Visitors' experience through smart technologies

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Abstract

Purpose – The paper aims to underline the effects on value co-creation (Grönroos, 2008; Vargo *et al.*, 2008) generated by the deployment of smart technologies in the cultural sector (Lang *et al.*, 2009); the authors want to deepen the role of users in enhancing visit experience and in co-producing services (Grönroos and Helle, 2010) in a cultural heritage context, to stress their proactive role (Tallon and Walker, 2008). We focused on the interpretation of the value-in-experience (Helkkula *et al.*, 2012) and on the role played by technology in favouring co-production activities and the switch from users to co-producers.
Design/Methodology/approach – A netnographic approach has been chosen (Kozinets, 2002, 2010a) and the research was performed thanks to a content analysis through NVivo (Krippendorf, 2012; Bazeley and Jackson, 2013), aiming at acquiring insights from data collected through the social networking sites (SNS) related to a single case study, due to its uniqueness, namely the sculpture exhibition "Il bello o il vero", framed in a project planned and implemented by the Cultural District DATABENC.
Findings – The research underlines the main features related to the cultural experience through smart technologies before, during, and after the visit. The results are used for a first attempt towards the delineation of users' contribution in co-producing new services when stimulated through a contest. The smart technologies and the chances offered by social networks together with users' skills all played a fundamental role, leading to consider users as co-producers and even as co-marketers, due to what they do when visiting the part of exhibition they co-produced in the contest.
Research limitations/implications – The analysis can be performed also for other cultural experiences and data collection from SNS can be extended through direct interviews with informants (Kozinets, 2010) and survey to visitors (Bryman and Bell, 2011) to achieve a more complete perspective on customers' perceptions.
Practical implications – The characteristics of co-production in cultural experiences allow the delineation of the fundamental issues that cultural institutions and firms have to consider during the delineation of a cultural project when deploying their core activities even through new technologies.
Originality/value – This study depicts the role played by the current development of smart technologies within the cultural sector and shows the linkages of this phenomenon with the value co-production to improve experiences and empower value-in-use. The focus on digital culture services can complement the already achievable contributions on digital culture goods (Lang *et al.*, 2009).

Key words – cultural experiences, co-production, smart technologies, value co-creation, service logic

Paper type – Research paper

1. Introduction

The role of visitors in museums and exhibitions is changing and the notion 'visitors' is not suitable anymore, as different activities are performed by people interacting with museums, due to the usage of new technologies. This innovative approach is an essential requirement to get people and cultural organisations closer and take into account the increasing need for participative activities.

Users is a more fitting notion related to the creation of more human-centred cultural experiences with the implementation of principles of openness, equality and pluralism (Antrobus, 2010), and the deployment of new tools enlarges this perspective with evolutions towards immersive experiences, improvements in measuring satisfaction (Rageh *et al.*, 2013), and several ways to create interactions among all actors moving around museum and exhibitions in physical and virtual contexts (Jafari *et al.*, 2013). In this context, social media, as smart technologies, increase and make easier and quicker the frequency of social interactions online among users, especially their self-expression and sharing of experiences. The "frictionless" of social media applications and spontaneity are the main drivers of social media growth and users' underpin this increasing importance in order to fulfil their needs of learning, relationships, diversion, progression, and recognition (UM, 2013).

The implementation of smart technologies in cultural organisations is nowadays extended to the following temporal phases: before the visit with interactive web sites, virtual tours, online booking; during the visit through mobile applications, and touch and touchless technologies; finally after the visit with social networks. One of the most recent opportunity offered by these smart technologies that is widespread along all the cultural experience phases, lays exactly on social networks (Larson *et al.*, 2007), as a context where users can do something different compared with the past, as they can firstly obtain information on the cultural proposal, then they can contribute in a "learning for fun" perspective (Packer, 2006) to define cultural-based needs (Moura *et al.*, 2012), share, mash-up, and spread their experiences both during the visit, and as outcomes of the participation. Co-production more than co-creation is pivotal in depicting the outcomes of interactions taking place in the different contexts before usage (Grönroos and Helle, 2010).

2. Literature review

2.1 Co-production and co-creation

The purpose of this paper moves from the recent debate on co-production and co-creation taking place in service logic (Chathoth *et al.*, 2013); the two concepts are linked and sometimes they overlap, leading to some issues in defining them in a unique way. Co-production (Ackoff and Frey 1972) exists even before service logic made its first appearances in marketing literature (Grönroos, 2006, 2008), when it was defined as the activity performed by an actor together with a firm, leading also to the definition of co-producer. Co-production has been taken into account even in public services, like health services (Wikström, 1996) and in the activities carried on when services are designed in cooperation between a firm and a customer (Piller *et al.*, 2004).

Scholars' contributions are diverging on what can be considered as co-production in comparison with co-creation, since some authors (Payne *et al.*, 2008; Frow *et al.*, 2010) framed co-production as one of the possible co-creation activities, so as a specific way of co-creation, and even as a synonym (Lang *et al.*, 2009). Some other authors considered co-production as different from co-creation, as the two activities take place in different moments; this is the reason why a recent contribution by Chathoth *et al.* (2013) defined the two concepts as on a continuum more than as shaping a dichotomy. A clarifying contribution about the two conceptualizations had been already given by Grönroos and Helle (2010), defining co-production as the participation of customer in processes usually carried on by the provider; hence, when a customer is engaged in production processes together with a firm, the role of co-producer emerges.

The analysis of both co-production and co-creation is relevant due to the pivotal role played by value-in-use in marketing literature (Grönroos, 2006, 2008) as it represents the reason why scholars switched from goods logic to service logic; in the new perspective emerges during use and because of use, as resources can deploy their value when used (Helkkula *et al.*, 2012). So co-production takes place before usage and it is useful to shape value proposition by levering on resources and

knowledge held by both firms and other actors; differently from what just stated, co-creation takes place during usage, so during interactions taking place in customer's sphere. Moreover co-production is thought as an activity taking place even during co-creation (Nilsson and Ballantyne, 2014) as they share the same place where users are expected to play their role as both co-creators and co-producers.

The involvement of actors in co-productive activities depends on their commitment (Pini, 2009) as the enabler of resources to be integrated and knowledge to be employed. The approach to co-production is common in public service management, as service experience are used in order to improve the way services will be offered in the following provisions; if the participation takes place through users' engagement in already existing services, a *participative co-production* emerges, while if users' experiences are complemented by participative planning of new services, an *enhanced co-production* arises (Radnor *et al.*, 2014).

The openness of the approach chosen by each firm will be useful to favour actors' participation, especially if technologies are the tools to propose co-production to more and more subjects and in easier ways. Technology is even the key to favour creativity (Lang *et al.*, 2009), leading to better results and to fruitful interactions; moreover co-production is not limited to direct customers as underlined in some investigations (Ordanini and Pasini, 2008; Dong *et al.*, 2008), but even different actors can participate and give their contribution, as it happens in community-based contexts, especially if there are virtual spaces supporting this kind of interactions. Technology plays several roles in service activities (Karppinen *et al.*, 2014) and as a consequence users are expected to interact more and more with both firms and other actors.

Virtual platforms are examples of such kind of combinations among different users, apart from their condition of previous consumer, potential buyers, or just interested in cooperating. The variety of actors shaping virtual communities depends on different motivations leading them to participation, as stated in several contributions about both engagement and involvement in marketing literature (Holbrook, 2000; Dahl and Moreau, 2000, Brodie *et al.*, 2011). More into detail, Holbrook defined a model and then upgraded it in order to better depict the reasons why people participate to some activities and he finally introduced eight driving forces leading to action: efficiency, excellence, status, esteem, play, aesthetics, ethics, and spirituality; with a similar aim and with a comparable outcome, Dahl and Moreau highlighted seven different kinds of motivation leading to the involvement of actors, namely: competence, autonomy, learning, engagement and relaxation, self-identity, public accomplishment and community. The last motivations put in evidence by Dahl and Moreau is particularly useful to describe participation in communitarian contexts, both virtual and physical.

Technologies had an impact on the co-production activities, leading to two new conceptualizations in marketing, namely consumer-generated content and user-generated content. The usage of both of them is necessary to underline what has already been stated before: not only customers contribute to co-productive activities, but even other actors. New technologies and the great accessibility to them enable actors to express their creativity in supporting value proposition and value creation, too. Obrist *et al.* (2008) underlined the usefulness of new technologies and other scholars focused on the role of internet (Cha *et al.*, 2007; Kaplan and Haenlein, 2010). These contributions were at the same time useful to depict users' contributions before the web 2.0 spread in such a massive way (Blythe and Cairns, 2009).

The willingness to participate expressed by different actors is stressed by Muñiz and Jensen Schau (2011), as they switched from the notion of customer to fans, to highlight the strong commitment of people taking part to co-productive activities. What is usually asked to actors in community-based contexts is to produce, design, and publish (Krishnamurty and Dou, 2008), and the role of social networks is particularly relevant in supporting these tasks.

Actors' participation in cultural-based services has been analysed in some recent contributions; first of all the ethnographic research performed by Moura *et al.* (2012) depicted visitors' participation to co-design session in a museum in Brazil. The participants visited the exhibition under construction and then suggested how to improve it before the official opening. This activity has been named co-

design by the authors and it is aligned with service logic approach to participative activities between a firm and actors; moreover it can be framed in the innovation process, as comparable to prototyping and testing phases before launching phase with an open innovation approach (Bifulco, 2009). Co-production in museums has been thought as co-design even as actors' participation to public services in a more theoretical way (Govier, 2010), by underlining the efficiency aim and the necessity to "achieve mutually compatible aims" (p. 19).

2.2 The role of smart technologies

The service logic literature has recently been analysed using technologies as an innovative lens for the understanding of the fundamental combination of human and technological components in service systems as complex interacting contexts (Maglio *et al.*, 2006; Spohrer *et al.*, 2007; Vargo *et al.* 2008; Vargo and Lusch, 2011). These attempts are grounded on the recent emergence of smart technologies in innovation literature, starting from 1995 with Sheen and MacBryde's study on smart structures and materials to the application within the wider service industries (i.e. transport, payments, security, energy, healthcare, education, construction, tourism, and cultural heritage).

Smart technologies are related to the fuzzy concept of Future Internet (FI), concerning technologies useful to favour integration of different actors and resources, especially in relation to knowledge sharing and creation when providing services (Hernández-Muñoz *et al.*, 2011). One of the most common description of FI states that it is "a socio-technical system comprising Internet-accessible information and services, coupled to the physical environment and human behaviour, and supporting smart applications of societal importance" (Boniface and Surridge, 2013). This definition highlight the attempts of service innovation literature, especially the recent conceptualisation of service (eco)systems (Akaka and Vargo, 2014; Vargo *et al.*, 2015), to the analysis of integrated systems in which smart objects acquire, process and exchange information each other through sensors network and Internet technologies (i.e. Internet of Things – IoT) to provide better and customised solution, with a focus on the pivotal role of platforms as a collector of context- and people-aware information in order to provide IT-based services.

The integration of dynamic resources in these ecosystems drive value creation and innovation in actor-to-actor (A2A) contexts where innovations and changes are new practices in social interactions with technology taking an integral part of new service provision (Akaka and Vargo, 2014; Löbler and Lusch, 2014).

One of the main application of this progressive approach to service ecosystem can be observed in cultural heritage studies as the focus has recently moved from conservation and preservation to valorisation and promotion activities thanks to the increasing importance and the pivotal role of smart technologies (Tallon and Walker, 2008; Bakhshi and Throsby, 2012), especially participative online and interactive and immersive technologies, demanding users to act and choose, and allowing actors interactions (Carrozzino and Bergamasco, 2010).

The application of these smart technologies, especially in museum exhibitions, has been considered by Amato *et al.* (2013) as a complicated activity, in relation to the high dynamism of cultural systems which have to deliver a huge amount of real-time information to users in movements, but the wide enhancement of users' experience during the visit confirm the necessity to overcome the technical obstacles. In fact, the powerful use of technologies in cultural heritage can be widely highlighted in museums and galleries, especially in relation to the adoption of devices to support visitors' experience, learning and enjoyment (Packer, 2006; Moura *et al.*, 2006; Sheng and Chen, 2012).

This perspective has been analysed by many scholars, even more in relation with the diffusion of mobile devices, namely smartphones and tablets, allowing the development of new kinds of mobile guides for handheld-based visits or applications to be downloaded by visitors on their personal devices (Hsi, 2004; Jaén *et al.*, 2011; Chang *et al.*, 2014); different evidences show the better acceptance of complex technologies in relation to everyday life equipments and to the familiarity of people with sophisticated devices as touch-screen and motion sensors (Carrozzino and Bergamasco, 2010).

The use of smart technologies has been analysed underlining visitors' perception of the utility of enabling devices which allow to access multimedia explanatory information, enhance learning effectiveness, promote their flow experience, and extend the amount of time spent on the artworks (Jaén *et al.*, 2011; Chang *et al.*, 2014). In particular the research conducted by Chang *et al.* (2014) has underlined the fundamental role of interaction between visitors, companions, and the exhibition itself thanks to the support of a mobile guide, led to the formation of a "human-computer-context" interaction (HCCI), concerning the ability of balance visitors' attention distribution between the device and the artworks to avoid an excessive attention on "human-computer (guide system)" and the carelessness of the "human-field/situation (exhibition and local context)". This result underlines the necessary consideration of visitors as self-motivated learners rather than passive recipients of knowledge, making their own choices about what to learn and when to request facilitation; similar findings have been presented by Jaén *et al.* (2011) who have explained visitors' willingness to preserve the possibility of doing a free-style type of visit, and by Antrobus (2010) as she stated technology acts as a support in improving physical experiences, even if it is common "to keep user engagement safely online (or offsite) and away from the 'real' space of the gallery" (p. 7).
The role of cultural organisations is strictly related to this increasing hybridisation of technologies which have to be considered the driving forces towards the requirement of integration between devices and users to allow visitors' creation of their own kind of experience; as this kind of support takes place during the visit experience, it can be framed in co-creation because the use is pivotal in conveying towards the effects for the visitors.
The fundamental interactions among users, technologies and context led to the emerging of cultural service ecosystem, confirming the recent issues on participatory sensing regarding users' engagement through the use of everyday technologies, as mobile devices like cellular phones or tablets. In detail, one of the principal way to activate and obtain information from users, creating a flow of knowledge, thanks to technologies, is the participative sensing through social networks. The pivotal role played by Internet and social media has been recognised by museums, creating website increasingly interactive (e.g. Google maps, MP3/PDF guides download, newsletter, online database/radio/store, podcasts, Internet TV, virtual visit), and using social networks (e.g. blogs, Facebook, Flickr, Instagram, Twitter, Youtube) to promote and create online communities of supporters who actively participate in cultural value creation (Larson *et al*., 2009; Kidd, 2011; Lin *et al.*, 2012; Padilla-Meléndez and del Águila-Obra, 2013).
In particular, the importance of the design of museums' website for a wider presence on web and a high value creation, has been analysed by Lin *et al.* (2012) in order to underline the role of website in helping users to experience a sense of engagement, positive affect, and fulfilment, as it should consider users' intention, involvement, and participation, and should offer interactive experiences that facilitate the enjoyment of its content; these assumptions have also been studied by Padilla-Meléndez and del Águila-Obra (2013) to identify museums' strategies on web and social media, as defender, analyser and prospector, starting from the use of Internet technologies to collect and diffuse information.
The role of social network in cultural service ecosystem can be related to users' sharing of contents, as social platforms have made it easier and have allowed the rise of a generation of users actively caring their online personas with a strict link between personal success and reputation (UM, 2014). The use of posts and tags before, after, and especially during the visit can be mainly related to users' co-creation of contents to express both their creativity and their willingness to share the acquired knowledge and seek other users' opinion.

3. Method

The authors propose a qualitative research design as it is most appropriate when a new phenomenon has to be studied (Lee, 1999; Bryman and Bell, 2011), in order to give evidence to the smart technologies implemented by museums and to understand which are their impacts on visitors' experiences (Sheng and Chen, 2012). Moreover the choice of a single museum's exhibition stands on the availability of technologies to be considered both as innovative and as enabling new kinds of

cultural experiences. We chose to perform our investigation in a museum context as it embeds relevant features of innovation ecosystems (Akaka and Vargo, 2014; Löbler and Lusch, 2014), as the approach to integration of knowledge, the role of smart technologies, and the interactions of actors, in order to understand how people communicate, evaluate, and share ideas about the exhibition through social networks (Muñiz and Jensen Schau, 2011). In line with the approach proposed above we chose netnography as our research methodology, because it is useful when studying activities performed by communities and through new technologies (Kozinets, 2010a). Netnography is based on an approach similar to ethnography (Kozinets, 2002) and it can lead to interesting results about common languages, behaviours, communication approaches, and symbols too. The usage of public available data has been hugely discussed due to privacy reasons (Schrum, 1995), but Sudweeks and Rafaeli contribution (1995) clarified the fair usage of these data as the willingness to share is embedded in the choice of publishing on sites, blogs, and social networks pages.

The context of analysis is the sculpture exhibition "Il bello o il vero" ("The beauty or the true"), a project planned and implemented by the DATaBenC District - High Technology District for Cultural Heritage, concerning the Neapolitan sculpture of the late nineteenth and early twentieth centuries, started in October 2014 and still ongoing, within the rooms of the Monumental Complex of San Domenico Maggiore in Naples in Region Campania.

In order to investigate actors' participation both as visitors and as co-producers, we collected data from Twitter and Instagram by users before, during and after they visit the exhibition, and following the suggestion provided by several scholars we chose a content analysis approach to netnographic analysis (Kozinets, 2010b). Since the role of some actors in the contest can be depicted as lead users, this is one more reason to apply content analysis to data achieved through a netnographic approach (Belz and Baumbach, 2010). Moreover, as exhibitions are strictly connected to informal learning context (Spock, 2004; Garcia-Peñalvo *et al.*, 2012) a joint approach between netnography and content analysis is particularly useful (Sandlin, 2007).

In more detail we performed a content-analysis based on the study of different sources (Bazeley and Jackson, 2013) and we analysed the content through NVivo (version 10.1), as it is considered as one of the most reliable software to perform a content analysis, because as stated by Weber (1990) it is a suitable way to classify and analyse textual material and to reduce it to easily manageable data and bits of data. With a similar approach Krippendorff (2012, p. 18) depicts the content analysis as a "research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use". In detail, we focused on the most used words and on the linkages among them, based on results with a relevant Jaccard's coefficient (above 0,8 on a range ending at 1,0).

4. Findings

The research results from netnography confirm the widespread assumption in studies related to museum and exhibitions that visitors want to fulfill experience expectations concerning fun and leisure, cultural entertainment, personal identification, historical reminiscence, and escapism (Sheng and Chen, 2012; Siu *et al.*, 2013), enhanced through the pivotal role played by smart technologies.

The application of this methodology in the framework of service logic led to the enhancement of these expectations offering interactive and immersive experiences, and allowed the depiction of new roles to visitors, as co-producers in the joint sphere of value creation in interaction (Grönroos and Voima, 2012), namely cultural heritage-based experiences.

The context of analysis, "Il bello o il vero" exhibition, represented a great field to show the above mentioned assumption, as visitors were able to perform new kind of cultural experiences thanks to both the use of a mobile app interacting with sensors network and giving information on sculptures, and the interactions through touch and touchless technologies. Moreover social networks have been thought as ways to support visitors' and other actors' involvement even apart from the direct experience at the exhibition.

In details, the results of the content analysis performed on social networks, namely Twitter and Instagram, was the second phase of the research. The data analysis led to the achievement of a word frequency and the dataset was purged with the elimination of expected and useless words, as those related to the exhibition's title, users' name, months, social networks, and similar words, focusing on the top 20 evidences synthesized in the following table (Tab. 1).

Table 1. Top 20 results from "Word frequency" analysis

Word	Weighted percentage (%)
Display	1,88
Exhibition	0,65
Naples	0,59
Conversation	0,53
#naples	0,47
Complex	0,23
Are	0,23
App	0,18
Beautiful	0,18
Save	0,18
Sculpture	0,18
#artsmeettechnology	0,12
Tour	0,12
Enjoy	0,12
Art	0,12
Interactive	0,12
Monumental	0,12
Artwork	0,12
Liked	0,12
Others	0,12

Source: authors' elaboration from NVivo

These evidences allowed to confirm the main experience expectations of museum visitors, related to fun, leisure, and cultural entertainment, and to underline the role of social networks as contexts where interactions among actors can favour the evaluation of the services provided, thanks to the recurring of words such as beautiful, enjoy, and liked.

Moreover, the results show both the emerging role of users and their engagement in the co-production process with the words expressing undertaken activities, namely display, talk, and save, and they confirmed the perceived importance of technologies within the exhibition, thanks to the words app, arts-meet-technology, and interactive.

The opportunity for users to acquire information, share cultural experience, and participate in a community offered by social networks, has been increased and enhanced with the role of co-producer of ideas and new cultural heritage-based services, as the most beautiful photographs reinterpreting "Il bello o il vero" exhibition, shared by users on Instagram and Twitter, were selected for the development of an exhibition within the exhibition, namely "101 sguardi di Instagram" ("101 looks of Instagram"). The collection of photographs posted with the official hashtag #ilbellooilvero exploited the previous contest launched by the media partnership among the exhibition's organisers, the Universal Forum of Culture of Naples and Campania Region, and InstagramersItalia for the selection of the best photographs on the wider cultural heritage of Naples, included the exhibition. The arrangement of the "101 sguardi di Instagram" exhibition has been designed along one of the corridor connecting the different rooms with sculptures and the 101 photographs have been showed enclosed in frames of recycled cardboard.

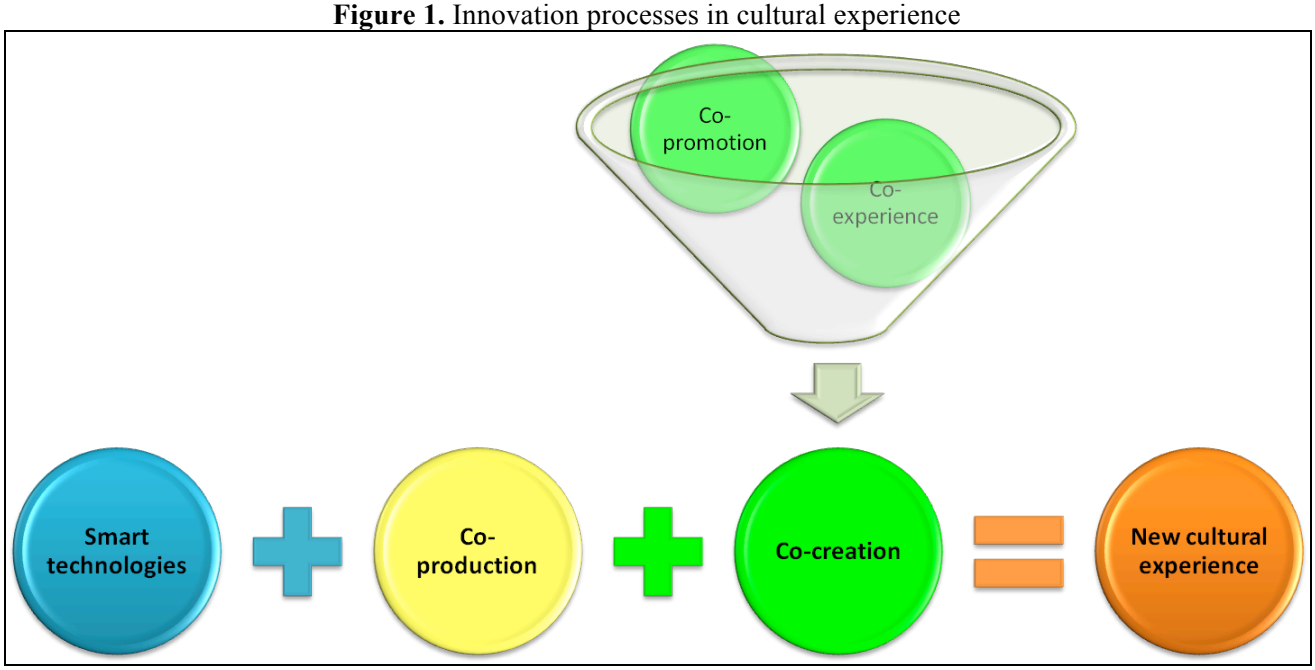
These results show the emerging and increasing importance of users as co-producers of cultural value thanks to the enhancement, interpretation, and collection of emotions and experiences through new technologies, especially within community-based contexts as social networks.

Furthermore, the value co-creation occurring in this cultural service ecosystem can be analysed also from another perspective beyond the co-production activities of users' through the creation of the exhibition from their photographs, as suggested by Frow *et al.* (2008) conceptual model for co-creation: users' contribution of their own resources (time, money, mobile device, knowledge, etc.) to be involved in the shared experience of visiting the exhibition represents the co-experience activities; in addition a more significant result stands on the many tags created by users' account on Twitter and Instagram allowing identifying co-promotion activities as users' sharing of cultural experience represent a kind of word of mouth activities. This latter type of co-creation activity is even more relevant when users' are those selected from the exhibition "101 sguardi di Instagram" who repeat the visit and express and share their satisfaction of being selected through co-promotion activities represented by the upload of their photographs during the discovery of their works which have become artworks within the exhibition, representing the result of their co-production activities.

5. Conclusions

Management of service experiences in cultural heritage have to be considered as a mean to develop new forms of interactions between users and organizations, as they can act together to improve services even while services themselves are being provided. Co-design has already been taken into account (Moura *et al.*, 2012), but it is not the only way actors can contribute in improving services to be provided in cultural heritage contexts. The participation has to be framed in line with the conceptualizations of co-production Grönroos and Helle (2010), as the support offered by resources of different actors can lead to offer new experiences even while using them. The exhibition "Il bello o il vero" is a useful example to show how visitors during co-creation activities were involved in co-production activities; taking photographs to be shared through social networks is an activity to be considered as part of the experience (co-creation) but even as a way to prepare new artworks to be presented in the exhibition itself in the following days (co-production). So, actors can play different roles, both as mere customers and as co-producers and they have not to be considered as future potential customers, as their contribution can be over after taking part to the context (fig. 1); hence, co-production can take place even with subjects different from customers, as we want to underline in comparison with what emerged from our literature review (Ordanini and Pasini, 2008; Dong *et al.*, 2008).

Figure 1. Innovation processes in cultural experience



Source: authors' elaboration

Finally, the uniqueness of the context we investigated and the merger between methodologies to be used and service logic lead to new results if compared to previous scholars' contributions (Govier, 2010), by underlining the differences between co-production and co-creation. New opportunities are offered to organizations playing a role in cultural heritage experiences, as they can lever on actors' participation to favour the improvement of already running services, instead of just involving them in co-design activities.

6. Limitations and further research

The results are related to a context where the exhibition is still in progress and a wider focus on users in a longer time span can be useful to empower the achieved results. The context is unique, so a replication of the investigation can only be thought in the same context, but the analysis can be performed for other cultural experiences (not only sculpture exhibition).

Data collection from SNS can be extended with further data gained through participant observation during the cultural experiences, and with a questionnaire survey conducted after the visit (Bryman and Bell, 2011) to achieve a more complete perspective on customers' perceptions. Moreover, an analysis on co-producers would be interesting in order to test the reasons why they participate to the co-productive activities and to apply one of the frameworks proposed by scholars investigating motivations, like Holbrook (2000) or Dahl and Moreau (2000).

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