The Estimation of the Optimal Level of Productivity for Sponsors in the Recovery and Enhancement of the Historical-Architectural Heritage

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Abstract. The paper explores the theme of sponsorship aimed at enhancing the historical-architectural heritage, analyzing the point of view of companies. Specifically, a static analysis model proposed in a previous paper, whose objective is to establish the optimal amount to invest in sponsorship to maximize business profit, is integrated with an innovative model that allows the company to assess the degree of financial efficiency of the investment, i.e. its productivity Υ. The latter depends on a series of variables that characterize both the monument to be enhanced, the location in which it is located, and the sponsorship strategy adopted by the company. However, in the case of sponsorship of recovery/restoration work, the critical variable that most affects the efficiency of the investment is the number of visitors to the location where the monument is located (direct audience). This is because as the number of visitors increases, the level of exposure to the sponsorship message increases. Therefore, we assume two functional relationships, one linear and the other logarithmic, which correlate financial efficiency to the average number of visitors. In this way, the advantage of the company is twofold. On the one hand, it has the opportunity to maximize profits by investing the optimal amount of sponsorship. On the other hand, it can choose the level of productivity of the investment by deciding to finance the monument of a specific location according to its degree of exposure.

Keywords: Sponsorship · Historical-architectural heritage · Sponsorship productivity · Sponsorship financial effectiveness · Direct audience · Profit maximization

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1 Introduction

In the last decade in Italy, public administrations have established multiple sponsorship relationships with private entities to carry out different types of public action interventions. The main sector in which there is a high use of sponsorship is certainly that of cultural heritage [1–4]. In this sector, the public intervention has proved insufficient due to the recent economic crisis and the consequent cuts in public spending [5–7]. The sponsorship contract establishes a collaborative relationship between public and private actors, generating clear advantages for both parties. In particular, the public body acquires the necessary resources to protect and enhance the cultural heritage, while the private entrepreneur obtains a considerable return on advertising as well as incentives of various kinds and tax relief. The recent spread of the instrument among private companies is mainly due to its strong social impact in terms of advertising. Sponsorship contributes to the diffusion of the company name and its products, often being more effective than other promotional strategies of the marketing mix [8].

The main form of sponsorship in the cultural sphere consists essentially in the donation of money, the supply of goods or the provision of services necessary for the implementation of interventions to upgrade the historical-architectural heritage. According to Nelli and Bensi [9], this type of sponsorship is the most suitable to give prestige to the company and improve its image as it allows the sponsor to create consensus in the local community. However, it has some limitations, such as the reduced visibility offered to the sponsor (it is not always appropriate to place a company brand next to monuments or buildings of artistic and cultural value), the not always optimal relationship with the mass media (often these initiatives can obtain a limited media resonance because part of the public does not accept the commercial exploitation of the image of monuments), the difficult integration of sponsorship with other forms of communication. According to Peluso [10], these limitations are due to the difficult adaptation of the contractual model of sponsorship to the cultural sphere. It is a contract of an essentially mercantile nature initially used only in the sports and broadcasting sectors. For that reason, the commercial activity of the sponsor is badly suited to the cultural and historical asset being upgraded. The historical-architectural heritage belongs to the community, which is itself represented by it. For this reason, the territorial communities do not always recognize themselves in the goods or services that the sponsor intends to advertise. However, if social responsibility objectives prevail over purely commercial ones [11], there is generally positive perception of the initiative promoted and therefore successful sponsorship. There must be an affinity of values and complementarity of objectives between the company's communication strategy and the cultural project for sponsorship to be effective. The sponsoring company can thus obtain a series of benefits: ensure greater visibility, strengthen its image and reputation, improve internal relations, strengthen relations with stakeholders, consolidate its impact on the territory [12]. These benefits coincide with the company's corporate communication objectives. No less important are the marketing objectives, measurable in terms of financial performance, that the company intends to achieve through sponsorship. Improving the company's visibility, image and reputation often lead to an increase in demand for the goods or services it offers. When a company intends to pursue a specific marketing objective, the message of sponsorship is mainly

addressed to the final consumer. In this case, the aim is to achieve an increase in turnover and, therefore, in profits [13–15].

The objective of this work is to analyze the financial aspects of sponsorship, contextualizing the tool only in the marketing field. Specifically, a static analysis model proposed in a previous work, whose objective is to estimate the optimal amount to invest in sponsorship to maximize business profit [16], is integrated with a new model that allows the company to choose the level of financial efficiency of the investment. Not only is it, therefore, possible to determine the optimal sponsorship budget that allows the company to obtain the highest possible profit, but the amount needed is also commensurate with the degree of productivity of the investment, a parameter that depends not only on the organizational and management skills of the company but also on the characteristics of the sponsorship activity and the sponsored object.

The elaboration of the model for the estimation of the optimal level of productivity for companies sponsoring interventions for the redevelopment of the historical-architectural heritage can be summarized in three phases. In the first phase, the critical variables that influence the financial efficiency of the sponsorship are identified. In the second phase, two different functional relationships (linear and logarithmic) are hypothesized that correlate each critical variable to a parameter Υ representative of the rate of variation of the marginal productivity of the sponsorship. For the sake of simplicity, the only variable direct audience (number of visitors in the location of interest) is considered, since the latter in the case of sponsorship of recovery/restoration work is the one that has the greatest impact on the efficiency of the investment. And in fact, visitors to the location where the building is located are the main recipients of the sponsorship message, by viewing the billboards posted on the scaffolding of the building site. Consequently, there is a high probability that some of the new consumers of the products offered by the sponsoring company will coincide with some of the visitors to the location of interest. The latter, understanding the social usefulness of the sponsored initiative, may decide to purchase the goods offered by the sponsoring company instead of those offered by competing companies. In the third and final phase, the parameter Υ is introduced in the static analysis model to estimate the optimal budget that the company should invest in sponsorship. In this case, the productivity of the sponsorship is no longer linked solely to the company's historical data, i.e. only to the management strategies adopted in the past but can be defined by the company according to the desired level of direct public exposure to the sponsorship message. The static model has therefore been refined through an innovative procedure that allows estimating the productivity parameter Υ of sponsorship.

The ex-ante model proposed aims to show companies the right methods to follow during the sponsorship planning phase about the choice of the monument (and therefore the location) to match their image. In this way, it is possible to encourage the use of the tool for efficient enhancement of the historical-architectural heritage.

The model will be validated in a next work applying it to a company already active in the field of cultural sponsorship. For this company, the financial efficiency of the sponsorship will be estimated for several levels of direct audience.

2 State of Art

The main question underlying the construction of the model concerns the definition of the critical variables that influence the financial efficiency of the investment. It is therefore fundamental to identify those characteristics on which the success of the sponsoring activity depends, and which produce an increase in demand for the goods/services offered by the sponsoring company. To this end, a survey of the reference literature has been carried out to determine those parameters which, according to the most authoritative scholars of sponsorship, can contribute positively to the growth of sales volume.

Most of the studies conducted so far in the international arena have given little space to cultural sponsorship, framing the instrument from a general point of view or only in the sports and broadcasting fields. Most of these studies identify the set of criteria that influence the effectiveness of sponsorship communication objectives. However, it has rarely been examined how these parameters could affect the financial efficiency of the investment [17]. Over the years, several classifications of effectiveness criteria have been proposed, with greater emphasis on those most used by companies in the process of selecting sponsorship opportunities [9]. Although they condition the overall effectiveness of the investment, it is reasonable to think that many of these criteria may also affect the financial efficiency of the sponsorship. This is because the communication objectives of sponsorship may influence the marketing objectives. For example, an increase in brand awareness could generate an increase in sales volumes. Therefore, certain effectiveness criteria can also be used in assessing the monetary feasibility of the investment [3, 18].

Meenaghan [19] has identified the main criteria of effectiveness by systematizing them into the following classes: the ability to achieve objectives, the ability to convey the desired image, media coverage potential, the funding required, target audience coverage, hospitality opportunities, executive preferences, required geographic coverage, internal staff knowledge of the chosen sponsorship, type of sponsorship, exclusivity, the potential for bad publicity, organization of the sponsored activity, other criteria. These classes of criteria refer to sponsorship in general and not specifically to the cultural sphere. The same can be said for the criteria most used by the companies identified by Duncan [20], which are the following: target audience, brand image strengthening, extendibility, brand involvement, cost-effectiveness, presence of other sponsors. The study shows that companies pay little attention to economic criteria as they are more difficult to evaluate, preferring those that express the communicational character of sponsorship. Nelli and Bensi [9] identify four classes of criteria based on their relevance to companies. The classes proposed are the following: fairly important criteria (amount of costs, geographical coverage, level of coverage of the target group, the exclusivity of sponsorship, TV and press coverage), less important criteria (duration of the sponsorship, secondary media coverage, cost per contact, the link between sponsor and sponsee), irrelevant criteria (fiscal benefits of sponsorship).

Table 1 shows the classifications of the sponsorship criteria of Meeneghan [19], Duncan [20] and Nelli and Bensi [9].

Once the main criteria proposed in the literature have been identified, it remains to be established which of them have the greatest influence on the financial performance of sponsorship. Empirical studies conducted by Meenaghan [21] show that consumers who actively participate in a sponsored event are more likely to buy the products offered

Table 1. Three different classifications of sponsorship criteria

Meeneghan's criteria (1983)	
1. The ability to fulfil objectives	a) Broad corporate objectives b) Product related objectives c) Sales objectives
2. The potential to project the desired image	
3. Sponsorship choice and company/product compatibility	a) Product linked b) Product image linked c) Corporate image linked d) Non-linked
4. Media coverage potential	a) Television b) Other
5. The founding requirement	
6. Target audience coverage	
7. The opportunity for guest hospitality	
8. Executive preference	
9. Geographical coverage required	a) Local/regional b) National c) International
10. Staff knowledge of chosen sponsorship	
11. Sponsorship type	a) New/Established b) Once-off/Longer term
12. Solus position	
13. The potential of adverse publicity	
14. The organization of the sponsored activity	
15. Other criteria	
Duncan's criteria (2002)	
1. Target audience	
2. Brand image reinforcement	
3. Extendability	
4. Brand involvement	
5. Cost-effectiveness	
6. Other sponsors	
Nelli and Bensi's criteria (2005)	
1. Fairly important criteria	a) Amount of costs b) Geographical coverage c) Coverage of the target group d) Exclusivity of sponsorship e) Tv and press coverage
2. Less important criteria	a) Duration of the sponsorship b) Secondary media coverage c) Cost per contact d) sponsor/sponsee connection
3. Irrelevant criteria	e) Fiscal benefits of sponsorship

by the sponsor than those who do not attend the initiative. Similarly, those who are involved in an activity financed or organized by a sponsor are twice as likely to change their preferences as those who are not. This behavior has been recorded especially for those brands that offer "low involvement" products on the market. Gwinner [22] states that when the sponsoring company offers this type of goods the image of the sponsored event/activity positively influences the attitude towards the brand. In the case of "high involvement" products, the attitude towards the sponsor remains unclear according to studies conducted so far.

We can, therefore, say that those who are personally involved in a sponsored activity can more easily grasp its image values and associate them with the sponsor. So, sponsorship produces better effects for those who actively participate in the initiative promoted. Differently, in the case of the uninvolved public, the effects of sponsorship are generally rather limited. This trend is supported by empirical studies by Grohs et al. [23] which show that the degree of brand awareness of the sponsor by public increases with increasing exposure and level of involvement in the sponsored initiative.

In the case of sponsorships aimed at the restoration/recovery of the historical-architectural heritage, the exposure takes place mainly by the direct vision of the advertising posters posted on the scaffolding of the construction sites or through the mass media that publicize the promoted initiative. However, although it is difficult to measure, it can be assumed that the level of public involvement is higher if the sponsorship message is received directly on-site and not through the mass media. Moreover, the media contribution is generally rather small when the object of the recovery/restoration work is a so-called "minor monument" or a building of historical-architectural value little known to the community. In fact, in the context of Italian cities, recently there has been an increase in the number of cases of sponsorships aimed at the enhancement of monuments and historical buildings of lesser renown than those that were subsidized until some time ago (for instance, the Colosseum). In these cases, the critical variable that most affects the financial results of the sponsorship is the direct audience, i.e. the number of visitors to the location where the building is located. For this reason, in the study phase of the productivity parameter of the sponsorship, the critical variable direct audience was considered above all. However, the proposed functional relationships, which relate the sponsorship productivity with the number of visitors of a certain location, can also be used to explain how other critical variables (for instance, media coverage) can influence the financial performance of the company.

3 Method

Having established that the number of visitors to the location of interest is the main critical variable, we can refine the static model by introducing the estimation of the productivity parameter Υ. By this, the study can ideally be divided into two phases: the static analysis phase of the sponsorship investment and the phase of choosing the level of productivity desired by the company.

3.1 Static Analysis Phase

The static analysis phase of the sponsorship investment consists of the refinement of a model proposed by Bucci, Castellani and Figini [24] through the modalities explained in a previous publication [25]. The objective of this phase is to estimate the optimal sponsorship budget that allows the company to maximize profits. Specifically, it is assumed that the company's production is represented by the Cobb-Douglas function below [26]:

$$R = TK^{\alpha}L^{\beta}S^{\Upsilon}. \tag{1}$$

Where R is used to indicate the company's revenues, K, L and S represent the production factors labour, capital and sponsorship respectively, and the coefficients $0 < \alpha < 1$, $0 < \beta < 1$ and $0 < \Upsilon < 1$ measure the production elasticity and the diminishing returns of the individual factors of production. T, on the other hand, is the firm's technical progress constant. For simplicity the price of the good offered by the enterprise is normalized to 1.

The coefficients T, α, β and Υ, which represent the rate of change in marginal productivity of capital, labour and sponsoring, can be estimated using the log-linearity condition of the Cobb-Douglas function. And, in fact, known the historical series of K, L and S, the multiple linear regression applied to the linearized production function, reported below, returns the value of the four unknown variables:

$$LN\,R = LN\,T + \alpha LN\,K + \beta LN\,L + \Upsilon LN\,S. \tag{2}$$

The coefficients T, α, β and Υ estimated through the regression are the trend coefficients, i.e. those which would occur if the company did not decide to change either the productivity levels of the three inputs or the technology adopted.

The total profit of the company is represented by the following equation:

$$\pi = TK^{\alpha}L^{\beta}S^{\Upsilon} - rK - wL - sS, \tag{3}$$

where rK, wL and sS represent capital cost, labour cost and sponsorship cost respectively, while r, w and s are their respective unit costs [27, 28]. From the condition of the first order, obtained by placing zero the derivative concerning S of the profit function, we can solve the optimization problem:

$$S^{*} = \left(s/\left(\Upsilon T\,K^{\alpha}L^{\beta}\right)\right)^{(1/(\Upsilon-1))}. \tag{4}$$

Equation (4) allows estimating S^{*}, i.e. the optimal number of sponsored restorations capable of maximizing company profits. Multiplying S^{*} by the unit cost of sponsorship s (cost of a single restoration) results in the optimal investment in sponsorship (sS^{*}), which can also be expressed as a percentage of turnover. Finally, by replacing S^{*} with S in Eq. (3) it is possible to estimate the maximum profit achievable for the company.

The optimization problem is thus solved, and therefore the static analysis phase is finished. Figure 1 shows the logic of the static analysis phase.

In the next subsection, the innovative phase is introduced that allows the company to choose the productivity level of the sponsorship.

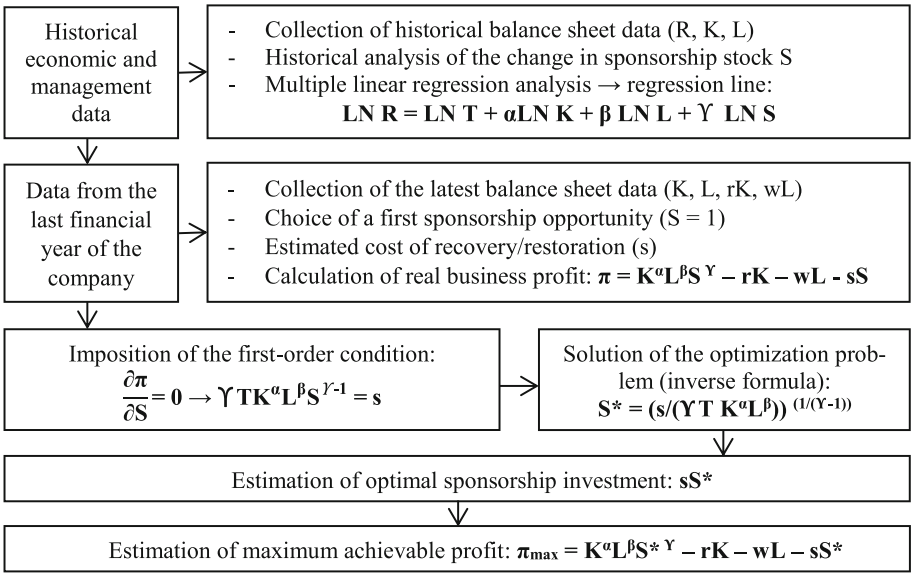

Fig. 1. Flow chart of the logical steps of the static analysis phase (own processing)

3.2 Productivity Level Choice Phase

At this point, the second phase takes over, i.e. one that allows the company to choose the level of productivity it considers most appropriate. As mentioned above, the parameter Υ represents the rate of variation of the marginal productivity of the sponsorship, i.e. the variation of the production output obtained following a unitary variation of the sponsorship stock *S*. In the applications proposed so far, Υ used in the static analysis is the trend estimated through the multiple linear regression. However, if sponsorship were to become more efficient it would increase its marginal productivity, i.e. the parameter Υ. As a result, the maximum achievable profit would become higher. The sponsoring company to increase the Υ of the sponsorship must, therefore, act on the critical variables that influence the financial efficiency of the investment. In the specific case of sponsorship aimed at enhancing the historical-architectural heritage, the main critical variables that can influence consumer choices (and therefore the productivity rate of the investment) have been identified, classifying them in the following categories:

- **Location features:** number of visitors to the location of interest (direct audience) *n*; location relevance to the community *rl*; target audience coverage *ta.*
- **Monument features:** popularity of the architect/designer *ap*; architectural quality *qa*; local relevance of the monument *rc*; national and international relevance of the monument *rni*.
- **Sponsorship features:** billboard size *dc*; media coverage *cm;* sponsor's organizational capacity *co;* congruence between the brand image and the monument image *ci;* ability to convey the desired image *id*; funding required *fr*.

The classes of critical variables considered are summarized in Table 2.

Table 2. Classes of critical variables of the historical-architectural heritage sponsorship

Location features	
Number of visitors to the location (direct audience)	n
Location relevance to the community	rl
Target audience coverage	ta
Monument features	
Popularity of the architect/designer	ap
Architectural quality	qa
Local relevance of the monument	rc
National and international relevance of the monument	rni
Sponsorship features	
Billboard size	dc
Media coverage	cm
Sponsor's organizational capacity	co
Brand image/monument image congruence	ci
Ability to convey the desired image	id
Funding required	fr

Therefore, the Υ parameter, representing the degree of efficiency of sponsorship, is a function of the variables introduced above:

$$\Upsilon = f(n,\ rl,\ ta,\ ap,\ qa,\ rc,\ rni,\ dc,\ cm,\ co,\ ci,\ fr). \tag{5}$$

For the so-called "minor monuments" located in small towns, the characteristics of the monument to be restored become negligible, as well as most of the characteristics of the sponsorship (such as, for example, media coverage). In the limit condition, the financial efficiency of the sponsorship will depend solely on the parameter n representative of the number of visitors to the location of interest. The essential requirement to obtain a return on the sponsorship investment is the public exposure of the initiative. We consider, therefore, that the contribution of the other critical variables is negligible. The Υ function, therefore, becomes the following:

$$\Upsilon = f(n). \tag{6}$$

We will, therefore, have different values of Υ as the location hosting the monument changes as the average monthly number of visitors changes. In particular, we hypothesize

two different types of functions that correlate Υ with n. The first function proposed is the following linear type:

$$\Upsilon = an + b. \tag{7}$$

In the absence of visitors, the sponsorship would be ineffective, so when $n = 0$ we have $\Upsilon = 0$. This means it must necessarily be $b = 0$. The line identified, therefore, passes through the origin of the axes. Moreover, known n for the location of interest, it can be assumed that its corresponding Υ is the trend estimated with the regression. Once this correspondence is established, it is possible, once measured n for other locations, to estimate with linear proportion the parameter Υ representative of the financial effectiveness of other sponsorship opportunities. Considering then two different locations and known for the first location the effectiveness of sponsorship Υ_A (mail equal to Υ estimated with the regression) and the average number of monthly visitors n_A and for the second location the average number of monthly visitors n_B, it is possible to estimate Υ_B in the following way:

$$\Upsilon_B = \Upsilon_A n_B / n_A. \tag{8}$$

The second function proposed is logarithmic:

$$\Upsilon = aLN(n + b) \tag{9}$$

In the case of the logarithmic function, it is assumed that the growth of Υ as n increases is less than proportional. That is, as the number of visitors increases, consumers' purchasing intention increases, but marginal purchases decrease. Again, the observation that when $n = 0$ we have $\Upsilon = 0$ applies. This means that it must necessarily be $b = 1$. The logarithmic function will then pass through the origin of the Cartesian axes. Considering then two different locations and known for the first location the effectiveness of the sponsorship Υ_A (mail equal to Υ estimated with the regression) and the average number of monthly visitors n_A and for the second location the average number of monthly visitors n_B, you can estimate Υ_B in the following way:

$$\Upsilon_B = (LNn_B / LNn_A) / \Upsilon_A \tag{10}$$

The static model is now applicable for both locations, and therefore for the two different levels of direct audience. For each level of exposure, it is, therefore, possible to estimate the optimal sponsorship budget that maximizes the company's profit.

Figure 2 shows the logic of the sponsorship productivity level selection phase.

Similarly, linear or logarithmic relationships can also be assumed for other critical variables that influence the efficiency of the investment [29–33].

The logarithmic function, given the less than proportional growth, is more conservative than the linear one. As the degree of exposure of the message to the public increases, the level of efficiency of sponsorship grows more and more slowly until it stabilizes.

It can also be assumed that, should the company decide to use the mass media to increase the exposure of the sponsorship, both curves, linear and logarithmic, would shift to the right, no longer starting from zero but the number of contacts reached through radio, TV, web, newspapers, etc.

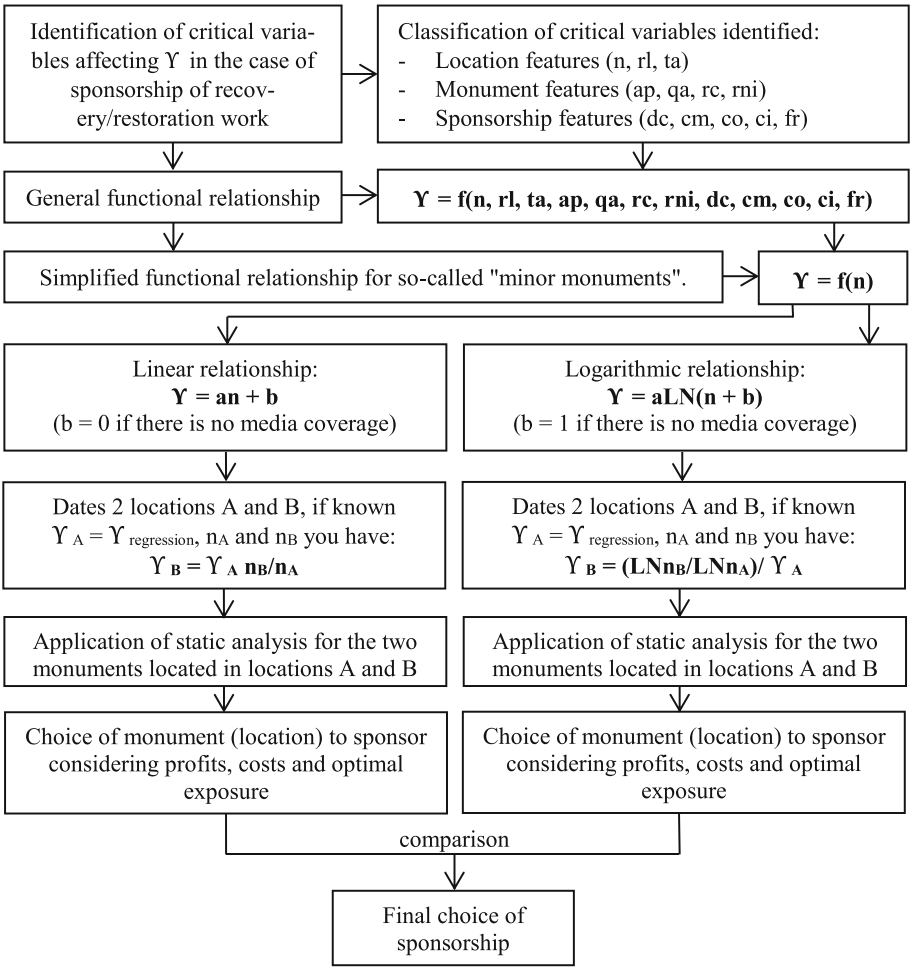

Fig. 2. Flow chart of the logical steps of the sponsorship productivity level selection phase (own processing)

The overall model, which includes both phases, allows the company to choose both the desired level of sponsorship productivity Υ and the right sS^* amount to invest to achieve the highest possible profit.

At this point, it would remain to be defined which of the two functional relationships, linear or logarithmic, is more representative of reality. Considering what Gwinner stated [22], one could think of applying the linear model, in which the effects of direct audience strongly affect the efficiency of sponsorship, to those companies that offer goods with low involvement, and the logarithmic model, in which the degree of productivity grows more slowly as exposure increases, to those companies that offer goods with high involvement. In fact, in the case of low-involvement goods, the image of the sponsored event, which depends on the level of exposure, positively influences the attitude towards the brand.

This effect should be less evident in the case of high-involvement assets. However, this hypothesis should be demonstrated through a series of posterior investigations of real cases of sponsorship.

4 Conclusions

The theme of the enhancement of the historical-architectural heritage is very much felt in Italy, a country that has the largest world cultural heritage [34–36]. Cultural sponsorship represents the partnership instrument most used by companies for the application of the principle of horizontal subsidiarity according to which, in the case of the valorization of the collective heritage, the private entrepreneur can cooperate with the institutions in defining the interventions that can improve the fruition and give greater value to the historical-architectural heritage [37–39]. By this, sponsorship brings significant advantages not only to public bodies, which receive the necessary funding to better preserve and promote the potential of the cultural heritage but also to businesses, which can combine their activities with the image of the property being valorized, thus increasing the reputation of their brand and the products offered [40]. To obtain these benefits, it is necessary to implement the use of the tool. To this end, new models that show Administrations and companies the limits and advantages of the investment are indispensable [41, 42].

This paper explores the point of view of private companies, whose main objective is profit maximization. In particular, a static model proposed in a previous paper [16], whose purpose is to estimate the optimal amount to invest in sponsorship to maximize profits, is integrated with a new model. The purpose of the latter is to estimate a parameter Υ representative of the rate of change in the marginal utility of the sponsorship investment. Therefore, Υ is an index that measures the financial performance of the sponsorship. The higher the Υ is, the more the company can sponsor interventions for the enhancement of the historical-architectural heritage. Consequently, as Υ increases, so do the company's profits. However, the company's experience in organizing and managing the sponsorship activity only improves if it is willing to make a greater financial sacrifice. In short, the company has to invest a higher amount to enhance its performance. The higher cost of the investment is necessary if you want to improve the brand's ability to increase its reputation and image by changing the critical variables that affect the productivity of sponsorship. These variables, in the case of sponsorship aimed at enhancing the historical-architectural heritage, have been systematized into three classes: location features, monument features, sponsorship features. It is assumed that in the case of sponsorship of monuments or buildings with historical-cultural value, the critical variable that most affects the efficiency of the sponsorship is the number of visitors n of the location of interest. Therefore, two functions have been proposed, one linear and the other logarithmic, which correlate the parameter of productivity Υ to the number of visitors n. In both cases, as n increases, Υ also increases. In the case of a linear function, the n parameter has a greater weight on the productivity of the sponsorship. Differently, the logarithmic function is more restrictive than the linear function since the growth of Υ is less than proportional.

The model supports companies that want to evaluate the convenience of sponsorship investment. However, it may also be useful to public administrations. In fact, the public

authorities can match the advertising fee (i.e. the surcharge of the restoration cost) of each location to its attractiveness expressed in terms of exposure to the sponsorship message [43].

With this work, some of the theoretical limits of the previous version of the static model have been overcome. However, there are still some critical issues that depend on the basic assumptions adopted. In the future, not only will an attempt be made to overcome these critical points, but more weight will also be given to the other variables that may influence the financial performance of the sponsorship investment starting from an empirical observation on real cases. Moreover, the model, here formulated only on a theoretical basis, will be validated through its application to a company active in the field of sponsorship for the valorization of historical-architectural heritage.

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