

Can service industrialization deliver customer experience?

Evidence from online higher education services

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1. Introduction

The industrialization of services consists of the convergence of two main factors: the transfer of manufacturing managerial practices into the service context and the widespread and heavy use of new information and communication technologies (ICT) (Baglieri and Zambolin, 2012; Baglieri and Croom 2014; Baglieri and Karmarkar, 2014).

The potential of this phenomenon is enormous, because industrialization represents an immense source of innovation for services due to its impact on one particularly salient characteristic of services: the contextual affinity of production and consumption. The usual perspective adopted by the Operations Management discipline is that service industrialization increases productivity and efficiency. We argue that it can also create new sources of the customer experience.

The goal of this paper is to analyze the impacts of the service industrialization on a specific service context, the higher education and to answer to the following question: how can we design and industrialize service operations to deliver a memorable customer experience?

Investigating the design and the engineering of the customer experience is quite a new topic. While product and related process engineering are very well known and codified, service design and related process engineering to deliver experience are still fluid. They look like partially codified by marketing, and partially by architecture and industrial design as well. They have been only marginally discussed by the Operations and Technology Management discipline, whose main traditional focus have been to cope with process capacity and the management of queues.

In our paper we explore the differences in customer experience between a traditional service theatre context (the on campus higher education) and the emerging model of Massive Online Open Courses (MOOC), which we can generically define as a service factory model. The goal of this paper is to explore whether the customer experience increases or decreases when moving from “theatre” to “factory” and to identify what factors affect this dynamic of the customers’ perception.

2. Service industrialization strategies and the convergence of “factory” and “theatre”

In 1988, Chase and Erikson were the first to introduce the concept of service factory. Chase and Garvin took up it again one year later (1989), stating that traditional factories must acquire the

practices and competences typical of the services sector. However, the semantic perspective adopted by Chase and his co-authors still looked at the factory, to be transformed into a provider of services. Baglieri and Karmarkar (2014) re-interpreted the service factory as that specific approach to service operations which focuses on the following factors:

1. mass production and high volumes, as the main drivers of the growth of the business;
2. high level of standardization of the operations;
3. high efficiency production system;
4. focus on cost reduction;
5. low level of flexibility, of both plant and human resources;
6. quality as conformance to customers' expectations;
7. high level of dependability;
8. low variability of the process output;
9. great attention to selecting the process input.

At the other extreme of the classification, a service theatre is designed to meet any customer needs and, better, to exceed any customer expectations. Generally speaking, the factors that characterize this operational paradigm can be summed up as follows (Baglieri and Karmarkar, 2014):

1. low volume production;
2. low standardization of operations;
3. efficiency derives from the focus on a few operations;
4. low attention paid to costs;
5. high flexibility of production factors;
6. high quality and above all high level of customization;
7. low dependability;
8. high variability of process output;
9. high attention paid to selecting the process input .

In short, we may say that in a service factory the main focus is on high efficiency in the production and delivery processes, while in a service theatre the focus is on effectiveness of the inputs of the operational model, first of all the human resources.

Service industrialization may be directed towards the standardization of both the process and the outputs of the service operations (Karmarkar, 2004, 2010; Karmarkar and Apte, 2007). In this case, the design of the service operations is closer to a mass-production good manufacturer than to the common archetype of service. It is otherwise clear that the future landscape of services may either consist of highly-efficient and standardized service factories or highly effective and flexible service "theatres" (Pine and Gilmore, 1999).

These two operational paradigms were historically very different, particularly considering the different inputs and the characteristics of the processes they mix to produce and deliver their output (Baglieri, Zambolin and Karmarkar, 2011).

Recent studies demonstrates that the diffused and simultaneous adoption of different managerial practices and technologies can actually enabling the convergence between service factories and service theatres (Baglieri and Karmarkar, 2014). This combination of various service industrialization strategies aims to balance the productivity of the service operations with the demand for the *theatricalization* of the service offering. Pooling ICTs and methodologies like "business process reengineering" and "lean thinking" allows to industrialize processes (at both the back and the front office) and the customers' contribution (Baglieri and Zambolin, 2012).

In terms of research implications, we can say that the concept of service theater (Harris, Harris & Baron, 1990; Grove & Fisk, 1992; Grove, Fisk & Dorsch, 1998; Pine & Gilmore, 1999; Stuart & Tax, 2004; Fisk & Grove, 2013) and service factory (Chase & Erikson, 1988; Chase, Kumar & Youngdahl, 1992; Silvestro et al, 1992) can be embedded in the so called 'service dominant logic' (Vargo & Lusch, 2004; Lusch, Vargo & Wessels, 2008).

The impact of this phenomenon seems to be twofold: on the one hand, efficiency and productivity increase; on the other, customer satisfaction rises, with a positive impact on the entire business. This

outcome emerges when the service processes properly focus on what a customer really expects: a memorable experience.

3. From service design to the engineering of the experience

Theme parks are pure service factories. Nonetheless people pay very high entrance tickets to get into any Disneyland and Sea World, and spend a lot of money throughout their visit, because these parks actually deliver an experience and, most of all, they are very dependable in always delivering emotions! Thus, while we expect the service theatre to be the only highly experiential context, recent studies demonstrate that service factories with some “flavor” of *theatricalization* deliver more experience than service theatres pretending improvisation behind a very rigid and codified plot to act! (Baglieri and Zambolin, 2012). In short, we would say that the next challenge for OM in the service context is to move its focus from the rational side of the performance of production and delivery processes to the relational and emotional side of the customer experience.

The main issue is that experience sounds like a very complex item to codify. Experience comprises knowledge of or skill of some thing or some event gained through involvement in or exposure to (Carù and Cova, 2014). Experience can be observed under different perspectives: scientific, physical, cognitive, emotional, and social. Service experience is mainly linked to the service encounters and how they affect customers’ perceptions as a whole (Karmarkar and Karmarkar, 2014). It is usually also related to the concept of *servicescape*, i.e. “the context surrounding the service” (Bitner, 1992), essentially in physical sense, then in a social one (Baker et al., 1994) and including the roles played by staff and customers.

Furthermore, customer experience is different from service quality (Klauss and Edvardsonn 2014). In short we can summarize that quality consists of meeting customers’ expectations, experience consists of delivering unexpected performances.

Customer experience is generated from three types of encounter: (1) communication, mainly before the delivery (2) service delivery and (3) usage, during and after the delivery. The three encounters are moderated by the context of the experience; that is, involvement, complexity, relationships and the hedonic nature of the experience (Klauss and Edvardsonn, 2014). Most of all, customer experience is longitudinal: it starts before the service encounters and can last after the encounters. It evolves and in some sense it has its own life cycle, being related to the memory of the experience itself (Karmarkar and Karmarkar, 2014).

The design of a service is a complex problem, with high heterogeneity across different sectors. Thus, the appropriate focus must be on the service processes as experienced by customers, rather than core service outputs and process design related to outputs. As suggested by Karmarkar and Karmarkar (2014), centering on the design of the service process to deliver an impressive customer experience, companies should follow this list of five steps:

1. identify the encounters
2. design both the experience at each stage and the links among the different stages
3. sequencing the process, taking into consideration various aspects and particularly the «peak-end» model and the «primacy-effect», the impact of «acclimation» and «satiation», and the time preferences
4. setting the standard, in order to manage the expectations
5. leverage on the customers’ involvement, participation and co-creation (the Ikea effect, Norton et al. 2010).

In the next sections, we first present the evolution of higher education under the effect of the adoption of new practices and technologies. This change is generating a disruptive innovation in this service sector, because new business models are arising. Then we compare the three dominant models of higher education. We position their operational model along the continuum between the described paradigms (service factory vs service theatre), and we summarize their differences in order to the five steps to design and engineer the experience described above.

4. The industrialization of higher education

Education is a crucial part of anyone's life and affects the growth and wealth of the economies of nations. Higher education is fundamental for its contribution to the development of skill and competences that impact on the overall performances of the economic systems, contributes directly to the competitiveness of the nations, to the quality of life of populations, to the democracy and balance of the society in general.

Education is still one of the most promising service sector for the next decades, for example in the USA, according to the statistics of the Labor Statistics Department of the US Government (2013).

Nonetheless, education, and particular higher education is still struggling between the need for quality and the search for efficiency. Many authors, and from different perspectives, still underline the complexity of delivering both a top quality education to a larger part of the populations, facilitating accessibility, and preserving the selectivity of an education system that, while offering equal opportunities to anyone, should continue to reward the most performing and brilliant ones. Most of all, top quality education can be very expensive, because it requires top quality inputs (tangible, intangible and human resources). If we consider the students as a main input of this service operations, top quality education should require a great level of selection at the "intake" level, equivalent to the inbound flow of raw materials and components of a manufacturing company. The consequence is that national education systems are very different, according to the "ideological" perspective adopted in their overall design.

In the USA, the best offering in terms of higher education is mainly represented by the private sector. Selection of the students is a severe combination of merit and financial resources the students (and their family) can commit to education. The main exception is California, with a significant impact of the cost of higher education on the budget of the State. In Europe, there are many different approaches, but in general the public system is very good, at least ensuring an easier accessibility to top schools without selection necessarily based on ability to pay tuition fees. A long debate still persists in countries like Italy on the long term sustainability of such a model and its real benefits to the growth of the nation¹.

The revolution in higher education started with the launch of the online learning programs and culminated with the so-called MOOCs, or Massive Online Open Courses.

4.1. On campus higher education

Traditional "on campus" courses are based on a continuous attendance, a strong intimacy among the students and the faculty during classes, a severe and selective grading process, and finally a certification of the level of knowledge acquired. Colleges and universities charge students before they get the degree and provide to them a lot of additional services that, even if complementary to the core service (for example dorms and catering), are important to their economic performance.

Facilities are crucial to attract the students and to offer a high service quality. They largely affect the economics of these institutions. Tuition fees, even if very high in the case of the top ranked schools, cannot ensure the financial sustainability of the traditional model. Public subsidies and fund raising are necessary to complement their revenues.

The core element of traditional higher education is the face-to-face class (F2F). Professors transfer their knowledge to students, who are engaged in the class through the instructors' teaching abilities - a combination of verbal and mimic skills, learning tools, exercises, simulations, cases and so forth. Students are usually stimulated to interact, and the flow of this interaction is both from the professors to students, and vice versa. Instructors usually prevent students from interacting among peers during their class. Most of all, interaction among students during an exam is prohibited and classified as "cheating", always severely penalized. If team working is part of the learning process, specific

¹ For an interesting and complete understanding of this complex topic, we suggest A. Bonaccorsi (editor), Knowledge, Diversity and Performance in European Higher Education, Elgar Publishing, UK, 2014

sections of the class may be dedicated to collaboration through provision of specific places and rooms designed to support this activity. It is quite unusual for team collaboration to take place in the classroom, the preference being by the professors to evangelize to their attendants. The length of the single class may vary, but in general it takes 50-90 minutes. The longer the class, the higher the instructor's effort (even physical) to make students paying a high level of attention to his/her work.

4.2.Traditional online courses

Traditional online courses replicated the approach of the “on campus” education. They charge tuition, carry credit and limit enrollment to a few dozen to ensure interaction with instructors. After some attempts to fully substitute “on campus” with “online” courses, the majority of the colleges and universities in the world, and particularly the b-schools, made to choice of blending their teaching approaches into a ‘hybrid’ format. They sometimes mix online and on campus classes in the same program; in other cases, online courses are adopted for basic, introductory level (pre-courses, for example); it is not unusual they are used as “complementary” or optional contents, connected to a main stream of topics in a longer sequence of classes.

Teaching material, rules and even the length of the class are in many cases equivalent to the on-campus course.

Tuition is lower than “on campus”, but in the majority of cases is still not trivial, because the provider would like to underline that, even if the process of delivery is different, the quality of the knowledge transferred is not lower. Exams are usually “on campus” and based on the same methodologies and approaches adopted for the on campus classes.

The online courses can be very frustrating for the students. Their chances for feeling part of the class and generating the same “emotional temperature” of the face-to-face class are often lower, but they are handled and evaluated like the on campus students. On the one hand, this feature should preserve the quality of the online courses and address to them those students who, for specific reasons, cannot attend. Originally, colleges and universities expected to enlarge their market without cannibalizing their current offerings. On the other hand, these students are evaluated with the same rigor and approaches of the on-campus ones, without benefitting from the whole learning experience generated by both the real interaction with the professors and their classmates. At the end of the day, they may pay less but they get less, and may not be able to perform at the same level. As a consequence, large and branded institutions reconsidered their strategy for online courses. Simultaneously, a new market segment emerged, for those providers that deliver a degree formally comparable with the traditional institutions, but largely based on the online courses and assessment. Their value proposition is based on providing an education at a very affordable tuition fee. Particularly in the USA, this is the origin of phenomenon like the University of Phoenix.

4.3.The MOOC

“Circuits and Electronics” (6.002x), began in March 2012. It was the first MOOC developed by edX, the consortium led by MIT and Harvard. Over 155,000 students initially registered for 6.002x, which was composed of video lectures, interactive problems, online laboratories, and a discussion forum. The course ended in June 2012 and inspired the majority of the top ranked universities in the world to develop similar projects. Most of all, researchers began to analyze the rich sources of data it generated. This paper, still qualitative, is the first output of a longer research project whose goal is to leverage on the data available from the MOOCs’ platforms and primary data collected through interviews and surveys, and finally contribute to generate a new theory on the “engineering of the experience”.

A MOOC is usually free, credit-less, and massive. The concept of a MOOC is 100% consistent with the design of products and services based on the digital technologies and the so called “sharing economy”. The audience is potentially as large as possible: anyone with an Internet connection can

enroll. Most of all, anyone with a Facebook or LinkedIn account can enroll, through a worldwide platform.

There is no selection process, neither based on merit nor on fees. The price the applicants pay is not monetary, they exchange data and personal information for the access.

MOOCs attract a very large volume of students, thousands, beyond that of any class in a single classroom. Faculty cannot possibly respond to students individually, neither can they customize contents and comments to any specific students' question and curiosity except through the use of technology-based solutions (such as decision tree driven course options).

How course material is presented, and how the interactivity is handled, counts for a lot in terms of student learning outcomes. The instructor-to-students interaction is not central, while students-to-students interaction is crucial, emphasized and stimulated. Classmates may lean on one another in study groups organized in their towns, in online forums or even, a contentious issue, for grading work. The evolving form of MOOCs knits together education, entertainment, gaming and social networking. Unlike its antecedent, the MOOC is a full course designed keeping the "customer" at the very center of the all process.

The medium is still the lecture, but 8 to 12 minutes is the typical length of the single section. Videos may pause, twice or more per clip, for a quiz to make sure students understand the material or, in computer programming, to let them write code.

Feedback is electronic and frequently automatic. Teaching assistants may monitor discussion boards, moderate them and address next subjects to argue. There may be homework and a final exam.

The MOOC certainly presents challenges, particularly if we adopt a traditional perspective. For example, cheating is a reality, and it cannot be prevented. Yet, why should people cheat if there is neither credit, nor final exam nor degree at the end? They attend the course because they want to, not because it is a fixed portion of a longer and complex curriculum whose final outcome is the graduation. So, if they "interact", it is because they can benefit from the co-working with their classmates, and because the accumulated knowledge they acquire from this collaborative approach is higher than the sum of the single classmates' knowledge. The expectation is that such free courses can bring the best education in the world at the same time as helping people in their careers, through expanded intellectual and personal networks.

Three components matter most in online learning: quality of material covered, engagement of the teacher and interaction among students.

The first is not an issue at all for MOOCs: most professors come from elite campuses, and so far most MOOCs are in technical subjects like computer science and math, with straightforward content.

Providing instructor connection and feedback, including student interactions, is trickier.

In short, how can you make the massive feel intimate?

4.4. The role of the platform in a MOOC

A relevant contribution to the design of the learning process is played by the platforms hosting and delivering the MOOCs. A global audience typically does not get directly in touch with a single University. Even if they hold the knowledge to transfer, the teaching skills and facilities, and the labor-force (the faculty), their role in the customer experience chain is to provide the content, because their access to potential market is historically spatially constrained. So they need a "channel" to be visible to this mass market. The most well-known platform is Coursera, casting itself as a "hub" for learning and networking. The learning comes *gratis* from an impressive roster of elite faculty offering a wide range of courses, from computer science to philosophy to medicine. Coursera make suggestions, but ultimately all pedagogical decisions are made by the universities.

Most offerings are adapted from existing courses: the Bocconi University Coursera course on the Management of Fashion and Luxury Goods is a Bocconi undergraduate course. Yet, the vibe is decidedly Facebook: build a profile, upload your photo, and employ tools for students to plan "meet-ups" with Courserians in about 1,400 cities worldwide. These gatherings may be study groups or social sessions, but undoubtedly no university in the world can usually offer such a feature today.

One of the most troubling aspects of MOOCs to date is their low completion rate, which averages no more than 10% (Breslow et al., 2013). So classmates frequently like the discipline a group offers. An interesting evidence emerging from online students' comments is that the courses organizing study groups are those with lower dropout rate. For example, Udacity, a MOOCs developer for large corporations like Microsoft and Google, designed a course on building a search engine, organizing Thursday evening discussions of the week's material followed by a social hour at a nearby pub. The group meeting each week at the Ansir Innovation Center, a community space with big tables and comfortable chairs, in the Kearny Mesa neighborhood of San Diego, completed the course with a share higher than the rest of individual students (L. Pappano, The year of MOOC, NYT, 11.02.2012). Platforms may also play a critical role in the way the faculty is selected. Students want to learn from the best teacher, not the dominant academic researcher, as universities currently typically organize faculty selection. In the near future MOOCs will polarize a large part of higher education, particularly in terms of how faculty are attracted, trained and paid, a disruption that may likely be based on the most popular faculty on the platform being compensated more like a TV actor or a movie actor, in essence as a function of the audience they can attract!

Finally, the platforms work on continuous innovation in terms of the tool sets they hold. For example, students can now control how fast they watch lectures: some like to go at nearly double the speed; others want to slow down and replay. A technology that platforms are testing is based on the automatic correction: if the student gets a wrong answer, the software figures out where he/she went wrong, offers a correction and suggests an additional content.

For those activities that cannot be automated, for example the grading of written assignments, MOOC providers are pushed to innovate. Coursera uses peer grading: submit an assignment and five people grade it; in turn, you grade five assignments! Coursera is developing software that will flag those who assign very inaccurate grades and give their assessment less weight!

4.5. The job market value of MOOC

In general, MOOCs are credit-less. Yet, many courses give the students the chance of getting a "certificate" or "badge", issued by the University and Coursera, for a very low fee. Once again, it is crucial the role of both the platform and the social networking side of this form on higher education. The certificate/badge is actually automatically reported onto the students' LinkedIn profiles. This professional social network is increasingly being used by recruiters and head hunters to both identify and select talents and to verify the contents and the consistency of the applicants' CVs. The main weakness of LinkedIn profiles is that the information you can gather is provided directly by the users, who can opportunistically overestimate their skills, their capabilities and, most of all, their education. The need for a trustworthy third party certifying someone's LinkedIn profile is becoming more important. The direct connection between the two categories of platforms, like Coursera and LinkedIn, represents an interesting feature and a challenge for the future business models: you attend the course, you learn, you pass the exam, you pay to get the certificate or badge and the platform (not you) automatically updates your profile with the appropriate contents. More in general, a hypothetical student of the near future can create his/her own customized curriculum, picking from the best school with the best faculty, getting a bunch of certificates and the platforms can aggregate them in a single "super-certificate" whose value consists of the combination of the trustworthy of the platform as an aggregator and the quality of the single portions provided by the top ranked schools.

5. Discussion

In the following section we map the evidences presented above, comparing the three current models of higher education. The mapping of the service forms will be based on two different steps: first the positioning of the three models on the input-process matrix, in order to identify the most critical determinants of their operational models (Baglieri et. al. 2011); second, the comparison of the three

models adopting the 5 steps suggested by Karmarkar and Karmarkar (2014) to properly drive the design of service processes to deliver high level of experience.

As described in Figure 1, the three models adopt different distinctive factors within their operational models.

The traditional on-campus higher education (green line) underlines the role of human factors, the quality of faculty first, supported by the service staff and other personnel may deliver. The experience it provides is a combination of different processes, many of them highly routinized and standardized, some of them accepting some degree of flexibility, and finally a contingent set of activities, giving the instructors the freedom to design their programs according to their own abilities and attitudes. The role of the human resources here is crucial, and it affects the effectiveness of such a model, particularly when a mismatch takes place between the students’ expectations for outstanding class performance of the faculty and the hiring process of the professors, which is often based more on their skills as researchers and their track records in terms of productivity of research. In essence, the students, particularly in the most exclusive universities, pay their tuition fees to get the best knowledge, but this system ensures the quality of the knowledge faculty produce, but not necessarily on the quality they can deliver! Finally, on-campus education leverages the “campus” itself: facilities and infrastructure are central to deliver a high level of experience in such a model. It is, therefore, a service theatre that host its patrons in the best premises but cannot always keep the promise that the best actors will always appear on stage, even if the top screen-players were hired!

Table 1. Higher education operational models: plotted on the input-process matrix

		Process		
		Fixed	Modular	Contingent
Input	Customer	MOOCs		
	Intangible components			
	Tangible components			
	Human resources		Traditional online	On campus

The (traditional) online education (purple line) looks stuck in the middle. It stresses the quality of the faculty, but it is the same as the on-campus education, with similar strengths and weaknesses. Unfortunately, the online students do not always have the chance to share their real life experience with their instructors, who, even if bad performers in a face-to-face class, when dealing with students in a laboratory or a workshop can sometimes demonstrate the quality of the knowledge they possess. Facilities are not visible to the students, even if in the majority of the cases the production and the delivery of this service take place in the same sites were the on campus students attend their classes. Processes are a combination of rigid procedures and attempts to customize the classes to the audience. In short, neither a traditional online courses are neither service factory nor a service theatre. This unclear positioning can contribute to explain the low success of this model.

The MOOCs are the real disruptive innovation, because they completely change the perspective. Forget the tangible components of the service! Who cares where the “factory” is: it is more relevant to create chances for additional and complementary learning activities, wherever the customers may be. At the end of the day, the provider of the MOOCs is a virtual aggregator, nobody knows where the platform is physically located, and it is consequently everywhere. MOOCs preserve the role of the faculty, but, as said, they must excel as distributors of contents, no matter if they *package* contents

generated by others. Most of all, MOOCs use information. Students' information, most of all: their location, to suggest groups and activities; their performance, to correct them and address towards extra-works; their interests and availability, to involve them in the peer-grading and to suggest next courses to complement their profile. Finally, MOOCs are totally customer-centered and the customer are totally immersed in their own personalized learning experience; in fact this is almost a self-service approach! They grade each other; they virtually interact, more than they can physically interact in a face-to-face class, and this way they learn collaboratively; they meet up, comment, discuss and definitely, once again, lean each other. In a few words, they co-create the course and their co-creation, with the variety each one bring into the operations widely compensate the rigidity of the process, which is highly standardized and automated.

One can say that MOOCs are service factories, but this does not necessarily imply that the customer experience is poor.

The Table 2. summarizes how the three models of higher education differ in terms of attention paid to the five steps suggested by Karmarkar and Karmarkar (2014) to generate a memorable experience to the customers.

Table 2. Higher education models: the five steps to customer experience compared

Rules designing the customer experience (Karmarkar and Karmarkar, 2014)	Traditional higher education	Online learning	MOOCs
1. Identify encounters	Maximum attention paid to the selection of students and then to the delivery of the class. After the end of the course, no specific activity is usually foreseen.	Maximum attention paid to the selection of students and then to the delivery of the contents	No selection, the initial encounter takes place on the social networks. The delivery is central, but it is strictly connected to next activities. Platforms and social networks manages the activities after the delivery, the experience can take place after the end of the course.
2. Focus on stages and links	Links are crucial among sections of the class. Stages are long.	Links are crucial among sections of the class. Stages are long. Design of the class (to make it fruitful and appealing) is more important than delivery.	Stages are very short, a lot of links, really embedded into the learning experience
3. Sequencing	Each good instructor places the most "sexy" contents at the very beginning, to engage, and uses the last sessions for company visits and gaming, to leave a great memory of the course.	Same approaches of the traditional education, but with the constraints of being "virtual", which reduces the chances for interaction among instructors and students	Same approaches of the traditional education, but with the constraints of being "virtual", which reduces the chances for interaction among instructors and students
4. Setting the standard	The quality of the syllabus is crucial, contents are connected to the instructor's reputation. Instructor's reputation raises expectations and can motivate to interact with	The quality of the syllabus is crucial, the instructor's reputation raises expectations, interaction is weaker than the real time class	The ranking of the school increases the perceived value, the quality of the syllabus is still crucial, the instructor's reputation can raise expectations, interaction is weaker than the real time class
5. Customers' involvement	Assignments and group-works, pitches and case discussion are frequently used, but typically located as a portion of the service, whose "core" is the class, with an	Assignments are usually individual, group-works are not frequent, pitches and case discussion are complex to get. The "core" is the online class, with an instructor presenting	Assignments and group-works, meeting-ups and class discussion are stimulated. The co-working is part of the "core" of the class. The instructor does not interact during videos

	instructor interacting with the audience (one to many) and back (many to one). The interaction among students during the traditional class is discouraged (no many to many when professor is in)	and sometimes interacting with the audience (one to many) and back (many to one) through the “chat-room” (synchronous) and the “discussion boards/forums” (asynchronous). The interaction among students during the online class is feasible, not particularly stimulated.	with the audience, it may happens after class/between sections (one to many and many to one, asynchronous). The interaction among students during the class is encouraged (many to many, even when professor is “on air”). Students share more knowledge and personal background. They grade each other.
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It is clear that the two opposites, traditional class and MOOC, leverage on totally different design characteristics. The traditional higher education underlines the quality of the class as a combination of contents “on the edge” and on the instructor’s abilities to perform. The most relevant encounters are before and during class, as after class is not usually a central stage. The design of the syllabus usually tries to benefit the “primacy effect” and places “unpleasant” portions of the contents at central stages, symmetrically far from the two main “pleasant” portions, the start and the end of the class. Co-creation is welcome, but always rigidly planned and handled by the instructors. The professor is the “star” of the play, students must interact with him/her, but he/she discourages students from chatting (and cheating), if not allowed. The instructor is both the actor and the director of the show! Online learning is an intermediate model, it could benefit from many design characteristics that technology process innovation can drive. Yet it is still a limited perspective into what service industrialization may be: it is a way to reduce some costs (maybe), but it still touches a small portion of the “market”, because fees and selection reduce the size of the class. It moves the emphasis from delivery to design, but uses the same “labor factor”, the professors, who may love to satisfy their narcissism in a face-to-face lecture than to dedicate a long time to prepare and record a virtual class. There is usually little attention to what happens after class, and even if the class is not typically a great and memorable experience, because the technology adopted is very basic (recording a class plus some charts and videos), it constrains the instructor’s performance and does not provide the same chances for interaction and students’ involvement as in a face to face class.

The MOOCs’ process design is once again disrupting. There is very little selection at all, although if any, it is because applicants are self-selecting their desired course. There is typically no focus on a single topic, the range of the offering is so wide that anybody can find the content meeting his/her own need. There is no exclusivity in terms of elite brands, any brand is in. The “*word of mouse*” counts more than the alumni associations, and the students’ feedback on social networks will generate the ranking of the top schools, rather than their history or the Financial Times. Professors are important because they perform and act, not because they research and publish. The design of the course is very rigid, the delivery process is highly standardized, but technology is used and pursued to make each single student live his/her own experience. The students’ role is crucial, they co-create the class because they co-create the contents and share their knowledge. Virtually, no limitations persist in terms of age, sex, background, nationalities, education. The more places the students come from the more chances to practice a unique learning experience. Furthermore, if you travel during the MOOC, you can meet classmates everywhere, and every time. Students co-create the course because they even co-grade! They do the oddest side of any professors’ job, and yet they enjoy it.

This is a memorable experience, isn’t it?

6. Conclusions

This study represents an additional contribution to the seminal work started by Baglieri, Zambolin (2012) and Baglieri, Karmarkar (2014) on the convergence between service factory and service theatre as a consequence of the so called *service industrialization* phenomenon. It contributes to better qualify the difference between service quality and customer experience (Baglieri and Croom, 2013).

The discussion in this paper is based on our qualitative observation of the three models of higher education investigated, filtered by our experience as long-term instructors. We are driven by two very specific models, based on the perspective of the “service industrialization” stream of research.

It is not enough to generalize our conclusions, and this methodological constraint represents the real limitations of our paper. Nonetheless, we can argue that:

1. There is an evident weakness in the online learning model, which is the strategic inconsistency: is it a low cost education for a new market or a way to attract the same market segment competing on price? The operational model is consequently an unbalanced mix of technology and people designed having in mind the traditional course as the main product to deliver at a more affordable and convenient way;
2. On campus learning and MOOCs are two completely different services, with totally different strategies and properly differentiated design characteristics. On campus learning can be considered as a very theatre-driven service operations model. The MOOCs are typically factory-driven service operations model;
3. It is hard to say whether on campus learning is more theatrical than MOOC. The latter leverages on the students co-creation of the service and thus can leverage on massive inputs, as many students enroll to the class (usually thousands)! Yet, in a few words, it is clear that even such a service factory as a MOOC is can play (and be perceived) as a theatre, and eventually deliver a very memorable experience.

As discussed by Karmarkar and Karmarkar (2014), customer experience is strongly influenced by many factors, and among them, the impact of digitalization is controversial. Our finding is that digitalization can increase the active role of the customer in the co-creation of the service. Thus, even if employed with the goal of generating a more factory-driven operational model, it can contribute to increase the perception of a positive experience. This phenomenon can paradoxically transform an online learning experience in a more experiential stage than a face-to-face class. Furthermore, the experience increases as more the number of “co-creators” involved increases, a typical effect of positive externality enabled by digital technologies, while in a traditional learning experience, the theatricality of the class is strictly related to a reduced number of participants and to the instructors’ ability to interact with them.

We are now going to compare these two operational approaches in terms of the degree of experience they can deliver and in our next investigation we will try to quantitatively demonstrate that the more the “theatre” moves towards the “factory” adopting digitalization as the key strategy for industrialization of the service production and delivery process, the better it can be in terms of customers’ experience.

The managerial implications of such evidence would corroborate the adoption of those service industrialization strategies based on the design of a factory-driven service operations model, not only to increase efficiency, but, more relevant, to disrupt the current business models.

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