Information and Communication Technology for Development: Evidence from MOOCs Adoption

Jie Xiong
University of Nebraska at Omaha, jxiong@unomaha.edu

Abhishek Tripathi
University of Nebraska at Omaha, atripathi@unomaha.edu

Cuong Nguyen
University of Nebraska at Omaha, cdnguyen@unomaha.edu

Lotfollah Najjar
The University of Nebraska at Omaha, lnajjar@mail.unomaha.edu

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Research-in-progress paper

Jie Xiong
University of Nebraska at Omaha
jxiong@unomaha.edu

Abhishek Tripathi
University of Nebraska at Omaha
atripathi@unomaha.edu

Nguyen Cuong
University of Nebraska at Omaha
cdnguyen@unomaha.edu

Lotfollah Najjar
University of Nebraska at Omaha
lnajjar@unomaha.edu

ABSTRACT

As an important catalyst for development, evolution, and transformation, Information and Communication Technology (ICT) has been shaping both developed and emerging areas in the world for years. As the world has embraced the era of the Internet, Massive Online Open Courses (MOOCs) enable students, especially those from emerging economies to attend cutting-edge courses from elite universities for free. However, although much attention has been paid to the status quo of MOOCs, very little research has been conducted on the factors that could affect the adoption of MOOCs among students. We show that MOOCs could be an important factor which effects development, especially in emerging nations. This research-in-progress paper illustrates a theoretical model on the adoption of MOOCs based on the UTAUT model. Future research will be conducted to further understand and verify the model.

Keywords

MOOCs, IT for Development, Technology Adoption, UTAUT

INTRODUCTION

As the second goal of the United Nations Millennium Development (United Nations, 2014), achieving Universal Primary Education is among the most challenging tasks for governments. While in 2011, 57 million children of primary school age were out of school - down from 102 million in 2000- there are still 123 million youth aged from 15 to 24 who lack basic reading and writing skills (Millennium Development Report, 2013). Nevertheless, the United Nations International Covenant on Economic, Social and Cultural Rights of 1966 declares that the right to access higher education should be equally accessible to all (United Nations, 1966). Both public and private sectors have been investing heavily in education. As a key variable to access to human capital, education in its broadest sense is the means through which the aims and habits of a group of people are sustained from one generation to the next (Xiong et al, 2013). In 2012, more than 2 million students obtained a college degree in the USA (United Census Bureau, 2014). In China, after surges college enrollment since 1999, more than 7 million college students graduated in 2013 (Education online, 2014). However, higher education faces several challenges, including education's cost, quality and accessibility.

Recently, higher education institutions are facing challenges and pressures from Massive Online Open Courses (MOOCs) (George, 2014). As a means of delivery of education, MOOCs create a model which makes resources available online for anyone who wants to take a course. This research-in-progress paper presents a research model of evaluating the factors that could make effect to the adoption of the MOOCs among student. As the first step of the research, a preliminary research model is proposed. In this paper a set of variables from IS literature have been identified, which would enable this research question to be answered in the future: **What potential factors affect the adoption of MOOCs by students?**

LITERATURE REVIEW

MOOCs

Before the Internet, distance learning, or e-learning, appears to be the precursor of MOOCs. As George (2014) stated, MOOCs are not new at all. Broadcast radio in 1920s, movies in 1940s, CCTV in 1980s, and Internet in 1990s, all used different approaches for delivering information and knowledge without meeting face to face. From open access to open educational resources, and now to the open online course, there is a growing movement of 'Open' (Yuan & Powell, 2013).

While some scholars promote the use of emerging technology in education (Alexander, 2004), MOOCs also face their own challenges and issues. First, there are many factors that could affect the motivations of learners. Although allowing students to participate in online discussion boards is considered a good pedagogical method (Bonk et al., 2001), students' motivation to participate is essential to the success of online learning (Chen, 2010; Xie et al., 2006). Secondly, human interaction in MOOCs is completely different, when compared with traditional courses. Xu and Jaggars (2013) determined that within the community college setting, there is no significant difference between online and face-to-face student outcomes. However in another study from the same research team, 32% of students failed or withdrew from for-credit online courses, compared with 19% for equivalent in-person courses (Fowler, 2013). Third, MOOCs face assessment and credit issues (Yuan & Powell, 2013). Evaluations of students who are enrolled in MOOCs are usually based upon multiple-choice questions. Fourth, it is hard to verify whether the student who registers for the course is the person who is taking the course. Hoxby (2014) contrasted nonselective postsecondary education (NSPE), in which institutions sell somewhat standardized educational services in return for up-front payments, and highly selective postsecondary education (HSPE), in which institutions invest in students in return for repayments much later in life.

On the other hand, developing counties such as China and India do not have enough higher education opportunities, compared to the United States. The lower barriers to student entry and ubiquitous setting of MOOCs provide an alternative way for emerging states to catch up with education.

Human Capital

Human capital began its own revolution began in the 1950s and early 1960s with the research of Schultz (1961), Mincer (1958), and Becker and Chiswick (1966). The current era places much greater emphasis on the importance of knowledge and information to the development of both countries and individuals (Becker, 2011). The concept of human capital describes how added value serves to either lower economic costs, or to elevating customers' willingness to pay (Porter, 1985, p. 394). The term "human capital" for the purposes of this paper describes how changes in a person's skills and capabilities enable that person to behave in new ways, or to make different sets of choices (Coleman, 1988). Human capital may also be described as the set of competencies and commitments of the people within an organization (Ceridian, 2007).

Information Technology Adoption

There are several existing models which illustrate Information Technology Adoption and Acceptance. Venkatesh, et al. (2003) identify these models: Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1972), Technology Acceptance Model (TAM) (Davis,1989), the Motivational Model (Davis et al., 1992), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT).

Venkatesh et al. (2003) introduce the Unified Theory of Acceptance and Use of Technology (UTAUT). The Venkatesh model proposes that four key constructs - performance expectancy, effort expectancy, social influence, and facilitating conditions - are direct determinates of usage intention and behavior (Venkatesh et al., 2003). Gender, age, experience, and voluntariness of use are posited as mediators of the impact of the four key constructs on usage intention and behavior (Venkatesh et al., 2003).

Development

The concept of Development has its roots in the economics of the firm. Schumpeter (1934) defined development as "the interruption of the business cycle". Development is often used to describe growth in organizations and in the regions in which they reside. Development has been understood as an economic phenomenon which may lead to better livelihoods. Some have regarded the main purpose of development to be a way to spread freedom and its "thousand charms" to the citizens (Sen, 1999). Development is a concept which is considered both theoretically and politically, and is inherently both complex and ambiguous (Summer and Tribe, 2008). As the second goal in the United Nations Millennium Development (United Nations, 2014), achieving Universal Primary Education is among one of the most challenging tasks for governments. Thus, it is also considered to be the development.

RESEARCH MODEL

Based on the literature review, an initial research model was developed. Performance expectancy, effort expectancy, social influence, and facilitating conditions are identified to be the most important factors that could lead to the adoption of the MOOCs among students. Figure 1 suggests the Initial Research Model.
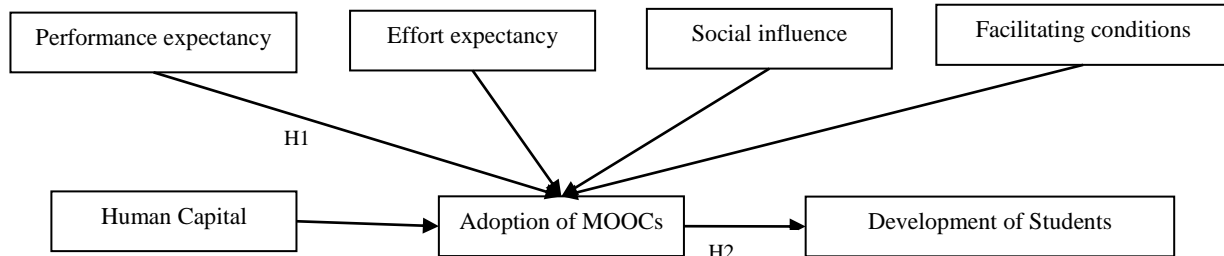

Figure 1. Initial Research Model

Based on the research model. Two hypothesizes were developed to further investigate the research question.

H1: Performance expectancy, effort expectancy, social influence, facilitating conditions, and human capital will make a positive impact on the adoption of MOOCs.

H2: Adoption of MOOCs will make a positive impact on the development of students.

RESEARCH METHOD

This research will follow a quantitative research method to further test the two hypotheses which were proposed. A questionnaire will be developed based on the literature review and on the initial research model. Once the study is approved by the institutional review board (IRB), students will be invited to finish the questionnaire.

Once the data is collected, regression analysis will be applied to examine the relationships between the independent constructs with the adoption of MOOCs. Factor analysis will be conducted in the second stage of data analysis.

CONCLUSION

As an initial research model, this project was proposed based upon the literature review to further answer the research question **What could be the potential factors affect the adoption of MOOCs by students?** Performance expectancy, effort expectancy, social influence, and facilitating conditions which are originally from UTAUT model is utilized. Human capital is also identified as important factor that could make effect to the adoption of MOOCs. On the second stage of the study, the relationship between the adoption of MOOCs and development of students will be further studied.

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