A BUSINESS MODEL FOR THE INTERACTION BETWEEN ACTORS OF CULTURAL ECONOMY

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Abstract. *The paper proposes a business model for the efficiency optimization of the interaction between all actors involved in cultural heritage sector, such as galleries, libraries, archives and museums (GLAM). The implementation of virtual exhibitions on mobile devices is described and analyzed as a key factor for increasing the cultural heritage visibility. New perspectives on the development of virtual exhibitions for mobile devices are considered.*

Keywords: cultural heritage, virtual exhibitions, business model, mobile applications.
JEL classification: Z1 - Cultural Economics, O1 - Economic Development.

1. Introduction

We are living in the era of the internet and mobile technologies, where information can be accessible at a touch/click distance and the most important is that the access can be anytime and from anywhere. Mobile technologies have evolved at exponential rate in the last years and the evolution will continue. The rapid change of mobile devices in hardware and software have made possible the replacement of old computers and laptops with smart phones and tablets when discussing about internet surfing, email checking and so on [1].

Young people represent the majority of mobile device users, having grown up with these gadgets and being familiar with their use. A big issue of the anytime-anywhere access to information of young people is that they want to discover everything online, they have no time to go to libraries to read classic books, they are not willing to visit museums and art galleries to explore exhibitions of paintings, sculptures and so on. Thus, their knowledge of culture, literature and history is not as rich as schools and universities expected them to have.

In order to aid the young generation and to increase the visibility and number of visitors, libraries and museums have decided to present their exhibitions and collections online. The idea of virtual exhibitions implementation on mobile devices, as native mobile applications, is accepted by many museums and libraries that already have digitized material available online. A virtual exhibition goes beyond digitizing a collection which is primarily meant for preservation [2].

The potential offered by mobile technologies and the increased number of mobile devices processing multimedia content, both offline and online, facilitate the implementation of virtual exhibitions on mobile devices [3]. In [4] and [5], a cybernetic model for computerization of the cultural heritage is proposed in order to study the relationship between the organizations involved.

2. Cultural economy

The idea of cultural economy originated in the 90s, when De Michelis said that "Europe's cultural heritage is a strategic resource similar to oil for Arab countries". Through the digitization process of multimedia collections from libraries, museums and other cultural institutions, the knowledge and development of national and European cultural heritage elements are ensured [4].

The cultural economy is a combination of technological developments, human factor, new business models and geopolitical and economic evolutions [6], as shown in Figure 1.
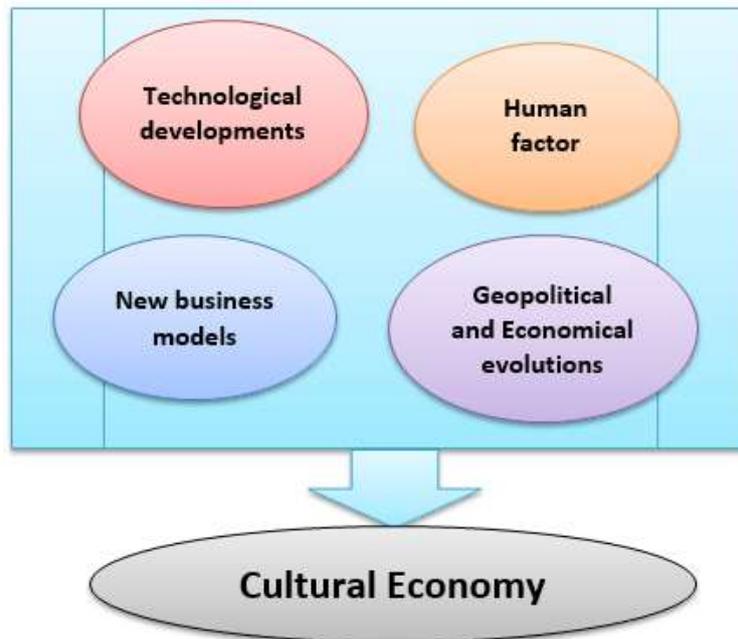

Figure 1. Components of Cultural Economy

When discussing about cultural economy, we must consider the academic world's perspective on democratization of the access to knowledge and on preservation of the original objects of cultural heritage.

At the same time, heritage and culture in a globalized world are exposed to a wide range of demands of consumption and communication [7].

The evolution of information and communication technologies must ensure not only a better knowledge and preservation of cultural heritage items, but it must promise an increased number of direct visitors of cultural institutions as well. Software applications for creating virtual exhibitions, in addition to being used as tools to prepare and build content for virtual visits, may help the staff of a museum or library to conceive and create exhibitions [8].

Technology has offered museums and libraries the means to create more vivid and attractive presentations for communicating their message to the visitors in a more effective and attractive manner [9].

3. The proposed business model

The model proposed for explaining the interaction between actors of cultural heritage sector has the objective to highlight the direct relation between investment in digitization and visibility of cultural heritage exhibits on the one side, and the number of visitors and revenues of cultural institutions on the other side [10]. The model supposed to increase the visibility

and attractiveness of different exhibits and collections stored in libraries and museums by making them available online with the support of mobile applications for the implementation of virtual exhibitions [11] [12].

The objective of implementing virtual exhibitions on mobile devices is not to replace physical exhibitions, but to bring art consumers closer to what they love, to make collections accessible at any time and from any place, to keep visitors informed in the field with new exhibitions or events and to open people's appetite to knowledge [13].

Here is the simplified business model:

$$x_1(k) = \sum_{i=1}^{w} d_i(k) + \sum_{i=1}^{w} v_i(k) + x_0(k)$$

$$y_1(k) = \sum_{i=1}^{z} m_i(k) + \sum_{i=1}^{z} h_i(k) + y_0(k)$$

where:

k – the current month;

x_1 – the number of estimated physical visitors of cultural institutions;

x_0 – the number of existing physical visitors of cultural institutions (who visit them repeatedly);

d_i – the increase of the number of visitors resulting from investments in digitization;

v_i – the increase of the number of visitors resulting from investments in visibility (implementation of virtual exhibitions for mobile devices);

y_1 – the estimated revenue of cultural institutions;

y_0 – the current revenue of cultural institutions;

m_i – the revenue resulting from investments in visibility (development of virtual exhibitions for mobile devices);

h_i – the revenue resulting from data reuse (digitized collections reuse);

w – the number of exhibits selected for digitization;

z – the number of digitized exhibits selected for reuse.

In Figure 2 below, there are presented the relations between implementation of virtual exhibitions for mobile devices on the number of visitors and revenues of galleries, libraries, archives and museums. The figure shows a simplified diagram of the proposed business model, in which users of mobile applications, such as virtual exhibitions, come to visit cultural institutions, due to exploration of virtual exhibition on the mobile device.

In the preconditions of the business model proposed, we consider that data should be reusable also for other virtual exhibitions or in other online way. The concept of permanent universal cultural depot appears, which is totally distributed, infinite in size and accessible anytime and anywhere and implementing the vision of the British novelist H. G. Wells [14].
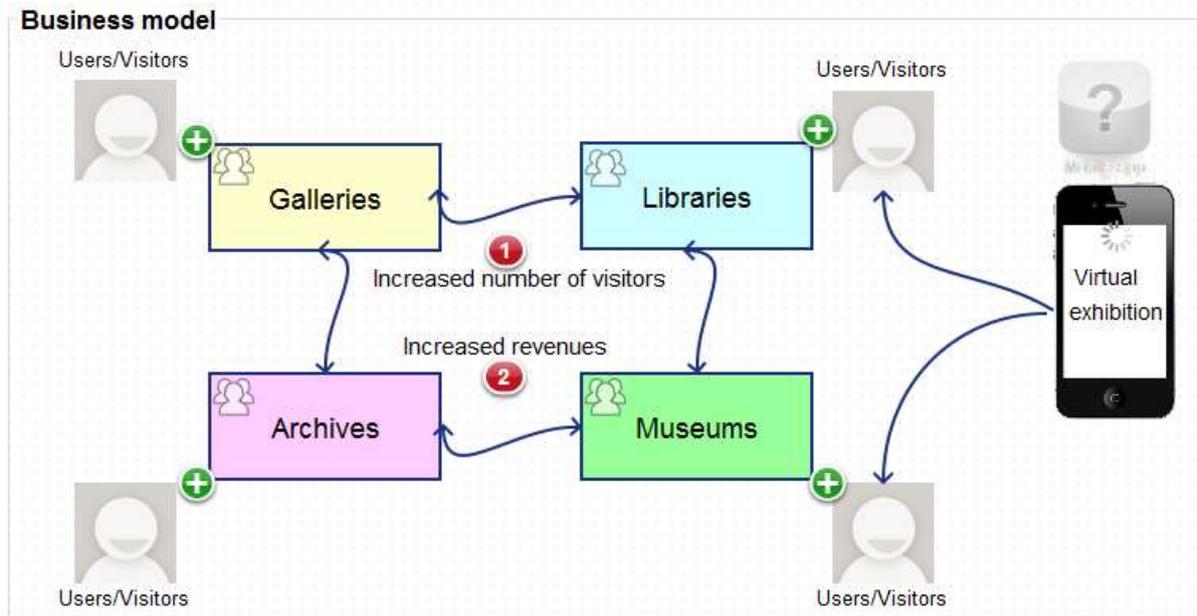
Figure 2. Influence of business model on cultural institutions indicators

The impact of the business model is upon several other domains, such as education (increase the quality and attractiveness), tourism (diversification of the offer of services), e-commerce with digital content and consumer goods industry.

4. A mobile application for virtual exhibitions

We consider a mobile application for implementing a virtual exhibition accessible on mobile devices, such as tablets and smartphones with Android© operating system. The mobile application is designed to allow the reuse of digital content to implement also other virtual exhibitions. The whole digital content, such as images, movies, sound and text descriptions are stored on server and not locally, on mobile devices. This is a feature that allows the developer to change the content of the virtual exhibition, without requesting the user to update or reinstall the mobile application.

The mobile application created was meant to present a virtual exhibition with historical documents from the Romanian Academy Library (BAR). Some screen captures from the mobile application are displayed in Figure 3.

The mobile application has the following objectives:

- attract new visitors online, who will be transformed into physical visitors of cultural institutions;
- present most important pieces of collections extracted from real exhibitions;
- increase the visibility of collections shown in virtual exhibitions;
- estimate the users' behavior, in order to create categories of visitors and to discover users' preferences in terms of exhibits visited.

Providing educational and cultural information through virtual exhibitions on mobile devices is not enough to arouse the interest of young people in culture, as the collections need to be presented to the public in an attractive manner.

Figure 3. Mobile application for virtual exhibition implementation

The authors think to implement the proposed business model, in the mobile based solution, by making available the mobile application to a great number of museums and libraries in Romania in order to collect and analyze information about the evolution of indicators.

We must agree that virtual exhibitions are extraordinarily difficult to design and develop, mainly because of the number of various stakeholders involved in the process [15].

The good news is that several platforms are already available to achieving multilingual virtual exhibitions. A good example is the MOVIO tool [16] [17], which is largely utilized as a *de facto* standard in Athena Plus project (www.athenaplus.eu).

5. Conclusions

The implementation of mobile applications for virtual exhibitions has the objective to show rare and valuable collections and will witness a significant development in the next years, if we consider the impact they have in the educational and cultural fields.

In the next period, the evolution of mobile technologies will be significant in terms of devices capabilities, operating systems, mobile applications and number of users. Taking this aspect into consideration, it is crucial for any cultural institution to develop at least one mobile application for increasing the visibility and attractiveness of cultural heritage.

The future works on the proposed topic will include researches on the evolution of visitors' number of cultural institutions resulting from investments in digitization and implementation of mobile applications for virtual exhibitions and the relations between actors of cultural economy.

Acknowledgment

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