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AN EXPLORATORY ANALYSIS OF FACTORS INFLUENCING STUDENTS DECISIONS TO TAKE ONLINE COURSES

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ABSTRACT

This study attempts to examine the perceptions of college students regarding online/hybrid education, the criteria used for decision making and the drawbacks that may keep students from enrolling in online education. Studies by Thomerson and Smith [15], and by Leonard and Guha [7] demonstrate that there are various characteristics that affect students' perceptions which were the basis for this study.

The main factors collected from previous studies that were analyzed included effectiveness, convenience, and social interaction, and level of difficulty.

Data were collected by distributing surveys through the internet. 146 usable questionnaires were returned. Factor analysis was performed based on the surveys returned and significant factors were found. These results lead to the proposal of a research model.

Keywords: E-Learning, Online Courses, Distance Education.

INTRODUCTION

The movement toward online learning has become very popular among higher educational institutions through the 21st century [16]. Over 60% of traditional campus schools offer online courses, and 3.2 million students reported being enrolled in an online course in 2006 [10]. Estimates showed that US companies spent from $3 billion in 1999 to $11 billion in 2003 on IT-based delivery training [12]. More schools now offer online and hybrid (combination of traditional and online instruction) courses in addition to traditional classes. This trend toward online/hybrid courses is due in part because of changes in the technological world that have enabled much progress in the society as well as in the education world.

Advancing computer technology and the internet age have dramatically changed the ways that people access, deliver and use information [7]. William Bennett, the former US Secretary of Education, further confirms this idea by describing new technology as "the only way to reach everybody" [9]. The growing ubiquity of the internet made higher learning programs shift from local desktop to web-based applications [1]. However, while many institutions offer online/hybrid courses (hybrid), not all students engage in online learning because of the different ways the elements involved in this revolutionary approach of teaching impact their decision making [13]. The main reasons why students decide to enroll in online/hybrid courses include convenience regarding time and commuting costs and comfort [7]. Others decide not to attend an online or hybrid class because of their perceptions on the level of difficulty that an online education presents. Furthermore, some students are reluctant about online learning because of the lack of teacher/student interaction as compared to taking a non-traditional class. Students report higher satisfaction in online classes depending on the quality and the level of interactions [11]. Some students think that they learn better in a traditional class where they have more interaction with their teachers, and therefore feel uncomfortable taking an online or hybrid course [7].

This study will identify and explain the main factors that influence students' decision to enroll in an online/hybrid class. This is very important to know as it will help educators to respond better to factors that deter participation in online learning, thus increasing acceptance of online/hybrid courses by students. By knowing which factors students value the most when considering enrolling in an online course, academic institutions will succeed in the online teaching and learning environments [17].

The major research questions that lead this project are as follows:

1. What are the main factors that influence students when taking a decision on whether to enroll in an online/hybrid course versus a traditional one?

2. How do students' perceptions of online learning impact their decisions to take an online or a traditional face-to-face course?

LITERATURE REVIEW

Online education has been growing at a fast rate over the past decade. A number of influences set this type of education apart from traditional education. Students' perceptions and the most valued influences of online education have been the topic of a few studies. We will build upon this research by focusing on the influences that affect the decision-making process of college students when considering whether to engage in online learning.

Even though there has been a small number of studies on this specific subject, there is some research on the area of student perceptions of online education, and pros and cons of e-learning that have served as a basis for our research. Previous literature suggests that some of the benefits of e-learning include, but are not limited to, flexibility, convenience, costs, efficiency of content delivery [15] organization [14], acquisition of technological skills and effectiveness [7].

Porter also identifies the "greatest strength of distance education," which is the fact that information can be presented in different formats. Online courses are usually more standardized than traditional ones, according to Porter, which guarantees quality [18].

Several influences contribute to the student's decision not to take online courses. A few of these include feelings of isolation, frustration, anxiety and confusion, as well as the need for greater discipline, writing skills, self motivation and appropriate time commitments to learning [12]. In addition education students report that online courses are not as effective in instructing them how to teach [7]. Some students are reluctant to take an online course for fear that the degree will not be as accepted as a traditional one because the majority of employers would consider a traditional degree more valuable than an online degree [2, 4]. Another drawback of this period in time is the lack of experience of some faculty members in teaching online courses.

However, a growing number of employers appreciate the value of online degrees. They offer the same quality education, as well as require self-motivation and discipline from students that are very valuable considerations at the time of applying for a job [2].

Previous research demonstrates three characteristics that students perceive as most valuable when choosing an online course: interaction with instructors [6], convenience [3, 7], and flexibility [3, 5, 18]. In agreement with the study conducted by Leonard and Guha, Clark [3] concluded that the two most valuable characteristics of online education, according to students, are flexibility and convenience. This study was based on undergraduates' students who were enrolled in an online course in a Computer and Information Sciences department. Stewart, Waight, Norwood and Ezell [14], concluded that the majority of the students surveyed consider flexibility the most important aspect of online education. This study was based in the College of Technology at the University of Houston where 90% of students live off-campus.

Impact of Learning Styles

Other types of studies have focused on the different learning styles of the students and personal characteristics of individuals in assessing their choice of education type. According to Clark [3], students who are self-directed and independent would rather have the flexibility and independence of online courses, while students who value guidance and face-to-face contact are prone to chose traditional courses. Clark's study also found that there is no significant difference in the amount of effort required or in the level of knowledge acquired or level of difficulty from online to traditional courses. Most students felt that they could make the same grade in either type of education. The same study found that 60% of the students surveyed said they could take a heavier course load if all the classes where offered online, and 90% said that they wished there were more online courses offered.

Previous expert studies also show that students who have already experienced some type of online education have a much more positive view of the effectiveness of online courses than students that have never taken one [7]. Lapointe and Reisetter [6] research concludes that graduate students hold in high value interaction with instructors. However, there was a low value placed on interactions with peers.

Maturity of Education Level

Leonard and Guha [7] examined the differences between graduate and undergraduate students in education who were enrolled in online courses. This study concludes that Convenience is the major factor in enrolling in an online course. Moreover, the uncertainty of interacting with technology was overcome as student involvement increased. A study by Hatch [5] conducted on postgraduate students, concludes that the main reason for the growth of online education is its flexibility.

METHODOLOGY

Based on the literature review, the study will examine five key elements that influence student's decisions of taking an online or hybrid course. The key influencers are level of difficulty, convenience, effectiveness, and social interaction. The model is shown below.

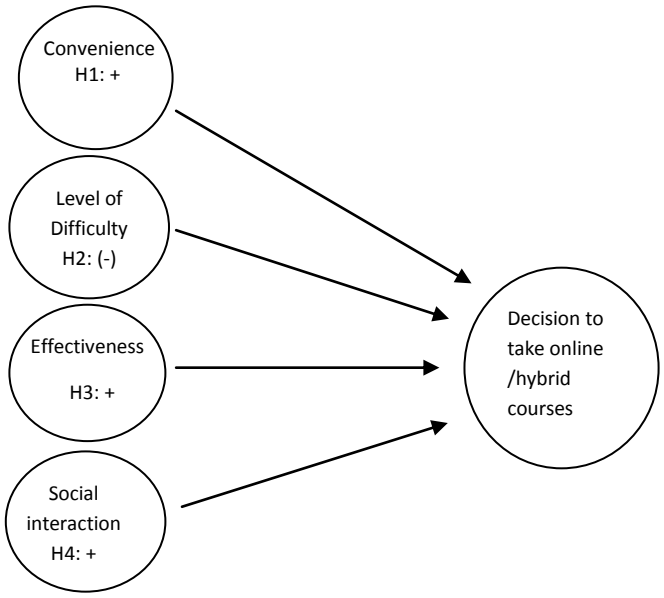

Figure 1. Research Model

H_1: Convenience will be perceived by university students as a positive influence in their decision to take an online/hybrid course.

H_2: Level of Difficulty will be perceived by university students as a negative influence in their decision to take an online/hybrid course.

H_3: Effectiveness will be perceived by university students as a positive influence in their decision to take an online/hybrid course.

H_4: Social Interaction will be perceived by university students as a positive influence in their decision to take an online/hybrid course.

These key elements represent the independent variables, and the decision to take an online/hybrid class represent the dependent variable. Surveys were used as the research style where no setting and/or observation is necessary especially since the survey was administered online [8]. Justification for the research methodology include; generalization to the broader population, time management and convenience for the respondents.

Data Collection

The survey was designed based on five key elements that influence student's decisions and employed items developed by Thomerson and Smith [15]. The questions that described each factor were separated into clusters. The five clusters were convenience, level of difficulty, social interaction, and effectiveness. This was not visible to the participants since the questions pertaining to each factor were scattered and not followed by one another. Such questions were the ones asked in the Likert Scale. The questions in each grouping are available upon request.

These types of questions will aid the research by helping understand the power elements that students take into consideration when making decisions about online/hybrid classes. To minimize response bias, survey questions were stated negatively and positively [12]. For example, in the survey question number 1d was worded: "I learn better through online/hybrid course," while question 1g was worded: "Online/hybrid courses are harder than traditional ones."

The remaining questions varied between multiple choice questions, and allocation of percentage questions regarding the key elements once again to see the element that is given the more weight when making a decision. The later will attempt to prove that convenience is the decisive factor in student's perceptions of the decision-making process when

considering online/hybrid courses. A series of demographic questions followed including gender, age, classification, employment status and grade point average (GPA). The questionnaire was a one-page survey for simplicity, number of responses and to make sure students would take it seriously.

A pilot survey was administered to 180 business administration students at a southern university. The pilot survey consisted of questions in a five-point Likert-type Scale questions and a series of multiple answer questions. The participants were only business students with fair representation from each classification, including freshman, sophomores, juniors, seniors and graduate students. The five-point Likert-type scale questions in the pilot survey yielded insufficient data for the research to be accurately concluded; therefore, a second survey was created with a seven-point Likert scale questions, multiple type questions and allocation of percentages questions to yield more precise information.

The survey was administered again, drawing participants from a broad range of disciplines and academic classifications. The survey was administered via the internet through an online survey service. A total of 146 usable surveys were returned by the participants. The descriptive analysis of the collected data was gathered from the same website that carried the survey. The results of this analysis will be further analyzed in the later sections of this research. To further examine the data collected, SPSS was used to conduct a factor analysis and a series of multiple linear regressions. Factor analysis was used because the different questions based on the key elements had to be factored out to run a regression analysis. Linear regressions were used for the reason that the basis of the research consisted on one dependent variable (decision making) and many independent ones (key elements).

Descriptives of Participants

The characteristics of the participants are summarized in Table 1. The respondents self-selected the survey online thus it limited the ability to generalize the results. As indicated, the general sample has a fair distribution of gender with 50.7% of participants being female and 49.3% male. The participants consisted of 81.3% College Business students. The majority of the respondents,78.1%, were in between the ages of 16 and 25. The overall sample was also fairly distributed among the college classifications with 15.1% freshman, 21.9% sophomores, 22.6% juniors, 23.3 seniors, and 17.1% graduate students. Data shows that the majority of respondents had part-time employment status.

Table 1: Participants Descriptives

	Percent	Count
Gender:		
Female	50.7%	74
Male	49.3%	72
Age Category:		
16-20	37%	54
21-25	41.1%	60
26-30	17.8%	26
31+	4.1%	6
Classification:		
Freshman	15.1%	22
Sophomore	21.9%	32
Junior	22.6%	33
Senior	23.3%	34
Graduate	17.1%	25
Employment Status:		
Full-Time	25.3%	37
Part-Time	47.9%	70
Unemployed	26.7%	39
Grade Point Average:		
0-1.9	.7%	1
2.0-2.4	13.7%	20
2.5-2.9	22.6%	33
3.0-3.5	35.6%	52
3.6-4.0	27.4%	40

RESULTS

The descriptive of the analysis is summarized in Table 2. As indicated by the table and the seven-point Likert scale, the factor Convenience (CVN) had the highest individual means resulting in positive ratings. By computing the mean for the CVN factors, the descriptive supports the hypothesis that states that convenience is the major factor influencing student's decision making with an average mean of 4.8782.

Social Interaction (SCL) factor had the lowest individual means resulting in negative ratings. The SCL group mean was 3.1442.

"Online/hybrid classes are easier than traditional ones" had a negative coefficient, meaning that this question received a similar answer to the LOD7 question "Online/hybrid courses are harder than traditional ones" but with an inverse scale. As a

Table 2: Descriptives of factors

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error
CVN1	146	5.1644	1.79665	-.851	.201
CVN6	144	4.3194	1.71237	-.043	.202
CNV11	146	5.1507	1.61178	-.619	.201
LOD2	144	3.6250	1.61234	.162	.202
LOD7	145	3.8345	1.45780	.129	.201
LOD12	144	4.5556	1.49955	-.153	.202
SCL3	145	3.2138	1.67989	.183	.201
SCL8	146	2.7055	1.58948	.809	.201
SCL13	146	3.5137	1.51878	.183	.201
EFFC4	144	3.3403	1.44920	.393	.202
EFFC9	145	3.9586	1.86293	-.122	.201
EFFC14	144	3.4306	1.38752	.002	.202
Valid N (listwise)	139				

Factor Analysis

A factor analysis was performed to determine that the questions asked related to the element that was measured. Three questions were taken out one by one to yield better results since they do not actually measure the element. For example, question 6 "I don't have to adapt my schedule to an online/hybrid class" was taken out from the analysis because it is not actually measuring convenience. CVN6 was taken out first, followed by EFFC4. After the questions were taken out, the explained variance incrementally increased from 63.356 to 69.034.

The final results of the factor analysis are shown in Table 3; EFFC was related to Factor 1, SCL was related to Factor 2, LOD was related to Factor 3, and CVN was related to Factor 4. Question LOD2

Table 3: Final Results for Factor Analysis

Rotated Component Matrix[a]

	Component			
	1	2	3	4
CVN1				.743
CNV11				.822
LOD7			.809	
LOD12			.872	

SCL3		.856		
SCL8		.660		
SCL13		.667		
EFFC9	.787			
EFFC14	.820			

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Cluster means were computed by adding all the individual means that make up the groupings and then dividing them by the number of individuals [15]. The table of the computed cluster means is shown in Table 4.

Table 4: Cluster Means

Descriptive Statistics

	N	Mean	Std. Dev.
CVNsum	144	4.8981	1.23046
LODsum	141	4.0071	.76787
SCLsum	145	3.1379	1.25805
EFFsum	143	3.5664	1.23590
Valid N (listwise)	139		

Multiple Regression Analysis

Linear regression was run with all the element clusters (independent variables). The results are shown in Table 5. The results of the regression analysis using the variables comprising the research model were highly significant at p=.000.

The results from the coefficients of the multiple regressions are shown on Table 6. The dependent variable, Decision Making (DCSN), was measured using nominal type operationalization and was coded as Yes=1 and No=2. The alternative direction of the nominally coded dependent variable serves to invert the relationship with the independent variables in the regression equation, thus the coefficients' Beta values

Table 5: Multiple Regression Results

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.871	4	2.968	17.494	.000[a]
	Residual	22.733	134	.170		
	Total	34.604	138			

a. Predictors: (Constant), EFFsum, LODsum, CVNsum, SCLsum

b. Dependent Variable: DCSN1

Table 6: Multiple Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.340	.234		9.980	.000
	CVNsum	-.093	.031	-.232	-3.041	.003
	LODsum	.068	.046	.106	1.500	.136
	SCLsum	-.018	.034	-.045	-.519	.604
	EFFsum	-.178	.038	-.426	-4.639	.000

a. Dependent Variable: DCSN1

are negative showing an inverse relation. An examination of the regression coefficients in Table 6 shows that the direction of the relationships for each of the four dependent variables supports the hypothesized directions for each factor.

Only the variables for Convenience (CVN) and Effectiveness (EFF) are shown to be significant. Both of these variables are highly significant at a level of $p < .005$, providing evidence supporting the acceptance of hypotheses H_1 and H_3. Coefficients for the two variables indicate that respondents were most concerned with the quality of the course, followed by the overall convenience. That both of these variables are significant in the decision process for choosing to take an online/hybrid course is intuitive. The ability to obtain instruction comparable quality (EFF) to a face-to-face course at a time and place convenient (CONV) to the student would cause students to perceive online courses more favorably.

The Level of Difficulty (LOD) variable does not appear to be significant as a part of the decision process for students choosing between online/hybrid and face-to-face courses with p=.136. Although the sign of the regression coefficients are in the direction postulated by H_2, there is insufficient evidence to accept the LOD hypothesis.

The Social Interaction (SCL) component of the regression model was also not found to be significant with p=.604. Again, although the sign of the coefficient is in the expected direction, there is insufficient evidence to accept H_4. Despite the lack of statistical significance supporting SCL as a component in student choice to take an online course, the very large p-value and low regression coefficient provide insight into attitudes towards the way online/hybrid courses are typically delivered. Widely adopted learning management systems (e.g. Blackboard, WebCT, and Moodle) generally handle student interaction via discussion forums, polls, and text chat sessions. Students do not regard these forms of communication as rich forms of social interaction [7, 11].

CONCLUSION

Integration of online and hybrid forms of course delivery have become widespread throughout the higher education. With this alternative form of course delivery available; administrators are faced with the need to understand student preferences for online offerings. The current study attempts to examine the critical criteria university students use in their decision between traditional versus online/hybrid courses. A review of the literature revealed a number of elements that come into play in this decision.

Students at a southern university were surveyed on the importance of various criteria in their decision making process when choosing between traditional and online courses. A Factor Analysis of the results yielded four major factor clusters; Effectiveness, Convenience, Social Interaction, and Level of Difficulty.

A regression model of the factors found derived from the factor analysis was constructed and a series of hypotheses linked to each of the four factors were tested. The results of the test of the overall model was highly significant, providing support for the usefulness of the research model in explaining student behavior when choosing between course delivery forms. An examination of the individual variables showed that directions of influence of the variables postulated in the research model were supported. However, only Effectiveness and Convenience elements of the model were found to be significant, with the strongest influence being Effectiveness, indicating a concern about the quality of instruction in selecting a course format. Further, the analysis is supportive of findings published in the literature that maintains that students to not perceive social interaction to be an important element in their decision making process when choosing between an online/hybrid course and a traditional face-to-face course.

Future Directions

Based upon the results of this research, the following directions for future research are considered:

- Use of a larger and more diverse sample to provide more generalizable results
- Given the importance of student interaction in the learning process, examine the impact of various media forms and platforms on student satisfaction with online course delivery
- Expand the current study to include demographic differences between students

Limitations

The sample size of this research can be viewed as a limitation. A sample of 146 participants can yield information that is not generalizable to the broader population. The distribution among the participants towards degrees is also posited as a limitation since the majority of the participants were College of Business students. On the statistical analysis conducted, a major limitation was the nominal type question chosen for the dependent variable rather than an interval scale type question. The limitation was noted on the regression analysis where nominal type questions are usually not used in regression.

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