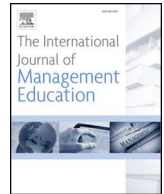


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

The International Journal of Management Education

journal homepage: www.elsevier.com/locate/ijme

Online business education research: Systematic analysis and a conceptual model



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ARTICLE INFO

Keywords:

Online education
E-learning
Blended education
Synchronous learning
Asynchronous learning

ABSTRACT

The growth of online education has become a global phenomenon driven by the emergence of new technologies, widespread adoption of the Internet, and intensifying demand for a skilled workforce for a digital economy. Online education is no longer a trend; it has become mainstream. This paper explores authorship, coverage, currency, context, scope, theories, frameworks, and key themes through a systematic review of 60 business education journal articles published since the year 2008. Through detailed content analysis, we provide useful recommendations for researchers and practitioners working in academia, industry, or government. We articulate an emerging conceptual model of interactions between diverse entities and stakeholders in the online education industry with special reference to tertiary business discipline. This model will certainly be applicable with minor changes to other disciplines and other levels of education—primary and secondary. We recommend that this model be tested by researchers using appropriate research methodology.

1. Introduction

The ubiquity of information technology has impacted almost all aspects of our lives: the way we work, live, drive, entertain ourselves, interact with others, process, analyze, and share information. E-evolution or e-revolution (Palvia, 2013) has witnessed e-mails, e-commerce, e-government, and now e-education. E-education, or online education, is changing the way we approach teaching and learning. Changes in education delivery models have been profound and have generated huge interest among researchers, educators, administrators, policymakers, publishers, and businesses. The current form of online education started in the 1990s with the advent of the Internet and World Wide Web and continued to develop as information and communication technologies advanced and became more sophisticated.

Dziuban and Picciano (2015) describe the evolution of online education in four phases. The first phase began in the 1990s when universities like Penn State World Campus and University of Maryland College, that already had well-established distance learning programs, were able to quickly adapt their programs for online delivery leveraging the capabilities afforded by the Internet. During this time, the University of Phoenix also entered the online education market and soon became a key player. The demand for online programs continued to grow, and by 2002 approximately 1.6 million students in the U.S were enrolled in at least one online course

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<https://doi.org/10.1016/j.ijme.2018.11.002>

Received 29 August 2018; Received in revised form 25 October 2018; Accepted 5 November 2018
1472-8117/ © 2018 Published by Elsevier Ltd.

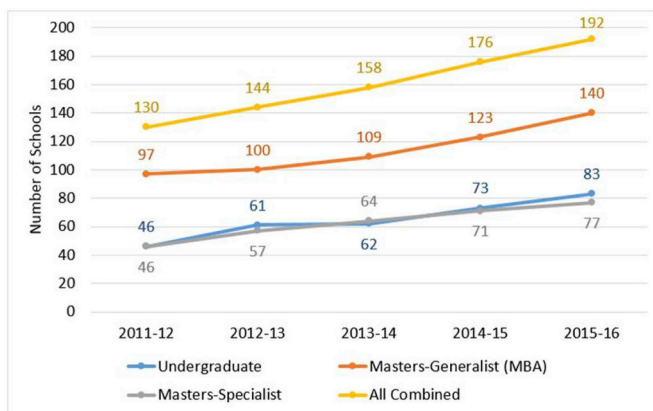


Fig. 1. Growth in number of schools offering online degree programs from 2011 to 2016. (Source: Nelson, 2016 <http://aacsblogs.typepad.com/dataandresearch/2016/10/index.html>).

(Allen & Seaman, 2016). The **second** phase of online education (2000–2007) saw tremendous growth in enrollment - the Babson Survey Research Group estimated that by 2008 there were approximately 4.6 million students in the U.S enrolled in at least one online course. Dziuban and Picciano (2015) refer to the **third** phase (2008–2013) as the MOOC phenomenon, when a new model of online education called “MOOC” (Massive Open Online Courses) evolved. The MOOCs are a different model of online education, where the goal is to offer online education at a large scale with no or very little cost to students. Several MOOC platforms, like Udacity, Coursera, and EdX, emerged. The period after 2012 is called the **fourth** phase – during this time online education enrollments continued to grow outpacing traditional higher education enrollments. According to the Babson Survey Research Report (Allen & Seaman, 2016), by Fall of 2013, one in every eight students enrolled in college and universities in U.S was studying completely online, and one in every four students took at least one online course. Babson Survey Research Group's latest report (Seaman, Allen, & Seaman, 2018) states that enrollments in distance education programs have continued to increase despite the decline in enrollments in higher education. By 2016, there were more than 6 million students in the U.S enrolled in at least one distance education course, representing 31.6% of all students. The report also highlights that online and distance education is not limited to graduate education; in fact, there are nearly five times as many undergraduate enrollments (4,999,112) compared to graduate enrollments (1,022,993) among students taking at least one online course.

To address the changing needs of students, an increasing number of business programs are incorporating online and blended education in their undergraduate, graduate and executive education programs. Recent survey data shows that business administration remains the most popular discipline for online graduate programs (Friedman, 2016). AACSB data collected from 521 accredited schools representing 36 countries, shows that there is an increase in the number of schools offering fully online degree programs at all levels (Nelson, 2016). According to the report, the proportion of schools offering online degrees increased from 25 to 37 percent in the past five years. While online MBA programs continue to grow, a significant increase (more than 67 and 80 percent increase) is seen at the online specialized graduate and undergraduate levels. Fig. 1 below shows the growth in the number of schools offering online degree programs from 2011 to 2016.

According to AACSB International, based on their 2014-15 Business School Questionnaire, 13.4% of member schools provide fully online bachelor degrees compared to 7.6% in 2009-10 and many schools are planning to expand their online offerings in the coming years.

This rich and diverse history of online education has produced a substantial body of research, examining different aspects of online education. Research related to online business education was initiated in the 1990s by IS researchers like Alavi and Leidner, focusing on technology-mediated learning (Alavi, 1994; Alavi & Leidner, 2001). In recent years, many conferences and journals have had themes and special issues focusing on online education. Our paper examines and critically evaluates the extant research on online education in business disciplines in an effort to synthesize existing research findings, identify topics and themes that have interested researchers, methodologies that have been used, and explore gaps in current research that may provide future opportunities for research.

The paper is organized as follows. First, we discuss the scope and importance of this study highlighting the current gaps in online business education research that this study aims to address. Then we describe the methodology used to systematically analyze existing research. Finally, we discuss our findings and provide recommendations for future research based on a conceptual model.

2. Importance and scope

The purpose of this study is to do a comprehensive systematic review of research on the theme of online tertiary level business education to identify common themes, trends, methods, and future directions for research. As an increasing number of business schools and programs offer online and blended learning options, it is important to critically examine and reflect upon the findings of extant research. This review will help us summarize what we have learned about program or course design, pedagogical practices,

student learning and what gaps exist in the literature that can be addressed in future research. Although the research on online business education started in the 1990s, very few studies have conducted a systematic review or meta-analysis of previous research. Only one set of researchers – Arbaugh et al. (Arbaugh et al., 2014, 2009; Arbaugh, Rau & Desai, 2010) have done a comprehensive review of research related to online and blended learning in business disciplines. Arbaugh et al. (2009) reviewed 182 articles on blended and online learning published in business journals between 2000 and 2008. The review included research from business disciplines such as Management, Finance, Information Systems, Accounting, Economics, Marketing and Supply Chain. The authors found that even though there had been a significant increase in research in online business education between 2000 and 2008, the research was uneven within the business disciplines. Most of the research was conducted in IS, Management, and multi-disciplinary fields. The authors also noted that most of the articles reviewed focused on either comparative studies or studies examining factors influencing course outcomes. The findings suggest that learning outcomes in online courses were comparable to face to face courses. Additionally, the study identified many gaps in research up to 2008. The second article of this study (Arbaugh, Rau, & Sridhar, 2010) examined 75 articles related to management disciplines and reported that more research is published in disciplines like Organizational Behavior and Strategic Management compared to Human Resources, Operations Management and International Management. The study also identified several areas for future research. The third article from the study (Arbaugh, 2014) reported a review of 60 articles specifically focusing on blended education. Based on the review authors presented three key findings: **First**, blended learning is viewed more positively than online education. **Second**, students' attitudes towards technology may be more influenced by peers, rather than through online courses. **Third**, learner control is more prominent in blended learning formats. The prominent research topics were comparative studies examining learning outcomes in online and blended formats, course design considerations and effectiveness for different blended formats, and students' attitudes and usage of technology. The author notes that most of the studies reviewed in this paper used the Technology Acceptance Model (TAM) to assess participants' attitude and satisfaction with technology. The author identified many gaps in research and suggested opportunities for future research.

Given the current trends in online business education, our study is both timely and significant for several reasons. **First**, since only one study, led by the same researcher Arbaugh, has conducted a review of online business education research, our study will help advance research in this area. **Second**, our study goes beyond the year 2008 covering up to 2016, which is crucial since most online innovations and proliferation have happened since 2008. **Third**, it is a structured global study covering all parts of the world and provides a broader perspective of the state of online education research in business. The study includes data from five regions of the world—North America, Europe, South America, Asia, Asia-Pacific, and Africa. **Finally**, our study helps in understanding the current state of online education research in business disciplines and identifies gaps to advance future research. The study aims to address the following broad research questions in the context of past research:

- a) What are the common themes and topics?
- b) What are the publication patterns?
- c) What are the common research methodologies being used?
- d) What are the common models and frameworks being utilized and tested?
- e) Are there any differences in themes and methodologies across different regions?
- f) What are the significant findings?
- g) What are the gaps in current research?

3. Research methodology

In this study, we have focused on articles that address issues pertaining to online learning in the business disciplines. We define online learning to include teaching and learning in synchronous and asynchronous formats, completely online, blended, hybrid or flipped modes. Business disciplines in this research include Accounting, Economics, Entrepreneurship, Finance, Information Systems, Management, Marketing, Operations, and Supply Chain. Interdisciplinary studies in the business fields or non-disciplinary general business studies are also included in this research. Driven by our goal to find out the extent to which online education research is going on worldwide, we are curious to find out if the research is happening in only a few countries or several countries. We are also curious to find out if there is research collaboration going on within an institution and across institutions and countries. We searched for articles in major business academic databases, such as ABI/Inform Global, Business Source Complete, EBSCO Host, LexisNexis Business, and Google Scholar. The search is limited to the 2008–2016 time-frame. We developed a review protocol and searched peer-reviewed articles using terms like “e-learning”, “online”, “blended learning”, “hybrid learning.” We limited our search to articles published in business journals only. The initial search generated more than 100 articles, after a careful review of the articles based on our criteria we had 60 peer-reviewed business articles for the analysis.

In our systematic review, we have included both conceptual and empirical studies. While conceptual studies are important to identify ideas being discussed, empirical studies help us to understand if the ideas are being tested for validation in the real world. We also examine the unit of analysis in the studies—a single course; an entire degree program (like MBA or MS in Taxation) offered by a school or a university department; or all programs offered by a university.

4. Analysis

Based on our research questions, what follows is our analysis of current online business education research on the criteria of authorship, coverage, currency, context, scope, research methodologies, theories, and frameworks, and key themes. This analysis is

Table 1
Article breakdown by journals.

Sr. No.	Journal name	Number of articles reviewed
1.	Journal of Economic Perspectives	2
2.	American Economic Review	1
3.	Journal of Management Education	2
4.	Journal of Business Ethics	1
5.	Journal of Education for Business	3
6.	Journal of Applied Business and Economics	1
7.	Journal of Academy of Business Education	1
8.	Business Education Innovation Journal	4
9.	Academy of Management Learning & Education	2
10.	American Journal of Business Education	2
11.	Journal of Information Systems Education	6
12.	Issues in Accounting Education	1
13.	Marketing Education Review	2
14.	Decision Sciences Journal of Innovative Education	16
15.	Communications of the AIS	1
16.	International Journal of Business Research and Information Technology	1
17.	Journal of Information Technology Education: Research	4
18.	Journal of product and Brand Management	1
19.	International Journal of Educational Management	2
20.	Industrial and Commercial Training	1
21.	International Journal of Management Education	4
22.	International Journal of Operations and Product Management	1
23.	Journal of International Education in Business	1

based on sixty peer-reviewed journal articles related to online or blended education in business disciplines.

4.1. Authorship, coverage, and currency

As is shown in [Table 1](#) the articles came from a wide variety of business journals. In our sample, we had the maximum number of articles ($N = 16$) from the *Decision Sciences Journal of Innovative Education*, which is not surprising as DSJIE is a premier journal for business-education related research. [Table 2](#) shows the pattern of authorship indicating that research is being published by researchers from all business disciplines. Majority of the articles reviewed were published by researchers from information technology, general business, and management disciplines. Majority of the articles were co-authored, with two to three authors being most common (75%, $N = 45$) and only 25% of the articles were single authored suggesting a pattern of collaborative work. We also examined the business disciplines ([Table 3](#)) that were the focus of the study/article. Half of the studies focused on general business discipline and 15 articles related specifically to information technology discipline. [Fig. 2](#) summarizes time frames of these articles - more than half (58%) of the articles reviewed were published between 2015 and 2018, 32% during 2011–2014 and only 10% between 2008 and 2010. This data might suggest a trend of increasing interest in publishing research related to online education among business school researchers with online education becoming increasingly popular. The average number of references for each of the articles reviewed is 47 suggesting that these studies are drawing upon a rich body of literature for their studies.

4.2. Context, scope, research methodologies

In terms of the context of the research, we focused on a single course vs. entire program of courses. By scope, we meant a single country or global focus. A majority of the papers (67%) were specific to US, 4 papers described studies conducted in Asia, 4 in Europe, 2 in Middle East, 1 in New Zealand and 1 in Canada. Only 25% of the studies focused on program level issues with majority focusing on research at course level. Majority (68%) of the articles utilized empirical data collection and analysis, while 32% were either

Table 2
Article breakdown by Disciplines of Authors.

Sr. No.	Discipline of Authors	Number of Articles
1.	Management	8
2.	Information Systems	16
3.	Business	22
4.	Accounting	3
5.	Finance	1
6.	Marketing/Sales	3
7.	Operations Management	3
8.	Economics	4

Table 3
Article breakdown by business discipline focus of the article.

Business Discipline Focus of Article	Number of Articles
Management	7
Information Systems	15
Business	29
Accounting	1
Finance	1
Marketing/Sales	4
Operations Management	1
Economics	2

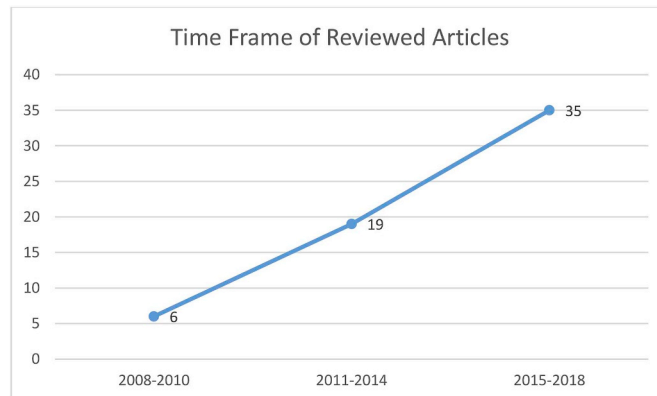


Fig. 2. Time Frame of reviewed Articles.

conceptual/theoretical in nature or narratives of program and/or course development experiences. In the empirical studies, survey methodology was the most commonly used method. Few studies also used learning management system usage and student learning performance data.

4.3. Theories and frameworks

There is more than two decades of research on online education in business disciplines, we were interested in identifying what theories and frameworks have been developed and used by researchers in their studies. [Leidner and Jarvenpaa \(1995\)](#) proposed one of the first conceptual models and frameworks for understanding and researching technology-mediated learning. The authors assert that an integrated approach that includes use of appropriate technology tools, an understanding of the learning processes and effective teaching strategies can impact student learning. After examining different models of learning the potential impact of IT on learning processes, the authors developed the framework showing how instructors can transform learning by facilitating display of information, collaboration and creation of knowledge. We wanted to find out which other conceptual models have been developed, tested and used to study different aspects of online and blended education in the business disciplines. In our analysis, we found that more than half of the papers (N = 38) did not use any theoretical framework. Those who used a framework used existing frameworks, with only 1 study proposing a new framework. The theories and models discussed in the papers are Adaptive Structuration Theory, Trans-Theoretical Model (TTM), Technology Acceptance Model (TAM), Control Value Theory, Bigg's 3 P Model (Presage, Process and Product), Szulanski's Model, Critical Success Factors for E-Learning, Disruptive Innovation theory, Cognitive Load and theory of Mastery Learning, Technology-Mediated Learning, Innovation Diffusion Theory, System Success Model, Picolli's Virtual Learning Environment Model, and DeLone McLean Model of IS.

5. Key themes

One of the main objectives of a systematic review of literature is to summarize the key findings of the different studies. The purpose of our study is to consolidate perspectives on the status, issues, and challenges facing disruptive technology of online education and identify gaps in existing research. We have identified following key themes.

5.1. Studies to compare face to face versus online modes of teaching and learning

Comparing the effectiveness and student perceptions in different learning formats was one of the predominant themes in the articles. [Sohn and Romal \(2015\)](#) conducted a meta-analysis of existing studies to compare student performance between online and

face-to-face undergraduate economics courses in the US. After reviewing 79 studies, the authors selected 9 studies for the meta-analysis. The authors found that students performed better in face-to-face format and concluded that the impact of moderating factors like student demographics, prior economics course and other factors needs to be examined further. Another study (Fish & Snodgrass, 2015) compares business students' perceptions in online and face to face courses. They surveyed 64 undergraduate and 47 graduate students and compared their perceptions towards online and face to face formats regarding motivation, discipline, independence, time, and cost investment. The authors found that in general, students favored face to face formats and their perceptions towards online became more positive as they took more online classes. Similarly, in a recent article by Fadol, Aldamen, and Saadullah (2018) the authors do a comparative analysis of flipped, online and traditional teaching by comparing 122 students' performance and perception in an Introduction to Management course in a university in Middle East. The online and flipped section performed better than traditional and the flipped section performed better than the online section.

5.2. Narrative accounts of online course/program development experiences

Roe, Toma, and Yallapragada (2015) document the process used by Arkansas University faculty to design, develop, and launch a high quality and now successful online MBA program. One idea worth noting is to price an online program appropriately in the range of lowest to highest priced online MBA programs based on the institution's brand image and ranking. The authors give nine recommendations, including piloting the online program for your current traditional MBA students before marketing for outside enrollments. They provide good suggestions for integrity and academic honesty in the administration of assignments, quizzes, and exams. Christ, Arsenault, and Gault (2015) examine the benefit of on-site experience programs within an online MBA program. The physical classroom delivery may happen in home-campus or any facility, such as a hotel. The study indicates that there are benefits in the residency programs as it allows direct engagement with students, fosters engagement between students, and can customize learning goals of the program. Alvarez, Taylor, and Rauseo (2015) developed and tested a course structure that integrated experiential learning activities to teach critical thinking skills. They used a three-phased approach which included scaffolding, task generalization and metacognition. Using a pre-post intervention design, they assessed students' critical thinking skills in a traditional face to face format, online with a control group. Students critical thinking scores increased in online and face to face courses, but not in the control group. Gill and Mullarkey (2015) report on their experience of designing and teaching an online undergraduate MIS capstone course and compared it to the face to face course. They found that the quality of student projects and presentations was much better in online course and student learning gains were similar in both formats. Carroll and Burke (2011) offer a framework for developing an online degree program that universities and colleges can use as a guide to design effective online programs.

5.3. Course design, student characteristics, interactions and learning outcomes

The topic of most of the empirical studies related to examining the different aspects and impact of course design elements, student characteristics on learning. Sebastianelli, Swift, and Tamimi (2015) assesses the impact of six factors—course content, course structure, course rigor, professor-student interaction, student-student interaction, and mentoring support on three outcomes: learning, satisfaction, and quality. Structured Equation Modeling (SEM) was utilized for thorough analysis. Past literature identifying success factors for online education has been cited. Results reveal statistical significance for course content on learning; course content and professor-student interaction on satisfaction; and course content, student-student interaction, and mentoring support on perceived quality of outcome. Sohn and Romal (2015) present a meta-analysis of 9 studies published between 2000 and 2012 to examine differences in student performance in college-level undergraduate principles economic courses in online and traditional face to face courses. The authors found that student performance was stronger in face-to-face courses but caution that several moderators such as gender, prior economics courses taken and mathematical ability could influence performance and need to be investigated in future studies. Callister and Love (2016) compare learning outcomes in skills-based courses in online versus face to face formats to examine if the same learning outcomes can be achieved in online formats and what factors influence these outcomes? The authors compared student learning outcomes of students enrolled in a Negotiation master's level course in online and face to face format and found that students in both courses were mastering the content at the same rate, but the students in online course were not mastering the skills at the same level as students enrolled in the face-to-face class. Authors suggest that a strong social presence and building an online community could help facilitate learning in online skill-based courses.

Butz, Stupnisky, Pekrun, Jensen, and Harsell (2016) conducted a longitudinal study to investigate the impact of emotions on student achievement in synchronous hybrid MBA and Masters of Public Administration programs. Using the control-value theory as a framework, authors found that the achievement domain compared to technology domain, yielded higher scores for control, value, enjoyment, anxiety, and boredom. Further, perceived success was positively related to enjoyment and negatively related to anxiety and boredom.

Study by Ahmed (2010) examined hybrid e-learning acceptance by students using three critical success factors: instructor characteristics, information technology infrastructure, and organizational and technical support. Based on a survey given to students, 538 responses were analyzed using Structural equation modeling to test the proposed research model. The results showed that all three factors significantly and directly influence the learners' acceptance of hybrid e-learning courses. Albert and Johnson (2011) report that there are differences in student perceptions towards online learning prior to taking online courses based on their socio-economic background. Based on their study they found that working-class students perceive e-learning systems more positively than middle-class students. Universities can use this information to tailor their marketing campaigns for online education to students from different socio-economics background.

5.4. Impact of technology in interaction with other factors on learning

As technology is a major factor in the delivery and success of online and blended education, this topic has been examined by many researchers. Some of the articles we reviewed focused on technology use. [Miranda, Isaias, Costa, and Pifano \(2017\)](#) present a framework of e-learning 3.0's critical success factors that is based on extensive literature review and interviews with experts. The framework could be used by practitioners for delivery of online education and training, and for conducting research in this area. In another article, [Freeze, Alshare, Lane, and Wen \(2010\)](#) use the Information Systems Success Model in examining e-learning systems success. Using a sample of 674 students and structural equation modeling, the authors conclude that system quality and information quality had significant positive impact on user satisfaction and use. Other studies include: examination of students' acceptance of hybrid e-learning using three critical success factors – instructor characteristics, information technology infrastructure and organizational and technical support ([Ahmed, 2010](#)); impact of human and system factors on success of online learning environments ([Alshare et al., 2011](#)); critical success factors for designing e-learning at a university in India ([Sharma, Pandit, & Pandit, 2011](#)); computer self-efficacy and motivation to learn in a self-paced online course ([Simmering, Posey & Piccoli, 2009](#)); and socio-economic status and gender-based differences in students' perceptions of e-learning systems ([Albert & Johnson, 2011](#)).

5.5. Faculty perceptions and roles

Faculty play an important role in helping programs and institutions transition to online and blended formats, faculty's negative perceptions and attitudes can be a barrier to this change. Impact of instructor characteristics on acceptance of e-learning was examined by [Ahmed \(2010\)](#). Out of 60 articles we reviewed, only one article examined faculty perceptions towards online education. [Mitchell, Parlamis & Clairborne \(2014\)](#) applied the Trans-theoretical Model of Change for getting faculty buy in to support online and blended education initiatives. Based on existing research, authors identify key reasons for faculty resistance and offer recommendations to gain their support. Another article ([Navarro, 2015](#)) discusses the impact of the increase in online education courses/programs on faculty role and provides suggestions for adapting to this change.

5.6. Conceptual papers related to impact of processes and choices in online education

[Natale and Libertella \(2016\)](#) take a hard stance on online education in terms of its ability to offer and sustain a “Moral Compass” for students. Online learning is linear and can never match F2F's rich medium that helps in forming lifelong bonds with professors and their ethical and moral values and with campus communities. Traditional learning in a college environment is holistic learning (if students live on campus). The article focuses on the role of faculty in providing affective, moral, ethical learning for students. The article primarily focuses on areas in which online learning is deficient.

[McPherson and Bacow \(2015\)](#) refer to a five steps process for any innovation to be accepted (if at all) by diverse stakeholders at different levels: (a) initial trigger, (b) inflated expectations (hype), (c) trough of disillusionment, (d) slope of enlightenment, and (e) plateau of productivity. These five steps are akin to the S-shaped learning curve. The authors also discuss online learning and teaching by selective (quality focus) versus non-selective institutions (cost focus) using asynchronous, synchronous, flipped, blended, or online modes. It compares traditional education with e-education. They also raise issues regarding “fit” of education mode based on teacher, student, and course characteristics and discuss causes of resistance by faculty.

[Navarro \(2015\)](#) explains that there are multiple ways to evolve into the e-education world—flipped, blended, online, and various combinations thereof. MOOCs can be very costly to develop—options are build, buy, collaborate, or outsource to so-called “enablers” who typically receive 80% of the tuition revenue. One big question is who owns the intellectual property rights to online course content, professors or university administrators? The authors articulate Ten Commandments to follow to develop and use MOOCs successfully. Research professors can use blended or flipped models, while teaching professors can find ways and means to explore online education and evolve from “sage on the stage” model to “cyber guide on the side” model. Some prescriptions are provided for chairpersons and deans, chief academic officers, and university presidents. One recommendation is that instead of hoping for professors to volunteer to teach online courses, they should be recruited.

[Deming, Goldin, Katz, and Yuchtman \(2015\)](#) provide a glimpse into the demographics of online education students who are taking courses from non-selective public and private institutions. It describes evolving history of regulations for online education (OLE) in the U.S. Such country regulations do have an impact on the growth and direction of OLE. The authors mention several OLE designs—blended, flipped, completely online, and possible combinations of these. The primary focus of the article is to analyze the impact on costs for students from traditional and OLE modes. Costs of online education are going down mainly because of scalability with almost zero marginal cost, whereas the costs are steadily rising for traditional education.

Based on our extensive systematic analysis of online business education literature, we feel confident in presenting the following emerging holistic model ([Fig. 3](#)).

6. Emerging holistic model of online education

Our model is an extension of the model and concepts in [Whitaker, New, and Ireland \(2016\)](#). Based on extensive literature survey, these authors emphasize the role of technology, course, student, faculty, and environment both internal and external.

In our model, we break up global online education factors into **five** levels: Micro, Program, Institutional, National, and Global. Researchers have a choice of either simple (parsimonious) or complex (holistic) models/frameworks to understand any phenomenon/

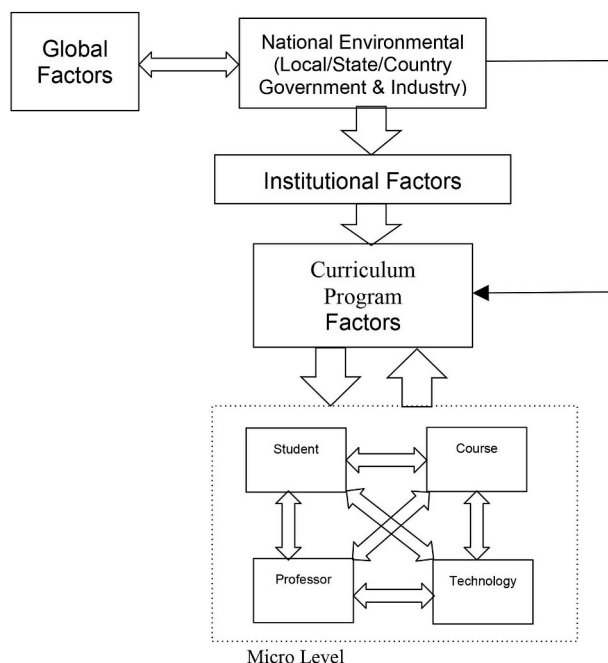


Fig. 3. Holistic model of global E-education.

innovation. We describe our model in both parsimonious and holistic terms below.

Micro level can be construed as the level at which actual education is delivered completely or partially online by a Professor to the students for a course using the available IT platform towards the goal of achieving desired learning outcomes. For students, the sub-factors include motivation, culture, learning style, and IT skill level. For professors, the component factors include, but are not limited to, role (anywhere from “sage on the stage” to “cyber guide on the side”); teaching mode (cognitive, affective, managerial) and IT skill level (low, medium, high). Course factor typically includes discipline, level of course (undergraduate, graduate), learning outcomes using perhaps Bloom’s well-known taxonomy. Technology characteristics that can be considered are: platform (LMS type) user perceived usefulness, perceived ease of use.

Curricular program level factor ought to include sub-factors like level (freshman, sophomore, junior, senior, graduate), part time or full time, normal or executive program, and online mode (blended, flipped, hybrid, fully online, and degree of synchronous/asynchronous).

Institutional factors will include support from administration, marketing, technology, and top management; institutional culture (entrepreneurial, hierarchical, etc.), selective versus non-selective institution, public versus private, and for profit versus not for profit.

National environmental factors include industry (business) and government at local, state, and federal levels. Corporate and government sector’s policies and guidelines determine employability of online program graduates. Also, local and state government make regulations in regard to all educational programs and initiatives including online education. Environmental factors also include laws, ICT capacity, Internet/mobile technology diffusion, income divide, and digital divide.

Finally, at a **global** level, online education’s reach can be global only if there are standard technology platforms (like Internet), standard or compatible Learning Management Systems, bridging of the digital divide, accommodation of diverse languages and cultures, and standard curriculum and evaluation processes.

The implications of this model are enormous. More studies can be done at each of the five levels, or combination of levels, or for all levels of the model. These studies can utilize any research methodology – survey-based, experimental, case study, field study or a triangulation/integrated approach. In the foreseeable future, online education might overtake traditional education just like e-commerce might soon overtake traditional commerce. Given that futuristic scenario, testing this holistic model in several ways for global online education may serve all stakeholders enormously.

7. Implications for academia, industry, government, and society

This study conducted a systematic extensive analysis of extant research related to online education in business to explore common topics that are being examined and to identify gaps in existing research. The findings indicate that there are some common themes dominating this area of research. The issue of **quality** in online courses appeared to be the most prevalent topic. Most of the articles conducted comparative studies examining effectiveness of face-to-face and online/blended formats, student perceptions of their online experiences, and learning outcomes. Collectively, these studies suggest that overall online learning is viewed favorably by

students and learning outcomes are comparable in online and F2F formats. Very few studies examined institutional, societal, and cultural factors related to online education in business.

These findings have important implications for academia (research as well as teaching), industry, government and society.

The extensive analysis suggests that while this area of research has attracted the attention of business scholars, the range of topics and themes remain limited. There are still gaps.

1. The majority of the research has been conducted at the course level. Even at this micro-level, the jury is still out in terms of which mode is better in which context and for which stakeholders.
2. One thing is clear, there is a learning curve and the usual factor of resistance to change creeps in at the beginning. As we humans enjoy and want to perpetuate what we keep getting used to, the resistance withers away.
3. Surprisingly, we did not come across many studies that examine faculty perceptions and attitudes towards online education. Several reports over the years have shown that for the past decade faculty perceptions towards technology and online education haven't changed much and remain negative (Allen & Seaman, 2016). What are the possible factors influencing these perceptions, and how can we facilitate faculty buy in and acceptance of online education?
4. Very few articles addressed curricular program or institutional level issues. Additionally, it is important to note that only a small percentage of the higher education institutions are offering the majority of the online programs. What are the institutional factors that facilitate the adoption of innovative educational delivery models and approaches? How do these factors differ based on country, type of institution, etc.?

The above gaps in the online education research provide many opportunities for research in the future. Furthermore, researchers have the opportunity to examine independent, mediating, and dependent variables at each of the five levels of factors in the holistic model presented.

The findings of this study also provide useful information for practitioners in teaching institutions – professors, administrators, and IT support people. The results suggest that the quality of education can be comparable in online/blended and F2F formats and online education has the potential to reduce significantly overall costs in the long run, if not in the short run. These inferences can motivate educational institutions to design, develop and implement innovative online and blended courses and programs.

Also, external stakeholders, such as potential employers and publishing houses, also need to understand how online education impacts their relationships with educational institutions. For example, potential employers need to be informed that the change of medium doesn't compromise the quality of students' experiences. Similarly, publishers need to collaborate with academia to explore new models developing interactive and multi-media rich content.

It is clear that online education has potential to be truly global, with faculty and students drawn from all over the world. But for this to happen, there is a need for standards in many areas—technology platforms, selection criteria for different programs, and curricula for different business disciplines. Governments have to contribute at micro as well as macro level in this initiative. In most countries, curriculum development is the responsibility of certain autonomous bodies recognized by governments such as school education boards, universities. Generally, institutions recognize one another's curricula and courses. However, several countries generally do not recognize the curricular programs and course of other countries. That has been an impediment to movement of people across the globe. Since online programs can be easily global in planning, organizing and execution, the need to standardize as many curricular programs and courses as possible is urgent. The mechanism to standardize and recognize online programs has not started, developed or matured. Students who take such courses, may do it for the purpose of learning or for the value of certificate, but these certificates may neither be recognized by their governments or by government of other countries. Hence, governments in the countries where online education programs flourish, have to initiate steps to recognize such programs.

In less developed economies, government can make use of e-education to make education accessible to students in remote locations. This will reduce the gap between access to college and university education between rural and urban locations. For example, in countries like India, government has actively promoted development of good quality content (study material) for engineering colleges and have developed platforms that make the content accessible to the students in the country. The colleges and universities accept courses taken from such platforms and provide waivers to the students for the courses taken on e-learning platforms.

Governments, can also avoid duplication of efforts and resources, by funding and ensuring establishment of common platforms, and make it available to educational institutions at nominal or no costs. Further, acceptance of degrees and certificates from online education platforms for the purpose of government jobs (in countries where such jobs are considered important) will increase the perceived value of such programs in the views of students, faculty as well as, private sector.

Funding source

This research was partially funded by United States India Education Foundation (USIEF) that supported Dr. Shailendra Palvia during January–April, 2017 in his role as Fulbright-Nehru Senior Research Scholar with host institution being the Indian Institute of Management Ahmedabad (IIMA).

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijme.2018.11.002>.

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