

# Assessing the Performance of a Tourism MOOC Using the Kirkpatrick Model: A Supplier's Point of View

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**Abstract** This paper presents the evaluation methods and results of a pilot tourism MOOC (Massive Open Online Course) called *eTourism: Communication Perspectives*, based on the Kirkpatrick model. It assigned twelve indicators to the model's four levels of evaluation (reaction, learning, behaviour, results). Indicators include: self-efficacy and motivation, satisfaction, relevance, course performance, collaborative learning, higher-order learning, reflective and integrative learning, skills development, post-course practices, corporate social responsibility, public relations, and marketing. With various measurement tools such as pre-, in- and post-course surveys, post-course interviews, and analytics data by the host platform, the paper explains the available data with the twelve indicators and provides meaningful performance assessment for the MOOC. Results show that the MOOC was successful in all four levels according to the twelve indicators. The limitations and the future directions are also discussed at the end of the study.

**Keywords** MOOCs • Massive Open Online Course • Kirkpatrick model • Tourism

## 1 Introduction

Imagine a scenario: your Massive Open Online Course (MOOC) was finished and uploaded online; you shook hands with team members and popped a champagne together, thinking the work was done. Think twice. As suggested by Rodrigo, Read, Santamaría, and Sánchez-Elvira, (2014), since MOOC delivery has become an innovative part of modern education it should also undergo the same type of quality assurance as other eLearning courses. After all, you as a supplier need to know

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whether your MOOC is a success or a failure, worth of a second run or not, demanded or ignored by the online learners, perfect or insufficient in contents.

In 2015, a total of 1,800 new MOOCs were announced online adding the number of MOOCs in the world to 4,200 from over 550 universities; meanwhile, the total number of learners who signed up for at least one MOOC had crossed 35 million (Class Central, 2015). A shocking fact was that between 2012 and 2015, out of 4,745 peer reviewed publications about MOOCs, only 26 papers covered extensively the issue of their quality assessment (Gamage, Fernando, & Perera, 2015). With so many MOOCs produced, the evaluation of such supplies undoubtedly remains in the early stage in the literature.

The settings of hospitality and tourism uncovered a similar situation as above. A preliminary analysis (Lin, Kalbaska, Cantoni, & Murphy, 2016) identified a total of 51 MOOCs between 2008 and 2015, with 23 of them being provided by universities. In the existing literature, only a few MOOC studies focused on hospitality and tourism, with even fewer dedicated to MOOC evaluation (Murphy, Tracey, & Horton-Tognazzini, 2016; Tracey, Murphy, & Horton-Tognazzini, 2016).

This research aimed to answer the following three questions: (1) how to evaluate the performance of a MOOC using the Kirkpatrick model? (2) what indicators can be included during such a process? and (3) is the selected MOOC successful according to the relevant evaluation criteria?

The methodology of this study took a further step, compared to the previous studies related to MOOC evaluation in hospitality and tourism settings, by introducing specific indicators and practical measurements. Results can potentially benefit the future MOOC suppliers when they evaluate the effectiveness of a MOOC of their own.

## 2 Literature Review

### 2.1 MOOC Evaluation

Evaluation can be on different scales and aspects based on various purposes as displayed in Table 1. How to evaluate a MOOC stays an open question and there is no agreed model for conducting MOOC evaluation.

Regardless of different formats of evaluation, in its essence quality is very much the condition that determines how effective and successful learning can take place (Creelman, Ehlers, & Ossiannilsson, 2014). Therefore, measuring the learning inside a MOOC is a critical factor concerning quality. However, due to the mass scale of global audience, MOOC as an innovative educational movement is destined to hold much more dynamic characteristics than a traditional face-to-face class. Downes (2013) claims that the success of a MOOC is process-defined rather than outcomes-defined, and that it should be seen as a vehicle for discovery and experience. Thus, the evaluation mechanism for a MOOC should ideally adopt

**Table 1** Evaluation of MOOCs: cases, aspects, and literature

Evaluation cases	Evaluation aspects	Literature
A single MOOC: overall	Critical thinking skills	Poce (2015)
	Participants' perspectives on MOOC	Cross (2013)
	Learner engagement	Parra (2016)
	Learner motivation	Douglas, Mihalec-Adkins, Hicks, and Diefes-Dux (2016)
	Usability and effectiveness of the blended mode	Yousef, Chatti, Schroeder, and Wosnitza (2015)
A single MOOC: a component	Learning analytics module	Yousef, Chatti, Ahmad, Schroeder, and Wosnitza (2015)
	Discussion forum	Onah, Sinclair, and Boyatt (2014)
Multiple MOOCs	Design quality of moocs	Khalil, Brunner, and Ebner (2015), Rodrigo et al.(2014)
	ICT tools in for teaching	Lesjak and Florjančič (2014)

multiple sources of data to enhance its capability of various cases inclusion, rather than simply considering the completion rate.

In the hospitality and tourism field, defining MOOC failure or success remains a tricky issue (Murphy et al., 2016). Tracey et al (2016) recommended using the Kirkpatrick model as a comprehensive framework to evaluate MOOCs in applied tourism and hospitality settings. They suggested including: self-efficacy beliefs into level 1 criterion, higher level of learning into level 2, participant engagement, participant persistence, pre- and post- course performance comparison into level 3 and cost-benefit model, linking customer engagement and performance outcomes into level 4. However, this brief framework was only a conceptual proposal and they did not apply it to practically evaluate any MOOC. A similar effort was found in another research (Lin, Cantoni, & Kalbaska, 2016), which tried to apply the Kirkpatrick model to evaluate a MOOC by proposing indicators.

## 2.2 The Kirkpatrick Model

The Kirkpatrick model was first introduced by Donald Kirkpatrick in 1954 and became the worldwide standard for training course evaluation after his best-known work *Evaluating Training Programs* (Kirkpatrick, 1975). The model has long been considered one of the most influential models for any kind of training course, formal or informal. Kirkpatrick's model (1994) delineates four levels of training outcomes that successively build upon each previous one: reaction, learning, behaviour, and results. The first three levels examine the effectiveness of training, on individuals while the fourth one explores that at the organizational level.

**Level 1: Reaction.** Reaction was originally used to describe how much participants liked a particular training program and the term evolves along with time to assess trainees' affective responses to the quality (e.g., satisfaction with instructor) or the relevance of training (e.g., work-related utility) (Bates, 2004).

**Level 2: Learning.** The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training (Kirkpatrick Partners, 2016). Measuring learning is important because changes in behaviour cannot occur if learning has not taken place (Bradley & Connors, 2007).

**Level 3: Behaviour.** Behaviour outcomes address either the extent to which knowledge and skills gained in training are applied on the job or result in exceptional job-related performance (Bates, 2004). Essentially, this level's evaluation explores what the individual participants did or did not do once returning to jobs (Bradley & Connors, 2007). It is more challenging and costly to conduct than previous two levels because the involved factors are difficult to be measured directly.

**Level 4: Results.** The degree to which targeted outcomes occur as a result of the training and the support and accountability package (Kirkpatrick Partners, 2016). At this level, it shifts the analysis from changes observed in individuals to the impact on the organization (Bradley & Connors, 2007).

### 3 eTourism: Communication Perspectives

The MOOC to be evaluated by this study is *eTourism: Communication Perspectives*, which was a pilot MOOC provided by *Università della Svizzera italiana* (USI) from Switzerland. First launched on October 5, 2015 on the German MOOC platform iversity (<http://www.iversity.org>), it has lasted for eight weeks with eight chapters of contents. English was its instruction language and the estimated study hours were three to four per week. Eleven staff supported the development. Four instructors and three assistants were collaboratively working on its delivery. This MOOC contained 17 lecturing videos (usually each week one theory video and one case video), 17 video scripts, 16 quizzes matched with videos, eight content-based discussion forums, eight lists of further readings, 21 course announcements, one engagement survey, two platform-generated surveys, one Facebook group, one Twitter hashtag. Learners in the Certificate Track, who paid 49 euros, were able to take the final online written exam, COA exam, any day any time in the given exam period. The exam included 30 multiple choice questions. If the learner passes the exam, she/he will receive a Certificate of Accomplishment with his/her grade on it.

The MOOC attracted the attention of 5,519 global learners from 142 countries. By the end of the course, 7.1% learners completed at least 80% of the course and received a free Statement of Participation.

The completion rate of 7.1% in this MOOC lingers in the range of 5–10% found by other studies (Jordan, 2014; Khalil & Ebner, 2014). If measured by the traditional standard of education success, critics may consider this a failure. However, as aforementioned the completion rate is only one small piece of the iceberg and establishing relevant success measure is critical to organisations adopting and subsequently implementing MOOCs (Murphy et al., 2016).

## 4 Evaluation Methodology

The evaluation of this MOOC sought to review the course data by assigning twelve indicators to the Kirkpatrick model, which were adapted to the need of the evaluation. Multiple sources of data were utilized for evaluation. The host platform provided results from their pre-course survey, post-course survey, as well as course analytics data. In the fifth chapter of this MOOC, an engagement survey was delivered to participants for responses. Meanwhile, individual post-course interviews were invited among the respondents who participated in the engagement survey activity. For the social media consumption data, they were directly retrieved from the involved social media tools Facebook and Twitter. All the data were retrieved after the MOOC went offline. The number of respondents can be found in Table 2.

## 5 Results

### 5.1 Reaction Layer

**Self-efficacy and motivation.** Most learners initially held high level of self-efficacy concerning their ability to dedicate time and complete this course. For example, 80% of them intended to spend 1–5 h on this MOOC. Nearly 87.5% of them planned to finish all or most of the provided lecturing videos. 81.7% considered completing all or most of the course assignments (homework, quizzes, and exam).

Three major reasons encouraged the participants to enrol in this MOOC: personal curiosity, supporting current job responsibilities or company's line-of-business, and being useful for obtaining a new job. The impact of the institute, the instructor, and the friend in the MOOC were found to be little in such decision. Over 82% claimed that

**Table 2** Evaluation methodology based on the Kirkpatrick model

Kirkpatrick model aspects	Indicators	Literature basis	Measurements	No. of respondents
Reaction	Self-efficacy and motivation	Douglas et al. (2016), Tracey et al. (2016)	Pre-course survey (9 questions)	477
	Satisfaction	Kirkpatrick (1975)	Post-course survey (3 questions)	114
	Relevance	Kirkpatrick (1975)	In-course engagement survey (1 question)	216
Learning	Course performance	Kirkpatrick (1975), Tracey et al. (2016)	In-course analytics data: video views; number of posts in forum; quizzes; CoA exam attendance and grades	5,519
	Collaborative learning	Wintrup, Wakefield, and Davis (2015); Tracey et al. (2016)	In-course engagement survey (2 questions)	216
	Higher-order learning		In-course engagement survey (5 questions)	216
	Reflective and integrative learning		In-course engagement survey (5 questions)	216
	Skills development		In-course engagement survey (8 questions)	216
	Post-course practices	Kirkpatrick (1975)	Post-course interviews	9
Results	Corporate social responsibility	Self-developed indicators	Number of subscribers from developing countries and unlikely-to-attend-physical-class groups	Refer to Sect. 5.4 of this study
	Public relations		Visibility of USI in positive contexts: such as number of total subscribers, and media exposure rate (Facebook, Twitter, YouTube); New collaborative projects or materials being reused by others	
	Marketing		Number of new admissions at campus due to the MOOC	

taking this MOOC was mostly due to the consideration of their professional life or academic life.

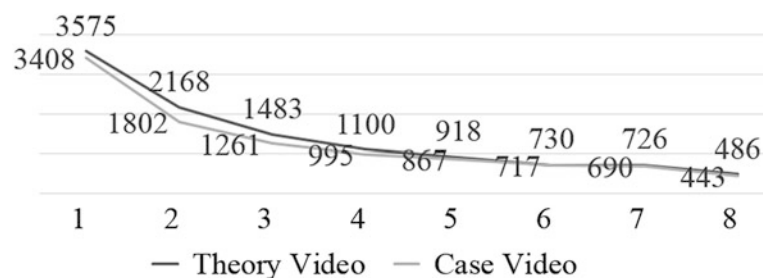
**Satisfaction.** Among 114 respondents to the satisfaction question, 71.9% chose “very satisfied”, 22.8% selected “somewhat satisfied”, and others responded as: neutral (2.6%), somewhat dissatisfied (1.7%), and very dissatisfied (0). The satisfaction rate reached 95.0%. Besides the high level of satisfaction, 88.5% expressed the willingness to take more courses from the same instructors and nearly 86.0% of them were positive about recommending this MOOC to their friends.

**Relevance.** Out of 216 respondents of the engagement survey, 93.6% found the given resources in this MOOC useful and relevant (very often: 54.2%, often: 39.4%, sometimes: 6.9%, never: 0).

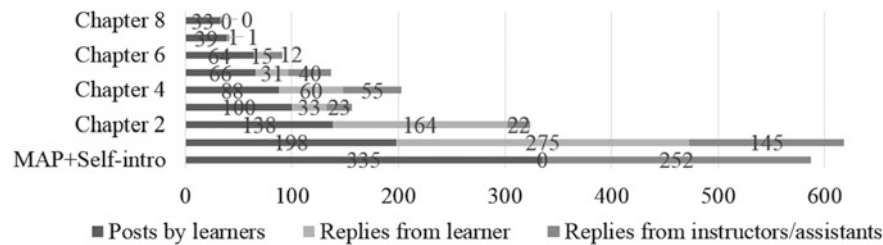
## 5.2 Learning Layer

MOOCs are often heavily based on lecturing videos. These videos, instead of traditional textbooks, become the core medium for knowledge acquisition in MOOCs. The video views of eTourism MOOC continuously dropped over weeks (Fig. 1). The views of theory videos on average decreased from 3,575 views in the first week to 486 views in the final week. Throughout the course, theory videos were in general more popular among learners than the case videos. This difference was more obvious before the fifth week, after which the views on both videos simultaneously decreased.

Nine chapter-based discussion forums in this MOOC provided valuable channel for the participants to communicate with the instruction team and other learners. At the same time, they produced new valuable contents for the course. The first forum invited learners to do self-introduction as a warm-up activity. The remaining eight discussion activities were designed as homework to examine the understanding of learners on each given topic. Learners were required to post their answers to the given tasks in the forums. As shown in Fig. 2, the participation rate in finishing homework declined over chapters. The high level of engagement with the forums



**Fig. 1** Video views by chapter/week



**Fig. 2** Post numbers by chapter

were found in the first four chapters, with active posting and replying from both learners and instruction team. In the final two chapters, the facilitation from the instruction team stopped because of a sudden technical change in forums on the host platform side, which disabled instructors or assistants to reply to learners' posts.

The quizzes data was not usable by instructors in this MOOC, majorly due to the settings of the host platform. Learners were able to have multiple tries in all the quizzes' questions until they reached the right answer. And in the analytics data provided by the host platform, was always simply displayed as 100% success for each quiz. Therefore, the quiz data was not much of a help in this study.

For the CoA exam, although there were eighty learners who were registered, only 37 ones completed it and obtained the Certificate of Accomplishment. The average grade reached 25.4 (out of 30.0) and the lowest score was 17.0 (1 out of 37).

**Collaborative learning.** Out of 216 respondents in the engagement survey, approximately 78.3% never asked another learner for help to understand course materials, and 64.2% of them never explained course materials to others.

**Higher-order learning.** Most participants agreed that their higher-order learning was achieved well through this MOOC. Over 90% stated that they were able to memorise course content, apply facts, theories, or methods to new situations, analyse ideas or theories in depth by examining their parts, evaluate or judge a point of view, decision, or information source. Nearly 98% formed a new understanding from various pieces of the course by different levels: some (20.8%), quite a bit (40.7%), very much (36.1%).

**Reflective and integrative learning.** Over 80% of the 216 participants at least sometimes or more (often, very often) were involved in the following learnings: connected their learning to societal problems or issues (80.6%), examined the strengths and weaknesses of their own views on a topic or issue (88.4%), tried to better understand someone else's views by imagining how an issue looks from his or her perspective (90.7%), learned something that changed the way they understood an issue or concept (94.0%), and connected ideas from the course to prior experience and knowledge (94.4%).



**Skills development.** On average over 90% claimed that they developed—some, quite a bit, or very much—the following skills: thought critically and analytically (94.9%), became an independent learner (94.0%), were innovative and creative (89.8%), developed or clarified personal values (90.3%), understood people of other backgrounds such as economic, racial/ethnic, political, religious, nationality, etc. (91.2%). Meanwhile, more than 76% agreed that in at least some parts of this course they wrote clearly and effectively (83.8%), analysed numerical and statistical information (75.9%), acquired job or work-related knowledge and skills (83.8%).

### 5.3 *Behaviour Layer*

All the interviewed learners (nine in total) expressed that eTourism MOOC was their first MOOC experience and it was so positive that they would like to continue the MOOC experience in the future. A coach from Panama discovered the opportunity of delivering education to African people via mobiles after finishing one homework about evaluating a mobile app, which was developed to educate African youth concerning world heritages preservation in Africa. He said:

One of the things that brought at first on my mind, well, the colours, the look, the feel, were not what I expected. However, I found out that people in Africa they are stunning on mobile devices. Now I am connected to a company who will deliver some education to mobile... For me, it was mind changing that we should not think about only locally, like perhaps the world is obviously similar everywhere. We should take advantage of the whole global economy rather than just local or regional.

Another interviewee had finished master level of education in tourism when taking this MOOC and said that this MOOC delivered very practical experience, which triggered more learning opportunities for her.

[Because of this MOOC,] I finished Ticino Travel Specialist eLearning course and found out a lot more about online education. Now I am studying something from Paris and Hong Kong travel specialists. That is something really good that I can practice all my life after this MOOC. So it was very practical.

A French interviewee served as a coordinator of the promotion service in a destination management organization, specialized in media relations. She shared her experience of a cross-sector collaboration because of the influence of this MOOC.

I had a discussion with a colleague who was taking care of the eTourism reputation for [Ddestination X] tourism. She said to me I don't know what to do on twitter for the [Ddestination X] tourism, can you help me? I was then following the course and said ok we can try. And I will take that account for press, tour operators and tour players. So she said ok I will let you take care of the Twitter account for [Ddestination X] tourism. It helped me to go from one subject to another inside and even outside the team, better communication and collaboration.

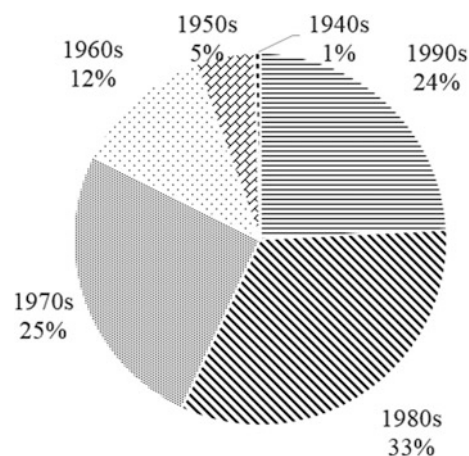
### 5.4 Results Layer

**Corporate social responsibility.** A total of 1,817 participants from 51 developing countries (based on United Nations sources) were attending this MOOC. 339 of them had at least 5% progress in taking the course. Five of them passed the final CoA exam and received Certificate of Accomplishment and they are from Serbia (2), Côte d'Ivoire (1), India (1), and China (1). The top five developing countries where participants were from included: Philippines (308), India (2190), Bangladesh (162), Pakistan (151), and Kenya (95). Besides the coverage of developing countries, another indicator is the number of participants who were not students. According to the demographic survey results, there were 428 non-students, accounting for nearly 70% of the responses. There were more female learners (62.1%) than male learners (37.9%). The majority of learners were of 26–46 years old (82%). The detailed age distributions can be found in Fig. 3.

**Public relations.** When the MOOC went offline, it attracted 5,519 subscribers. Compared to other hospitality and tourism MOOCs, it was the most active MOOC in cultivating social networking channels for better communication (Lin et al. 2016). It had 887 members on its Facebook group and the number is still growing. The course hashtag *#eTourismMOOC* on Twitter received hundreds of tweets under this topic with the potential reach of 20,700. The trailer video of this MOOC received 7,630 views. Besides the social media exposure, this MOOC was also reported in the mass media channels (such as *Il Sole 24 ORE*, *Skopje*, and *teleticino*) and multiple websites (such as *academic-future.com*, or *wn.com*).

Meanwhile, the MOOC's materials were being reused by other universities including Université Sorbonne ([univ-paris1.fr](http://univ-paris1.fr)), CETT-UB Campus de Turisme, Hoteleria i Gastronomia ([www.cett.es](http://www.cett.es)), University of Barcelona ([www.ub.edu](http://www.ub.edu)), and National Research University Higher School of Economics (<https://www.hse.ru/en/>).

**Fig. 3** Number of participants by age group (out of 645 responses)



**Marketing.** Because of the MOOC, the exposure and reputation of the university and its relevant tourism related programs got enhanced. One direct impact was that enrolled participants moved from online classroom to face-to-face classroom at campus. According to the admission office of USI, at least two new admissions were directly generated from the eTourism MOOC as indicated by the required survey.

## 6 Discussions

The Kirkpatrick model's four-level evaluation criteria provided a systematic and effective way to assess the performance of this MOOC as an online training program. Firstly, learners' reactions were dominantly positive regarding motivation before the course, satisfaction after the course, and relevance of the course. Secondly, during the course, it was discovered that the participants' performance dropped along with the progress. A lot of them ceased the course, based on the statistics of the video views and post numbers. However, most of them still held positive attitude to their learning achieved through the MOOC considering the fact that they highly rated their performance in aspects of collaborative learning, higher-order learning, reflective and integrative learning, and skills development. Thirdly, the MOOC opened a new gate to the education for the masses and they confirmed with their own post-course practices that this opportunity encouraged them to carry on with more similar learning experiments online, apply acquired knowledge and skills into daily job and earn new chances at work, and obtain a refreshing view of the global economy by breaking through the local or regional perspectives. Lastly, this MOOC not only helped different individuals enjoy the course and get better in learning or behaviours, but also fed back the three drivers of the provider, *Università della Svizzera italiana*, by serving people from developing countries and at-job workers to develop new skills and update knowledge, created new channels of communications through public promotions in different media sources, and admitted new students to the at-campus academic programs. Overall, *eTourism: Communication Perspectives*, as a pilot MOOC, was considered a success according to the four layers from Kirkpatrick model with twelve indicators assigned in this study.

Besides the evaluation results, two more results about MOOC learners are worth of attention. Based on the fact that over half of learners were non-students and one major purpose for taking the MOOC was connected to professional life and academic life, it was clear that besides fulfilling curiosity, MOOCs also became a tool for adults to seek further education or on-job trainings. With such a precise learning purpose, however, learners displayed an excessive amount of optimism in their learning efficiency on this MOOC. As discovered, the majority of learners set the original goal as finishing the course, but the completion rate of this MOOC actually only reached 7.1%. One important factor underestimated by these learners obviously was the time per se. It seemed that most learners scheduled only 1–5 h for a

course of expected 16–24 h' time commitment. On one hand, it revealed the short tolerance of online learners to the length of the MOOC. On the other hand, it hoisted an alert for MOOC designers that when developing a MOOC, the time commitment should be set carefully in order to provide a more practical learning experience for online learners.

Another interesting finding was that learners were more willing to participate in internal activities mainly discussion-based ones in forums, rather than external activities posted on other social media channels such as Facebook or Twitter. Hereby the border between internal and external activities is set by the criteria of inside or outside the host platform. This finding aligned with the results from previous studies (Alario-Hoyos, Pérez-Sanagustín, Delgado-Kloos, Muñoz-Organero, 2014). The drawbacks of the absence of social networking communities related to a MOOC is that the learners from different periods of attendance cannot communicate with each other, and when the MOOC is over there will be no further communication among the participants even if they are from the same period. The advantage of having all communications within the platform is that it can reduce the information overload for both teachers and learners (Lin et al., 2016).

The limitations of this study are threefold. The indicators assigned to the Kirkpatrick model is self-developed and experimental. Another one is that the relationship among different indicators remained unknown in this study. Thirdly, this study provided a brief evaluation of the whole MOOC, not only as a course but also as a project within the institution; however, there were much more details to explore considering the large amount of available data.

## 7 Conclusions

The Kirkpatrick model is a widely used model for training evaluation. This paper presented the methodology to assess the performance of a Swiss tourism MOOC, *eTourism: Communication Perspectives*, by adopting the Kirkpatrick model. A total of twelve indicators were proposed under the four levels of the original model. Multiple sources of data were used to measure the indicators. The eTourism MOOC was evaluated to be successful, with high number of motivated and satisfied learners, who claimed to have achieved effective learning through the MOOC. The follow-up interviews also revealed positive influence of the MOOC on job-related practices, personal value and learning behaviour changes. The supplier, *Università della Svizzera italiana*, benefited from the production of this MOOC in respect of corporate social responsibility, public relations, and marketing.

One future research direction can be to in-depth investigate the different surveys inside this MOOC, in particular the engagement survey, to understand better about the potential relationships among indicators that have been omitted by this study. Another suggestion is to validate the current indicators and explore more indicators to support the approach of using Kirkpatrick model to conduct MOOC evaluation, and when possible to validate the proposed framework of indicators.

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