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MOOCs in tourism and hospitality: a review

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ABSTRACT

Massive Open Online Courses (MOOCs) have grown significantly and globally in less than ten years. However, practices and research in tourism and hospitality MOOCs remain nascent. This study proposes the MOOC Components Framework with six groups of course components: scaffolding, lectures, networking, collaboration, assessment, and affirmation. Drawing on this framework and a case study method, the study analyses 18 tourism and hospitality MOOCs from higher education institutions. The results highlight that: tourism and hospitality MOOC offerings lack diversity; the forum is the preferred communication tool; social media are comparatively underused; the discontinuity of MOOC instructors needs attention; and finally, littless multilingual support is available.

Introduction

As a trendy online education development, Massive Open Online Courses (MOOCs) surfaced in 2008 when University of Manitoba's (Canada) course *Connectivism and Connective Knowledge* went online; over 2000 people from around the globe enrolled and took the course for free (Leontyev & Baranov, 2013). This inaugural MOOC was innovative in using connectivism pedagogy and became the first prototype of a "cMOOC", which encouraged participants to learn from making connection with others and to contribute knowledge in the community. The rise of MOOC platforms, such as *Coursera, edX*, and *Udacity* in 2012, shifted the pedagogy of connectivism to cognitivism and behaviourism. This shift popularized the "xMOOC" format, using interactive media and texts to emphasize individual learning rather than learning from peers.

By 2015, MOOCs had reached over 4200 offerings from more than 550 universities and comprised 35 million learners (Shah, 2016). Yet MOOCs remain an ill-defined term due to challenges such as being an emerging field (De Waard et al., 2014) and a futuristic trend that has yet to mature (Atiaja & Proenza, 2016). Terminology is tricky when trying to describe a new disruptive technology (Conole, 2014). Other definitional challenges include a proliferation of platforms and MOOC diversity (Atiaja & Proenza, 2016). Summative and reflective reviews of MOOC definitions lead to the following proposed definition. A MOOC is a distance education development mainly achieved

Table 1. MOOCs of different subjects on Coursera and edX.

Platform	Keyword	Number of results	Platform	Keyword	Number of results
Coursera	Business	624	edX	Business	373
	Computer	501		Computer	419
	History	167		History	201
	Health	116		Health	137
	Physics	109		Physics	181
	Chemistry	20		Chemistry	42
	Literature	29		Literature	68
	Tourism	6		Tourism	8
	Hospitality	7		Hospitality	7

by self-regulated learning and social interaction, initiated from the open education effort, with the support of diversified digital media, the Internet, and electronic devices, to provide free global mass education (Lin, 2017).

Besides the difficulty of defining MOOCs, MOOC-related research seems in the initial exploration phase and primarily in the education, information technologies, and computer science disciplines (Bozkurt, Keskin, & De Waard, 2016). More MOOC research in multidisciplinary, interdisciplinary, and cross-disciplinary fields, such as in Tourism and Hospitality (T&H), is essential to add promising ground for studying digital learning (Veletsianos & Shepherdson, 2015).

T&H industries contribute significantly to global employment but constantly face challenges due to skills shortages, staff turnover, seasonality, and training (Ryan, Horton-Tognazzini, & Williams, 2016). By opening higher education courses to the public, MOOCs have the potential to remedy the burgeoning tension for fast training in this field as well as help democratize T&H education (O'Mahony & Salmon, 2014). However, offering T&H MOOCs is a rarity. By 2015, there were 51 T&H MOOCs (in English), with 23 of them provided by higher education institutions. A 29 April 2017 search of the two leading MOOC platforms – Coursera and edX – illustrates that T&H is underdeveloped compared to other topics (Table 1).

Furthermore, the studies have yet to detail the overall development of these T&H MOOCs. Therefore, this study aimed to conduct a comprehensive review of the existing T&H MOOCs to benchmark their status and to shed light on the future development of other T&H MOOCs. The following questions guided the research process:

(1) How to examine MOOCs structurally?
(2) What is the status of T&H MOOCs across different MOOC platforms?
(3) What are the commonalities and differences among the T&H MOOCs?

Literature review

As the "Single Most Important Experiment in Higher Education" (Weissmann, 2012), MOOCs are designed and operated mainly by universities from around the world and call for a global scale to attract the public's attention and participation in these free and open courses. From the MOOC providers' perspectives, MOOC instructors can share their expertise and passion in their fields with highly motivated learners at the scale of thousands to even tens of thousands. Instructors can also experiment with different didactic strategies. Universities might enhance their reputations through networking

benefits, engage part-time and distance students, alumni, and local employers (Annabi & Wilkins, 2016), reduce the cost of higher education, explore new business models, and increase shared services (Jansen & Schuwer, 2015). Considering MOOCs' potential benefits and advantages, more and more instructors and universities are building different subject's MOOCs, including T&H MOOCs.

Until now, 16 publications (please see Table 2) across eight conference proceedings/reports, six journals, and two book chapters examined T&H MOOCs. The first T&H MOOC was *Tourism Industry Analysis*, offered on the *Canvas Network* platform by Professor Tadayuki Hara from the University of Central Florida in 2013. Hara, Moskal, Saarinen, and Instructure (2013) reported their experience of teaching this MOOC and the general student performance. In the same year, another conference paper explored the adoption and diffusion of T&H MOOCs (Murphy, Williams, Ryan, Kalbaska, & Cantoni, 2013). Many studies afterwards were still in conferences, discussing topics such as student engagement (Weir, Dale, & Deery, 2014), democratization of T&H education (O'Mahony & Salmon, 2014), MOOC platforms (Lin, Kalbaska, Tardini, Decarli Frick, & Cantoni, 2015), development and evaluation (Lin & Cantoni, 2017; Lin, Kalbaska, & Cantoni, 2016), and blended learning (Murphy, Tracey, & Horton-Tognazzini, 2016). Six articles were in journals: the Journal of Hospitality & Tourism Education (Murphy, Kalbaska, et al., 2014; Ryan et al., 2016), e-Review of Tourism Research (Lin et al., 2016), Journal of Teaching in Travel & Tourism (Deale, 2015; Marchiori & Cantoni, 2017), and The International Review of Research in Open and Distributed Learning (Lin & Cantoni, In press).

Among the journal articles, the research by Ryan et al. (2016) was the only review of T&H MOOCs' development. They provided a snapshot of current MOOCs in the broad T&H discipline through online searching and posting to the Tourism Research Information Network mailing list of more than 2400 T&H academics and professionals. Their results summarized the following information from 30 T&H MOOCs: provider, course platform provider, its latest offer, hours, weeks/modules, and instruction language. However, this list lacked the detailed commonalities and differences among the T&H MOOCs.

Table 2. A summary of tourism and hospitality MOOC publications.

Reference	Publication type
Hara et al. (2013)	Conference proceedings
Murphy, Williams, and Lennox, (2013)	Conference proceedings
O'Mahony and Salmon (2014)	Book chapter
Murphy, Horton-Tognazzini, and Williams (2014)	Conference proceedings
Weir et al. (2014)	Conference proceedings
Murphy, Kalbaska, et al. (2014)	Journal
Murphy, Kalbaska, Horton-Tognazzini, and Cantoni (2015)	Conference proceedings
Lin et al. (2015)	Conference proceedings
Deale (2015)	Journal
Murphy, Kalbaska, et al. (2016)	Book chapter
Lin et al. (2016)	Journal
Murphy et al. (2016)	Conference proceedings
Ryan et al. (2016)	Journal
Lin and Cantoni (2017)	Conference proceedings
Marchiori and Cantoni (2017)	Journal
Lin & Cantoni, In press	Journal

Studies outside the T&H field often reviewed MOOCs of a specific subject or the overall design of MOOCs. For instance, Alario-Hoyos, Pérez-Sanagustín, Cormier, and Delgado-Kloos (2014) proposed a conceptual framework – MOOC Canvas – for supporting educators in the description and design of MOOCs, which was an early effort to shed light on the design of MOOCs. Liyanagunawardena and Williams (2014) collected a list of health and medicine MOOCs by searching MOOC platforms, e-mailing platform managers to obtain official records, and searching two MOOC aggregator sites, *Class Central* and *MOOC List*. They reviewed 98 eligible health and medicine MOOCs, analysing and comparing elements across these offerings. Wong (2015) examined the pedagogic features of 32 education and math xMOOCs on four MOOC platforms – *Coursera, edX, FutureLearn*, and *OpenLearning*. Zhan et al. (2015) collected information of 51 sustainability-related MOOCs. A similar effort resulted from interviewing eight University of Toronto MOOC instructors (Najafi, Rolheiser, Harrison, & Håklev, 2015). Table 3 summarizes the MOOC components and categories reflected by above studies.

Inspired by the academic literature, this study developed the conceptual MOOC Components Framework, constructing six groups of course components to examine MOOCs in depth (Figure 1).

(1) **Scaffolding** components relate to the overall MOOC description, structure, and support.
(2) **Lectures** components refer to the major MOOC teaching components.
(3) **Networking** components enhance course communication and foster an engaging and active learning community.
(4) **Collaboration** components require collaboration among involved parties.

Table 3. Review MOOCs of different subjects.

| Reference	Number of Aspects	Categories	Components
Alario-Hoyos et al. (2014)	11	Available resources	Human, intellectual, equipment, platform
		Design decisions	General course description, target learners, pedagogical approaches, objectives and competences, learning contents, assessment activities, complementary technologies
Liyanagunawardena and Williams (2014)	10		MOOC platforms, language, offering institution, number of instances, duration, time commitment, recognition, prerequisites, qualitative analysis, and target groups
Wong (2015)	6		Course duration, teaching components, types of assessment, lesson flow, types of social interaction, and instructors' participation in online discussion
Zhan et al. (2015)	20		Course goals, syllabi, content outlines, textbooks, reading materials, learning resource elements, pedagogical methods, projects, prerequisites, grading, course length, hours per week, language, subtitle, course level, number of instructors, instructor titles, instructor gender, institute, and country
Najafi et al. (2015)	8	Learning components	Video lectures, readings, guest speakers, and external links
		Assessment components	Quizzes, self-graded assessments, peer-assessment
		Communicative components	Discussion forums
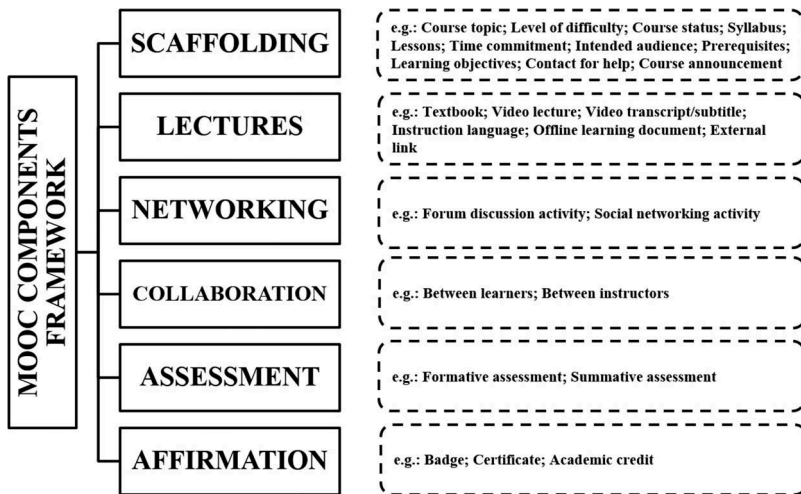
Figure 1. A framework to review MOOCs: MOOC components framework.

(5) **Assessment** components test how well the learners have mastered the topics with: (a) formative assessment during the course to reflect learner development and (b) summative assessment at the end of the course to evaluate course outcomes.

(6) **Affirmation** components encourage and reward the efforts of MOOC learners.

Methodology

This study adopted a multiple case studies approach, "a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information and report a case description and case-based themes" (Creswell, 2006, p.73). A variety of MOOC researches have used case studies to examine: strategic and leadership issues (Marshall, 2013), completion rates (Cisel, 2014), instructional design, instruction and pedagogy (Comer, Baker, & Wang, 2015), learning analytics (Clow, 2013), and blended learning and flipped classrooms (Firmin et al., 2014; Slomanson, 2014). This study considers T&H MOOCs as cases. The scientific inquiry followed the following steps.

Identify higher education institution T&H MOOCs

From March to December 2015, four sources helped identify T&H MOOCs: (a) a MOOC aggregator site – *Class Central* (www.class-central.com), (b) the T&H MOOCs list on the IFITT website (www.ifitt.org/hospitality-and-tourismmoocs), (c) an online search of different MOOC platforms with keywords "tourism", "hospitality", "travel", "restaurant", "hotel", and "cooking", and (d) Google searches combining "MOOC" with the above keywords. The MOOC inclusion criteria were: (a) the start date was before December 2015, (b) accessible during the study analysis period, (c) free to enrol, (d) in English, and, (e) offered by a Higher Education Institution.

Enrol on MOOC platforms

After identifying the MOOCs for inspection, the authors created ad hoc learner accounts on the host platforms for course enrolment and data collection.

Collect, clean, and analyse the data

Browse each MOOC to collect data of the components in the MOOC Components Framework. For information that was unavailable online, instructors of the MOOCs were contacted through e-mail to request the details.

Each MOOC ultimately had its own complete "profile" detailing the six groups of course components. These profiles were read carefully and organized in a spreadsheet for descriptive analysis (Figure 2).

Results

A preliminary overview

Between 2008 and 2015, this study identified 18 T&H MOOCs (Table 4). The first two T&H MOOCs surfaced in 2013: *Tourism Industry Analysis* from the University of Central Florida,

Figure 2. Tourism and hospitality MOOC profiles: From creation to comparison.

Table 4. Tourism and hospitality MOOCs provided by higher education institutions.

ID	MOOC title	Content provider	Platform provider
1	Tourism Industry Analysis	University of Central Florida	Canvas Network
2	Writing American Food	The New School	
3	Innovators of American Cuisine		
4	Projecting Your Brand Through New Media	eCornell	
5	Wonderful Styles of Food and Beverage Around the World	Taylor's University	OpenLearning
6	Introduction to Wines 101		
7	Business of Tourism & Hospitality		
8	Housekeeping Operations 101		
9	Essential Cuisine Techniques		
10	Basic Pastry Making		
11	Introduction to Global Hospitality Management	Cornell University	edX
12	Science and Cooking: From Haute Cuisine to the Science of Soft Matter	Harvard University	
13	World of Wine: From Grape to Glass	University of Adelaide	
14	Food & Beverage Management	Università Bocconi	Coursera
15	The Fundamentals of Hotel Distribution	ESSEC Business School	
16	The Fundamentals of Revenue Management: The Cornerstone of Revenue Strategy		
17	Demand management: Breaking down today's commercial silos		
18	eTourism: Communication Perspectives	Università della Svizzera italiana	iversity

and *Projecting Your Brand Through New Media* from eCornell. In 2015, 8 universities deployed 16 additional MOOCs.

Five platforms – *Coursera, Canvas Network, edX, OpenLearning*, and *iversity* – hosted these MOOCs. American platforms hosted 11 MOOCs. The Australian platform *OpenLearning* was the platform for all six MOOCs by Taylor's University in Malaysia.

Nine universities from six countries offered these MOOCs. Most universities were of relatively high impact in the university world ranking. Taylor's University was the only Asian university providing T&H MOOCs.

A total of 45 unique instructors participated in these 18 T&H MOOCs, with 13 instructors participating in more than one MOOC.

Using the component groups from the MOOC Components Framework – scaffolding, lectures, networking, collaboration, assessment, and affirmation – the following paragraphs share the main study results.

Scaffolding

Tourism or hospitality MOOCs
There were more hospitality MOOCs (79%) than tourism MOOCs (16%) (Figure 3). Half the hospitality MOOCs were about cuisine/food/drink and one-fifth were about hotels. Tourism topics only appeared in three MOOCs: *Tourism Industry Analysis, Business of Tourism & Hospitality*, and *eTourism: Communication Perspectives*.

Learning objectives
Most MOOCs used descriptive paragraphs or bullet points to present learning outcomes, which were usually abstract and not measurable. As an exception, *Introduction to Global Hospitality Management* had good practices. Its learning objectives were a list of
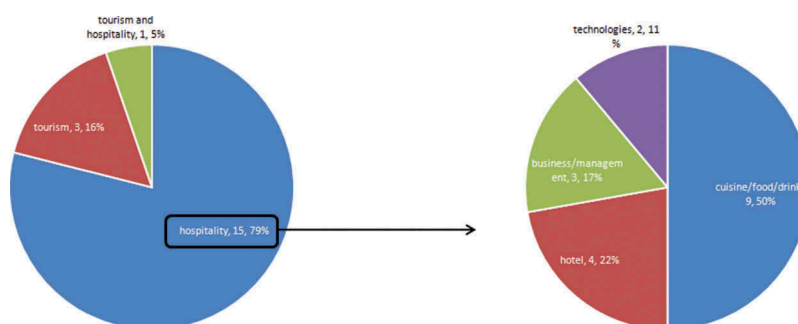
Figure 3. Topic distribution of tourism and hospitality MOOCs (2008–2015).

descriptors in the welcome page and also broken down into lesson-based objectives, which associated the completion of each lesson with measurable learning outcomes across the whole course.

Syllabus and lessons

Most T&H MOOCs (11 out of 18) provided a syllabus at the beginning of the course, formatted either based on the host platform's requirements or developed on their own. In either case, a detailed list or a description of course components was often available in the syllabus.

A MOOC usually contains a series of lessons in modules or weeks. The examined MOOCs had a total of 107 lessons, with an average- 5.9 lessons per MOOC. The number of lessons varied across MOOCs, from 4 to 14. Four- (7 of 18) and six-lessons (5 of 18) were the most adopted structures. In a typical MOOC, one lesson lasts for one week when it is active online; thus the popular course duration for T&H MOOCs was four or six weeks.

Learner requirements

While most MOOCs stated that they were for anyone, three MOOCs clearly specified the expected learners. For instance, one described the course as expecting: destination managers, people active in the tourism industry, policymakers, students (especially within T&H programs), academics, and researchers.

Four MOOCs expressed the preferred learner skills and knowledge for better course engagement. For instance, *Tourism Industry Analysis* mentioned, "knowledge of high school algebra and MS-Excel skills would be very helpful to navigate this course. If you did not have those skills, you can still take this course by pledging to work harder" (http://bit.ly/2BUCuzG). Another MOOC, *Science and Cooking: From Haute Cuisine to the Science of Soft Matter*, noted that, "knowledge of high school physics and chemistry will be useful, but not required" (http://bit.ly/2BRcWTX).

Seven MOOCs suggested learners spend a certain number of weekly hours, usually from three to four, with the MOOC for a successful learning progress.

General communication

A direct contact, such as e-mail, for learner support was rare among the examined MOOCs. On the contrary, every MOOC used course announcements for communications. Among them, five T&H MOOCs sent regular announcements on a weekly basis. The most

active MOOC was *eTourism: Communication Perspectives*, with 21 announcements over eight weeks. Announcements serve different purposes such as welcoming learners, promoting events, guiding the assessment activities, announcing the opening of a new week's contents, summarizing and reflecting, etc. As for summarizing and reflecting, the *Introduction to Global Hospitality Management* instructors quoted learner contributions in the announcements, empowering the course management's one-way communication.

Course discontinuity

Eight MOOCs were ongoing; the ten other MOOCs were archived as self-paced courses. Among these archived MOOCs, three were recurring with active instructor participation and the other seven closed the enrolment and only allowed previously enrolled participants to access the archived content.

Lectures

Videos as textbooks

None of the 18 MOOCs required textbooks; videos replaced textbooks and became the MOOCs' main didactic tool. There was no preferred number of videos. For instance, *Science and Cooking: From Haute Cuisine to the Science of Soft Matter* had 194 videos, while *Housekeeping Operations 101* only had four (Figure 4).

The videos displayed various common presentation styles. Following a list of video styles (Hansch et al., 2015) yielded 13 video presentation styles across the 18 MOOCs: talking head, text-overlay, conversation, on location, animation, picture-in-picture, presentation slides with voice-over, demonstration, Udacity-style tablet capture, interview, recorded seminar, webcam capture, and green screen (Figure 5).

Language and transcript/subtitle

All MOOCs used English as the instruction language and provided English subtitles/transcripts for each video. Only *Food & Beverage Management* provided subtitles in other languages: Italian, Spanish, and Chinese.
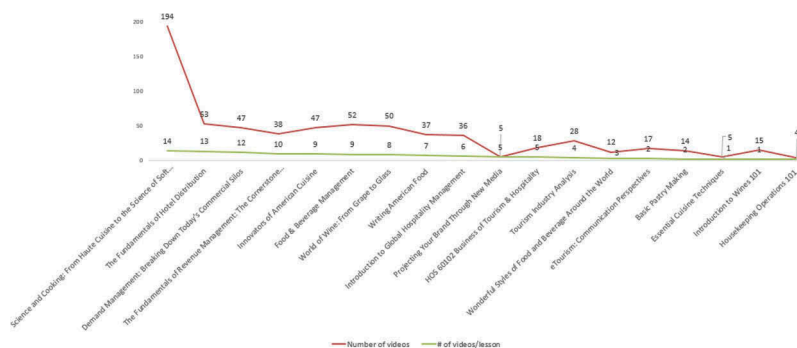
Figure 4. Video statistics for the 18 tourism and hospitality MOOCs.
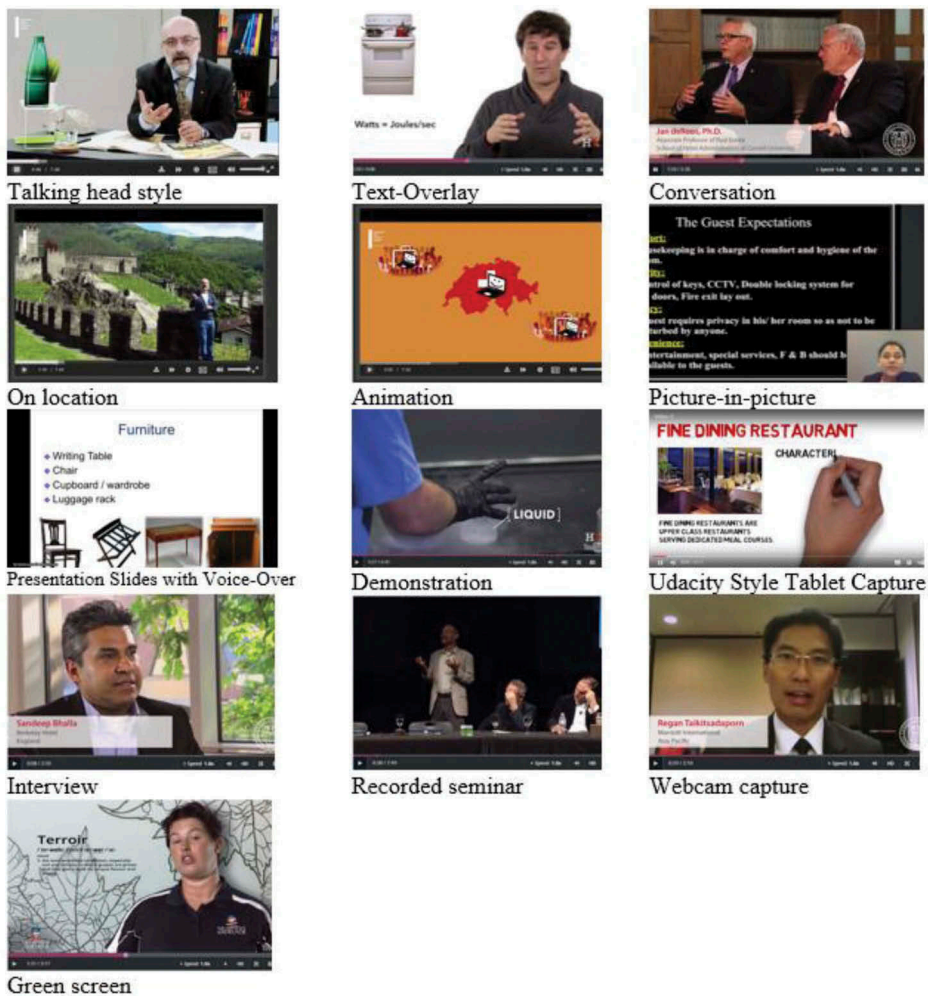
Figure 5. MOOC video presentation styles.

Restricted study mode

All T&H MOOCs appeared to promote an online within-platform study mode, wrapping the learning experiences inside the host platforms, rather than an offline outside-platform study mode. For instance, three MOOCs hosted on *Canvas Network* provided no reading materials for learners to download. Those few documents available for learners to study offline were usually reading materials in PDF, PPT, Word, Excel, or other file formats that supported downloading. Hyperlinks to external resources were as references or optional resources. For instance, *World of Wine: From Grape to Glass* listed external links to resources related to wine apps, wine books, wine sensory websites, and wine regions.

Networking

Forum discussion activity

The forum was the most adopted communication medium in these MOOCs. Six MOOCs had more than 1000 forum posts: *Introduction to Wines 101, Basic Pastry Making, Introduction to Global Hospitality Management, Science and Cooking: From Haute Cuisine to the Science of Soft Matter, World of Wine: From Grape to Glass*, and *eTourism: Communication Perspectives*.

Social networking activity

Other communication channels included social networking tools such as Facebook and Twitter. Four MOOCs used social media. The instructor from *Tourism Industry Analysis* invited learners to friend him on Facebook. *Writing American Food* created a course Facebook page, albeit they closed this page after the completion of the course. *World of Wine: From Grape to Glass* developed two communities: The Wine101X Facebook page received 2168 likes, while its Twitter account published 17 tweets and attracted 286 followers with 12 likes. The most active MOOC in cultivating social networking channels was *eTourism: Communication Perspectives*, with 970 Facebook group members and the number is still growing. The course hashtag *#eTourismMOOC* on Twitter received hundreds of tweets under this topic and at least 90 tweets by learners participating in the MOOC.

Collaboration

Considering the different MOOC stakeholders, collaboration can take place among learners (group work, peer review) and among instructors from the university or industry if invited.

Learner collaboration

The Fundamentals of Hotel Distribution was the only MOOC with collaborative assignments. This 4-week MOOC had a weekly peer-review assignment. The learners submitted their assignments and then reviewed peers' submissions. As a collaboration activity among MOOC participants, this review was also an assessment component. *Introduction to Global Hospitality Management* designed a wiki page in their MOOC but received no learner contribution.

Instructor collaboration

Two MOOCs were one-instructor-show courses; the other 16 MOOCs had from two to eight instructors. Universities produced MOOCs on their own (15 out of 18) or with industry practitioners (3 out of 18), leaving no record of inter-university collaboration to produce a shared T&H MOOC. Three MOOCs with industry practitioners as co-instructors included: *The Fundamentals of Revenue Management: The Cornerstone of Revenue Strategy, Demand Management: Breaking Down Today's Commercial Silos*, and *Essential Cuisine Techniques*.

Assessment

Formative assessment

Quizzes were a common formative assessment across the MOOCs, but the number of quizzes varied significantly. *Science and Cooking: From Haute Cuisine to the Science of Soft Matter* had 129 quizzes. The six Taylor's University MOOCs, on the contrary, had just 12 quizzes in total.

MOOCs had other types of formative assessment. *Introduction to Global Hospitality Management*, for example, had 17 case studies and two word-cloud activities. *Basic Pastry Making* used many "upload your work" assignments to encourage learners to display their cooking assignments. *Science and Cooking: From Haute Cuisine to the Science of Soft Matter* had three self-review assignments. Only one MOOC, *The Fundamentals of Hotel Distribution*, had peer-review assignments. Six MOOCs on the *OpenLearning* platform had 29 nonquiz formative assessments, such as puzzles, document submissions, project submissions, crosswords, and dictionary activities.

Summative assessment

Three MOOCs arranged final exams: *Tourism Industry Analysis, The Fundamentals of Revenue Management: The Cornerstone of Revenue Strategy*, and *eTourism: Communication Perspectives*. Final exams were mainly multiple-choice questions, which required no manual grading. *Science and Cooking: From Haute Cuisine to the Science of Soft Matter*, however, implemented a final project in the course's closing two weeks.

Affirmation

MOOCs usually offer different affirmations to learners who complete the expected progress. For example, *Coursera* offers Statements of Accomplishment for successful course completion, Verified Certificates for formal recognition under Signature Track, and Specialization Certificates for completing a group of related courses. *Openlearning* provides both free badges and free Certificate of Participation to learners. *Canvas Network* has no built-in tool that generates certificates. Instructors usually provide a certificate that students can download upon completion of the course or the institution will send the certificate to students directly. *EdX* offers honour code certificates of achievement, verified certificates of achievement, and XSeries certificates of achievement. On *iversity*, before 2016, the statement of participation was free for learners who finished 80% of the course and the certificate of accomplishment required paying 49 Euros to purchase. However, starting from 2016, even the previously free statement of participation costs 29 Euros.

A total of 11 T&H MOOCs provided formal course certificates – four gave free certificates, whereas seven gave both free and paid certificates. The cost of paid certificates varied from 49 dollars/euros to 150 dollars. No provider granted any academic credit.

Discussions and implications

Diversify the MOOC offerings

This study revealed a skewed distribution of T&H MOOCs across countries, universities, and topics. First, US-based universities and platform providers led in offering T&H MOOCs, consistent with a previous study (Peters & Seruga, 2016). Second, the pioneer T&H MOOC providers were mainly highly ranked universities. One major MOOC innovation is the ability to curate and deliver free content from top universities to the global masses (Ahn, Butler, Alam, & Webster, 2013). In return, MOOCs strengthen these top universities' reputation and possibly profit by selling certificates (Ozturk, 2015). Third, hospitality MOOCs outnumbered tourism MOOCs by four times, and over half the hospitality MOOCs were about cuisine/food/drink and hotels.

One implication of these findings is the need for diversity among MOOC providers. For instance, more universities from developing countries could join the market by sharing their expertise and enriching global conversations. Meanwhile, when considering producing a new MOOC, tourism-related topics need more coverage to balance the imbalance between hospitality and tourism topics.

Level up and increase collaboration

All T&H MOOCs aimed for the beginner level of education, rather than for a medium level or advanced, professional audiences. As research verifies that most MOOC participants have higher education degrees, course content could target those holding academic degrees (Hara et al., 2013; Melicherikova & Piovarci, 2016). Hence, for advanced audience seeking to enhance their topic or subject understanding, these basic T&H MOOCs could be less useful and disappointing.

By positioning themselves as basic educational courses, the design of individual xMOOCs has moved little beyond traditional pedagogical approaches of lecture-based formats (Breakwell & Cassidy, 2013). The T&H MOOCs often followed a similar pedagogy with common components such as video lectures, quizzes, and discussion forums, consistent with another study's findings (Woodgate, Macleod, Scott, & Haywood, 2015). Little collaborative activity was in these MOOCs, such as peer-review or group projects.

Increasing MOOC learner collaboration is highly encouraged considering collaboration's educational benefits and social context. One way to improve student education is to promote mass collaborations, which could improve the MOOC experience and generate collective value from the combined hours and cognitive efforts invested in academic work (Sancho, 2016). Constructivists also argue that collaboration, communication, and versatility are key student expectations today (Brailas et al., 2017).

Academic and industry collaboration should also increase. The T&H curriculum has long focused on occupational skills, though the trend is shifting gradually. T&H educators and industry practitioners are increasingly aware of education, industry, and society's deep interconnectedness. Littlejohn and Watson (2004, p. 412) argue that "the school's role of enhancing employability requires more than providing students with a skill base and educating them in appropriate attitudes and aspirations to guide their career trajectories and industry visions". T&H education must go beyond practical

details and encourage students to think critically, while developing self-awareness, motivation, imagination, and creativity (Ettenger, 2009).

Regarding fulfilling vocational and liberal education's public missions, the T&H MOOCs generally balanced these roles. However, increased collaboration between universities and industry practitioners would increase practical knowledge and cases, especially for the medium/advanced learners, and help cope with T&H's highly practical and evolving industries.

Discontinuity of MOOC instructors

A concern surfaced regarding the high discontinuity of instructors. Most T&H MOOCs were one-time events and afterwards instructors withdrew from them, often leaving upcoming learners unsupported. Scholars have widely discussed MOOC learner discontinuity in terms of dropout and retention rates (Gomez-Zermeno & Aleman De La Garza, 2016; Kim et al., 2017). However, the MOOC instructor discontinuity seems underestimated and under-researched. One reason for the high instructor dropout rate possibly relates to MOOCs' requisite time and effort. A study estimated that "to create one hour's worth of MOOC video-lecture required three to ten hours of preparation" (Hollands & Tirthali, 2014, p. 3), which was more time-consuming compared to traditional online courses. Future studies could conduct both quantitative and qualitative research regarding this phenomenon. In addition, MOOC institutional providers should be more aware of this potential problem and prepare to take over responsibility when necessary to ensure continuity.

Another possible discontinuity reason is that institutional, rather than instructor's, interests were the major motivation of providing MOOCs (Lin & Cantoni, In press). Institutes should provide sufficient support and training to the early adopters' practices, which can help ease the uncertainty and exhaustion of MOOC developers and instructors. Institutions could also credit the instruction time dedicated to MOOC practices as equivalent to their offline work.

Provide multilingual support

T&H MOOCs would benefit from additional multilingual support. Nonnative English speakers face challenges in MOOCs, whose instruction language is English (Koutropoulos & Zaharias, 2015; Mackness, Mak, & Williams, 2010). One MOOC study (Hara et al., 2013) detailed this problem: only 14% of people enrolled were native English speakers, 53% read and wrote English but were not native speakers, and 24% wrote poor English.

Subtitles help participants understand video content. Transcripts act similarly to visualize video lecture content, sometimes, even more so, to enable learners to study the courses without watching videos. In some areas and countries, these options can be critical because of poor Internet connection.

Facilitate social communication

That forums were the preferred communication tool in T&H MOOCs resembles other studies (Alario-Hoyos, Pérez-Sanagustín, Delgado-Kloos, & Muñoz-Organero, 2014). Having all communications within the platform reduces the information workload for both teachers and learners.

By contrast, T&H MOOCs used few social networking tools. Social media such as Facebook, Google+, or Twitter are sometimes useful in MOOCs as a discussion forum's alternative (Alario-Hoyos et al., 2013; Purser, Towndrow, & Aranguiz, 2013). MOOC learners also reported that social networking tools had a positive impact on their social learning (Brownell & Swaner, 2010; Dodge & Kendall, 2004; Kassens-Noor, 2012), and they preferred familiar social media (Veletsianos & Navarrete, 2012).

The lack of social interaction with existing social media tools, combined with the discontinuity of MOOC instructors, can potentially hinder forming an online learning community among MOOC learners. T&H MOOC instructors need proper guidance and support on how to use social tools to facilitate communication, and possibly more importantly, to understand that learners welcome tools that can help improve social learning in MOOCs.

Conclusions

Despite MOOCs' eruptive global growth, T&H MOOCs only started rapid growth in 2015. This study developed the MOOC Components Framework to review six groups of MOOC components – scaffolding, lectures, networking, collaboration, assessment, and affirmation. The framework helped describe, analyse, and compare 18 higher education institutions T&H MOOCs from 2008 to 2015. The results revealed MOOC commonalities, differences, and a need for diverse T&H MOOC offerings. Future T&H MOOCs should consider their difficulty levels to meet the needs of various global learners and provide collaboration opportunities among learners. This study also brings readers' attention to the discontinuity of MOOC instructors, the importance of multilingual support – such as transcripts and subtitles – and underused social media communication in MOOCs.

This study has two major contributions. First, the MOOC Components Framework offers a map to inspect MOOC designs across disciplines, which can guide new MOOC designs or evaluate existing MOOCs. Second, the results and relevant implications can help improve existing and future T&H MOOCs.

The limitations of this study include little discussion about the subject matter and pedagogy of T&H education in a MOOC context. Another study limitation is focusing on T&H MOOCs and excluding MOOCs of other disciplines. A third missing detail is the financial aspect of the T&H MOOCs, which would interest future providers and future researchers.

Following this research, further work can use the proposed framework to describe the curriculum design of a MOOC of their own choice, or modify the conceptual framework by adding more components or categories. Interviews and surveys can be a further step to conduct in-depth research and explore experiences and perspectives of instructors and learners, when dealing with different MOOC components.

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