

# **Net Benefits Associated With the Use of XenDirect Enterprise Software by the University of Belize- Toledo Campus**

Completed Research Paper

**Ernest H. Westby Jr**

Team Leader

Indianville, Punta Gorda Town

[ewestbyjr@gmail.com](mailto:ewestbyjr@gmail.com)

**Amira S. Palma**

Team Member

Hopeville, Toledo District

[amirapalma@ymail.com](mailto:amirapalma@ymail.com)

**Kyla D. Cho**

Team Member

Indianville, Punta Gorda Town

[kaylacho@yahoo.com](mailto:kaylacho@yahoo.com)

**Derron Pollard**

Team Member

Indianville, Punta Gorda Town

[pollardderron@gmail.com](mailto:pollardderron@gmail.com)

## Abstract

This research was conducted to analyse how effective the XenDirect Enterprise Software is, at aiding the University of Belize in addressing its student registration and information management needs. To achieve this we have employed the Delone and McLean Information Systems Success Model. This model according to its founders, William Delone and Ephraim McLean, looks at six of the most critical evaluative criteria used to analyse the success of information systems, those being: information quality, system quality, service quality, system use, user satisfaction and overall net benefits. We have resultantly conducted this research by studying, analyzing, and then explaining the relationships among the six dimensions of the Delone and McLean Information Systems Success Model against the XenDirect Enterprise Student Registration and Program Management Software currently in use by the University of Belize.

Across the globe, there has been significant research done to assess the success of information systems at work in varying fields, whether in research or commerce. However, while this is true for most developed nations, many developing countries such as Belize have only just begun to get on board in terms of adopting complex information systems to help manage important information. As a result, research regarding IS success is extremely limited in Belize. Fundamentally, this is what makes this research and others like it an important feature of information systems 'IS' success research in Belize.

The data required for this research was gathered through the use of surveys issued via a convenience sample of thirty (30) individuals who either work for, or study at the University of Belize Toledo Campus. The surveys were designed to meet the criteria of the six-dimensional Delone McLean system success model; focussing on system quality, service quality, information quality, usage intentions, user satisfaction which all combine to determine the net benefits associated with the software's use. To aid our analysis of how these dimensions interact and influence each other, we conducted a Pearson Correlation study among each of the six dimensions identified in the Delone and McLean Model of IS Success. While the results of the correlation studies show a positive correlation among the dimensions of the model, the correlation scores were either weak or for the most part moderately strong throughout. Though the results of the correlations were somewhat positive in favour of Xenegrade's XenDirect Enterprise software's success as an effective information system, the moderate strength of the positive correlation results among the dimensions of the Delone and McLean model does not completely prove the success of the system in carrying out its functions.

Additionally, a regression study was conducted to see the extent to which the dimensions affect net benefits, however; as was the case with the correlation tests, the results of the regression analysis were somewhat weak or inconclusive with only a little more than 50% of the variance in the dependent variable (Net Benefits), being explained by the independent variables (use, system quality, service quality, information quality and user satisfaction).

**Keywords:** Delone McLean success model, information systems (IS), information system success, Regression analysis and correlation study.

**Definition of keywords:**

An information system is software that helps you organize and analyze data. This makes it possible to answer questions and solve problems relevant to the mission of an organization. (Zandbergen, 2018)

A regression analysis is used to study the relationship between two or more variables. Moreover, the regression technique is used to observe changes in the dependent variable with changes in the independent variables. (Chegg Study)

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases. (Rouse, 2018)

## **Introduction:**

Across the globe, universities like the University of Belize have now sought the use of automated systems to help them manage student information; improve service efficiency and overall productivity. While many would never dispute the often exorbitant costs associated with acquiring such technology, most companies would assert that the steep costs are worth the benefits associated with the use of their information system of choice, and more often than not, would go on to contend that automated information systems usage saves money in the long term (Nurzhan, Dosmahanbet, Amirtayev, & Kanatc, 2014). While these assertions could very well be true, there just has not been enough research done to validate these claims in Belize. Apart from budgetary benefits, information systems boast performance improvements, security, demanding features and user friendliness, with very little tangible proof of claims available for validation. The University of Belize currently uses XenDirect Enterprise Student Registration and Program Management Software, and since its adoption in 2010, there hasn't been substantial research done at UB to assess the success or lack thereof given its use of the system.

In this paper we investigated the extent to which XenDirect Enterprise Student Registration and Program Management Software produces net system benefits according to the relationship among variables outlined in the DeLone and McLean model of IS success. In an effort to try and grasp this measure accurately, we have conducted this research while guided by the Information System (IS) success model of William H. DeLone and Ephraim R. McLean, which was first introduced in 1992. This model attempts to explain how each of six dimensions, namely; information quality, service quality, use, system quality, user satisfaction and net benefits relate to one another.

It is designed for non-credit educational organizations including colleges, universities, training organizations, workforce development programs and employer based training programs, and any organization providing education or training in the post-secondary market. The product highlights of XenDirect include accessing secure data from any place. It allows instant analysis of the registration details, with an objective to increase revenue while decreasing cancellation rates. Of the two primary interfaces of XenDirect, the Web Registration Module is designed for students to view offerings, purchase courses, and manage their account. The Admin Module is the system interface the staff use for all aspects of managing programs. These claims are backed by the use of the system in learning institutions across the U.S, Europe and Central America.(Xenegrade, 2018).

As researchers, our primary aim was to assess just how effective the XenDirect Enterprise version Student Registration and Program Management Software actually was at meeting the needs of those who depend on its applications within the University of Belize's Toledo Campus. We aspired to discover whether or not it actually helps its users to efficiently and effectively gather and use relevant information produced by the software. This study is extremely important because to our knowledge, this is the first research into the benefits associated with the use of Xendirect Enterprise Student Registration and Program Management Software's effectiveness at the University of Belize's Toledo Campus. So simply put, one of the primary goals of this research is to determine just how much of the net benefits associated with the use of the Xendirect software can be explained by its system's quality, its information quality, service quality, use and user satisfaction if any at all.

Additionally, our research was geared at producing data evidence which can be used to describe the relationship among the six dimensions in the DeLone and McLean IS success model. To

achieve this end, a correlation analysis was generated in SPSS Statistical Package for the Social Sciences to explain the strength of the relationships among the six dimensions.

## **Literature Review:**

### **Xenegrade in (IS) Management:**

After extensive research using several search engines and research databases including EBSCO, Google Scholar, Zotero and Mendeley, little concrete information was discovered to support or refute the notion that the XenDirect Enterprise Student Registration and Program Management Software is an effective tool for managing important student information at the University of Belize Toledo Campus. What does exist is information about the general expectations of how the software should function once properly used. According to Crudup 2017, The product highlights of XenDirect include accessing secure data from any place. It allows instant analysis of the registration details, with an objective to increase revenue while decreasing cancellation rates. Of the two primary interfaces of XenDirect, the Web Registration Module is designed for students to view offerings; purchase courses, and manage their account. The Admin Module is the system interface the staff use for all aspects of managing programs.

“Xenegrade’s philosophy has always been to provide scalable and affordable registration systems to organizations of all sizes. Enhancing and automating educational registration programs along with fast response support times and extensive system features, some of which are exclusive, are a major focus of Xenegrade. It allows instant analysis of the registration details, with an objective to increase revenue while decreasing cancellation rates. Of the two primary interfaces of XenDirect, the Web Registration Module is designed for students to view offerings, purchase courses, and manage their account. The Admin Module is the system interface the staff use for all aspects of managing programs. (Leisse, J. 2018). These uses have been verified through interviews with students and staff who use the system at the University of Belize Toledo. However, the review of the literature failed to produce any information to support these claims within the context of the University of Belize’s Toledo campus.

Furthermore, the growth of student populations on university campuses across the world has resulted in the reform of higher education as universities as seen here in Belize begin to adopt bachelor and master’s degree programs which require further development of university software. This is necessary to manage and integrate the systems that function to produce important information the University needs to run its business effectively. “The on-going reforms of higher education and the adoption of bachelor/master’s degrees affect the further development of university software. At the same time, vendors of commercial university software enhance the offered functionality to keep pace with the requirements. The need for integration stems from increasing requirements to combine data throughout the whole university or department and to extract information for the university’s management.” (Kudrass, 2018).

### **System Support:**

It is certainly not unusual to assume that computerized information management systems falter from time to time, and as such, software manufacturers must plan for this possibility by providing some form of technical support for users of the system they designed. Xenegrade, being a leader in this industry has done its work to ensure that all users of its available software packages have adequate support when needed. “The online Support Centre is the first line of contact for support. The online Support Centre includes the XenDirect help files (knowledgebase) and a support ticket system used to report all errors or submit questions about XenDirect. The Support Centre is monitored 24/7. If Xenegrade deems that the ticket system is not adequate for a submitted issue; Xenegrade will contact the customer directly regarding the support issue. When relevant, Xenegrade support staff may use a remote connection application to connect to the user’s computer to observe the issue at hand. (Krantz, 2017).

If this coverage is indeed accurate, then it suggests that issues relating to system failure, if at all existent while using this system would be rare and when identified; quickly addressed by experts. This feature is imperative since unsupported or improper use of the system can result in birth of added issues. “Information systems are implemented in organizations to improve the effectiveness and efficiency in those organizations” (Hevner, March, Park, & Ram, 2004); “Further, developing information systems is an effort that involves expertise, insights and skills of several individuals” (Tiwana & McLean, 2005).

### **The Transition to Electronic Information Systems:**

Sometimes, instances where information systems fail to fully address the needs of its users exist simply because processes and procedures were not fully documented and explained during installation. It is important that all aspects of the business are communicated prior to customization of the software packages. “Before any process can be transferred to digitized form, the process must be known thoroughly. This knowing requires one kind of experience from the people who are involved in the design and other kind of experience when the process is digitized. We emphasize that despite being able to act according to the routines there may be problems when writing the routines down and when explaining them in depth to other people.” (Halonen, 2006). So, in instances where the University of Belize may have problems with the Xenegrade system, it could be a result of miscommunication regarding synchronized processes involved in getting important tasks completed.

### **Organizational Expansiveness and Effectiveness:**

For universities like the University of Belize which has several locations over fairly vast distances, the need for integration cannot be understated. In fact such institutions rely on integration for efficiency and overall effectiveness in executing tasks in order to provide essential services. According to Bischof, Gebhardt and Steves in a 2016 article, the concept of an integrated information system is based on the insight that the essential comfort and efficiency gains are realized by improved processes and not just the IT support itself. The most effective means for process improvement is integration. Furthermore, according to Everisto in a 2017 article, the concept of an integrated information system is based on the insight that the essential comfort and efficiency gains are realized by improved processes and not just the IT support

itself. The most effective means for process improvement is integration. Erickson and Evaristo in 2006 add that organizational distance increases the complexity of relationships and thus increases the risk of failure. They also note that different organizations develop their own corporate culture and approaches to development, thus increasing the possibility to misunderstand and mistrust between the distributed sub-teams. "The importance of collaboration between organizations representing same business area is known especially from the commercial branch. The driving force is described to be financial and the benefits are calculated in money. In the university world where the organizations are independent, the benefit of the collaboration is not purely financial but also practical."(Johnston & Vitale, 1988)

## Methodology

To effectively gather data for this research, surveys were designed according to the six dimensions outlined in the DeLone and McLean IS success model. Once the design phase was concluded, the questionnaires were distributed to fifteen UB students, eight of its faculty members and seven auxiliary staff members (adjunct lecturers and or other support staff) who have used the XenDirect system at least once. The surveys included scaled questions which were used to gather relevant information from users of the system.

Once the surveys were completed, they were then collected, organized and the data inputted into an excel spread sheet before analysis and a mathematically supported assessment of the success of the XenDirect system along the key areas was conducted. The data collected from the surveys were organized in Microsoft Excel and then exported into SPSS where statistical tests were carried out. The results of these tests described in the generated and then analysed in order to make mathematical inferences about the success of the XenDirect student registration and management system's success according to the dependent variables or key areas, which are: information quality, systems quality, service quality, use, user satisfaction and net benefits. A Pearson correlation study was conducted to measure how the six variables as identified above are related and to what extent. Once this phase was completed, inferences were made about how and to what extent the quantitative data explains the level of success associated with the information system.

The primary goal of this research was to uncover the facts about the overall net benefits associated with the use of the XenDirect Enterprise student registration and management software currently employed by the University of Belize. To achieve this, we analysed the data gathered while relying on the results of a regression test in SPSS. This test was used to see how much of the 'net- benefits' associated with the use of XenDirect Enterprise can be attributed to the dependent variables. These results will culminate what will be an analysis of how these factors interact to determine the overall net benefits associated with the use of the XenDirect Enterprise version of Xenegrade.

## Hypothesis

The hypothesized relationship between the overall success of the XenDirect Enterprise software being used by the University of Belize according to the six dimensions included in the Delone and McLean systems success model are as follows:

- H01: Information quality will positively impact user satisfaction
- H02: Information quality will positively impact use
- H03: System quality will positively impact user satisfaction
- H04: System quality will positively impact use
- H05: Service quality will positively impact user satisfaction
- H06: Service quality will positively impact use
- H07: Use will positively impact user satisfaction
- H08: User satisfaction will positively impact perceived net benefits
- H09: Use will positively impact perceived net benefits



## Data Analysis and Discussion

The purpose of this analysis is to determine whether or not the XenDirect Enterprise version of Xenegrade is in fact meeting the expectations of those who interact with the system at the University of Belize. Based on the respondent's results, inferences were made about the effectiveness of the system in aiding either students or employees of UB in completing relevant tasks. All thirty, or 100% of the distributed questionnaires were completed and returned for analysis.

Primary data: this data was obtained from the responses of the thirty (30) participants who took the survey. Convenience sampling was done in order to get an unbiased sample set, inclusive of students, faculty and auxiliary staff.

The descriptive statistics for the six dimensions/variables (Information quality, system quality, service quality, use, user satisfaction and net benefits) are presented in the table below:

**Statistics**

	years of experience using computers	Information Quality	System Quality	Service Quality	User Satisfaction	Use	Net Benefits
N Valid	30	30	30	30	30	30	30
Missing	0	0	0	0	0	0	0
Mean	14.57	3.8056	3.5667	3.2667	3.3333	3.3476	3.1833
Median	11.00	4.0000	3.7500	3.2500	3.2500	3.4286	3.1667
Mode	10	4.50	3.75 <sup>a</sup>	3.00	4.00	2.57 <sup>a</sup>	3.00
Std. Deviation	6.917	.87437	.86337	.75411	.84673	.75563	.75474
Variance	47.840	.765	.745	.569	.717	.571	.570
Range	25	3.67	3.50	3.00	3.50	3.43	4.00
Minimum	5	1.33	1.50	1.50	1.50	1.14	1.00
Maximum	30	5.00	5.00	4.50	5.00	4.57	5.00

Table 1.

The number values seen at the top represent the size of the sample set, and as we can see, all the respondents in the sample set participated in the survey at all levels indicated by the six variables. Focussing on the column labelled 'years of experience', we see that among the respondents, the average years of experience using computers is 14.57 years. This suggests that on average, students and or employees of UB have fourteen or more years of experience using computers, with ten years of experience being the most frequent experience level among participants. In terms of experience with computers, there was a maximum of thirty years of experience, and a minimum of just five. Looking at the standard deviation for years of experience we see that there is a 6.917 years deviation about the mean which indicates that there are significant gaps in experience working with computers among participants. For the six variables ranging from information quality to net benefits, we see that on average across all variables, the system seems to be performing fairly well with averages above 3.0 out of 5.0. This is an indication that the system seems to be aiding users in a fairly significant manner when completing their tasks using the system. Information quality and system quality share the highest standard deviations; an indication that respondents have significantly different views regarding these two variable groups. This is not to suggest that respondents only disagree about system quality and information quality as the deviations for the other variables are also significant, just that for these two, the results deviate from the mean score most significantly.

The following charts and tables show the frequency distribution of respondents and their relevant descriptive qualities including gender, age and position:

#### Gender M (1) F(2)

Frequency	Percent	Valid Percent
11	36.7	36.7
19	63.3	63.3
30	100.0	100.0

Table 2

Here we see that of the thirty respondents 63.3% are female while only 36.7% are male.

**Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <25	10	33.3	33.3	33.3
25-35	6	20.0	20.0	53.3
36-45	12	40.0	40.0	93.3
46-55	2	6.7	6.7	100.0
Total	30	100.0	100.0	

Table 3

Table three shown above reveals that of the thirty respondents who took part in the study, the majority or 40% of them were between the ages of 36 and 45. People forty-six years and above were the least represented in the study.

**Position**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Student	15	50.0	50.0	50.0
Full-time lecturer	8	26.7	26.7	76.7
Support staff	7	23.3	23.3	100.0
Total	30	100.0	100.0	

Table 4

Here in table four we see that student's responses were the most significantly present, followed by full-time lecturers and support staff. (Support staff includes both adjunct lecturers as well as non-teaching staffers).

The information included in the above tables is represented graphically below:

**Pie chart showing age ranges for respondents in the study:**

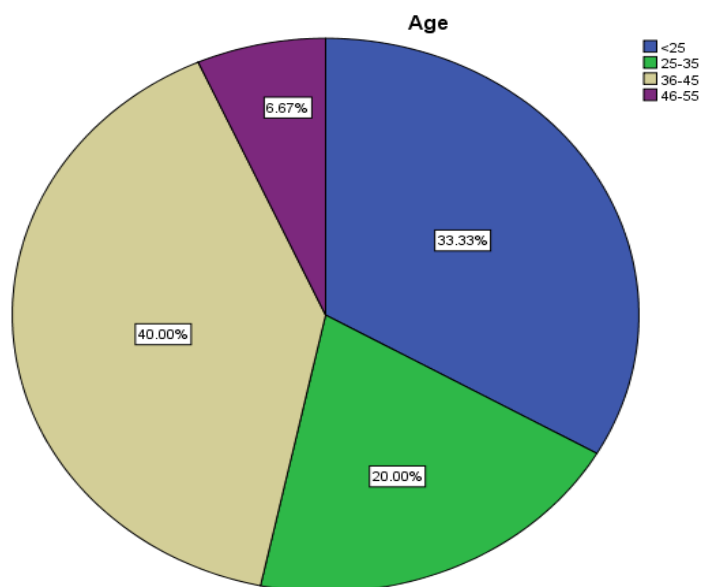


Figure 1

**Pie chart showing position of respondents:**

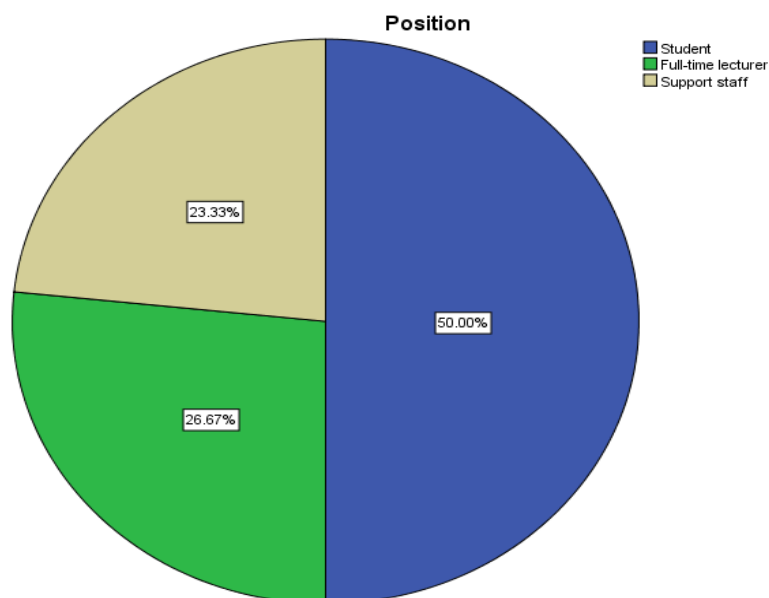


Figure 2

Again, we see that students were most significantly included in the study as they represent half of the respondents.

## Correlations

		Use	Information Quality	Service Quality	System Quality
Use	Pearson Correlation	1	.631**	.532**	.373*
	Sig. (2-tailed)		.000	.002	.042
	N	30	30	30	30
Information Quality	Pearson Correlation	.631**	1	.705**	.393*
	Sig. (2-tailed)	.000		.000	.032
	N	30	30	30	30
Service Quality	Pearson Correlation	.532**	.705**	1	.415*
	Sig. (2-tailed)	.002	.000		.022
	N	30	30	30	30
System Quality	Pearson Correlation	.373*	.393*	.415*	1
	Sig. (2-tailed)	.042	.032	.022	
	N	30	30	30	30

Table 5

Having set our level of significance at 0.05, we see at the top row that use is positively correlated to information quality, service quality and system quality, with system quality having the least significant correlation value. We can also note that the significance values range from .042 down to .000. What this means is that it is fairly likely that the results we see birthed from the sample may also exist in the target population with a 95% accuracy rating. However, the strength of the correlation as seen with system quality cannot necessarily be accepted completely as its significance value is too close to 0.05 which indicates that while significant, the resulting p-value does not provide solid enough evidence to suggest that the findings in the sample set mirror what would likely result from a study of the entire population. When it comes to information quality and service quality though, judging by the significance values, it is very likely that the results obtained from the sample can predict that of the population. While this is moderately promising, the results cannot be accepted without reservations, for while statistically sound in one respect, the results can be questioned on the grounds that the sample size is too small compared to the larger population. (Further research with a larger sample size required for defensible assertions to be made regarding the target population)

Similarly, information quality is positively correlated to use, system quality and service quality with p-values that are less than .05. Here, it is also important to note that as was the case with use, system quality also shows the weakest correlation to information quality. While the correlation coefficients are significant for use and service quality, these correlations are only moderately significant, and as such

cannot perfectly assert that a truly undisputable correlation exists. Service quality to use, information quality and system quality are all positively correlated, with system quality ranking again as least significantly correlated. The results are similar for system quality and its correlation to use, information and service quality. Here we see also that the correlation between quality of the system and its use, and the quality of the system and its information quality while positively correlated, is very weak throughout which is an indication that users find that the quality of the system is relatively low. Correlations among use, information quality and service quality are moderately strong. While this is promising, the results do not provide strong enough validation that all is well, or not so well with the functionality of the system.

### Correlations

		User Satisfaction	Information Quality	Service Quality
User Satisfaction	Pearson Correlation	1	.597**	.717**
	Sig. (2-tailed)		.000	.000
	N	30	30	30
Information Quality	Pearson Correlation	.597**	1	.705**
	Sig. (2-tailed)	.000		.000
	N	30	30	30
Service Quality	Pearson Correlation	.717**	.705**	1
	Sig. (2-tailed)	.000	.000	
	N	30	30	30
System Quality	Pearson Correlation	.653**	.393*	.415*
	Sig. (2-tailed)	.000	.032	.022
	N	30	30	30

Table 6

In table six above, we again see fair to moderate correlations among all relevant variables. User satisfaction is correlated to information quality and service quality. Information quality is positively correlated to user satisfaction but has a stronger correlation to service quality. We can also see in the third row of the table that service quality is moderately correlated to user satisfaction and information quality. System quality seems to have the weakest correlation to information quality; however, system quality has a stronger relationship with user satisfaction. These results certainly do not suggest that the system isn't performing its job; in fact, these correlations though moderate to weak in nature do suggest that for the most part, the system is meeting the needs of its users somewhat.

#### Correlations

		System Quality
User Satisfaction	Pearson Correlation	.653**
	Sig. (2-tailed)	.000
	N	30

Table 7

As seen with the other variable correlations in the previous correlation tables, user satisfaction has a moderately positive correlation to system quality. So while for the most part respondents seemed to have a weak positive response to the quality of the system, the results suggest that users while not completely satisfied with the XenDirect system, they are to some extent comfortable with the way the system currently works. It is also important to point out that overall; respondents seemed to be least impressed with the quality of the system. While that might be true, we cannot assert that this is a result of the system itself but could very well be due to the limitations in expertise among those who run, update and manage the system at UB. These user observations could also be influenced by connectivity issues to the internet at UB Toledo, which is often terribly sluggish or not working at all.

#### Correlations

		User Satisfaction	Use
User Satisfaction	Pearson Correlation	1	.621**
	Sig. (2-tailed)		.000
	N	30	30
Use	Pearson Correlation	.621**	1
	Sig. (2-tailed)	.000	
	N	30	30

Table 8

In the table presented above we can see that there is also a moderately strong correlation between user satisfaction and use with a significance value well below .05, this suggests that while not completely likely, these results are possible when considering the entire population. However, given the small sample size, we cannot confidently accept that these results will hold if the sample size were to increase.

#### Correlations

		Net Benefits	User Satisfaction	Use
Net Benefits	Pearson Correlation	1	.704**	.675**
	Sig. (2-tailed)		.000	.000
	N	30	30	30

Table 9

Here we can see correlation coefficients of .704 and .675 for net benefits to user satisfaction and use respectively. These moderately strong correlation scores suggest that the net benefits associated with the use of the XenDirect Enterprise version of Xenegrade positively correlated to user satisfaction and use.

#### Regression Results:

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770 <sup>a</sup>	.592	.508	.52962

Table 10

a. Predictors: (Constant), Use, System Quality, Service Quality, Information Quality, User Satisfaction

b. Dependent Variable: Net Benefits

What we can see here in the model summary is that according to the adjusted R square value of .508, 50.8% of the variance in the dependent variable (Net Benefits), is explained by the independent variables (use, system quality, service quality, information quality and user satisfaction. This suggests that 50.8% of the time the predictors will determine the net benefits of the system's implementation and use. While this may seem like a promising indication that the predictors provide for more than half of the total net benefits, it also leaves the question of what provides for the other 49.2 % of the net benefits associated with the system. This seems to indicate that users of the system have accepted its limitations and instead find other means to fill the void of a system with limitations.



Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.456	.557		.817	.422
	Information Quality	.086	.176	.100	.489	.629
	System Quality	.028	.152	.032	.183	.857
	Service Quality	-.076	.217	-.075	-.348	.731
	User Satisfaction	.406	.216	.456	1.883	.072
	Use	.357	.183	.357	1.946	.063

Table 11

a. Dependent Variable: Net Benefits

Here we start by looking at the significance values presented in the last column of the table above. We see that for the first predictor variable information quality, the significance value is .629 which is greater than our significance level of .05, this indicates that information quality does not necessarily play a significant role in determining the overall net benefits associated with the system's use. The same is true for system quality and service quality which both carry significance values greater than .05, which like was the case for information quality does not positively influence perceived net benefits given the functionality of the system. However, the last two predictor variables of user satisfaction and use both have acceptable significance values well below .05, which indicates that both variables play a significant role in determining the perceived net benefits associated with the use of the XenDirect Enterprise version of Xenegrade used by the University of Belize. So, for the most part, respondents seem to use the system and are satisfied with the way it works. They however seem to not be satisfied with the quality of the information, the quality of the system and the quality of service provided within the information system.

Focusing now on the un-standardised coefficients looking at service quality, we can expect a .076 decrease in overall net benefits for every point increase in service quality. Similarly, for every point increase in use, we can expect a .357 of a point increase in net benefits. Then again, we cannot be 95% confident that these results will hold true for any of the independent variables other than user satisfaction and use, as these are the only two variables with a significance value below .05.

ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.787	5	1.957	6.979	.000 <sup>b</sup>
	Residual	6.732	24	.281		
	Total	16.519	29			

a. Dependent Variable: Net Benefits

b. Predictors: (Constant), Use, System Quality, Service Quality, Information Quality, User Satisfaction

Again, we can see that there is a statistically significant relationship among the variables as indicated by the significance value of .000 which is significantly lower than .05

## Conclusion

The purpose of this research was to evaluate the overall success of the XenDirect Enterprise version of Xenegrade used by the University of Belize as student registration and management software. Based on the results of the correlation and regression studies conducted we can say with fair confidence that the XenDirect Enterprise version of Xenegrade is meeting the expectations of its users at the University of Belize. Of all the variables considered in the study, system quality seems to rank lowest and as suggested earlier, this could be attributed to the lack of training in how to effectively use the system. Guided by the Delone and McLean system success model, we conclude that information quality and service quality positively impact use and user satisfaction, while system quality comes with a less significant rating in determining use and user satisfaction. Furthermore, a direct and positively significant correlation was seen between use and user satisfaction which both positively impact perceived net benefits associated with the use of the system. Based on the results of the statistical tests conducted, we can say that it seems the variables in the Delone and McLean Model correlate positively in this study with a slight disparity in system quality. If nothing else, these results are promising for us researchers but still inconclusive given the weak sample size. Further research with a larger sample of the population is required for us to determine for sure that the results presented in this study can significantly mirror that of the population.

## Recommendations

Because of the telling concern for the quality of the system, we recommend that those responsible for updating and managing the XenDirect System at UB be given the necessary training in order to effectively manage the system. We also believe that it would be beneficial if students and employees be given some form of monitored/guided familiarization prior to being added to the system. This will prevent the likelihood of any negative experiences with the system due to ignorance. We also recommend that

additional research is conducted across UB's campuses to get a better representation of the facts associated the system's use from a more significant population sample.

### **Limitations**

One of the biggest limitations was a lack of time to adequately conduct the research and analyse the data. Had our only task been the design and implementation of the research before analysis of the findings, perhaps we could have been able to include more participants and provide more reliable results from a more significant sample size. However, there were far too many other course obligations to meet during the semester.

## References:

- Nurzhan, Dosmahanbet, Amirtayev, & Kanatc. (2014). Development of an Automated Information System. *Procedia - Social and Behavioral Sciences* .
- University of Belize. (2018, February). *University of Belize, About Us*. Retrieved February 19, 2018, from [www.ub.edu.bz](http://www.ub.edu.bz): <https://www.ub.edu.bz/about-ub/>
- Xenegrade. (2018, February). *Xenegrade*. Retrieved February 19, 2018, from <http://xenegrade.com>: <http://xenegrade.com/versions/>
- Krantz, S. (2015, January 19). *Event Registration software* . Retrieved from <https://www.wvu.edu/ee/accreditation/2C19/EE2C19XenegradeRFP.pdf>
- Axiom partnership with Xenegrade*. Retrieved from <http://www.axiomhighered.com/articles/axiom-partners-xenegrade-support-non-credit-programs/>
- Crudup, R. (n.d.). *Students registration data*. Retrieved February , from <https://www.cioreview.com/company-epms/xenegrade-student-registration-data-in-integrated-cloud-based-system-cid-418.html>
- Annamalai, R. R. (2014, August 2). *Effective Mngagement Information System-For a successful portfolio management*. Retrieved February 14, 2018, from linked in: <https://www.linkedin.com/pulse/20140802150209-55690292-effective-management-information-systems-mis-for-a-successful-portfolio-management>
- Bischof, Gebhardt, & Steves. (2016). The Integrated CAMPUS Information System: Bridging the Gap between. *Center for Computing and Communications, RWTH Aachen University, Germany* .
- Erickson, & Evaristo. (2006). Risk Factors in Distributed Projects. *Journal of Global Information Management* .
- Evaristo. (2003). The Management of Distributed Projects Across Cultures. *Journal of Global Information Management* .
- Halonen, R. (2006). Digitizing Information Management. *Department of Information Processing Science, University of Oulu, Finland* .
- Hevner, March, Park, & Ram. (2004). "Design science in information systems research. *MIS Quarterly* , 75-105.
- Johnston, R., & Vitale, M. R. (1988). Creating Competitive Advantage with Interorganizational Information Systems. *MIS Quarterly* .

- Komka, & Daunoravicius. (2016). Information System of University: Goals and Problems. *Vilnius Gediminas Technical University, Lithuania, Sauletekio al. 11* .
- Kudrass, T. (2018). INTEGRATED UNIVERSITY INFORMATION SYSTEMS. *Dept. of Computer Science, Mathematics and Natural Science, HTWK Leipzig (University of Applied Sciences)* .
- Markus. (2004). Technochange management: using IT to drive organizational change. *Journal of Information Technology* , 4-20.
- Nurzhan, Dosmahanbet, Amirtayev, & Kanatc. (2014). Development of an Automated Information System. *Procedia - Social and Behavioral Sciences* .
- Tiwana, & McLean. (2005). Expertise Integration and Creativity in Information Systems Development. *Journal of Management Information Systems* , 13-43.
- Chegg Study. (n.d.). *Regression Analysis*. Retrieved April 22, 2018, from [www.chegg.com](http://www.chegg.com):  
<https://www.chegg.com/homework-help/definitions/regression-analysis-31>
- Evaristo. (2003). The Management of Distributed Projects Across Cultures. *Journal of Global Information Management* .
- Halonen, R. (2006). Digitizing Information Management. *Department of Information Processing*
- Hevner, March, Park, & Ram. (2004). "Design science in information systems research. *MIS Quarterly* , 75-105.
- Nurzhan, Dosmahanbet, Amirtayev, & Kanatc. (2014). Development of an Automated Information System. *Procedia - Social and Behavioral Sciences* .
- Rouse, M. (2018). *correlation*. Retrieved April 16, 2018, from [whatis.techtarget.com](http://whatis.techtarget.com):  
<https://whatis.techtarget.com/definition/correlation>
- Zandbergen, P. (2018). *What Are Information Systems? - Definition & Types*. Retrieved March 11, 2018, from [study.com](http://study.com): <https://study.com/academy/lesson/what-are-information-systems-definition-types-quiz.html>

As part of our Management Information Systems research, we are conducting a survey that identifies the overall success of the Xendirect enterprise software currently used by the University of Belize. We will appreciate if you would complete the table below. Any information provided that may in any way identify you will be kept strictly confidential.

**Respondent's Details:**

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Years of experience using computers: \_\_\_\_\_

Position: \_\_\_\_\_ (e.g. Student, fulltime lecturer, support staff...etc)

Strongly Agree <b>(1)</b>	Agree <b>(2)</b>	Neutral <b>(3)</b>	Disagree <b>(4)</b>	Strongly Disagree <b>(5)</b>
---------------------------	------------------	--------------------	---------------------	------------------------------

Dimension	Question Items	(1)	(2)	(3)	(4)	(5)
Information Quality	1. Xenegrade/Xendirect enterprise software provides exactly the information you require from it					
	2. Xenegrade/Xendirect enterprise software provides the information you need in a timely and efficient manner					

	3. Xenegrade/Xendirect enterprise software provides information that is relevant to your <b>job or student needs</b>					
	4. Xenegrade/Xendirect enterprise software provides sufficient information to meet your needs either as an <b>employee or a student</b>					
	5. Xenegrade/Xendirect enterprise software provides up-to-date information					
	6. Xenegrade/Xendirect enterprise software provides information that is easy to understand					
System Quality	1. Xenegrade/Xendirect enterprise software is easy to use					
	2. Xenegrade/Xendirect enterprise software provides high speed access to required information					
	3. Xenegrade/Xendirect enterprise software provides features that positively impact interaction between the system and its users					
	4. Xenegrade/Xendirect enterprise software is very user friendly					
Service Quality	1. UB's support staff keeps Xenegrade/Xendirect enterprise software up to date at all times					
	2. When I have an issue with Xenegrade/Xendirect enterprise software , UB's support staff make an effort to resolve it					
	3. UB's support staff informs users ahead of time when changes will be made to Xenegrade/Xendirect enterprise system software					
	4. UB's support staff responds to user concerns and queries promptly					
User Satisfaction	1. My friends and colleagues all find that Xenegrade/Xendirect enterprise software meets their needs.					
	2. I believe that other users are satisfied with the services provided by Xenegrade/Xendirect enterprise software					
	3. I am satisfied that Xenegrade/Xendirect enterprise software significantly helps me to get my work done					
	4. Xenegrade/Xendirect enterprise software has met all my expectations for usage					
Use	1. I frequently use Xenegrade/Xendirect enterprise software to get my work done					
	2. I possess the necessary know how to use Xenegrade/Xendirect enterprise software effectively					
	3. I depend on Xenegrade/Xendirect enterprise software to get things done					
	4. I am able to use Xenegrade/Xendirect enterprise software					

	unaided for all my requirements					
	5. I want to use Xenegrade/Xendirect enterprise software because it helps me get things done effectively					
	6. I would rather not use Xenegrade/Xendirect enterprise software as an aid in getting things done					
	7. I am being forced to use Xenegrade/Xendirect enterprise software as part of my work/student obligations					
Net Benefits	1. Xenegrade/Xendirect enterprise software helps me to improve my student/work performance					
	2. I am more productive because I use Xenegrade/Xendirect enterprise software to get my work done					
	3. Using Xenegrade/Xendirect enterprise software saves UB lots of money on operational costs					
	4. Xenegrade/Xendirect enterprise software helps UB to meet its institutional goals					
	5. Training and assessment processes are enhanced through the use of Xenegrade/Xendirect enterprise software					
	6. Overall, using the Xenegrade/Xendirect enterprise software greatly enhances my efficiency and productivity					

Strongly Agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly Disagree (5)
--------------------	-----------	-------------	--------------	-----------------------