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CRITICAL SUCCESS FACTORS FOR ONLINE EDUCATION: LONGITUDINAL RESULTS ON PROGRAM SATISFACTION

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Abstract:

For the past 15-20 years, many researchers have investigated the differences (or lack thereof) between online and face-to-face (f2f) course delivery and student learning. Most of this body of research concerns an individual course, an individual faculty, or a particular technology or tool. However, we don't yet know much about the factors that are critical for the success of an online degree program. Which factor or factors have the greatest impact on student satisfaction with an online degree program? Data on seven potential critical success factors were collected from 2005 to 2014 to measure their impact on student satisfaction. Data analysis is underway.

Keywords: Online Education, Critical Success Factors, Degree Program Satisfaction

I. INTRODUCTION

Since the Internet became commercialized circa 1993, it has pervaded most modern lives. Many commerce, information gathering, and entertainment activities have shifted completely to rely upon the Internet for connecting providers with consumers. We watch videos with YouTube and Netflix, purchase dog food from Amazon, search for the truth on Wikipedia, and debunk urban legends on Snopes. We purchase airplane tickets on Orbitz, use Passbook to store our boarding passes, watch TV on our devices using Southwest, and hail an Uber car to get us the rest of the way home.

Education has also moved onto the online arena. At first it was a means of providing traditional classroom students with files or multimedia, but then shifted towards being the method of delivery itself. Long-established distance education programs quickly moved into web-delivery, and by 2001 webmba.edu was registered by a traditional university [Freeman et al., 2004]. The correspondence courses by mail that an author of this paper and his mother both completed have long disappeared in favor of the interactivity, speed, and richness of delivery that are afforded by courses and programs delivered by the Internet.

Education is available in a variety of forms on the Internet. Documentaries can be watched on YouTube. Training courses are available on Lynda.com. Subject-specific help is available on many sites; perhaps the most well-known is Khan Academy. MOOCs (Massive Open Online Course) are also available from individual universities and consortia such as edX and Coursera that can reach over 100,000 students in a single course. For those seeking traditional degrees delivered in non-traditional ways, Bachelor's and Master's degrees are also available online. While many come from well-known universities, there are also those that come from non-accredited schools or even so-called diploma mills that have contributed to the stigma sometimes attached to distance/online education.

Schools offering online education often find themselves in a quandary of balancing convenience with perceived quality. Despite being two decades old, Internet publishing and open access is still often seen as inferior to paper journals [Watson and Montabon, 2014], and Internet-based education is viewed by many as not being a real educational experience that is equivalent to the experience in the classroom [Tucker, 2001; Bernard et al., 2004; Redpath, 2012]. Yet, the demands of the working professionals of today with families and other commitments often simply don't allow the commitment to full-time study that many traditional programs require, which also puts the consumers for such education in a bind [Hannay and Newvine, 2006]. The real proof could be measured by asking the customers if they are happy with their decisions and measuring their satisfaction.

II. CRITICAL SUCCESS FACTORS

A recent special issue of *Decision Sciences Journal of Innovative Education* was created to focus attention on the critical success factors in online education. This focus indicates a perceived need to effectively manage these critical success factors in order to ensure (or increase) success. The success of an e-learning program can be measured in terms of learning outcomes and learner satisfaction, two dependent constructs that have been widely accepted in the e-learning literature. Learning outcomes are measured by progress on relevant objectives set by the instructor including progress on gaining factual knowledge, learning fundamental principles, and learning to apply what is learned to improve problem solving. Learner satisfaction is measured by the degree of satisfaction with perceived outcomes of taking online courses, the courses, and the instructors.

While the courses and the instructors are important levels of measurement for learner satisfaction, another level is the overall degree program and the various components that come together to create a degree program. These components are different than those used to measure course-level satisfaction. For example, when measuring satisfaction with a course, factors such as advising and course availability are not relevant. However, when assessing an entire degree program and not an individual course or an individual faculty, these factors are quite relevant.

Critical Success Factors are elements of a project or activity that are necessary for the project's or activity's success. A critical success factor will make or break the success of the project or activity. Volery and Lord [2000] looked at technology, technology usage, and the instructor as possible course-level critical success factors where Papp [2000] focused on factors associated with the course itself – suitability to the learning environment, course creation, content, and course maintenance. Selim [2007] continued this line of research by looking at instructors, students, information technology, and university support as potential categories of critical success factors; and Sun et al. [2008] further expanded this line of research into critical success factors for course-level learner satisfaction among thirteen factors across six dimensions. A recently published review of the e-learning critical success factor literature [Elkaseh et al., 2015] found eight factors to have emerged from the literature: educational technology, computing experience, attitude, social influence, curriculum development, language, teaching and learning styles, and demographics. However, this prior research on critical success factors used the online course as the focal point and the basis for the dependent variables of success, satisfaction, performance, or quality.

III. RESEARCH QUESTION

Building off this prior work and expanding it to cover a degree program, possible critical success factors for an online degree program include the following:

- *Overall course quality

- *Overall interactivity
- *Overall faculty availability
- *Overall learning style and activities
- *The learning management system
- *Overall course availability
- *Advising and admissions
- Faculty attitudes
- Affordability
- Attitudes and anxiety towards technology
- Assessment diversity
- Relationship of program to career services

While not an exhaustive list, we chose the factors indicated with an asterisk for this study. It should be noted that the original purpose for collecting this data was not for theory development or testing, but rather for a measurement of program efficacy and identification of any factors needing immediate attention as perceived by the students.

Key Performance Indicators are quantifiable measures of the outcomes of a project or activity. They are related and connected to critical success factors in that they enable the measurement of performance as a result of the implementation of the critical success factor(s). Some possible key performance indicators for an online degree program are:

- Student job placement
- Financial sustainability
- Acceptance of program by marketplace
- Acceptance of program by accreditors
- Faculty satisfaction
- Student satisfaction

We chose student satisfaction as the indicator of success of the online degree program. This leads to the research question of: Which critical success factor, or combination of factors, impacts student satisfaction with an online degree program? The following model represents the factors for this study.

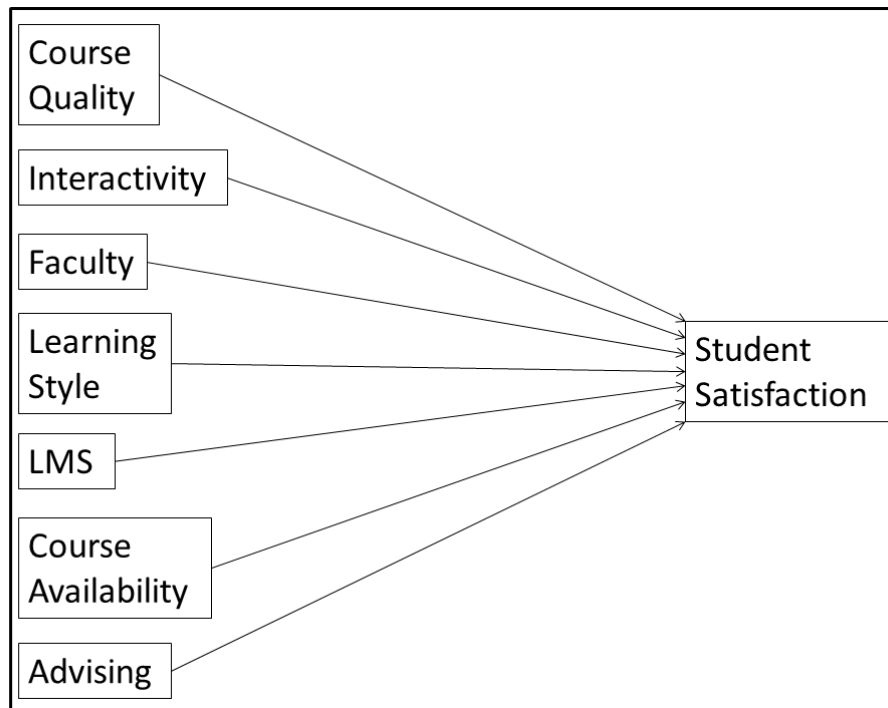


Figure 1. Research Model

Course Quality refers to the overall rating of the courses, fellow students (classmates), and the basic course information (syllabus and schedule). **Interactivity** refers to the various forms of interactivity within the courses – between faculty and students as well as between students and other students – and the ways the courses encouraged interactivity by allowing students to contribute their personal experiences and participate in synchronous/asynchronous group communication. **Faculty** refers to the availability of faculty to provide assistance and the timeliness of that assistance. **Learning Style** refers to the breadth of learning styles presented in the courses, the balance of online activities, and the promotion of active-learning. **LMS** measures various aspects and functionality of the Learning Management System in use for the courses, such as its overall ease of use as well as basic tasks such as uploading files, downloading files, participating in discussions, and completing assessments. **Course Availability** refers to both the breadth (number of different disciplines/subject areas) and depth (number of courses within specific disciplines/subject areas) of the available courses in the degree program. **Advising** refers to the interactions with the advising/admissions office regarding course registration, course planning, and the admissions process. Finally, **Satisfaction** refers to whether the students would recommend the degree program to a friend or colleague as well as whether the program has met expectations and needs.

IV. METHODOLOGY

From 2005-2014 (though not in 2006-2008), the business school at a medium-sized, Midwestern US university surveyed all students taking online graduate courses in its MBA program on a number of variables relating to their experiences with the previously identified potential critical success factors. All of the questions were from the perspective of the MBA degree program, not a particular course or a particular faculty. All courses in this degree program are taught 100% online, and there were approximately 45 unique courses (multiple sections of each) taught over the 10-year period. In addition, the survey included questions regarding program satisfaction.

The survey also collected demographic data on age, gender, and years of fulltime employment as well as the number of online courses and f2f courses taken at the institution. See Appendix A for the full survey.

The survey was implemented through Qualtrics with email reminders sent at various points within the two-week survey window. The survey was scheduled approximately two-thirds of the way through the Winter semester in order to follow midterms and spring break yet precede the end-of-semester crunch with projects and final exams. Most survey questions were on a 7-point Likert scale, from strongly agree to strongly disagree.

Data collection occurred a total of 7 times during this 10-year period. The yearly results were shared with the faculty and staff and discussed for program improvement.

V. RESULTS

Data collection provided a total of 539 usable surveys across the 7 years. The yearly breakdown of the demographic statistics is shown in Table 1. While the number of respondents fluctuated year over year, the average age and average years employed were both relatively consistent. Over time, the percentage of male students has dropped to the point where female respondents outnumber male respondents in the most recent survey year (matching the trend in the overall student population).

Table 1. Survey Demographics

Survey Year	Respondents	Usable Surveys	Average Age	Percent Male	Average Years Employed
2005	97	94	31.6	67.4	5.3
2009	113	105	33.0	64.4	5.0
2010	83	81	32.7	76.9	5.2
2011	92	80	33.4	68.8	5.4
2012	85	49	32.4	55.8	4.2
2013	87	68	33.7	55.4	5.5
2014	67	62	34.4	45.9	5.3

A confirmatory factor analysis was done on the questions in the survey to ensure that they loaded on their intended factors. The software package R was used, using RStudio as the interface, for the analysis. The *sem* library was then added to perform the confirmatory factor analysis. Initial analyses showed 11 major and 3 minor factors rather than the 7 hypothesized, although this was from the data being combined throughout the years. Discussions then led to the splitting of the data set across multiple years, as it seems logical that improvements made to a particular factor (e.g., LMS) after one year may confuse it with rankings when combined with data from other years.

As of the date of this writing, additional analyses are in progress and will be shown at the actual conference should the paper be accepted.

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APPENDIX A. SURVEY INSTRUMENT

- 1) Course Quality
 - a) Quality of the courses has been high (QualityCourse)
 - b) Quality of fellow students has been high (QualityStudents)
 - c) The course syllabi and course schedules were informative and helpful (QualitySyllabi)
- 2) Interactivity
 - a) Interactivity between faculty and students has been high (InteractivityFacStud)
 - b) Interactivity between students and other students has been high (InteractivityStudStud)
 - c) The courses provided opportunities for students to contribute their own experiences (InteractivityContributions)
 - d) The use of discussions and chat sessions to encourage interactivity has been high (InteractivityDiscussions)
- 3) Faculty
 - a) Faculty has been available for questions, assistance, and office hours (FacultyAvailable)
 - b) Faculty have responded to my emails in a timely manner (FacultyResponsive)
- 4) Learning Style
 - a) The methods of learning have been appropriate for my learning style (LearningAppropriate)
 - b) The courses utilized multiple teaching styles and learning styles (LearningMultipleStyles)
 - c) The courses balanced various online activities, such as discussions, practical applications, readings, assignments, etc. (LearningBalance)
 - d) The courses were designed to make students active learners (LearningActive)
- 5) LMS
 - a) The LMS dashboard page is easy to follow and use (LMSDashboard)
 - b) The LMS software is easy to use (LMSSoftware)
 - c) Uploading files and assignments is straightforward and simple (LMSUploading)
 - d) Downloading files and assignments is straightforward and simple (LMSDownloading)
 - e) The discussion forums are easy to use (LMSDiscussions)
 - f) The mail function is easy to use (LMSMail)
 - g) Taking/completing assessments (quizzes and exams) is straightforward and simple (LMSAssessments)
- 6) Courses
 - a) There is sufficient breadth of courses (# of disciplines) to choose from (CoursesBreadth)
 - b) There is sufficient depth of courses (choices of disciplines) to choose from (CoursesDepth)
- 7) Advising
 - a) Course registration was simple and straightforward (AdvisingRegistration)
 - b) COB advising was available when I needed it (AdvisingAvailable)
 - c) COB advising staff were able to assist me with my course planning and other needs (AdvisingAssist)
 - d) The admissions process was clear (AdvisingAdmissionsClear)
 - e) The admissions process was handled in a timely manner (AdvisingAdmissionsTimely)
- 8) Satisfaction
 - a) I would recommend this program to a friend or colleague (SatisfactionRecommend)
 - b) I feel the program has met my expectations (SatisfactionExpectations)
 - c) I feel the program has met my needs (SatisfactionNeeds)

All on a 7-point scale: (1-Strongly Agree, 2-Agree, 3-Somewhat Agree, 4-Neutral, 5-Somewhat Disagree, 6-Disagree, 7-Strongly Disagree)

ABOUT THE AUTHORS

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Andrew Urbaczewski is the Chair of the Department of Business Information and Analytics in the Daniels College of Business at the University of Denver. He received a Ph.D. in Information Systems from Indiana University, and also holds an MBA from West Virginia University and a BS in Finance (with honors) from the University of Tennessee. He is an Associate Editor of *JITCAR* and formerly also of the *Journal of Informatics Education and Research*. He has been involved in AIS heavily, serving on the Technology Committee and is the current Past President of the AIS Special Interest Group on Education. His research interests include IS Education, Health Informatics, and electronic monitoring of employees. His research has been published in several prestigious journals and conferences, including *Journal of Management Information Systems*, *Communications of the ACM*, *Journal of Organizational Computing and Electronic Commerce*, and *Communications of the AIS*.