# PARTICIPATION AND ACHIEVEMENT IN ENTERPRISE MOOCS FOR PROFESSIONAL LEARNING

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**ABSTRACT**

This paper presents initial results of an empirical study describing participation and achievement in Enterprise MOOCs for professional learning. In a case study, five courses from openSAP, the MOOC offering of SAP SE, with a total sample of n = 9994 have been surveyed. The results indicate a strong solution-market fit for Enterprise MOOCs in the context of professional learning and development. Detailed information about socio-demographics, the educational and professional background, as well as participants´ MOOC experiences are presented. The second focus is on participants´ intentions with regard to their self-set learning objectives and their actual achievement at the end of a course. Results indicate that achievement patterns might provide more reliable performance indicators for Enterprise MOOCs than traditional academic drop-out concepts. Implications for future research are discussed.

**KEYWORDS**

MOOC, digital workplace learning, professional learning, corporate training, openSAP, Enterprise MOOCs

## 1. INTRODUCTION

Massive Open Online Courses (MOOCs) have been a trending topic in online learning and especially in academic education over the recent years. Departing from enormous expectations (like no less than the democratization of the U.S. education sector through instructional technology), academic MOOCs currently might just have overcome what is called the "trough of disillusionment" in the "Gartner Hype Cycle" (White, 2014). Quite a few MOOCs in academia fell short of their self-imposed targets, facing challenges like unsatisfactory completion rates (Jordan, 2014) and questionable instructional quality (Schulmeister, 2013; Margaryan et al., 2015). However, there is a growing body of research on the design of MOOCs, and promising developments to reach the "plateau of productivity" are underway.

In this light, academic MOOC providers like Udacity (Ifenthaler & Schumacher, in press) shifted their offerings away from the ideas of open education toward more business model oriented formats, while the corporate sector itself became aware of the MOOCs. As contemporary workplace learning calls for a reconsideration of the design of learning environments with a special focus on learning technologies (Noe, Clarke, & Klein, 2014), MOOCs can be seen as promising alternative in technology-enhanced professional learning (Littlejohn & Margaryan, 2014). MOOCs are associated with flexible, scalable and measurable knowledge transfer with the opportunity of saving costs and promoting lifelong learning. For professional development, MOOCs can suit the demands of corporations which have to deal with an increasingly complex and rapidly evolving business environment, shortened lifecycles of products and services, and a global stakeholder network in demand for highly topical job-relevant knowledge (Egloffstein & Ifenthaler, submitted). However, there are still very few substantial corporate MOOC initiatives, and little is known about MOOCs in professional learning. Therefore, this explorative study aims to shed light on Enterprise MOOCs by the example of openSAP, with a special focus on participation and achievement.

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# 2. ENTERPRISE MOOCS IN PROFESSIONAL LEARNING

MOOCs are basically online courses with free and open registration that allow for large participant groups via the Internet. According to the different underlying pedagogies, two major categories of MOOCs can be differentiated (Ifenthaler et al., 2015; Tu & Sujo-Montes, 2015): (1) connectivist MOOCs (cMOOCs) focus on collaboration and learner networks. They provide interactive learning environments, foster discussions, peer learning and assessment, and promote autonomy of educational objectives and social network engagement. cMOOCs do not rely on one single platform, but make use of different tools and applications like Twitter, Facebook, YouTube, WordPress, etc. (2) extended MOOCs (xMOOCs), on the other hand, are based on a traditional cognitive-behaviorist approach and focus primarily on scalable content delivery. Typical elements are lecture videos, integrated quizzes and short (mostly multiple-choice) online tests for automated assessment.

Corporate MOOCs mostly follow the xMOOC-model, but can differ from academic MOOCs in various aspects (Egloffstein & Ifenthaler, submitted): (1) They are mostly limited to employees, (2) they are only open within the organization, (3) they may include additional instructional elements (e.g. discussions), and (4) they may include custom-built content. Enterprise MOOCs[1] can be seen as an extension of this concept: Although they also deal with corporate knowledge or product specific contents, they are not limited to a special target group within the organization. Instead, they are open to relevant stakeholders like suppliers, customers, the government, and the general public.

Recent studies indicate that employers tend to have a rather positive attitude towards the use of MOOCs in professional learning (Radford et al., 2014). Likewise, openness as promoted in Enterprise MOOCs was not seen as a hindrance by managers and HR specialists, so that Enterprise MOOCs could be suitable for organized professional development (Olsson, 2016).

# 3. CASE STUDY: ENTERPRISE MOOCS AT OPENSAP

## 3.1 The openSAP University

The openSAP University (available at https://open.sap.com) claims to be the first Enterprise MOOC platform on the market (Renz et al., 2016). Since 2013, SAP SE offers online courses free of charge, providing basic knowledge about product and innovation topics in the area of business and information technology. By making use of the xMOOC format, openSAP enables scalable knowledge transfer throughout its entire ecosystem, including partners and customers. The corresponding platform infrastructure (Xikolo Management System) is hosted and developed by the Hasso Plattner Institute (HPI) based in Potsdam, Germany, which enables business specific technical adjustments and improvements in a co-innovative partnership. Within SAP, a dedicated team is responsible for managing the course portfolio and the platform instance, as well as the course production with all its associated tasks, e.g. instructional design, communication, quality management and operations. The unique execution of these defined processes enables a short time-to-market production cycle and thus a fast distribution of new knowledge to the respective stakeholders.

An overview of the most important official facts and statistics about openSAP is illustrated in Figure 1. Until the second quarter of 2016, 60+ courses have been delivered, excluding repetition of courses, updates and translation to other languages. On the openSAP platform, more than 385k unique learners form over 180 countries and 1.3m course enrollments are registered. More than 50% of the unique learners are located either in India, USA or Germany. Most of the users are professionals (approx. 85%), but only a small amount are SAP internals (approx. 15%).

[1] The term was coined by Clemens Link in establishing the openSAP learning format in 2014

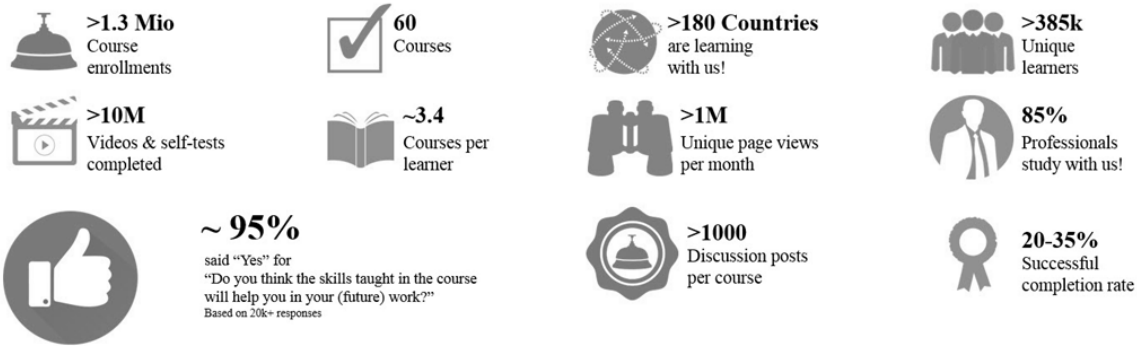


Figure 1. Official openSAP Statistics

## 3.2 Learning Environment and Instructional Design

The openSAP platform provides learning anywhere, anytime on any device. The platform itself is available in five languages to ease navigation and ensure a global reach. The content is mostly produced in English with some exceptions to guarantee a standardized delivery to huge masses. The offering is open to anyone, free of charge and mostly without any needs for previous knowledge. To participate in a course, a registration with a valid email address is the only prerequisite. Although it is possible to download all the course contents, assessments take place exclusively online. In addition, every openSAP course follows a well-defined structure. Thus, courses have a defined start and end date, and the content is divided into several weeks (in average four to six) to provide a guiding structure for the learners. Despite the defined course duration, it is possible to enroll for a course at any given time. Every week, new content is released to keep users in the same learning rhythm. One course week includes various learning elements:

- Video lectures of approximately 15 minutes are released week-by-week throughout the course. Once they have been released, videos can be viewed any time or downloaded for offline viewing. Videos are complemented by elaborate transcripts and subtitles.
- After each video unit, the user has the opportunity to test his or her knowledge. These so-called self-tests are not graded, and they can be attempted several times.
- Wiki pages provide participants with text-based information about the course. They are adaptable for various use cases, e.g. to introduce a demo system used for hands-on exercises, provide a summary of download links or other additional resources.
- At the end of each week, an assessment containing ten questions in a multiple answer or multiple response format is conducted. Participants have 60 minutes in total to answer the questions and only one attempt. To keep users motivated, all assignments have a weekly deadline for submission, so users have to learn continuously. The points collected in these weekly assignments and the final exam add up to the overall course performance.

The suggested average weekly learning time is four to six hours. At the end of each course a final exam about the whole contents is conducted in the same format as the weekly assignments, including more questions which have to be answered within 120 minutes. The overall points of the final exam equal the sum of all weekly assignments. As an alternative option to the final exam, openSAP offers peer assessment as a method for examination in selected courses. This is used primarily if a task cannot be evaluated in a computerized way and thus needs a more complex assessment format.

Participants can earn two kinds of certificates. To obtain a Confirmation of Participation (COP), learners need to work with at least 50% of the given learning materials. To earn a Record of Achievement (ROA), learners need to participate in the weekly assignments and the final exam to collect at least 50% of the overall points available throughout the course. Outside the regular duration of a course, all content remains available, except for the graded assignments, final exams and peer assessments. Thus it is still possible to earn a COP, but one cannot earn a ROA outside the regular course duration. This course status is called self-paced.

Courses are complemented with different additional features like discussion forums to foster exchange between the learners. Course specific weekly announcements help the users to keep track and to stay active over the weeks. Collaboration spaces enable smaller groups to deepen their knowledge on top of the weekly contents. Therefore file sharing, online documents, a discussion board and video chat is implemented into these spaces to enable collaboration among the learners.

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# 4. PARTICIPATION AND ACHIEVEMENT AT OPENSAP

## 4.1 Purpose of the Study

Regardless of their potential benefits, MOOCs in professional learning have not been researched extensively yet. A recent study showed a comparatively low awareness for MOOCs among employers. However, once the concept was acknowledged, potentials for professional and workplace learning were identified (Radford et al., 2014). On the other hand, studies highlight that most employers are unaware of their employees' participation in MOOCs (Castaño Muñoz et al., 2016). Therefore, the purpose of this research is to explore the participation in Enterprise MOOCs, with a special focus on intentions and achievements, leading to the following research questions:

RQ1: Who is participating in Enterprise MOOCs at openSAP?
RQ2: What are participants' MOOC-related experiences and intentions?
RQ3: What are participants' achievements in Enterprise MOOCs at openSAP?

## 4.2 Courses Analyzed

In total, five different openSAP Enterprise MOOCs have been analyzed:

- *"Next Steps in HANA Cloud Platform"* (HC) is a successor of the introductory course "Introduction to HANA Cloud Platform". It comprises of six weeks and ran for the third time (second repeat). The course focused on the product SAP HANA Cloud Platform and how to develop native/HTML5 applications, apply advanced security features and develop widgets on the SAP HANA Cloud Portal. Therefore mainly application developers were targeted with this offering. For additional hands-on exercises, a trail system was provided. The use of this system was not mandatory and had no consequences on participants´ course performance.
- *"Introduction to SuccessFactors Solutions"* (SF) is an introductory course and ran for the first time over four weeks. The course focused on the product SAP SuccessFactors and how the cloud-based solution supports the full HR lifecycle. The course was open to anyone interested and had no specific prerequisites to participate.
- *"Application Development for Business ByDesign"* (AD) is a six weeks´ introductory course and was conducted for the first time. The overall objective of the course was to enable participants to develop add-ons to meet specific business needs for the product SAP Business ByDesign. The target audience included mainly application developers.
- *"SAP S/4HANA – Deep Dive"* (S4) is successor of the introductory course "SAP S/4 HANA in a Nutshell", comprises of four weeks and was delivered for the first time. The purpose of this deep dive course was to look at the product SAP S/4HANA in detail along the customer lifecycle. There were no prerequisites to take part in this course.
- *"Driving Business Results with Big Data"* (BD) is a five weeks´ course and ran for the first time on the platform. The course focused on the topic of big data and what it takes to extract the value from big data, also presenting solutions how to acquire, store, analyze and act on big data. Within the course SAP Rapid Deployment solutions, which help businesses adopt big data solutions and related technology, were presented. The target audience included anyone involved or interested in big data.

## 4.3 Sample and Method

The data from the five openSAP courses has been collected between May and August 2015. Therefore, specifically designed short questionnaires had been coded and linked to the Xikolo learning management platform, so that they could be integrated in the course environment in a seamless manner. The data of the initial survey has been merged with the available achievement data, and a sample of usable data sets was generated. Data was analyzed using Microsoft Excel 2010 and standard procedures of SPSS 23. While the number of responses seems considerably high in absolute terms, the pertaining response rates point towards a limited representativeness of the subsamples. Table 1 gives an overview on the population and the sample of the study.

Table 1. Sample of the Study

| Sample metrics | HC | SF | AD | S4 | BD | Total |
|---|---|---|---|---|---|---|
| Enrollments (half-way) [a] | 5962 | 9620 | 3397 | 18448 | 7993 | 45420 |
| Responses | 687 | 2651 | 581 | 4529 | 1546 | 9994 |
| Response rate (Percentage) | 11.5 | 27.6 | 17.1 | 24.6 | 19.3 | 22.0 |

*Note.* [a] Enrollments half-way describes the number of enrollments after half of the course time including "no-shows". Participants still have the chance to fully reach the course objective (ROA) when starting from that point.

## 4.4 Results

### 4.4.1 Participants (RQ1)

Table 2 shows participant characteristics for the surveyed openSAP enrollments as a percentage of the sample.

Table 2. Participant characteristics as Percentages of the Sample (Total frequencies in Parentheses)

| Characteristic | HC (n = 687) | SF (n = 2651) | AD (n = 581) | S4 (n = 4529) | BD (n = 1546) | Total (n = 9994) [b] |
|---|---|---|---|---|---|---|
| Age group [a] | | | | | | |
| Juniors | 18.3 | 13.4 | 21.9 | 13.2 | 19.5 | 15.1 (1508) |
| Experienced | 74.5 | 79.1 | 70.9 | 76.6 | 71.9 | 76.0 (7600) |
| Seniors | 7.1 | 7.5 | 7.2 | 10.2 | 8.7 | 8.9 (886) |
| Gender | | | | | | |
| Female | 14.6 | 31.2 | 16.2 | 16.2 | 19.1 | 20.5 (2050) |
| Male | 84.4 | 67.7 | 82.8 | 82.8 | 79.7 | 78.4 (7836) |
| Location | | | | | | |
| Americas | 18.9 | 22.5 | 20.7 | 20.2 | 20.0 | 20.7 (2071) |
| Asia Pacific | 40.2 | 43.0 | 40.4 | 40.0 | 37.1 | 40.4 (4039) |
| Europe | 36.7 | 27.6 | 30.5 | 35.4 | 34.6 | 33.0 (3301) |
| Middle East, Africa | 3.2 | 6.1 | 7.2 | 3.5 | 6.9 | 4.9 (492) |
| Academic Background | | | | | | |
| None / other | 6.6 | 6.5 | 6.7 | 6.2 | 6.7 | 6.4 (638) |
| Bachelor's degree | 46.4 | 44.5 | 49.9 | 46.4 | 41.8 | 45.4 (4538) |
| Master's degree | 36.7 | 47.3 | 41.3 | 45.8 | 47.2 | 46.0 (4602) |
| Doctoral degree | 3.2 | 1.3 | 1.7 | 1.3 | 3.9 | 1.8 (180) |
| Professional Status | | | | | | |
| Student | 4.5 | 2.2 | 6.4 | 2.0 | 6.3 | 3.1 (314) |
| Employed | 83,0 | 87,6 | 77.3 | 89.1 | 78.6 | 86.0 (8594) |
| Self-employed | 8.4 | 6.3 | 9.8 | 6.0 | 8.5 | 6.9 (685) |
| Not employed | 3.8 | 3.3 | 5.7 | 2.2 | 6.0 | 3.4 (339) |
| Field of work | | | | | | |
| IT | 66.4 | 63.7 | 65.1 | 64.6 | 61.1 | 64.0 (6392) |
| Not IT | 33.6 | 36.3 | 34.9 | 35.4 | 38.9 | 36.0 (3602) |

*Note.* [a] Age group - Juniors: < 25 ys., Experienced: 26 – 50 ys., Seniors > 50 ys. [b] Missings not presented.

Participant characteristics over the five courses present a consistent picture. The vast majority of participants are in the medium age group "Experienced", and most of them are male. Only the 'SF' MOOC shows a higher proportion of female participants. Geographically, people from all over the world take part in openSAP Enterprise MOOCs, with especially high participation rates from the Asia Pacific region. The vast majority of the participants have an academic background. Concerning professional status, most participants are employees, and mostly working in the IT business.

### 4.4.2 Participants' Experiences and Intentions (RQ2)

Table 3 shows participants' MOOC related previous experiences as well as MOOC related intentions.

Table 3. MOOC-related experiences and intentions as a Percentage of the Sample (Total frequencies in Parentheses)

| Experiences & intentions | HC (n = 687) | SF (n = 2651) | AD (n = 581) | S4 (n = 4529) | BD (n = 1546) | Total (n = 9994) |
|---|---|---|---|---|---|---|
| Previous MOOC experience [a] | | | | | | |
| None | 13.2 | 35.9 | 26.0 | 26.0 | 16.2 | 23.7 (2369) |
| Little | 16.2 | 15.3 | 12.4 | 12.4 | 12.3 | 15.5 (1553) |
| Medium | 41.6 | 30.3 | 32.7 | 32.7 | 39.4 | 36.8 (3678) |
| High | 28.2 | 17.7 | 27.9 | 27.9 | 31.3 | 23.2 (2316) |
| Intended usage context | | | | | | |
| Working time | 22.4 | 26.3 | 23.2 | 28.4 | 19.7 | 25.8 (2577) |
| Leisure time | 61.7 | 56.5 | 57.7 | 55.6 | 65.4 | 57.9 (5788) |
| Travel time | 3.3 | 2.0 | 2.1 | 2.7 | 2.7 | 2.5 (249) |
| Other occasions | 11.5 | 12.6 | 15.0 | 11.7 | 10.9 | 12.0 (1197) |
| Intended learning objective [b] | | | | | | |
| ROA | 86.6 | 85.6 | 80.9 | 85.3 | 85.4 | 85.2 (8519) |
| COP | 6.8 | 7.1 | 10.0 | 8.3 | 7.8 | 7.9 (790) |
| NC | 3.9 | 5.2 | 5.5 | 4.0 | 3.8 | 4.4 (437) |
| N/A | 2.6 | 2.1 | 3.6 | 2.4 | 3.0 | 2,5 (248) |

*Note.* [a] MOOC experience – Little: 1 MOOC, Medium: 2 – 5 MOOCs, High: > 5 MOOCs. [b] Intended Learning Objective – ROA: Record of Achievement, COP: Confirmation of Participation, NC: No Certificate, N/A: Not Available.

Looking at participants' previous experiences and intentions, results are also rather consistent over the courses surveyed. Most participants are aware of the MOOC concept and have relevant previous experience. Looking at the intentions, it becomes clear that participants are expecting to study in the openSAP Enterprise MOOCs mostly in times other than their working hours. As a learning objective, the vast majority of participants are aiming at a full Record of Achievement.

### 4.4.3 Participants' Achievements (RQ3)

With respect to participants' results, completion and achievement rates are displayed in Table 4. Achievement categories were calculated by comparing the intended learning objectives (cf. Table 3) with the actual achievements after finishing the course. When both variables match, participants are categorized as "Achievers". "Underachievers" are participants aiming at a ROA who only achieved a COP or NC, and participants aiming at a COP who only achieved NC – "Overachievers" vice versa. Participants with no intended learning objective N/A were categorized like those not aiming at any certificate (NC).

Table 4. Completion and achievement rates as a Percentage of the Sample (Total frequencies in Parentheses)

| | HC (n = 687) | SF (n = 2651) | AD (n = 581) | S4 (n = 4529) | BD (n = 1546) | Total (n = 9994) |
|---|---|---|---|---|---|---|
| Completion categories | | | | | | |
| ROA | 38.7 | 47.5 | 31.5 | 47.8 | 40.0 | 45.0 (4493) |
| COP | 14.7 | 16.8 | 13.8 | 13.6 | 14.2 | 14.6 (1462) |
| NC | 46.6 | 37.7 | 54.7 | 38.6 | 45.8 | 40.4 (4039) |
| Achievement categories | | | | | | |
| Overachievers | 1.5 | 3.7 | 2.6 | 3.6 | 2.3 | 4.2 (425) |
| Achievers | 54.1 | 45.8 | 58.5 | 45.3 | 53.1 | 49.5 (4944) |
| Underachievers | 41.8 | 48.4 | 35.3 | 48.7 | 41.6 | 46.3 (4625) |

Table 4 shows high completion rates among the surveyed sample.[2] Looking at achievement categories, more than half of the participants in every course reached or excelled their initial objectives. To gain a deeper understanding of the relationship between intended learning objectives and actual achievements, the achievement patterns for the total sample have been depicted in Figure 2.

[2] Not to be compared with course completion rates, which also take "no-shows" into account.

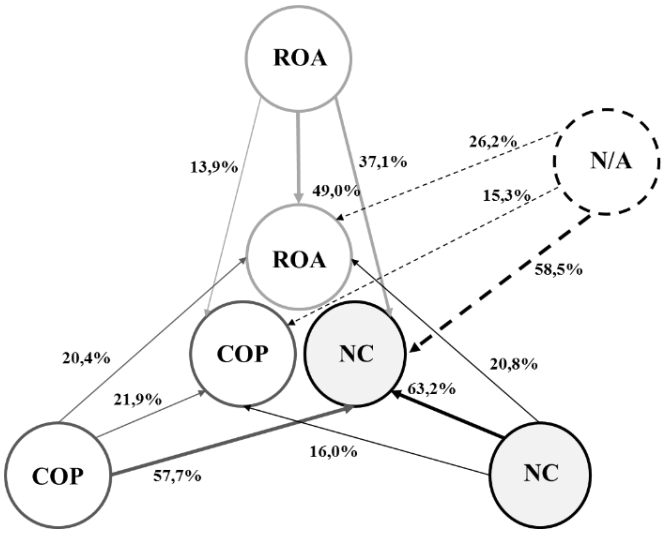


Figure 2. Achievement patterns as transitions between intended learning objectives and achievements. Outer circles symbolize intended leaning objectives, inner circles actual achievement

Figure 2 shows that the highest transition rates relate to the "Achievers" category – with one notable exception, as most of the participants aiming at a COP fail to achieve a certificate.

## 5. CONCLUSION

The study at hand presented initial findings on participants in Enterprise MOOCs, their intentions and achievements by the example of openSAP. Results indicate that Enterprise MOOCs can be a valuable tool for professional learning, especially in technology-oriented domains where a quick access to up-to-date knowledge is crucial. The courses seem to suit the demands of highly educated professionals from all over the world, which is a perfect fit to the scalability of Enterprise MOOCs.

Looking at the intended usage context, it becomes clear that currently MOOCs are not primarily used in digital workplace learning, but rather in off- or near-the-job contexts. As this seems more of an organizational than a technical issue, awareness among employers and responsible HR managers should be raised, so that Enterprise MOOCs can become a fully accepted medium of corporate training instead of just an additional "nice-to-have".

With respect to completion rates, results indicate that academic drop-out concepts do not fit too well within the enterprise context. As participants are looking for highly specific contents with personal relevance and do not want to study in lengthy academic-style courses, course completion rates might not be the best measures here. Analyzing achievement patterns by comparing intended learning objectives and actual achievements might be a first step towards more reliable and realistic performance indicators. As access to content on a granular level is becoming more and more important, additional credentialing with badges or gamification mechanisms (Ifenthaler et al., 2016) should come into effect.

The study also has some shortcomings, most notably a presumed sample bias. Completion rates within the sample are higher than the openSAP average, as users not taking part in the survey could not be included. Thus, achievement results must be interpreted with caution. Likewise, possible differences between the surveyed courses should be taken into account. Nevertheless, the study provides first insights into the relationships between intentions and achievement in Enterprise MOOCs. In future studies, these relationships should be investigated more thoroughly. A combination from additional sample data (e.g. on motivational variables) and system generated performance data (e.g. from learning analytic tools) seems to be a promising approach here. All in all, the learning science perspective (Fischer, 2014) seems equally important to MOOCs in the corporate or enterprise context as it is in academic learning, and much research needs to be undertaken.

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