

The Management and Governance of Museums

Research project for the degree of master of
Management, Organization and Business Economics

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1. Introduction

In this work we offer an overview of what has been researched in relation to the economy of museums, organising knowledge in a way that allows us to spot areas in which insufficient studies have been done, thus suggesting topics for future research.

To most people who are not looking at museums as an important type of organization, museums are the place for them to spend some time and see a few things, maybe learning something but do not see museums as having any impact on economy in their countries. In most studies (Frey 2003, Davis & Mort-Putland 2005) it has been shown a positive relationship between levels of educations and numbers of visitors, and this is also one of the roles that museums have to educate people.

But after all museums are playing a very important role in cultural and historical aspects which are one of the most important tourist attractions in different countries as well, but also on the other hand it is important to consider them in economic point of view.

The cultural effect of museums can also be helpful to improve the finance of museums, because of the important role that museums have in culture or history, they have many visitors and this can be an advantage for the museum and help them to have a better out come from their admission fee if they charge visitors, the more visitors the more admission fees. The visitors consist not only of local people, but also tourists. If they don't charge visitors, they will probably have more visitors and also be qualified to receive more support from the government as usually the public museums are free of charge and thus is the government who helps them with their expenses.

In the last few years some museums are working on different kind of activities in their organization. Most of them have their own shops and some other facilities. All these facilities make the public more satisfied of the museums performance (Amenta 2010, Nash 2012 and Gilmore & Rentschler 2002). We should consider the fact that if museums are changing their organization or make it a bigger one with more services; they also need to redefine their roles

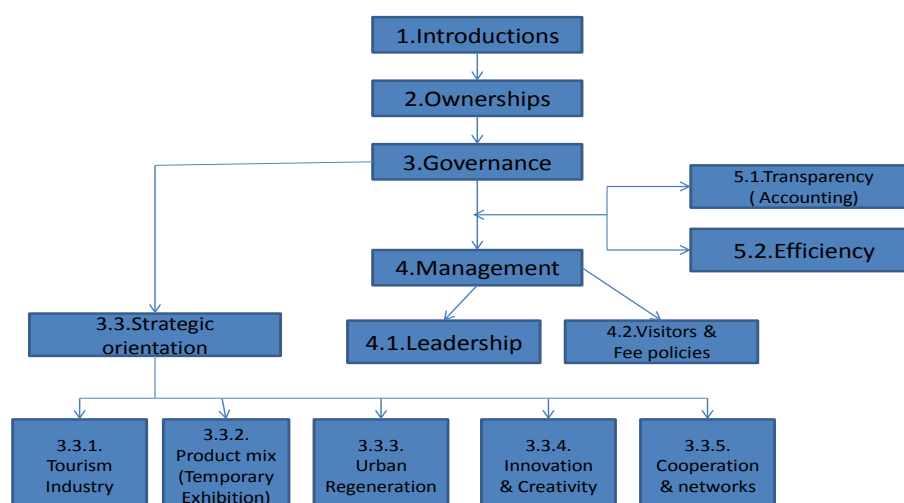
and responsibilities. A new role need the change in the governance of the museums as well and also the sources to cover the possible costs. If they are trying to set new services, it should be according to the opportunities to attract more visitors and also make more sources to benefit the museums.

In this study we are explaining different aspect which is related to museums. After introduction we will look at museums ownerships which shows that how different types of ownership affects museums activities and performance.

The next part is about museums governance and the varieties of governance in different organizations. The governance of a museum decides about their strategies for their activities and moving forward the organization, such as their strategy toward tourism industry, their exhibition, urban regeneration, Innovation and cooperation.

The management section is the next and it is the part of organization that decides about policies in different areas and has the responsibility to manage and control the museums.

The last section of the paper is about Transparency and efficiency of museums which is directly related to the governance and management of the museums. To have an efficient museum with a clear accounting system, it needs to have a successful management team and its governance with strategy to help the organization to move forward with a best performance possible.



2. Museums Typology: ownership

According to one of the leading scholars in the field of the economics of culture, museums can be classified into three types, public museums, private museums and dependent on donation museums (Frey, 2003). They differ in their sources to earn money to operate their accounts and to cover their expenses.

Public museums are those which receive the support by the government to pay for their costs, their managers being usually employed by entities which are directly or indirectly dependent on the government. These managers want to have a good performance but as their salaries are not depending on their performance, they usually don't risk on anything and they just do the very normal duty that they are asked to do. So basically these museums are running up by the rules and policies that the governments set for them and every decision that needs to be made, should be confirmed by the entity which is in charge of the museums. Also in public museums they are usually non profit organizations and all their activities are only to promote the field they are active such as art, culture etc and not trying to get a profit of it. Usually national museums in every country are a public museum.

The next group are **private museums**, as shown by their name they are managed by private organizations. The important point about private museums is that they do not depend on the government's subsidies and their finance is related to their performance and the owner to put more sources. There is an economic incentive which is part of it, and this incentive encourages them to focus more on their performance to help the museums and also to have a better quality. The managers try to perform their best to have a better outcome and to get a higher salary. On the other hand since employees in the museums work hard to have a better performance, it will cause more productivity which can be pointed as higher earning and profit for the museums and as a result better effects on economy. A museum with high quality will have more visitors and more tourists to come and as the private museums charge visitors, they will have a higher income and also higher profit. Examples for private museums are Madam Tussauds (London, UK) and Shipper's house museum (Bremen, Germany).

The last group of museums are those which **depend on donations**; this group of museums are kind of between public and private museums in their characteristics and not necessarily private. As it is apparent on its name they are related to donation. These donations can be party like one piece of work or bigger such as the whole collection or in some cases a building. The building usually will be named after the donor's name. In this kind of museums the donors have control over the museums and it depends on what they have donated. If they donate a piece to the collection, they can tell the museum in what condition they want the piece to be showed and museums need to follow their orders. In some other cases they may not be interested to set conditions for the museums and the manager can decide about how the exhibition will work. Museums dependent on donations can be non profit or for profit organizations and that is the reason why we said that they are a type between public and private museums. If they are non profit organization usually it is easier for the manager to deal with the donors because they are not trying to earn money out of the piece or obtain a high profit. In some of the dependent on donation museums, the owner of the piece is part of the museum's board and has control over the museums activity related to what they have donated to the museums. But if on the other hand the museum is a for profit organization, as managers need to work to get a higher profit and incentive is also important, they should make the donors satisfy and this way they can manage it better to get the most out of the piece they are showing to the people. Dr. Hesabi museum (Tehran, Iran) is an example for museum dependant on donation.

3. The governance of museums

The governance role in museums is very important in many ways. Governance is the system by which an organisation is directed and controlled (Babbidge 2006). A useful definition, based on that used by the Institute of Directors, is that governance is ensuring a museum's long-term sustainability by the collective direction of its affairs, while meeting public needs and complying with interests of key stakeholders (Babbidge 2006). Governance is the source to make plans for the organization which can be short or long term strategies and it helps them to have a better performance. It defines the roles function of developing, management, monitoring the system and clears the policy and the

guide for the staff to have a same direction as the organization to achieve their goal. These policies can be changed over the time and it depends on the museums plan to meet their systematic needs, working habits and their goals. Effective governance in an organization would reduce risks and that is one of the goals which most organizations look for. It helps them to make their financial policies and planning their budget and guide them to handle their difficult financial situation. Another advantage of effective governance is that the organization will be able to recognize the signs of their problem and also help them to move forward their plans.

There are different types of governance models in museums (Willson 2011) (Davis & Mort-Putland 2005).

- Policy governance is the first one. There is a clear distinction between the board and management staff in this kind of governance.

- The second type is governance as leadership. In this category the board is adapted to the strategic priorities and the structure of the board is flexible. The board is involved in all level s of governance and they create a strategic partnership with management staff.

- The last type is board centred governance. In this case CEO and staff support the board's activities. In order to have a successful organization usually the board led by CEO.

The board of museums usually makes decisions and can be as following: **governing board**, the part that establishes written policies frame work and set the role of each part of museums and the guide to followed by staff and manager of the museums and make sure all of them understand it. All the activities by the governing board should be legally accepted. The governing board is the one which chooses the CEO. If a museum has a CEO, is it more successful for them as CEO works according to the incentive and he/she will perform as good as possible to have a higher profit for the organization. The **working board** is also a governing board for a non profit organization with little or no staff and they have legal responsibilities and written police guidance and they present a formal report in the end of each year.

Next one is **advisory board**, the part that are usually un paid and they have the knowledge to improve the museums success and give them advice to CEO and

staff to have better and more effective structures. It is usually non governing board and they do not have voting power.

Management board is the third part, they help to manage the museums and it usually is in a few subcommittees that make the things more under the control and all the staff would know where they need to submit their reports to management board.

It is better for the museums to have a combination of these boards but some museums chose to have only one of them which in some case cannot be good as they might miss some points that are not included in that specific board's frame work and responsibility.

Board in museums must have plans to develop and monitor budget and provide the organization with strategies to reach their goals.

Studies have suggested four different board leaderships, board chief, board chief or president as co-leader, co-chairs, board chair and co-chair. They recommend to organizations to have both chair and president. The chair is responsible in external concerning and strategies and president is responsible for internal board structure and board members development. But after all the most effective leadership would be the way that board and staff have collaboration (Willson 2011).

Another aspect we might consider is the **board size**, we cannot certainly say that the large boards are better but usually large board are more likely to be successful to find opportunities and fundraising which is usually the most important responsibility they have in order to support the organization. But also if the small board has professionals who do their responsibilities in the best way possible, the organization will have its opportunities to develop and achieve their targets. Boards should take care to evaluate requirements regarding board size and adjust as needed.

In any organization if the board find that the organization plans don't move forward or not in the right direction, they should be able to recognize that and make decision to improve or change the governance of the organization. There might be the time that board may need some changes. They usually consider a limited time for the board members to get familiar with the organization but

also if they see any member is not suitable for the organization, they should ask that member to leave. This way none of the members would think that they have unlimited time and they will try their best from the beginning to support the organization to be more effective and this is the key of a successful board.

3.3. Strategic orientation

3.3.1. Tourism Industry

Visits by persons from outside the host community motivated wholly or in part by interest in the historical, artistic, and scientific or lifestyle/heritage offerings of a community, region, group or institution (Silberberg, 1995) is defining tourist. Managers also consider having some strategies to attract those people who are not in tourist category now but with these strategies they might be willing to join later on. Another type of people who might visit museums is those who travelling for other purposes and the motivation is non cultural but in the end they will plan to have some cultural opportunities. Managers get cultural tourism by bringing together the travel motivator with the personal motivation (Silberberg, 1995). To have more visitors will help the economy of the city and this is why different institutions also help each other to reach this goal. They can do this by using different policies to prepare some packages to attract tourists. Museums also can help other organizations such as hotels and this is actually a win-win situation for them. For example promotion tickets to be able to access a full day of different cultural activities. The key to the success of partnership and packaging relationships is to bring potential cultural and other tourism partners together (Silberberg, 1995).

In general the common reasons that are helpful for the tourist area to improve and earn more money are following (Silberberg, 1995):

- Earns more money and spends more money while on vacation;
- Spends more time in an area while on vacation;
- Is more likely to stay at hotels or motels;
- Is far more likely to shop;
- More highly educated than the general public;

-Includes more women than men. (Women, of course, represent a disproportionate share of shoppers and bus tour passengers);

-Tends to be in older age categories. (This is particularly important with the aging of the large baby boom generation.)

The tourist attraction responsibility of museums are one of the most important roles they have which help museums to earn more and apart from the revenue they have, it also develops the economy in the area which museums are located. So museums should have plans to encourage tourists to visit them.

Another museums typology: superstar versus small

As we wrote before the tourist attraction is an important effect which can be expected from some museums, museums play a substantial role in people's leisure activities and belong to one of the most important tourist attractions (Frey 2003). In order to achieve this goal they need to be well-known in their own field which can be science, history, art or many other fields. The tourist industry is affecting the economy of countries, especially in some countries that tourists are the very most source for them to earn money. In general, the tourist industry has relevant effects on economics in most countries and governments trying to attract more tourists to their countries to help and improve this area.

In the case of attracting tourists, they classify museums in two groups. The bigger group includes all museums and the other group are called superstar museums that are those museums which are the most well-known and have most impacts on the economy.

Superstar museums are those which can be in any of three category but we call a museum superstar if it has five qualifications to be classified in the group.

The five points are as following, the museums must have many visitors in the whole year. Its name should be in the guide book provided for tourists. The museums must have famous pieces or from famous artists in their collections. The building they own is usually relevant itself and from a well-known artist. The last one is the impact the museums have on the local economy and also it should have shops and restaurant or if it doesn't it should be helpful for the market around the museum (Frey 1998).

In general not all the superstar museums have the all five qualifications, but they need to have at least two or three of them to be categorizing in superstar museums.

3.3.2. Product mix

Temporary exhibition

Another way to receive more attention is to have a special exhibition in the museums (Frey, 2003). In this case they have their normal collection and in addition they borrow some special piece to have an exhibition and it can be in two ways, if they lend it for free or they need to pay and this makes them to consider the costs and get the most out of the exhibition. In some cases they may own the piece but they don't show it in normal exhibition and only in a few occasions in order to have the special exhibition. Special exhibition can also be in another way such as special day that usually they don't have their door open but for some special period, they have the exhibition.

Large temporary exhibitions frequently travel to other museums cooperating with the organiser. Some exhibitions indeed are already designed to be sent to various countries (Frey, 2003).

The education of the public on the nature and scope of collections and exhibitions is central to the entire museum service product. The relevance, frequency and quality of special exhibition are central to the drawing power of a museum, especially for repeat visits by local and regular users. (Gilmore & Rentschler, 2002)

3.3.3. Urban and economic regeneration

Some authors have focused on their effect on the regeneration of certain quarters in city centres. The first basic requirement for the establishment of a cultural facility which should attract people, firms and investments, is its location in an urban or regional environment. There are two important aspects to consider: Urbanity and accessibility (Plaza & Haarich 2009). Usually places around museums are more likely to be with higher prices in properties. Also shops or restaurants nearby museums have the advantage of having more customers and earn more money in their businesses and this is only about outside shops and restaurants, because most of the museums have their own

shops and restaurants as well which in a way increase their income. If museums have their own shops, it is usually more satisfying for visitors and also helpful for the museums itself.

Areas in which museums are located have different advantages for the economy of that city, such as educational, job creation and entrepreneurial initiatives. All these aspects would help the financial situation of museums as well, because the public always support them and museums will receive more funds to provide these services. The regional public would offer museums the funds even if the government does not provide museums with subsidies. They may also be able to attract local private sponsorships to help them to cover their costs.

There is another issue about museum's location, considering the place that museums are located will be helpful for them to have more visitors. Museums are more attractive for visitors if they are located in an area with some other famous attraction, because if the museum is in a place far from the other touristic destination, it is more likely that visitors skip visiting the museum.

Another aspect related to the location of museums is that some art pieces are more able in attracting visitors than others in some specific locations and cities.

3.3.4. Innovation and creativity

There is also some other way those museums can be more successful compared to other museums. Likely to any other field, always the more creative they are the more attractive they will be and this is the same about museums. Innovations, of both a technological and non technological character, are constantly impinging on museum operations (Johnson & Thomas 1998). Innovation may include new technological developments in, for example, conservation and display techniques, new ways of managing visitors and organising displays, and in information and communication (Johnson & Thomas 1998). If in museums they have innovation and creativity that is not similar to other museums they will attract more visitors and this is the way to be successful. The creativity can be placed in different areas and it depends on the museums and the manager who decides about how to get the most of their sources and at the same time satisfying their visitors.

So the job market effect of museums is important for the economy: they offer jobs and they help the economy in countries to decrease part of their unemployment problems. In fact if museums want to be effective and efficiency, the most important thing they need to have is a right governance structure to guide them in the right direction. With good governance they will be able to provide the most effective services possible.

3.3.5. Cooperation and networks

There is another strategy that some of the organizations such as museums and libraries are applying the last few years. Some of them use the joint strategy and as a normal process it usually helps them to decrease the costs. It is good for them to make each other's stronger and they support the services and the whole organization will grow more. So obviously they will also need a good planning which must be suiting all of them. They do not have to change the governance but they must select the best part of each governance models to make the perfect one for the whole organization. They also need to have written and published policies for their staff to be clear their responsibilities. There is the fact that visitors will also enjoy it more as they will be able to have them all in one place (Sanz, Herrero & Bedate 2003).

A motivation to cooperate might be given by the possibility to organise events and exhibitions showing a larger and more complete range of works. Other critical resources, such as space, often are already saturated by the institutions' production capacity and therefore they can seldom represent a reason to join forces (Bagdadli, 2003).

They also suggest four different board leaderships, board chief, board chief or president as co-leader, co-chairs, board chair and co-chair. They recommend to organizations to have both chair and president. The chair is responsible in external concerning and strategies and president is responsible for internal board structure and board members development. But after all the most effective leadership would be the way that board and staff have collaboration (Willson 2011).

4. Management

4.1. Governance, management and leadership

In most organizations the staff cannot be in the board except the CEO who represent staff's concern to the board. In fact there is only one situation that staffs are available in board and that is the time that they are asked to present some information for the board's meetings. Even though CEO is hired by the board but usually has the position to guide and lead the board. In some cases CEO is also part of the board but as the board is responsible to make decision about CEO's performance, it is better that CEO doesn't have the voting power in the board because it would be problematic for the organization. In fact in some certain issues the CEO should have the voting power.

The artists and boards should move towards collaborative models. In incorporating the expertise and experience of executive leadership, staff, and artists, boards will develop a deep connection to the organization's mission and get a rich source of training and skill. In order to maintain proper relation of leadership and authority, boards must also commit themselves to have a clear documentation and communication roles and responsibilities as well as engaging in meaningful evaluation. Art leaders also should be aware that their skills and trainings are vital part of the governance in the museums but they also need to be concern about problems. These potential problems would be solving by collaboration between the leader and the staff in supporting the board and would lead to success of the organization (Willson 2011).

An interesting perspective is based on the triangle structure with respect to share power between board, CEO and artistic director. The performance is related to the quality of their partnership. But as this model encourage three separate roles, it usually does not work as good as an organization with collaborative governance with is more effective and successful.

In the collaborative management on the other hand they follow the unique story. It involves many open conversation and planning sessions between the board, CEO and artistic director. In this model there is also a better relationship between the board and staff. Because every part of the organization is working together for the same goal, this model is more effective. There might also be a failure which is the time that one part keeps failing and it will affect other parts and in general the whole organization. To have the most effective governance is with cooperation between staff and board. So it is a good way to ask staffs who are more informed about specific issue to provide the board with their

information and their opinions and solution for any possible problem the board is faced (Willson 2011).

The other possible model for the museums is professionalized management. This model does not rely on the board to be the leader of the organization. The board makes plan, hires staff and set the goals but the model believes there should be a professional leadership in the centre of the organization. The model suggest the less power for the board and also choose those who are more informed about art to be involved in the board (Willson 2011).

Some museums may have director; there are two of them in museums. Artistic directors are those who are artistic leaders of an organization and not necessarily always available in the museum. This director makes decision about artistic output and activity integral to the organization (Willson 2011).

Executive director most involved in daily operations of the museum as well as involved in artistic decisions. This director is the bridge between board and staff.

Managers (directors) background

One of the subjects which are good to consider about museums is their managers background, it might show that managers with which kind of background have better performance and have positive effects on their organizations.

Arts organizations such as museums often have the unique element of both a CEO (also called executive director, general manager, etc) and an artistic director (AD) who often is an artistic professional such as a conductor, choreographer, or other artistic leadership position. Depending on the type of arts organization, the AD and the CEO may both be hired by the board (Willson, 2011).

In some museums none executive membership are appointed for their experience in similar businesses, or knowledge of relevant technologies, or an investment banking background, or useful political contacts. Museum governing bodies tend to be larger because, besides including a range of relevant skills, they frequently feel the need to represent the many constituencies that have a stake in the organisation - benefactors, funding

bodies, support groups, learned societies, education bodies, and (usually local) government. Such voices can enhance connections with, and be a source of accountability to, the communities of interest they serve (Babbidge, 2002).

4.2. Visitors and fee policies

One way in which museums may receive more visitors even in off seasons is that they can set different fee policies for their visitors. These policies can be different and depends on the type of museums and the type of visitors who are more interested in visiting that specific museum. They might also have some special fees for local visitors and different ones for foreigners. Sometimes they charge students lower prices or even allow free entrance, as educating people is an important role for museums (Frey 2003 and Davis & Mort-Putland 2005). If as it is usually the case they have less visitors in week days, it is a good solution for them to have some kind of discount in these days, this way they will still have visitors and it is also good for those visitors that might not be able to cover the normal fee to visit the museums. People in the lowest income bracket regard entrance fees as a barrier almost five times as much as people in the highest income bracket (Kirchberg, 1998). Price seems to have an additional effect for those who belong to certain sociological brackets with life styles that include museum visits. Or the opposite way is also possible to have a higher fee on the weekends, as there are always more visitors at the weekends.

Some believe that charges can damage public image of the museums and indeed the government if it was to be a political decision. Advantage of admission charge is that their imposition could lead to a reduction in the number of people who because there is a zero cost to entry use a visit to the museum for passing the time for those who has nothing to do with the museums function who can reduce the educational experience of the museum for others. Most museums have a small donation box even those who do not charge admission which means there is some fee either desire level or indicated level. It is also allowing those who cannot pay to enter free. It would be possible to have reduced rates or free access for different categories of attendance such as school students or free admission in certain days of the week or weeks of the year, frequent users or special memberships. There is one indirect effect of museums charge that they may affect other income

sources such as private donation and public subsidy. Also the public subsidies to be reduce to match the increase in income from admission charges. (O'Hagan, 1995).

5. Related topics

5.1. Transparency (accounting)

Museums unlikely to what people usually think have important impacts on economics and that is the reason they need to be transparent and have a clear accounting system for the users to be able to control them.

Museums are producing and sometimes selling intangible assets and have a revenue model in which gifts, sponsorships, public contributions and direct revenues have to be managed jointly. Therefore they need to be managed in the perspective of a multiple stakeholders approach. Collections are the main asset of museums (Baia Curioni, Forti, Martinazzoli, 2009). The finance in museums is in fact reflected by their governance; the board follows the governance policies and make decisions in different situations. Some museums sell their art pieces and replace them with new ones in order to get some profit from that and also make their art collections more interesting for their visitors. These actions depend on what they learn about their visitor's interests and they try to enhance it, to satisfy and get as more visitors as possible.

On the other hand some other museums keep their art works in separated categories and apart from their financial accounts and do not count on their art works as a source to make money as the other group of museums do.

The accounting definitions in museums are as following (Glazer & Jaenicke, 1991):

1. Reliability-The information is representationally faithful, verifiable, and neutral.
2. Assets as probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events. In for-profit organizations, goods and services (inputs) are acquired to be used to produce other goods or services (outputs) that are sold at a price sufficient to recover all costs plus a profit. Not-for-profit organizations acquire most of their resources for very different purposes. While they may be saleable or otherwise

ex- changeable, that is not their primary purpose. The resources are not used as inputs by the organization, which often has no expectation of recovering their cost.

3. Revenues as inflows or other enhancements of assets of an entity or settlements of its liabilities (or a combination of both) from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations. Many resources can be sold or used, directly or indirectly, to generate cash necessary to meet the organization's financial obligations.

The cost of implementing a recognition requirement will obviously vary greatly from museum to museum, depending primarily on the age and size of the museum, the quality of its collection records and supporting documents, and the measurement attributes selected (Glazer & Jaenicke, 1991).

According to previous studies (Frey, 2003) museums usually have high fixed and low variable costs and marginal cost of a visitor close to zero. The fixed costs are building, collection, Staff and etc and cannot be varied in the short run. And we mentioned earlier it depends on the museum and in which group it belongs the way they make decisions and how they cover the costs and the source they get the money for it.

5.2. Efficiency

In general, efficiency describes if time, effort or cost is well used for the intended task or purpose. So it is the same about museums, if they use their source in the way to have the best performance possible, we can say that museums are efficient. The same museum can react in very different ways, being efficient in one model and not in another (Mairesse & Vanden eekaut, 2002).

In order to measure the efficiency, museums can you the soft system approach. The soft system approach uses systemicity to construct a model of a situation and then compare it to real-life.it acts as a device for developing and using performance indicators to measure an activity's ability to achieve its intended goal, the efficiency with which it can be carried out, its effectiveness and its ethic. The particular benefit of this approach is that it is not necessarily

constrained to boundaries that correspond to traditionally define professional roles and organisational structures (Hutchings & May, 2006).

6. Database and results

Sections 1 to 5 have served us to offer an overview of the state of the art as to what the subject of museums and organizational economics is about. The papers which have been referred to feed a Bibliographical Database which has been purposely built, and which includes all the publications that we have been able to detect for which we have found connections with the above mentioned topics. Each paper has subsequently been classified according to three types of variables:

- Authors' affiliation
- Type of publication
- Topics covered by the papers

We have carried out an extensive empirical exercise by which we explore the relationships between these three dimensions.

The way the first dimension, authors' affiliation, has been codified is as follows:

1. The author or authors (in case there are two or more of them) work for a University or a research centre.
2. The author or authors (in case there are two or more of them) work for a Museum or a cultural institution.
3. At least one author works for a University / research centre and at least one author works for Museum / Cultural institutions.

With regards to the second dimension, the type of publication, three categories have also been devised:

1. Article published in scientific journals
2. Professional (published or unpublished) manuscript
3. Book

Finally, we have codified the subjects covered in the papers in the following way:

1. General characteristics of Museums
2. Ownership + boards + governance
3. Strategy
4. Management
5. Related topics (accounting, efficiency...).

With this empirical section we aim to complement (not to substitute) what has been commented on along the previous ones. We do not contrast any specific hypothesis, but instead we take a perspective that adds value to interested readers, by highlighting the publishing background which has served spreading current knowledge on museums as economic organizations. We also intend to produce a tentative view of what the reader can find in the literature which we have been reviewing. In order to fulfill with these objectives, we relate the three types of variables with each other to see if we can find:

- a) if there is a relationship between the authors' affiliation and the type of publication (scientific papers, professional articles or books) in which their studies have seen the light
- b) to see if there is a tendency in some type of authors to cover specific topics
- c) and, finally, to consider which topics are currently been covered by type of publications

Author_ aff	Type_publication			Total	%
	1	2	3		
1	31	8	0	39	72,2
2	5	6	1	12	22,2
3	2	0	1	3	5,6
Total	38	14	2	54	100
%	70,4	25,9	3,7		
	chi sq= 15,0226				

The table shows that 70,4% of the documents have been found in scientific journals, while 25,9% correspond with professional contexts. We have only found two references which have been published as books.

We also find that 72,2% of the papers are written by authors who are only linked to universities or research centres, with 22,2% being associated to cultural or museum organizations. Only 5,6% include authors affiliated to both types of organizations.

With regards to the relationship between both dimensions, we have performed a Chi-square analysis (bottom of the table) which shows that there is a significant and positive relationship between being affiliated to a university or research centre and publishing in scientific journals.

The next table shows the frequency of the five above mentioned topics, as identified in the keywords we have extracted from the documents.

Author_aff	Presence of topic # in keywords				
	1	2	3	4	5
1	30	21	22	21	8
2	10	4	6	9	0
3	3	0	2	2	0
Total	43	25	30	32	8
Sample	54	54	54	54	54
%	79,6	46,3	55,6	59,3	14,8
Chi sq=	1,045	4,2914	0,3115	1,7731	3,612

As expected, the wider category 1, “General characteristics of Museums”, is covered in the majority of documents. On the other hand, we can see that the second subject (Ownership + boards + governance) has been dealt with in 46,3% of the documents. We have also found that 55,6% of the documents are concerned with strategic matters (third topic), while management (fourth topic) has been studied in 59,3% of the documents. Finally, we have found less

documents studying the accounting or the efficiency of the museums (category number five), which suggests that there is a long way to go in this direction. The table also shows that, with the only exception of the fifth category, none of the topics has been exclusively been studied by one specific type of author affiliation, a conclusion which is supported by Chi square analysis at the bottom of the table.

Again with the only exception of the fifth topic, the next table also shows that neither has been found a relationship between the type of publication and the topics covered in the documents.

Type_publ	Presence of topic # in keywords				
	1	2	3	4	5
1	28	17	21	23	8
2	13	8	8	7	0
3	2	0	1	2	0
Total	43	25	30	32	8
Sample	54	54	54	54	54
%	79,6	46,3	55,6	59,3	14,8
Chi sq=	0,241	0,298	0,98	0,387	0,138

Annex: statistical note on the Chi sp analysis

Let's suppose that v is a qualitative variable, for example, the authors' affiliation, with S possible values. Each of the N documents has been classified with a code s , with $s = 1, 2, 3$. Then we analyze the intensity of the relationship between v and another qualitative variable y (for instance, type of publication), whose values correspond to groups $j = 1, 2, 3$. To do so we compare the observed frequencies for each pair of values ($v = s, y = j$),

$$f_r = f(s \cap j),$$

With theoretical frequencies:

$$f_t = \frac{f(s) * f(j)}{N}$$

The following statistic follows the χ^2 distribution:

$$\chi^2 = \sum_1^J \sum_1^s \frac{(f_r - f_t)^2}{f_t}$$

If there are no differences between observed and theoretical frequencies, the value of χ^2 should be nil. The larger χ^2 the more probability there is that a significant relationship between v and y exists.

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