimated SVI implies that if, in an alternative scenario, the Palau de la Música Catalana were to assign more importance to locality, the program of the 2015–2016 season could be improved by including more shows with the participation of local artists.

#### 4.2.3. Sensitivity Analysis 3: Audience, Dose of Risk, and Singularity

A third alternative analysis proposes a scenario 3 in which greater importance is assigned to a risky program (the original weight of 10% for the dose of risk was increased to 15%) and to uniqueness (the weight of the singularity criterion was increased from 10% to 15%), so as to make it work as a factor of differentiation that would help build a competitive advantage for the institution. This would simultaneously enable the generation of new audiences, a criterion whose importance would also grow

in this scenario (the original weight was increased from 15% to 20%). In sum, the criteria of dose of risk, singularity, and audience each increased their weight by 5%; the weights of the remaining criteria were redistributed proportionally to the original weights to ensure a total of 100% after summing all the weights. In this case, the obtained SVI was 0.839 (see Table 6), slightly greater than that obtained with the original weights. This means that even if the Palau de la Música Catalana decided to give more importance to audience, dose of risk, and singularity, the program scheduled for the 2015–2016 season would still be a very good one, although slightly better than the one with the original preferences.

In sum, the SVI proved to be quite stable with the variation of the weights, as shown in the sensitivity analysis that was carried out. The robustness of the proposed MCDM method favors its application in strategic management decisions in the cultural sector, offering a useful decision-making tool to managers. They can thus not only test and design optimal programming scenarios for each season, but also implement strategic planning of future seasons' programming and resources, covering a mid- and long-range time period.

## 5. Discussion and Implications for Management

The research framework—combining qualitative and quantitative methods—and the empirical evidence presented here show that MCDM methods can also be applied to the management of cultural institutions. Our findings indicate that the MCDM method has several advantages to be considered by cultural institutions: It allows for the consideration of as many criteria as necessary to the decision-maker, and the weights assigned to the criteria can be varied depending on their importance and cultural institutions' priorities, which may vary from year to year. The (contradictory) interests of various stakeholders, eventually involved in the control and governance of the cultural institutions, can thus be taken into account, and the results obtained are justified with objective parameters. The introduction of these types of decision-making methods in the cultural sector (they are very much appreciated in other industry sectors where managers are subject to continuous industry changes and pressure for obtaining positive results) does not imply the substitution of the human decision, but rather, it represents an aid to increase the so-called rationality of the agents involved in decision-making processes, who are usually limited by the numerous variables, budget restrictions, and uncertainty involved in the analysis.

The sensitivity analysis has shown that the method proposed is robust to changes in the weights (priorities) of the criteria considered, thus allowing for mid- and long-range design of alternative management scenarios by the managers. This aspect is particularly important in the cultural sector, where the managers can rely only on the 'posterior control' mechanisms, whose feedback can be introduced only after observing the results of a season and do not allow any foresight of the effects of the eventual changes applied.

It must also be noted that one of the a priori requisites of this methodological framework is to know the importance (weights) of the criteria to be applied, as this will have a direct impact on the result of the optimization process, that is, the SVI. Although the information extracted from the interviews with the representatives of the cultural institutions shows that each one deals with this issue in a different way, it also reflects the importance of the managers' own expertise in the field and the nature of the activity analyzed. Furthermore, as the main objective of this type of method is that of acting as an aid in the decision-making process (and not to become a substitute for it), this framework postulates itself as an optimal combination between human expertise and greater capacity of data analysis with the help of mathematics and technological innovations (e.g., computer software). In the same vein, a key element for the successful implementation of this framework of analysis is teamwork—good understanding, definition, communication, and measurement of the criteria to be used in the analysis, as well as the identification of other potential criteria, require the participation of various administrative departments/areas in the institution (e.g., finance, human resources, marketing, etc.), as well as the expertise of all agents working in the institution and involved in the realization of an artistic event. The interviews with experts in the field have stressed the fact that, in order to adopt more integrative

decision-making tools, cultural institutions must have well-defined and clear objectives, mission, and values, as their parameterization would be much easier. A good analysis and understanding of the audience's preferences and expectations with respect to the quality of the artistic events programmed (e.g., audience surveys, artist and orchestra rankings, box office data, etc., could be used to quantify the quality) is another important requisite. The training of the internal staff and future managers in these assessment procedures, together with the observed trend towards a more collaborative decision-making framework (involving the artistic director, the manager, and the marketing department), could serve as a preparatory step prior to the adoption of the MCDM method. The "predictive ability" of the MCDM method could also serve as a training tool to estimate future scenarios (with different weights and rankings of criteria) in order to adjust the results expected to the objectives of the institution.

Eventually, teamwork will also contribute, in the mid-/long-term, to building a strong organizational culture, enhancing those values and missions that better suit the identity of the cultural institution, thereby increasing its competitive market advantage given that organizational culture is one of the few resources of any organization that is difficult to imitate. The use of this type of decision-making tool in performance measurement in the cultural sector could also contribute to increased transparency of the management process and of the results obtained, highlighting eventual financial difficulties and signaling the potential solutions to be applied to ensure long-run sustainability. Given that most of the cultural institutions also rely on public funding (subsidies) and/or private resources (donations, etc.), an efficient and transparent management system could contribute to increasing the social impact of their activities by insuring the accomplishment of all of the objectives chosen by the institution.

It is also important to stress that the MCDM method presented here is easily adaptable to any type of organization in the cultural and creative sector, regardless of its organizational structure and size. Last but not least, in the present scenario, as they are threatened by the significant impact of the Covid-19 pandemic on the performing arts, the MCDM method can help cultural managers in the programming of sustainable season contents.

**Supplementary Materials:** The following are available online at <http://www.mdpi.com/2071-1050/12/14/5785/s1>, Table S1: Guiding questions for the interviews.

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