



## Full Length Article

## Value hierarchy for Massive Open Online Courses

Yu-Ling Lin<sup>a,\*</sup>, Hong-Wen Lin<sup>b</sup>, Tzu-Ting Hung<sup>a</sup><sup>a</sup> Department of Business Administration, National Chin-Yi University of Technology, No. 57, Sec. 2, Zhongshan Rd., Taiping Dist., Taichung 41170, Taiwan<sup>b</sup> Department of Business Administration, National Taiwan University of Science and Technology, No. 43, Sec. 4, Keelung Rd., Da'an Dist., Taipei 106, Taiwan

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## ABSTRACT

With E-learning emerging as an important application for education, Massive Open Online Courses (MOOCs) have further sparked a trend of online higher education learning. In order to explore the target values that learners pursue through MOOCs, this study adopted Means-end Chains theory and laddering interview to examine the structure of MOOCs' "Platform Attribute–Learning Consequences–Terminal Values" through learners' perspective. The study found that through platform attributes of **Rich course contents**, **Real-time discussion platform**, **Video instruction** and **Qualifications**, learners were able to benefit from the learning consequences of **Enhanced understanding of knowledge**, **Facilitation of learning exchanges and interactions**, **Ease of time management** and **Improve competitiveness**, thereby delivering the terminal values of **Fun and enjoyment of life**, **Self-fulfillment** and **Sense of achievement**. The study also took a further step to examine the discrepancies between user groups of different experience and number of courses completed and found that users in different groups emphasized on different attributes. In addition, the study also offered suggestions pertaining to management and education implications. Results of the study should not only enable platform designers to become more effective in the development process but also enable teachers to develop teaching guidelines that will effectively boost learners' motivations so as to further refine the MOOCs learning environment.

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## 1. Introduction

The advancement of Information and Communication Technologies has allowed educators and learners alike to break free from the traditional limitations of time, location and environment for learning. E-learning has the potential to influence higher education around the world in different formats and improve learning quality while lowering the costs of education (Alexander, 2001; Edwards, 2012). The development of E-learning has transformed relevant education, learning and training into a key topic that has received significant international attention (Gilbert, Morton, & Rowley, 2007). According to survey by Docebo (2014), the global value of the E-learning industry amounts to US\$ 35.6 billion in 2011 and is expected to reach US\$ 51.5 billion in 2016. Asia is the biggest contributor with an impressive growth rate at 17.3%, with the region market expected to reach US\$ 11.5 billion by 2016. Consequently, more and more organizations of educational resources around the world have openly shared contents of university courses that are freely

accessible via PCs with internet connection (Robert, Rhoads, & Toven-Lindsey, 2013). Spector (2014) also pointed out in the midst of various emerging formats of education, Massive Open Online Courses (MOOCs), Personalized Learning, and Game-based Learning will emerge as the focus of education in the near future. Nevertheless, these innovative teaching methods must be thoroughly studied and tested in order to verify their corresponding strengths and weaknesses.

The process of learning is sophisticated, with numerous methods and channels of learning at one's disposal (Ozyurt, Ozyurt, Baki, & Güven, 2013). Given the latest trends in education, it would be a worthy endeavor to find out how students actually conduct learning on the Internet (Sun & Hsu, 2013). Presently, in the domains of higher education in the U.S., approximately 1/3 of the students have chosen one or more online courses for learning (Allen & Seaman, 2013). Open education is the principle concept that has enabled MOOCs to develop and thrive because MOOCs are not only unlimited by factors such as finance and physical distance to freely impart knowledge to those who yearn to learn but have also been validated as a superior model of teaching compared to web-based lessons. MOOCs have transformed the traditionally teacher-centered teaching model to a student-centered model of learning (Yuan & Powell, 2013). However, Wolff, Baumol, and Saini (2014) pointed out that the average rate of course completion

\* Corresponding author.

E-mail addresses: [yllin2@ms27.hinet.net](mailto:yllin2@ms27.hinet.net), [yllin@ncut.edu.tw](mailto:yllin@ncut.edu.tw) (Y.-L. Lin), [woodylin34@hotmail.com](mailto:woodylin34@hotmail.com) (H.-W. Lin), [n035635v@hotmail.com](mailto:n035635v@hotmail.com) (T.-T. Hung).

for MOOCs fell at approximately 7%, which suggest that a portion of the learners who have taken the courses were not obliged or motivated to complete their courses. It is recommended that the calculation of course completion rate should exclude sit-in learners and only use standard learners (i.e. those who have actually selected the course) as the basis of calculation. In addition, there are two other potential factors that could have attributed to the low completion rate of MOOCs, namely excessive number of learners and the lack of motivation for course completion (Chafkin, 2013).

In order to create better learning environments to ensure improved learning outcome for learners to create optimal value, it is imperative for developers to understand the needs of learners in order to design popular learning platforms. And as such, the study has adopted the Means-end Chains (MECs) theory that sheds light on the process of cognitive formation for the subjects to examine the most representative platforms of MOOCs such as Coursera, EDX, Udacity and so forth in order to investigate the implicit platform attributes of MOOCs from the perspective of learners and identify the corresponding learning consequences and terminal values for each platform attribute. The hierarchy of “platform attribute – learning consequence – terminal value” constructed based on the finding of this research will not only shed light on the key elements that MOOCs learners emphasize on but also enable one to better understand the correlations between “platform attributes”, “learning consequences” and “terminal values”. Hopefully, the finding of the study will serve as a useful reference for platform designers in their development of platform design and optimized learning environment and educators as a guideline for strengthening learners’ inclination and motivation for learning.

The rest of this paper is organized as follows. In the next section, we review related literatures and studies about MOOC and the MEC theory. Section 3 structuralizes our research methodology consisting of research framework, the subjects participating, the method of data collection, and the analysis methodology. Section 4 summaries and discusses the empirical results. Finally, Section 5 contains our concluding remarks and implication of the study.

## 2. Theoretical framework

### 2.1. Open course ware

In 2001, the Massachusetts Institute of Technology (MIT) announced that the university will make most of its course materials and contents freely available on the internet so that educators, students and interested learners around the world could independently engage in learning and thus acquire knowledge and experience. This was made possible through the program of Open Course Ware as the concept of development (Caswell, Henson, Jensen, & Wiley, 2008; Hirwade & Rajasree, 2013), which in turn consolidated the foundation of Open Educational Resources (OER).

The term OER was initially adopted at the United Nations Educational Scientific and Cultural Organization (UNESCO) forum in 2002. Essentially, it created a new framework of knowledge dissemination and coordination model that offers free information query for learners and users around the world (Çakmak, Özel, & Yilmaz, 2013). In addition, the “Open Learn” concept proposed by the UK-based Open University in 2006 not only consolidated OER’s structure but also continued to offer ample resources for higher education in the midst of OER’s global development, thereby laying the foundation of learning and educational resources for MOOCs (Scanlon, 2014).

In terms of learner population, Coursera, EDX and Udacity have emerged as the three largest MOOCs platform at present (Brahimi & Sarirete, 2015; Breslow et al., 2013; Liyanagunawardena, Williams, & Adams, 2013). With the planning and operation of

different management teams, different course contents, functional interface and service models have been developed for these platforms. These courses cover more than a dozen disciplines, including science and technology, humanities and arts. At present, the most popular MOOCs courses (with the highest ratings) are machine behaviors, behavioral economics, modern and contemporary American poetries and so forth (Brahimi & Sarirete, 2015; Top free classes, 2014). Oliver and Herrington (2001) pointed out that the design of digital learning should encompass learning resources, learning missions and learning support. Therefore, the three platforms (Coursera, EDX and Udacity) have been compared based on the concepts of resource, mission and support with the results presented in Table 1 below. Coursera has the largest and greatest range of courses covering many subjects and areas. As of June, 2015, Coursera had 13 million users from 190 countries enrolled and offered more than 1041 courses from 119 institutions (from <https://www.coursera.org/>).

### 2.2. Massive Open Online Courses

Constructed on a webpage framework, MOOCs allow learners to access free and high quality knowledge and contents of higher education regardless of their educational background and physical locations without being subjected to geographical or time constraints. MOOCs make it possible for tens of thousands of learners to engage in learning at the same time in accordance with their individual learning objectives, knowledge background, skills, interests and needs (Voss, 2013). Depending on their needs, learners may go over the contents repeatedly and practice with tests through MOOCs. This not enables learners to review their learning results and prevent oversights while MOOCs responds in real-time with the correct answers. MOOCs offer significant benefits by inspiring learners to achieve understanding of knowledge and learning results (Gore, 2013).

MOOCs allow learners to perform different operations and as such, they are also referred to as a platform (Parkes et al., 2013). MOOCs provide an interactive learning environment for students, professors and teaching assistants to form social communities centered on courses (Karsenti, 2013). MOOCs make up for the discrepancies in learning for students lacking ideal learning facilities and have become an emerging domain of research (Bansal, 2013). Furthermore, the emergence of MOOCs also led to the formation of new education models, learning examples and commercial models (Wood, 2013). MOOCs not only utilize modern technologies to make online education more interactive than it used to be but also enabled a working model of open, cooperative learning to be achieved earlier than one has anticipated (Audsley, Fernando, Maxson, Robinson, & Varney, 2013). With innovative and enriched virtual learning environment that essentially changed the global environment of education and learning, MOOCs have shaped the

**Table 1**  
Comparison of three platforms (as of June, 2015).

	Coursera	EDX	Udacity
No. of courses	1041*	611**	87***
No. of domains	25	31	7
Instruction format	Short video clips, Online tests, Assignments		
Assessment	Essay questions	Essay questions	–
	Peer assessments	–	–
Social interaction	Online discussion forum	–	–
	Meet Up learning group	–	–

Data Resource:

\* <https://www.coursera.org/>.

\*\* <https://www.edx.org/>.

\*\*\* <https://www.udacity.com/>.

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