

## Association for Information Systems AIS Electronic Library (AISeL)

---

MWAIS 2014 Proceedings

Midwest (MWAIS)

---

5-15-2014

# Information and Communication Technology for Development: Evidence from MOOCs Adoption

Jie Xiong

*University of Nebraska at Omaha*, [jxiong@unomaha.edu](mailto:jxiong@unomaha.edu)

Abhishek Tripathi

*University of Nebraska at Omaha*, [atripathi@unomaha.edu](mailto:atripathi@unomaha.edu)

Cuong Nguyen

*University of Nebraska at Omaha*, [cdnguyen@unomaha.edu](mailto:cdnguyen@unomaha.edu)

Lotfollah Najjar

*The University of Nebraska at Omaha*, [lnajjar@mail.unomaha.edu](mailto:lnajjar@mail.unomaha.edu)

Follow this and additional works at: <http://aisel.aisnet.org/mwais2014>

---

### Recommended Citation

Xiong, Jie; Tripathi, Abhishek; Nguyen, Cuong; and Najjar, Lotfollah, "Information and Communication Technology for Development: Evidence from MOOCs Adoption" (2014). *MWAIS 2014 Proceedings*. 5.

<http://aisel.aisnet.org/mwais2014/5>

This material is brought to you by the Midwest (MWAIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MWAIS 2014 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# Information and Communication Technology for Development: Evidence from MOOCs Adoption

Research-in-progress paper

**Jie Xiong**

University of Nebraska at Omaha  
[jxiong@unomaha.edu](mailto:jxiong@unomaha.edu)

**Nguyen Cuong**

University of Nebraska at Omaha  
[cdnguyen@unomaha.edu](mailto:cdnguyen@unomaha.edu)

**Abhishek Tripathi**

University of Nebraska at Omaha  
[atripathi@unomaha.edu](mailto:atripathi@unomaha.edu)

**Lotfollah Najjar**

University of Nebraska at Omaha  
[lnajjar@unomaha.edu](mailto: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 countries 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.

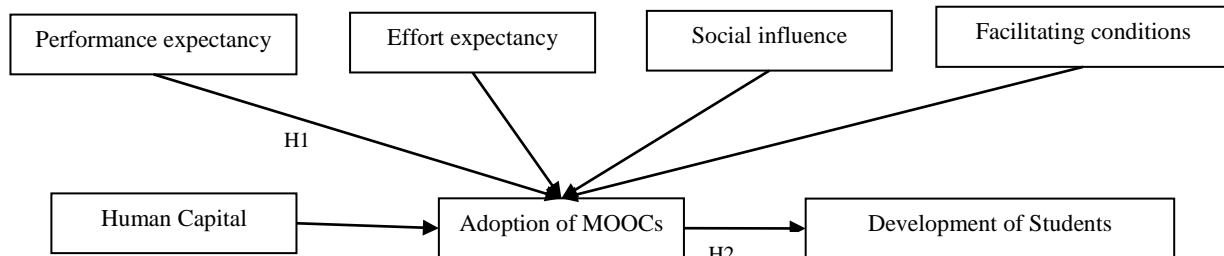


Figure 1. Initial Research Model

Based on the research model. Two hypotheses 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.

## REFERENCES

1. Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour. Prentice-Hall, Englewood Cliffs, NJ.
2. Alexander, B. (2004). Going nomadic: Mobile learning in higher education. *Educause review*, 39(5).
3. Becker, G.S. and Chiswick, B.R. (1966) Education and the Distribution of Earnings. *American Economic Review*, 56: 358-69
4. Bonk, C. J., Kirkley, J. R., Hara, N., and Dennen, V. (2001). Finding the instructor in post-secondary online learning: Pedagogical, social, managerial, and technological locations. J. Stephenson (Ed.), *Teaching and learning online: Pedagogies for new technologies* (pp. 76-97). London: Kogan Page.
5. Brcker, G.S. (2011) Foreword. *The Oxford Handbook of Human Capital*. Oxford University Press.
6. Ceridian UK Ltd. (2007) Human Capital White Paper Retrieved on September 17, 2012 via [http://www.ceridian.co.uk/hr/downloads/HumanCapitalWhitePaper\\_2007\\_01\\_26.pdf](http://www.ceridian.co.uk/hr/downloads/HumanCapitalWhitePaper_2007_01_26.pdf)

7. Chen, K.-C., and Jang, S.-J. (2010), 'Motivation in Online Learning: Testing a Model of Self-Determination Theory'. *Computers in Human Behavior*, vol. 26 no. 4, 741-752. doi:10.1016/j.chb.2010.01.011.
8. Coleman, J.S. (1988) Social Capital in the Creation of Human Capital *American Journal of Sociology*, Vol. 94, Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure (1988), pp. S95-S120
9. Davis, F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly* 13(3): 319–340
10. Davis, F. D., Bagozzi, R.P., and Warshaw, P.R. (1989) "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Management Science* (35:8), 1989, pp. 982-1002
11. Education online (2014) Retrieved via <http://www.eol.cn/html/c/2014gxbys/index.shtml> on March 1, 2014
12. Fowler, G. A. (2013) An Early Report Card on Massive Open Online Courses *The Wall Street Journal* Retrieved via <http://online.wsj.com/news/articles/SB10001424052702303759604579093400834738972> on March 1, 2014
13. George, Joey F., "The Future of Higher Education in the U.S.: MOOCs, a Case in Point" (2014). AIS Success Strategies Webinars. Paper 8. [http://aisel.aisnet.org/success\\_strategies/8](http://aisel.aisnet.org/success_strategies/8)
14. Hoxby, C. M. (2014). The Economics of Online Postsecondary Education: MOOCs, Nonselective Education, and Highly Selective Education (No. w19816). National Bureau of Economic Research.
15. Millennium Development Report, (2013) Retrieved via <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2013/English2013.pdf> on March 1, 2014
16. Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance* New York: Free Press.
17. Schultz, T.W.(1960). Capital Formation by Education. *Journal of Political Economy*, 68(6): 571-83
18. Schumpeter, J.A. (1932) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle* NJ:Transaction Publishers
19. Sen, A.K. (1999) *Development as Freedom* Anchor; Reprint edition
20. Summer, A. & Tribe, M.A (2008) *International development studies : theories and methods in research and practice* London ; Thousand Oaks, Calif. : Sage, 2008.
21. United Nations (2014) Retrieved via <http://mdgs.un.org/unsd/mdg/Default.aspx> on March 1, 2014
22. United Nations (1966) *International Covenant on Economic, Social and Cultural Rights* Retrieved via <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx> on March 1, 2014
23. United Census Bureau (2014) Enrollment Status of the Population 3 Years Old and Over, by Sex, Age, Race, Hispanic Origin, Foreign Born, and Foreign-Born Parentage: October 2012 Retrieved via <http://www.census.gov/hhes/school/data/cps/2012/Tab01-01.xls> on March 1, 2014
24. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 27(3).
25. Xie, K., Debacker, T. K., & Ferguson, C. (2006). Extending the traditional classroom through online discussion: The role of student motivation. *Journal of Educational Computing Research*, 34(1), 67–89. doi: 10.2190/7BAK-EGAH-3MH1-K7C6
26. Xiong, J., Qureshi, S. & Najjar, L (2013) The Role of Human Capital in Information and Communication Technology Adoption for Development: Evidence from China *2013 Pre-ICIS Workshop of the AIS SIG on ICT & Global Development (GlobDev)* Milan, Italy, Dec, 2013
27. Xu, D., & Jaggars, S. S. (2013). The impact of online learning on students' course outcomes: Evidence from a large community and technical college system. *Economics of Education Review*, 37, 46-57.
28. Yuan, L., & Powell, S. (2013). MOOCs and open education: Implications for higher education. Cetus White Paper.