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INTERPRETING CRISIS OF ATTRITION AND SOCIAL ISOLATION IN UNDERGRADUATE DEGREE PROGRAMS USING ASYNCHRONOUS LEARNING SYSTEM

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ABSTRACT

This study evaluates hidden crisis of attrition prevalent amongst students and programs with descriptive interpretation for solving social isolation. A Descriptive research design was adopted for this study with a variable values covering three (3) undergraduate degree programs. A Simple Percentage Method, chi-square tests, Tables and weighted average were used to get clear picture of analysis, of the academic and social characteristics of newly admitted undergraduate degree seeking students (N = 45) in the College of Business and Technology at Parker University, Dallas, Texas, United States from Fall 2013 to Fall 2014. A binary logistic regression analysis is proposed and performed to predict the probability of a student dropping out. A principal component factor analysis with descriptive analysis was performed on the twelve (12) questionnaire items used for data analysis. Student outcome (persistence or dropout) was the criterion variable. Analysis was not conducted to raise the assumptions of (adequacy of sample size, presence of outliers, factorability, linearity, and multi collinearity) because of the low number sample size (N=45). However, the general structure matrix pattern was examined for item loadings of three (3) programs in the undergraduate degree plan, in order to determine the number of factors to retain for convergent validity. Methods include Eigen functions, eigen values greater than one rule, scree test and total variance utilized to interpret factor structure coherent to the variable values. Mitigating factor analysis includes pertinence of program delivery mode, course design, enrollment number, number of students attending at end of the first year, undergraduate grade point average at time of dropout or completion, admission requirement criteria if any/test scores and number of sections to degree completion or number of courses completed at time of dropout.

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INTRODUCTION

The term "Bachelor degree" represents University Bachelor's degree. "Bachelor degree program" represents course of study leading to a University undergraduate degree program in the United States. Online instruction has become a very attractive choice for teaching and learning due to its convenience and improved technology. An Asynchronous learning is considered an online system of learning primarily or through the use of an Internet-based learning platform and or part on-ground rather than attending full traditional campus setting. It denotes the fact that students and instructors do not share either the same time or geographical space[1][2][3]. According to a recent survey, almost 3.9 million students were enrolled in at least one online class during the fall of 2010 in the United States. The 12.9% growth rate for online enrollment is much greater than the 1.2% growth overall of the higher education student population[10]. This study provides unique understanding on factors causing students' drop-out prior to completing their undergraduate degrees using the asynchronous learning system of online education. By exploring the provisioned database, this study envisioned the underlying variance structure of a set of correlation coefficients to predict the significance of social isolation and crisis of attrition in an online undergraduate program. The Undergraduate Degree programs running under the College of Business and Technology at Parker University, Dallas in Texas USA has been able to achieve growth in retention at a rate substantially higher than the national average for a pioneer college and programs within a year. The University's "Online Bachelor of Science Degree Programs" represent the simplest theory of the structure of variance in the example data, shown as case study, not only to investigate the effect but to ascertain the feeling of isolation and causes of attrition among the new students[1]. This study further provides affirmative interpretation of the analytical solutions for dealing with attrition and isolation feelings caused by new environment, new social dispensation, new program modules and new curricula.

1.1 Related Work

Bachelor Degree attrition rates issue in an online education has been the subject of numerous research[3][14][15][16][17][18]. Most studies were more on other programs attrition ratio, retention effectiveness and consequences on the universities that offer the programs. More so, that the studies received little attention from Bachelor degree programs and as a result, the attrition problem remains unnoticed or marginalized[18][19]. Literature reviews have not shown any significant studies in the context of American societal views of higher or Bachelor degree education towards accredited online infrastructural educational achievement. However, in comparing this value to American civil society, higher incomes are an important achievement of higher education to American society irrespective of the platform in which the learning took place[6]. Higher incomes achieved through higher education are important to individuals as well as society, due to increased amount of tax dollars paid and distributed into the economy through spending and also to charity[6][7]. In another research, it was reported that "the median income varies widely according to educational type. For example, in 2014 a high school graduate could expect to earn a median income of $48,200, a community college graduate could expect to earn a median income of $58,200, and a graduate with a Bachelor degree could expect to earn a median

income of $68,800[4][7]. These differences in earnings equate to 28% between a high school and community college graduate and 33% between a community college and four-year graduate. Even more astounding, however, is the 70% difference in median income between a high school graduate and a Bachelor's Degree recipient"[8].

1.2 Significance of the Study

Two areas represent the objective of this study – To achieve statistical significance level in identifying factors necessary to deal with social isolation feelings caused by new environment, new social dispensation and new curricula, and for dealing with attrition issue causing students' retention prior to completing their Online Bachelor degree programs. This paper further identifies the problem of attrition among online Bachelor Degree students in three programs – Bachelor of Science degree with a major in Computer & Information Systems, Bachelor Degree with a Major in Healthcare Management and Bachelor of Science degree with a major in Health Information Management and recommends solutions. The study is significant because it further identifies first year stage of Bachelor Degree completion rates and explains specific characteristics that may contribute to increasing social isolation amongst students. The findings identify different contexts for dealing with social isolation and minimize attrition rates in the program generated by statistical relevance or significance of different variable values.

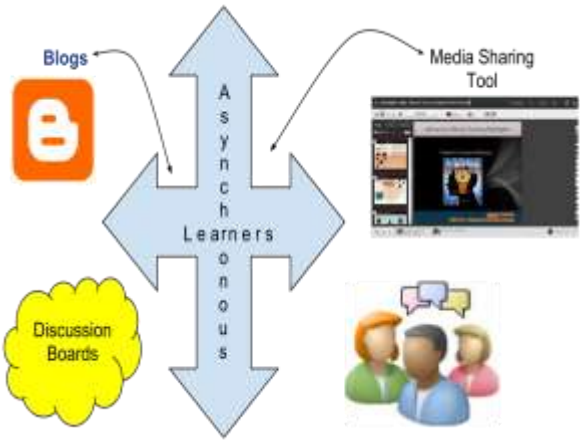


Figure 1: Asynchronous learning Platform Overview

1.3 American's Perceptions of Online Learning

Many American families are becoming aware of the importance of education as a way to a better life. They are equally in need of convenient studying albeit an online system of education that provides for easy accessibility to personalized form of education, giving credibility to accredited form of mobile learning environment[8]. The fact that courses using technologies such as video teleconferencing, digital learning management systems and others allow students and instructor to share the same time but are geographically separated in synchronous learning could not be same with Asynchronous learning where both are separated by time and geography[3][4]. Higher education, in particular, is often viewed as imperative in today's society and to its economy. The importance of Course management and technological tools is also crucial in connecting to learners through blogs, discussion boards, and media sharing tools as evidenced in Fig 1[9].

1.4 Impact of Digital Learning System

The value of a higher education benefits not only the individuals who attained them but the society which absorbed these skills and knowledge as well[4]. Several research concluded that those with a higher education tend to be more involved in their communities, have an increased role in civic participation, and have higher incomes[4][5]. There has never been any "discrimination in the platform in which the education took place"[10]. An

interesting measure of program quality and effectiveness is the program completion rates. Although studies have shown the effectiveness of instruction in the online environment to be comparable to that of the traditional classroom environment studies,[11] an anecdotal evidence indicate high attrition rates for online courses are often much higher than for campus courses[12][13][14]. Adult students have been reported to have lower retention rates in campus programs than traditional aged students which has implications for distance education programs since enrollment in these programs is predominantly adult students, particularly at the graduate level[13][14][15]. In identifying these disparities in earnings among educational levels, it is clear that some form of higher education is crucial in today's society, albeit online or on-ground or both and American society is no exception. It is also evident that an online Bachelor's Degree education based on asynchronous learning system from a regionally accredited institution could ultimately guarantee higher earnings as well.

1.5 Impact of Social Isolation and Remedies

Social isolation is portrayed in different meanings, but noted as typically accompanied by feelings related to loss or marginality. It is evident that this affects a wider range of population and influences the life of many individuals in different ways including work environment, school, and others[3][4]. According to the research by[22]; isolation can occur at four layers of social concept –"the outermost layer" which comprises of the community, the "organization layer" which has schools, work or churches, the "confidantes layer" which are friends, family, significant others and finally, the "innermost layer" of that of the person, who has the personality, the intellectual ability necessary to interpret relationships[21]. Two types of social isolation was noted in the classroom – "friendlessness and marginalization ". This is viewed from the perspective of the "number, frequency and quality of contacts; the longevity or durability of these contacts and the negativism" attributed to the isolation felt by the individual involved[20][21]. In retrospect, social isolation is felt strongly in unfamiliar environment such as studying for a new degree in an online environment or when dealing with situations that involve failure/disappointment, or loss of family member[3][4]. Undergraduates degree programs are known for having these characteristics that contribute to social isolation[3][8]. The results showed that both types of social isolation in the school class were related to various adverse individual, school-related and family-related aspects[22]. Other researchers like[23][25] suggested that "the perceptions of psychological presence that a distance student holds on the part of teachers, student peers, and the institution can be significant predictors of their success in distance learning" (p.79). This is significant because of the importance of academic integration of students in an online education environment.

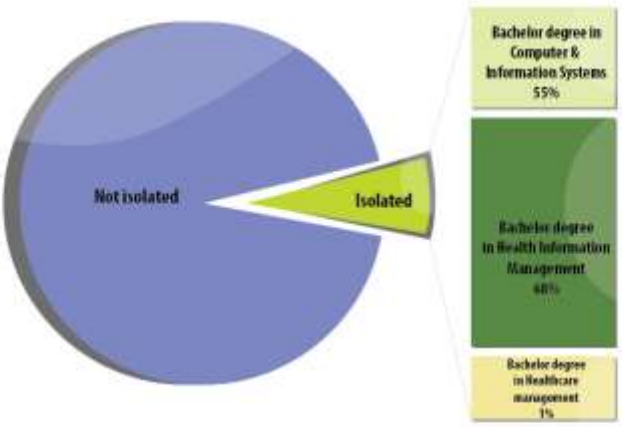


Figure 2: Representation of Isolated issues

In another study, researchers concluded that students had "limited opportunities for connecting to the larger community outside of what is provided in individual courses"[24], (p.190). Another researcher[25] identifies the importance of the formation of "relationships with cohorts" (p.8). Furthermore,[23] supports the "notion that interaction between peers is important to online students" and suggests that "the psychological presence of peer students can also bring a positive effect on various aspects of distance learning" (p.80). The researchers,[23][24] findings show that there was a statistically significant relationship between peer presence and student satisfaction and persistence[23]. Other recommendations signify that the impact of social isolation refers to experience of limited contact with academic staff at the University and department which contribute to feeling of disconnectedness. The result of the study conducted by the researcher[23] justifies that the mode of learning in an online class must involve effective communication through discussion forums.

This study asserts this recommendation and presented how effective communication was crucial to successful mitigating factors against social isolation. This study references two categories of "socially competent and socially isolated" when analyzing crisis of social isolation[24]. To mitigate against social isolation, policies must be put in place by management to enforce effective course room teaching and learning procedure by recommending and determining the number of posts by both the students and adequate number of responses by instructors within the specified weeks. Policies must also be put in place to ascertain deadlines for instructors to respond to students' communications through the messaging area or by email, usually within forty-eight (48) hours. Grading deadline must also be determined through this policy. In most cases, grades have to be completed and shared with students within seven (7) days of submission deadline. It is also obvious that instructors provide adequate and detailed feedback to students as part of effective learning. This factor was recommended by another researcher[26] who "measured effective online teaching and found that one important element of good online teaching is the effective facilitation" of a course. "The instructor's role and responsibilities in an online course involves carefully designed courses and effective written communications with the learners" (p.73). Therefore, instructors need to ensure that students have the opportunity to communicate, interact, and collaborate with course participants. "Online communication between distance students is justified by some authors as lessening student's feelings of isolation"[26][27], (p.283). It is also imperative that the online delivery includes making the courses stimulating and entertaining, using praise frequently and having a flexible positive attitude after identifying the isolation issues[27].

1.6 Impact of Undergraduate Attrition and Remedies

Some researchers have demonstrated the need to expand learner's set of skills to be successful. Attrition (or drop-out) refers to a decrease in number of learners or students engaged in undergraduate studies prior to completing their program[28]. Most institutions have different classifications of attrition to differentiate between the "dropouts", classified as those learners who never returns and never completes the course of study, the "stop out," who leaves but comes back later to finish, and the "attainer," who leaves before completion but who has nonetheless achieved some personal goals[29]. The inverse of the attrition rate is "retention" defined as the number of learners who progress from one module to the next[29].

No studies have been found in the United States with available statistics on attrition in Bachelor degree programs in an asynchronous learning system. However, in comparison with the United States, with an estimated statistics of just little over 15% of drop-outs before attainment of their degree was even more related to finances than social isolation[3][4][19]. One researcher[30] indicates a 10-20% higher than classes taught in a face-to-face setting. In another study conducted by the national Center for Education Statistics (NCES) shows substantial increase in both students' enrollment and number of institutions offering distance education as more students are choosing distance education[31].

High attrition rates could be costly to Universities; "the costs for development, delivery, and assessment, as well as lost tuition revenue, result in wasted expenditures for the institution"[31], (p.205). Other researchers like[30][32] believe that attrition is a measure used to "determine the quality of education" delivered by an institution. This can only be reinforced for institutions to properly identify the reasons students drop-out or fail courses. This would help determine what services and delivery methods the institution will need to provide in order to ensure successful completion of distant education classes[33]. The mitigating factors that could help reduce attrition were the issue of academic characteristics of online learners. It is important to ensure learning modules are easy to navigate, identify isolation issues and using quality technological resources, graphics, animation and video, along with text to enhance learning[29]. Another researcher[33] justifies this by indicating that the "number one issue was time management; students either tried to accomplish too much in one semester or they had difficulty managing their time or were hindered by several personal problems". Several other concerns included course assignments being too difficult, directions for assignments were unclear, inability to navigate the learning management system and students could not get help when needed[29][33]. Other researchers like[29][30] reported that "students often cite personal reasons such as family problems, finances, child care, lack of technology background distractions, and job needs and demands as the cause of withdrawal" (p.3). Researcher like[34] found that "students reported confusion, anxiety, and frustration due to perceived lack of prompt or clear feedback from the instructor, and from ambiguous instructions on the course website and in e-mail messages from the instructor" (p.68). In analyzing all variables, statistics and measures reported by different researchers, it would be viable to have a consistent view of key factors necessary in managing attrition rates for undergraduate degrees in asynchronous learning environment.

The "Tinto Model" above provided a strong retention concept or idea of "integration" of multiple influences on attrition. The model claims that "whether a learner persists is strongly predicted by that learner's degree of academic and social integration"[29]. The model further clarifies how "these evolve over time, as integration and commitment interact, with dropouts depending on commitment at the time of the decision"[35]. This model was supported by the learning orientation model which represent a "comprehensive set of psychological factors (conative, affective, cognitive and social) that influence how individuals approach learning"[36]. Other recent research by[29][35] highlights the strong impact of three additional factors on "persistence and performance, namely an individual's independence, goal orientation, and locus of control. These characteristics also impact factors commonly associated with learner retention and attrition. Others include

engagement, expectations, motivation, self-direction, and attitudes". These studies become the main factors used to distinguish learners who complete courses from those who do not[35].

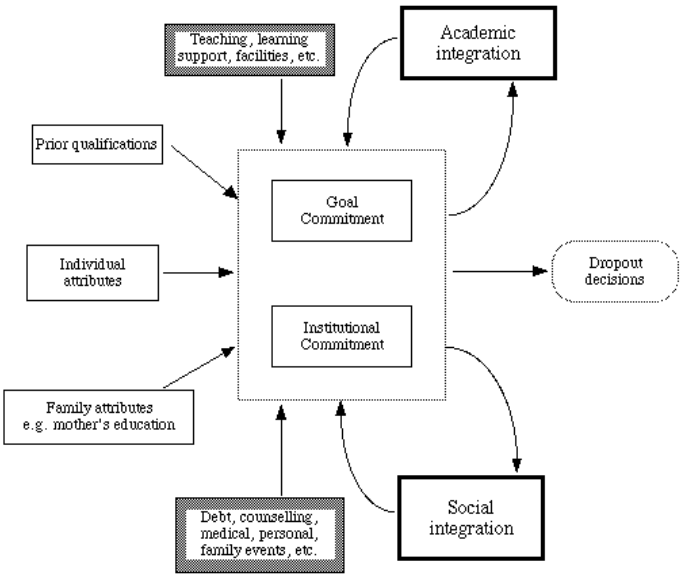


Figure 3: Tinto's Retention Model (Adapted by Stephen W. Draper from Tinto, V. (1975) Dropout from Higher Education: A Theoretical Synthesis of Recent Research, Review of Educational Research vol.45, pp.89-125.)

1.7 Undergraduate Degree Program's Statistical Viewpoints

The online format of the undergraduate programs for Bachelor of Science degrees with major in either Computer Information Systems, Health Information Management or Business Administration (concentration in Healthcare Management) were selected and recent data compiled. Each of the selected programs were based in the same academic departments and utilized the same campus technology and infrastructure and campus academic support services, but with different professors, curriculum, assignments. Thereby, offering some degree of control for intervening program, instructional, and institutional variables[29][30]. The variable values were aligned with first year of programs start of Fall 2013 to Fall 2014 academic session. The researcher studied individual student enrollment records in the student database and determined student enrollment status. Survey questions were distributed to all known students including those who dropped out. The variables were statistically coded using the following:

1. ("Coursepersister")-represents - attended all courses within the time frame;
2. ("Coursepersistence") - represents-did not attend all courses but continued enrollment without being out for more than one academic monthly start or section;
3. ("Or dropout") – Initially admitted and enrolled during the study but were not enrolled at end of the researched period and who had not been enrolled for two consecutive sections or terms[29].

DATA ANALYSIS

In the study, the dichotomous criterion variable was student persistence versus dropout. The predictor variables were undergraduate course classification, Last day of attendance (LDA), and mode of instructional delivery. This data was analyzed using

descriptive statistics as well as a series of *t*-tests, chi-square tests, and logistic regression. Descriptive statistics were calculated by program delivery format for the criterion variable, persistence or dropout. *T*-tests of independent samples and chi-square tests examining the relationship between student outcome and the predictor variables of undergraduate course classification, Last day of attendance (LDA), and mode of instructional delivery were calculated followed by the logistic regression analysis. A significance level of .05 was employed in all statistical tests.

Table 1: *Survey Questions references (>Yes<No)*

Items, Factor Loadings and Communalities (N=100)

Scales/Item	
Online Format Comfort	
Q1	If I need to, I will ask for help from my Classmate.
Q2	I feel Comfortable expressing my opinions and feelings in online courses.
Q3	I feel comfortable introducing myself in online courses.
Q4	I can effectively communicate in online courses.
Q5	Parker University provided easy-to-navigate learning Systems.
Q6	I have no difficulties with expressing my thoughts in my online courses.
Q7	I feel my instructors have created a safe online environment in which I can freely express myself.
Q8	I feel comfortable in the online learning environment provided by my program.
Community	
Q9	I feel emotionally attached to other students in my online courses.
Q10	I spend a lot of time with my online course peers.
Q11	My peers have gotten to know me quite well in my online courses.
Q12	I feel that students in my online courses depend on me.
Q13	I can easily make acquaintances in my online courses.
Q14	I have gotten to know some of the faculty members and classmates well.
Course Facilitation	
Q15	Instructors integrate collaboration tools (e.g., Chat room, wikis and group areas) into online course activities.
Q16	In my online courses, instructors promote interaction between learners.
Q17	Instructors promote collaboration between students in my online courses.
Q18	My online instructors are responsive to my questions.
Q19	I receive frequent feedback from my online instructors.
Q20	My instructors participate in online discussions.
Interaction and collaboration	
Q21	I relate my work to others' work in my online courses.
Q22	I discuss my ideas with other students in my online courses.

Q23	I collaborate with other students in my online courses.
Q24	I work with others in my online courses.
Q25	I share information with other students in my online courses.

Survey Questions and Responses [20]

2.1 Validity, Reliability, Sampling and Factorability

The data set included 44 completed response sets and 44 actual shared in order of the College's database which included all enrollment data for the three (3) programs. This is considered adequate because all communalities were greater than .60, items per factor ratio was about 3:1, and all "factor loadings were above .60 in absolute value[48]. Bartlett's test of sphericity"[49][50][51] measure was evaluated to see if the data were appropriate for a factor analysis. Both the[50] and[51] measure of sampling adequacy (.935) and the[50]'s test of sphericity ($\chi 2 = 4694.87$, $p = .000$) suggested that the dataset was adequate. The measure of sampling adequacy (SA) for all three programs was greater than .90 which is considered acceptable[52]. In order to ensure the construct validity of the original survey, the questionnaire was reviewed by a panel of experts involved in distance education and instructional technology at two private non-profit universities in the United States. The researcher completed "reliability coefficient" calculated for the instrument and its subscales after the questionnaire was administered during the study to students enrolled in three online programs (Computer & Information Systems, Health Information Management and Business in Healthcare Management) at Parker University. The instrument's reliability was found to be very high ($\boldsymbol{a} = .78$).

2.2 Statistical Processes of Tables and Figures

2.2.1 Logistic Regression

Table 2: *Case Processing Summary*

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	44	97.8
	Missing Cases	1	2.2
	Total	45	100.0
Unselected Cases		0	.0
Total		45	100.0

a. If weight is in effect, see classification table for the total number of cases.

b. The variable Mode of instructional delivery is constant for the selected cases. Since a constant term was specified, the variable will be removed from the analysis.

Dependent Variable Encoding

Original Value	Internal Value
Persisters	0
Dropout	1

Block 0: Beginning Block

Classification Table [a,b]

Observed			Predicted		
			Student persistence		Percentage Correct
			Persisters	Dropout	
Step 0	Student Persistence	Persisters	36	0	100.0
		Dropout	8	0	.0
	Overall Percentage				81.8

a. Constant is included in the model.
b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)
Step 0	Constant	-1.504	.391	14.807	1	.000	.222

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	GPA	1.133	1	.287
		Course classification	.447	1	.504
	Overall Statistics		1.347	2	.510

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	1.394	2	.498
	Block	1.394	2	.498
	Model	1.394	2	.498

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	40.331[a]	.031	.051

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	6.111	4	.191

Contingency Table for Hosmer and Lemeshow Test

		Student persistence = Persisters		Student persistence = Dropout		Total
		Observed	Expected	Observed	Expected	
Step 1	1	4	4.572	1	.428	5
	2	5	4.494	0	.506	5
	3	6	5.164	0	.836	6
	4	5	4.159	0	.841	5
	5	11	13.462	6	3.538	17
	6	5	4.149	1	1.851	6

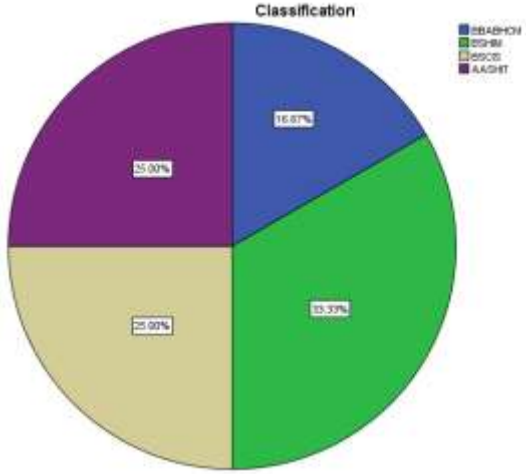
Classification Table [a]

Observed			Predicted		
			Student persistence		Percentage Correct
			Persisters	Dropout	
Step 1	Student Persistence	Persisters	36	0	100.0
		Dropout	8	0	.0
	Overall Percentage				81.8
a. The cut value is .500					

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C. I. for EXP (B)	
								Lower	Upper
Step 1[a]	GPA	-.484	.516	.880	1	.348	.616	.224	1.694
	Course Classification	-.365	.794	.211	1	.646	.694	.146	3.292
	Constant	.361	1.827	.039	1	.843	1.435		
a. Variable(s) entered on step 1: GPA, Course classification.									

Figure 4: *Retention Percentages*



Course offered	2013 (actual expectancy)	2014
BBA-BHCM	100%	16.7%
BS-HIM	100%	33.33%
BS-CIS	100%	25%
AAT-HIT	Not Quantified	Not Quantified

The above Enrolment data classification at start in the online classes for the year

Figure 5: *Student Persistence*

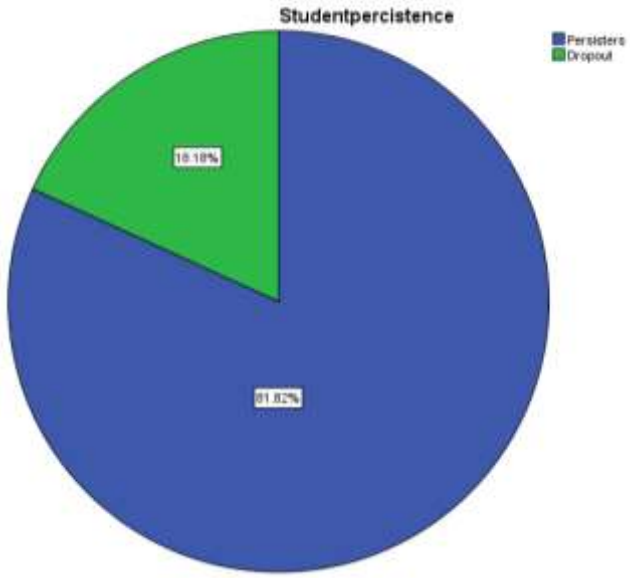


Table 3: *Computations for the Asynchronous method, online and dropout rates*

Statistics			
		Mode of instructional delivery	**Student persistence**
N	Valid	44	44
	Missing	1	1
Mode		1	1
Std. Deviation		.000	.390
Variance		.000	.152
Range		0	1

		Mode of instructional delivery
		Online
		Count
Student persistence	Persisters	36
	Dropout	8

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	44
a. No statistics are computed because Mode of instructional delivery is a constant.	

Table 4: *Regression Analysis*

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.131	2	.566	4.283	.020[a]
	Residual	5.414	41	.132		
	Total	6.545	43			

a. Predictors: (Constant), GPA, last day of attendance
b. Dependent Variable: Student persistence

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.639	.759		-.842	.405
	Last day of attendance	.155	.058	.388	2.700	.010
	GPA	-.100	.066	-.216	-1.507	.139

a. Dependent Variable: Student persistence

Figure 6: *Drop-Out Reasons*

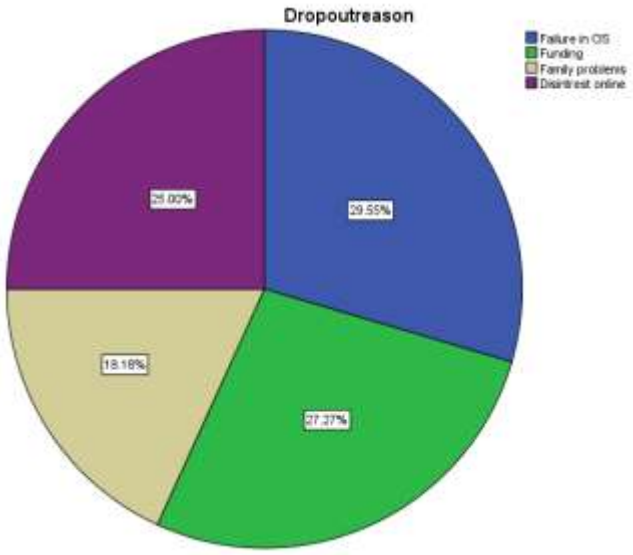


Table 5: *GPA * Student Persistence Crosstabulation*

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.435[a]	3	.218
Likelihood Ratio	6.589	3	.086
Linear-by-Linear Association	1.108	1	.293
N of Valid Cases	44		
a. 6 cells (75.0%) have expected count less than 5. The minimum expected count is .91.			

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Interval by Interval	Pearson's R	-.160	.146	-1.054	.298[c]
Ordinal by Ordinal	Spearman Correlation	-.195	.139	-1.287	.205[c]
N of Valid Cases		44			

Table 6: Statistics

			Statistic	Bootstrap[a]			
				Bias	Std. Error	95% Confidence Interval	
						Lower	Upper
N	Valid	Classification	44	0	0	44	44
		Student persistence	44	0	0	44	44
		College satisfaction	44	0	0	44	44
		Mode of instructional delivery	44	0	0	44	44
		Drop out reason	44	0	0	44	44
	Missing	Classification	0	0	0	0	0
		Student persistence	0	0	0	0	0
		Academic characteristics	0	0	0	0	0
		Mode of instructional delivery	0	0	0	0	0
		Drop out reason	0	0	0	0	0
Mean		Classification	2.11	.00	.00	2.11	2.11
		Student persistence	1.18	.00	.00	1.18	1.18
		Other issues	2.41	.00	.00	2.41	2.41
		Mode of instructional delivery	1.00	.00	.00	1.00	1.00

	Drop out reason	2.39	.00	.00	2.39	2.39
Std. Deviation	Classification	.538	.000	.000	.538	.538
	Student persistence	.390	.000	.000	.390	.390
	College satisfaction	.844	.000	.000	.844	.844
	Mode of instructional delivery	.000	.000	.000	.000	.000
	Drop out reason	1.166	.000	.000	1.166	1.166

a. Unless otherwise noted, Bootstrap results are based on 44 stratified Bootstrap samples

2.3 Statistical Analysis

In the classification table given the base rates of the two years options (36/44 = 81.8%) persists was reported in 2014, 18.2% additional was predicted for the year Fall 2015. This shows that the probability for prediction for persistence was greater. Under Variables in the Equation, we can see that the intercept-only model is ln (odds) = -1.504. If we exponentiation both sides of this expression we find that our predicted odds [Exp (B)] = .222. That is, the predicted odds of persistence -1.255. Since 36 of our subjects decided to go through high persistence and 8 in dropped out, our observed odds are 8/36 = 0.22. This means that the predication is most likely to be occurring in favor Persistence in classes.

Omnibus Tests of Model Coefficients gives us a Chi-Square of 1.394 on 2 df, significant beyond .5. This is a test of the null hypothesis that adding the year of admission variable to there has not significantly increased our ability to predict the enrolment made by our subjects. This shows NOT significance since p > 0.05, hence the null hypothesis is rejected.

Under Model Summary we observe that the -2 Log Likelihood statistics is 40.33. This statistic measures how poorly the model predicts the decisions the smaller the statistic the better the model. The Cox & Snell R^2 (R^2=0.031), but cannot reach a maximum value of 1. The Nagelkerke R^2 is (R^2= .051).

The Hosmer-Lemeshow tests the null hypothesis that predictions made by the model fit perfectly with observed persistence. Cases are arranged in order by their predicted probability on the criterion variable. These ordered cases are then divided into ten (usually) groups of equal or near equal size ordered with respect to the predicted probability of the target event.

The ANOVA results was a test of significance and the results was a significant on the student persistence, $F(2, 41)=4.283$, $p=.02$, NOT a significant last day of attendance, $B=.16$, (p =.01). (See Table 6, for demographics and test scores). The GPA and student persistence cross tabulations show a correlation factor of (R=4.435) that's is Not significant p=0.22 for a valid case of data sample (N=44).

2.3.1: Do dropout rates vary by program delivery mode using Asynchronous learning system?

The Dropout rates vary to a smaller extent with the online asynchronous method. The mode of instructional delivery and persistence shows a 0.0 variance (see figure 5). There is a Most of the class enrolment with the exception of the Health Information Management reported a 78% completion rate in the year 2014. While Bachelor of

Healthcare management reported an extremely low retention. This could be due to variables on the program which started later than the other two. This shows small incidences of dropouts in the students. (See figure 3). The relationship between the student and the instructor, in terms of the students' satisfaction with their communication with the teacher, is one of the factors that distinguish students who choose to continue or dropout[36]

2.3.2: At what levels do social isolation affects performance and causing drop-out?

The study's findings do seem to indicate that academic integration as indexed by the variables of undergraduate GPA may have a lesser influence on the persistence of online students (see figure 8 for significance, $p>0.05$). As indicated by the study, online persisters and online dropouts did not differ significantly on academic variables in the online degree program.

This supports the possibility that other factors beyond student characteristics such as situational factors external to the individual and instructor may be impacting dropout, thus lending support to the earlier findings of Astleitner[37], in a recent review of dropouts in web-based distance education concluded that communication or social interaction between students and between the teacher and the students represent a major factor in the decision to withdraw from a web-based course. Other scholars like [38] and [39] reported that Students in the online cohorts were significantly older so one might assume that the higher dropout rate is possibly a result of an older student population with greater family obligations and job responsibilities.

2.3.3: What social and academic characteristics are associated with dropout in an online undergraduate degree program?

On academic characteristics, 18.18% reported lack of interest as a reason for the dropouts in the online degree program (see figure 7). This is in line with report and recommendation by[39] who observed patterns of attrition with findings that the main factor that influenced their decision to continue or to drop out of the program was their level of satisfaction with course in the program. Other reasons for dropping out included "dissatisfaction with the learning environment, compromise in the professional and the course structure, low confidence levels" in distance learning. Some unique reasons included incompetence in using the distance education software effectively as a learning tool, the overwhelmed feeling of advanced knowledge and information overload.

2.3.4: At what levels do asynchronous learning method affect retention?

The asynchronous method had reported an 81.82% enrolment with persistence in the online classes, this implies a high retention in the number of the leaners (see figure 4). This clearly shows that the learning method (asynchronous method) has a positive effect on the retention of the students enrolled[40].

DISCUSSION

In this study, attrition was shown to be insignificantly but important in the online Bachelor's degree tracks in the three (3) programs. However, attrition was higher in the newest of the programs which is the Bachelor degree in Business Healthcare management

than the comparable online based formats of the same degree programs. The logistic regression analyses showed no significant effect of social isolation. This is based on the fact that the dropout students were not direct enrollment to the program but campus-based students who sought transfer to the program. Several conclusions were drawn based on the literature review report of this research. The researcher's findings must be interpreted with caution based on the limitations of the study. The study's findings are limited by several factors:

1. The study population is limited to level of study year of Fall 2013 to Fall 2014. Undergraduate students enrolled in selected Bachelor's degree program in one program may not be representative of other institutions and programs; thereby limiting the generalizability;
2. The enrollment data and the retention ratios were limited to only three (3) programs for online format limiting the validity and bias of study results;
3. Sample size and variables used in the study belonged to an "intact group" and were not randomly selected; and
4. The interpretation of the data collected is limited by censored data, meaning that the students persisting may drop out at a later time after the study ended or that students identified as dropouts may at some time in the future reenroll in the degree program [43].

CONCLUSIONS

Conclusions drawn from the study are stated below followed by a brief discussion of each.

1. Based on both statistics, enrollment and retention data within the study period, it is obvious that asynchronous program delivery or online format of the program delivery is a viable method of delivery "offering unprecedented access to higher education"; attrition rates in online programs were so minimal by this study, which suggest that attrition in online program formats was not a major factor, though it remains an issue and challenge warranting the attention of educational leaders in program planning and development[43].
2. This study confirms previous research that online education or distance education has become more accepted for American students, competing effectively with on-ground campus-based. In addition, this study disputes the claim by previous research that online students were six times more likely to drop out than campus undergraduate degree students. In fact, this study specifies otherwise.
3. The influence of "academic and social integration on student dropout may vary across different degree programs and delivery formats" [20].
4. The study's findings do seem to indicate that social and academic integration as indexed by the variables of undergraduate family issues, job obligations, course design, effective communications and technology issues may have a greater influence on the persistence of online students. As indicated by the study, online 'persisters' and online dropouts did not differ significantly on academic variables in all degree programs studied. This supports the recommendation that situational factors external to the programs may be impacting dropout, thus lending support to the earlier findings by[40][44].

5. Though, it was suggested by previous research that high dropout rates are an indicator of program quality; however, the findings of this study suggest that dropout rates may be explained by other external factors as well in an online program. This view was justified when a researcher [45] explained that "high dropout rates do not necessarily have to suggest academic non-success", if we define success as student grades rather than the decision to drop out or persist". Further explanation indicates that even when grades were un-earned, students may leave a program with increased knowledge and skills. Crisis of attrition may well be positively inclined to be the best academic option in "some students' situations if work and family obligations are interfering with their academic performance"[45].
6. Dropout seems to result from an "interaction of many complex variables that are difficult to delineate and determine, particularly in online environments, hence making it difficult for one comprehensive theory of dropout to fully explain the phenomenon in all situations or settings" [20].

This study findings quickly validate the recommendations of other researchers that no one reason or theory adequately explains the attrition puzzle[46][47]. The study's findings show that factors associated with attrition and social isolation vary according to external factors not associated with degree program and delivery formats. Furthermore, when examining the enrollment and retention data for the year under study, none of the crisis have any significant association; thereby adequately answering the questions that family issues, technology and course design may be a trivial cause of student attrition in online programs.

IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

A major implication for practice is the importance of recognizing the extent of social isolation and hidden crisis of attrition and their challenges when engaging in program planning and enrollment management. Could it not even be feasible to have pre-admission questionnaires to understand the readiness of potential students? Online orientation specific for all online programs must be a priority in having a cohesive characteristics of students in the program.

Recommendations for future research include: a new research to test the effect of different types of asynchronous learning tools used to facilitate interaction and dialog in online classes on student retention[20]. Other recommendation will be a further study of program specific characteristics that may impact attrition and research on specific characteristics of social isolation.

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