

## **Learner Demographic, Resource Characteristics, and Responsiveness to eLearning Delivery in Selected Distance Education Institutions in Ghana**

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### **Abstract**

*The study investigated the influence of learner demographic and resource characteristics on responsiveness to eLearning delivery in distance education programmes in Ghana. The study addressed three specific objectives: to profile the distance learners based on demographic and resource characteristics; to establish the relationship between demographics and eLearning satisfaction; to determine the extent to which resource characteristics influence eLearning satisfaction. The study utilized an analytical survey design with quantitative data collection method using a questionnaire. Two dual-mode universities in Ghana were targeted and 517 students were sampled through multi-level sampling method. The study found that distance education students in Ghana are moderately responding to eLearning delivery. It was also concluded that age, gender, marital status and geographic distance had a significant relationship with eLearning satisfaction. Moreover, access to ICTs, access to family time support and access to electricity were significantly related to eLearning satisfaction. It was recommended that distance education institutions should assess the characteristics of the learner prior to the introduction of eLearning.*

**Keywords:** eLearning, learner characteristics, satisfaction, distance education, ICTs, Resources

### **1.0 Introduction**

The advent of information and communication technologies (ICTs) and the Web 2.0 tools have brought significant transformation to 21<sup>st</sup>-century education. Computers and web-based learning has not only improved the quality of teaching and learning but also widened access to quality education. Distance education, defined as a “form of educational delivery, where the acts of teaching and learning are separated in time and space, and technology plays a significant supporting role in enabling this form of delivery” (UNESCO IITE, 2002, p. 11), have benefited immensely from ICTs.

ELearning has therefore emerged as the new dawn of modern education (Sun, Tsai, Finger, & Chen, 2008). The last two decades have seen a dramatic increase in eLearning implementation. Sun et al. (2008) indicated that the growth rate for eLearning market stood at 36.6% worldwide. As a result of this, higher education, all over the world, is embracing online course technologies to reach out to a growing number of non-traditional learners who are unable to attend traditional face-to-face campus courses due to workload, time or physical location issues. As emerging technology, eLearning has the advantage of "liberating interaction between learners and instructors, or learners and learners, from the limitation of time and space through the synchronous and asynchronous learning networks model" (Katz as cited in Sun et al., 2008, p.1183).

Meeting learner needs is vital to achieving learner satisfaction in eLearning learning (Driscoll & Carliner, 2005) and learner needs vary according to their characteristics. Learner characteristics are major determinants of learning performance. The nature of these characteristics can be personal, academic, social/emotional and/or cognitive. Most learner behaviours exhibited in the learning environment are attributed to their characteristics. Galusha (1998) was right on point when he emphasized the fact that "distance learning is student-centered learning; hence knowing the characteristics and demographics of the distance learners helps us understand the potential barriers to learning" (p. 6). An efficient eLearning course is the one that is developed to meet course and student satisfaction needs. There is no doubt that the learner characteristics could influence the learner's decision to drop out or persist in an eLearning course. Thus, taking into account of the learner characteristics would ensure designing and development of more efficient, effective and motivating instructional content.

Distance education institutions in Ghana have begun to utilize eLearning as a tool not only to improve the quality of interaction but also to expand access educational materials. As the learner is considered central to this paradigm of learning, there is the need to establish students' responsiveness to eLearning in terms students eLearning satisfaction in order to determine the progress made and make necessary adjustments for the future. This would help improve teaching and learning through digital technologies and serve as a guideline for future eLearning implementations.

While these developments are considered worthwhile, much has not been done to investigate how students are responding to the new method of delivering course contents to students. Some distance education institutions are reluctant to incorporating eLearning into their activities because they are skeptical of students' performance on and acceptance of these media. There is, however, limited research on distance students' characteristics in developing countries and how these characteristics influence learner responsiveness to technology-based learning. This is very important because what enhances learning is not only when innovation takes into account technology characteristics but also the learning context, pedagogic design, students characteristics and their previous experience, and learners' familiarity with technology (Kirkwood & Price, 2006). Generating a detailed description of distance education students provides useful information to "develop and maintain adequate and appropriate student support services and tailor the support systems to fit the needs of the individual students at their particular institutions" (Aragon & Johnson, 2008, p.147).

### **1.1 Purpose of the Study**

Hence, the purpose of this study was to investigate the influence of learner demographic and resource characteristics on eLearning satisfaction. The specific objectives of the study were as follows:

1. To identify the demographic and resource characteristics of learners in distance education programmes in Ghana.
2. To establish the extent to which learner demographic characteristics influence eLearning satisfaction in distance education programmes in Ghana.
3. To determine the influence of learner resource characteristics on eLearning satisfaction in distance education programmes in Ghana.

## **2.0 METHODS**

### **2.1 Resign Design**

The study adopted correlational survey design. The correlational studies allow researchers to explore the relationship between two or more variables. Survey research also is considered the best option when the researcher interested in collecting large amount data. Survey design is appropriate for measuring attitudes and behaviours of a large population. The study employed a quantitative approach to data collection and analysis. Data was collected using a questionnaire that contained mainly 5-point Likert scale questions.

### **2.2 Participants**

The study sampled 517 students from two dual-mode distance education institutions in Ghana. For anonymity purposes the universities have been named using pseudonyms as University A and University B. These institutions have adopted a blended mode of eLearning to delivery content to students. Although eLearning adoption is still at the infancy stage, some effort is being made at making course contents available anywhere and anytime. Multiple sampling techniques were utilized due to the sub-groups within the population.

### **2.3 Data collection and analysis**

The reliability of the research instruments was established using internal consistency method through the use of Cronbach alpha coefficient. Cronbach alpha coefficient of .87 was obtained which indicates a good internal consistency. Data collection took place at various study centres. Students were accessed in lecture rooms for the completion of the questionnaires. Data were analysed using Statistical Package Social Science (SPSS) version 20.0 and both descriptive and inferential data analysis tools. Inferential statistics included point-biserial correlation, analysis of variance (ANOVA) and Pearson's correlation. Descriptive statistics comprised percentages and means.

## **3.0 Findings of the Study**

Out of the 517 questionnaires distributed to respondents, 485 were completed and returned. However, 468 questionnaires were fully completed and were duly analysed.

### **3.1 Demographic characteristics**

The study profiled the distance learners based on demographic characteristics as presented in Table 1.

**Table 1: Descriptive Profile of Students Characteristics**

Variable	Attributes	N	%	Total
Age	19-24yrs	38	8.1	<b>468</b>
	25-29yrs	204	43.6	
	30-34yrs	110	23.5	
	35-39yrs	74	15.8	
	40-44yrs	32	6.8	
	45+yrs	10	2.1	
Gender	Male	265	56.6	<b>468</b>
	Female	203	43.4	
Marital Status	Single	257	54.9	<b>468</b>
	Married	211	45.1	
Geo. Location	<=10 km	33	7.1	<b>468</b>
	11-20km	75	16.0	
	21-30km	17	3.6	
	31-40km	39	8.3	
	41-50km	68	14.5	
	51 and above	236	50.4	
Level of Education	Undergraduate	249	53.2	<b>468</b>
	Graduate	217	46.8	
Employment status	Employed	425	90.8	<b>468</b>
	Unemployed	43	9.2	
Employment type	Full Time	393	84.0	<b>468</b>
	Part Time	12	2.6	
	Self Employed	20	4.3	
	Not applicable	43	9.2	

The results in Table 1 show the descriptive analysis of the demographic characteristics of distance education students in Ghana. The data shows that majority of the student (N=204, 43.6%) have their ages ranging between 25-29 years. It is also significant to note that three-quarters (n=352, 75.2%) of the respondents were less than 35 years with the rest (n=116, 24.8%) have their ages ranging from 35 years and above. The table also shows that quite a few number (n=10, 2.1%) were 45 years and above. The table also shows more male (n=265, 56.6%) compared to females (n=203, 43.4%) whereas the sample showed more single (n=257, 54.9%) learners compared to the married (n= 211, 45.1%) learners. It could also be seen from Table 1 that majority of students were employed full-time while others had part-time employment with a few unemployed.

### 3.2 Learner Resource Characteristics

The learner resource characteristics looked at learner's monthly salary, access to ICTs, access to the Internet, and access to electricity. It was found that a majority (72%) of the learners were within the low-income brackets. This hindered their ability to acquire digital gadgets for access eLearning resources.

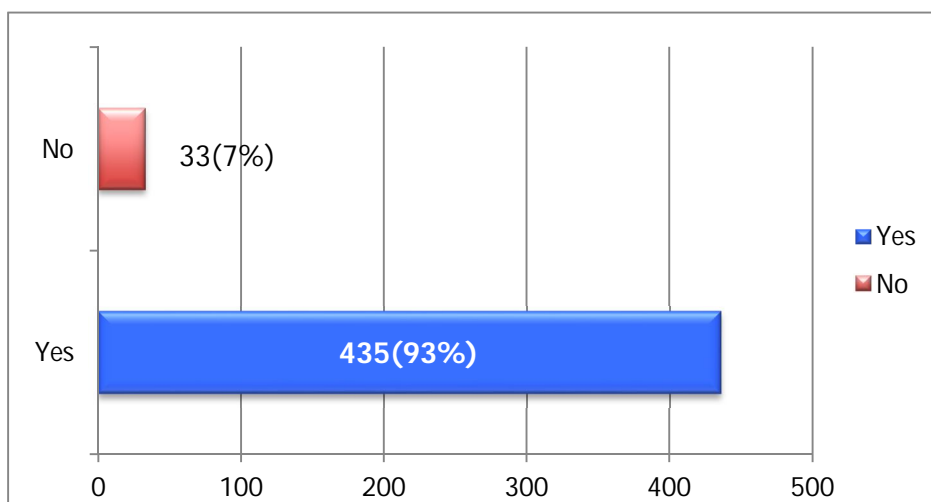
Table 2 presents findings on students' access to ICTs such as computers, smartphones, Tablets/Ipads, MP3/4 devices and external storage devices.

**Table 2: Learners' Access to ICT Devices for ELearning**

ICT devices	Yes	%	No	%
Computer	305	65.2	163	34.8
Smart Phone	367	78.4	101	21.6
IPad/Tablets	172	36.8	296	63.2
MP3/4 devices/iPod	43	9.2	425	90.8
External storage devices	403	86.1	65	13.9

Data in Table 2 shows that 65% of the learners had access to computers, 78% had access to smartphones, 36% had access to tablets and ipads, and 86% had external storage devices. The results suggest distance learners are becoming comfortable with mobile digital devices to access digital contents.

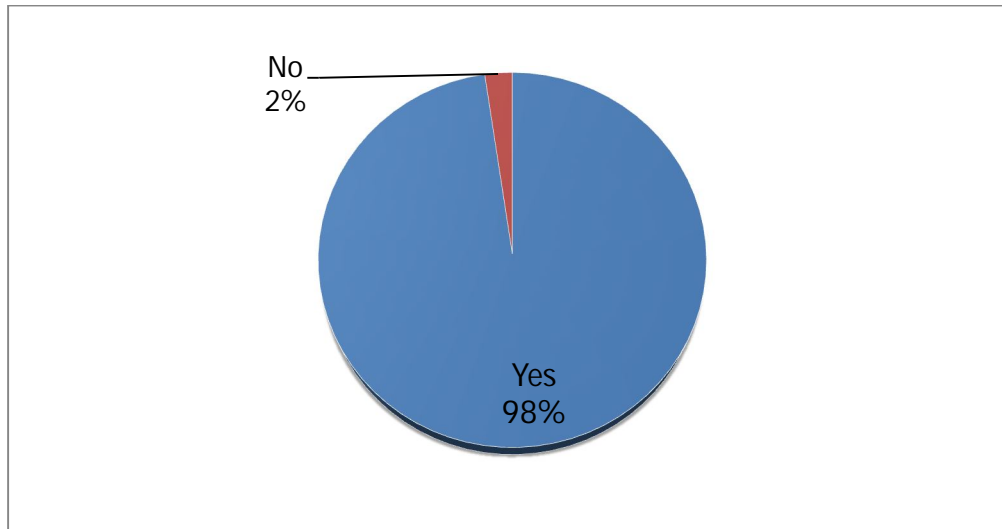
Learner access to the Internet was also looked at. Figure 1 displays the data.



**Figure 1. Learner access to the Internet for eLearning**

Access to the Internet has become a commonplace and key to eLearning implementation. The results in Figure 1 show that majority (93%) of the respondents indicated they had access to the Internet while a few (7%) did not have access to the Internet.

Learner access to electricity is critical to eLearning uptake. Figure 2 shows the result on students' access to electricity for eLearning.



**Figure 2. Learner access to electricity for eLearning**

The results in Figure 2 indicate that, out of the 468 students, majority (98%) of the students had access to electricity while few (2%) had no access to electricity.

### 3.3 Influence of Students Demographics and E-learning Satisfaction

To address the second objective of the study, the Pearson's point-biserial correlation and One-way Analysis of Variance were used. The results were as presented in Table 2 and 3.

**Table 2: Relationship between Students Demographics and Perceived ELearning Satisfaction**

Variable	Correlation coefficient ( $r_{bs}$ )	Sig. (2-tailed)	Coefficient of determination ( $R^2$ )
Gender	.284**	.000	0.080
Education level	.387**	.000	0.145
Employment status	.022	.628	0.001
Marital status	.289**	.000	0.084

\*\* Correlation is significant at 0.01 level (2-tailed).  $N = 468$

Table 3 presents the relationship between age, student location and eLearning satisfaction.

**Table 3: One-Way ANOVA Results of Age, Student Location, and eLearning Satisfaction**

Variable	$F$ -statistic	$df$	Sig. (2-tailed)	Effect size (Omega squared)
Age	11.652	5, 462	.000	0.32 or 32%
Student location	8.190	5, 462	.000	0.27 or 27%

The results in Table 2 show the relationship between four distance student demographic characteristics (Gender, education level, employment status, marital status) and eLearning satisfaction.

**Gender.** The analysis revealed a significant positive correlation between students gender and eLearning satisfaction ( $r_{pb} = .28$ ,  $n=468$ ,  $p < .05$ ,  $R^2 = 0.080$ ). The point-biserial correlation coefficient of  $r_{pb} = .284$  and the  $p$  value is less than the significance level (.05) demonstrate a significant positive correlation between the two variables. Using Davis's (1971) descriptors for interpretation, the point-biserial coefficient showed a weak positive correlation.

**Education level.** The results, as shown in Table 2, suggest that there was a significantly positive correlation between education level and eLearning satisfaction ( $r_{pb} = .39$ ,  $n=468$ ,  $p < .05$ ,  $R^2 = 0.145$ ). The results of the Point-Biserial Correlation coefficient of  $r_{pb} = .39$  with a  $p$  value less than 0.05 level of significance implies a significantly and moderately positive correlation between the two variables. However, as indicated by the  $R^2 = 0.145$ , the level of education explains about 14.5% of the variations in eLearning satisfaction.

**Employment status.** The results showed that though there was a positive correlation between employment status and eLearning satisfaction ( $r_{pb} = .020$ ,  $n=468$ ,  $p = .682$ ,  $R^2 = 0.001$ ), however, the correlation was non-significant. Again, the point-biserial correlation coefficient also demonstrated extremely weak correlation ( $r_{pb} = .020$ ).

**Marital status.** The results revealed that marital status had a significantly positive correlation ( $r_{pb} = .289$ ,  $n=468$ ,  $p < .05$ ,  $R^2 = 0.084$ ) with perceived eLearning satisfaction. Based on Davis's (1971) descriptors for interpretation, the strength of the relationship between the two variables as shown by the point-biserial correlation coefficient ( $r_{pb} = .289$ ) represents a weak to almost moderate correlation but significant. Marital status explains 8% of the variations in eLearning satisfaction.

**Age.** One-way ANOVA (see Table 3) was used to establish a relationship between student age group and perceived eLearning satisfaction in distance education. The results showed that there was a statistically significant relationship between age and eLearning satisfaction in distance education,  $F(5,462) = 11.652$ ,  $p < .01$ , and a moderate effect size of 0.32. Post-hoc analysis using Tukey's HSD recorded significant differences in mean scores between age group 19-24yrs and other age groups except for the age group 45yrs and above.

**Geographic location.** As clearly shown in Table 3, there is a significant relationship between student location and eLearning satisfaction in distance education,  $F(5,462) = 8.190$ ,  $p < .01$ , and an omega squared effect size of 0.27. The Tukey's HSD posthoc test indicated that mean satisfaction score of the students who stay between 41 and 50km ( $M = 3.60$ ,  $SD = 0.65$ ) from the study centre were different from those who stay at 40km and less ( $M = 4.04$ ,  $SD = 0.56$ ) away from school.

### 3.4 Influence of Resource Characteristics and eLearning Satisfaction

Student's resource characteristics consisted monthly salary, access to ICTs, access to the Internet and access to electricity. One-Way Analysis of Variance (One-Way ANOVA) and Pearson's Product Moment correlation were applied for the analysis. The responses were put in three income groups according to the Ghana Living Standard Survey 6 (2014). The income groups were low, middle and high-income groups. A One-Way ANOVA between-groups analysis of variance was conducted to explore the influence of monthly income on students' eLearning satisfaction. The results of the analysis were as shown in Tables 4.

**Table 4: Results of ANOVA Analysis of Monthly Income and eLearning Satisfaction**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.049	2	4.025	12.229	.000
Within Groups	153.034	465	.329		
Total	161.083	467			

A one-way ANOVA results in Table 4 revealed that there monthly income has a statistically influence on eLearning satisfaction,  $F(2,465) = 12.229$ ,  $p = .000$ , ( $p < .05$ ). The effect, calculated using omega squared ( $w^2$ ), was 0.05. The effect size of .05 according to Cohen, as cited in Pallant (2010) is nearly medium (.06). Post-hoc comparison results using Tukey HSD indicated that the mean score for low-income group ( $M=3.43$ ,  $SD = .490$ ) was significantly different from the middle income ( $M= 3.74$ ,  $SD= .611$ ) and High-income ( $M=3.83$ ,  $SD=.634$ ) groups. The middle and high-income groups did not differ significantly from each other.

The results in Table 4.22 show Pearson's Product-Moment Correlation analysis of the influence of access to ICTs, access to the Internet, time support and access to electricity on eLearning satisfaction.

**Table 5: Pearson's Correlation Analysis of Resource Characteristics and eLearning Satisfaction**

Variable	Pearson's Correlation ( $r$ )	Significance ( $p$ )2-tailed	Coefficient of determination ( $R^2$ )
Access to ICTs	.109	.005**	.012
Access to Internet	.164	.000**	.027
Access to electricity	.413	.035*	.171

- significant at .05 \*\* significant at .01

**Access to ICTs.** It was revealed in Table 5 that access to ICTs significantly influences eLearning satisfaction ( $r = .109$ ,  $n=468$ ,  $p = .005$ ,  $R^2 = .012$ ). The null hypothesis that access to ICTs does not have a significant influence on eLearning satisfaction is rejected at .05 alpha. The correlation coefficient of  $r = .109$  shows a mild positive correlation and significant ( $p < .05$ ) with a coefficient of determination  $R^2 = .012$  suggesting a small effect size (Field, 2007).

**Access to the Internet.** The Pearson's correlation results in Table 5 revealed that Internet access has a statistically significant influence on eLearning satisfaction ( $r = .163$ ,  $n=468$ ,  $p = .000$ ,  $R^2 = .027$ ). The value of the Pearson's correlation coefficient ( $r = .163$ ) indicates a positive but quite marginal relationship between the two variables with an effect size of  $R^2 = .027$  which was statistically significant. This means that students with Internet access are significantly more likely to be satisfied with eLearning compared to those who do not have Internet access.

**Access to electricity.** As clearly shown in Table 5, access to electricity significantly related to eLearning satisfaction ( $r = .413$ ,  $N=468$ ,  $p = .035$ ,  $R^2 = .171$ ). The value of the correlation coefficient indicates a moderately positive relationship, which was statistically significant. The coefficient of determination ( $R^2$ ) also indicates that 17% of variations in the dependent variable is explained.



## **4.0 Discussion**

### **4.1 Demographic Characteristics**

The study sought to profile distance education students and explore the relationship between learner demographic and resource characteristics. The descriptive analysis showed that majority of the students in distance in Ghana were males while the minority were females. A significant positive relationship was also established between gender and perceived eLearning satisfaction. Although the current findings are contrary to some studies in literature (e.g. Owusu-Boampong & Holmberg, 2015) the findings agree with the findings of others. In his study on learner characteristics and distance education preference in Nigeria, Awe (2015) concluded that distance education student in Africa is more likely to be male. Odunaike and Chuene (2010) found that in South Africa, a majority (63%) of distance education students were male while the minority (37%) were female.

The study also showed that age range of the distance learner is gradually declining. The current study found that majority of students were within age 25-29 years. This agrees to Moore and Kearsley (as cited in UNESCO, 2002) who indicated that distance learner is most likely to be between 25 and 50 years. On the contrary, several other findings have equally emerged in Germany (average age = 34.8), Greece (age group= 30-37) and in Hungary (between 30 and 40) (Owusu-Boampong & Holmberg, 2015). A significant relationship was also established between age and perceived eLearning satisfaction. In agreeing with, Muse (2003) conducted a study in northern Maryland to determine the factors for successful course completion in online learning and found that age was a significant predictor of course completion in a fully online course. Older students were more likely to complete online courses.

The study also established that there exists a relationship between the level of education and eLearning satisfaction. Graduate students tended to be more satisfied with eLearning compared to undergraduate students. This result concurs with Beqiri et al. (2009) who investigated the possible socio-demographic and education related factors that influence student's eLearning satisfaction and found that education level had a significant relationship with eLearning satisfaction. They indicated that graduate students tend to be significantly more satisfied with eLearning than the undergraduates because they tend to be more focused and purposeful in their academic attainment as compared to undergraduate students who sometimes apply an exploratory approach to learning.

Marital status was found to have a significant relationship with perceived eLearning satisfaction with the married being slightly satisfied than the single. The multiple roles such as personal and family responsibilities of the married make eLearning a preferred choice of content delivery. This complements Pontes et al. (2010) who also found that students who are married with dependents were significantly more likely to enroll in distance education course than single students with dependents. However, no significant relationship was found between employment status and eLearning satisfaction. Both the employed and unemployed showed the same satisfaction levels. It could be perceived that the employed would be more satisfied with eLearning delivery because of their work responsibilities compared to unemployed.

Student geographic location measured by the distance from student's residence to study centres was significantly related with eLearning satisfaction. A student who stayed farther away from study centres tended to be less satisfied with eLearning compared to those who stayed closer to study centres. This could be partly attributed to lack of access to electricity at those remote places. The current finding disagrees with Beqiri et al. (2010) investigation of the factors that determine

student's satisfaction in eLearning which revealed that students who stay farther away from school campus were more satisfied with eLearning than those staying closer to campus. However, it is consonant with Numan et al.'s (2013) findings revealed that distance from residence to study centre was significantly related to students attitude to distance education.

#### **4.2 Resource Characteristics and eLearning Satisfaction**

The current study found a significant relationship between monthly income, access to ICTs, access to the Internet, access to electricity and eLearning satisfaction. Students who fell within the low-income brackets had low eLearning satisfaction compared to students whose incomes were considered high. To some extent, income levels have an influence on student ability to acquire certain ICT devices. Students who have financial difficulty should weigh advantages of achieving their educational aspirations against quitting from their course. As Braxton and Hirschy (2005) indicate, students are more likely to drop out if the cost of attendance exceeds the cost of the perceived benefits of attending college.

Access to ICTs such as computers, tablets, CD-ROMs, smartphones, and flash drives is key to student's responsiveness to eLearning. This study runs counter to the findings of Henderson (2005) who found in two universities in North Carolina that computer access did not significantly influence students' intention to use Blackboard or the Internet or whether students perceive eLearning as useful. The current finding that ICTs access has a significant influence on eLearning satisfaction maybe due to the sharp digital divide that exists in our part of the world. Though the result was not significant, Henderson found that students' feelings about using eLearning tools are influenced by their level of computer access.

The third generation of distance education is closely associated with web-based or computers and distributed networks kind of learning. The Internet therefore is crucial to eLearning and students satisfaction. It was not surprising that this study found a significant positive relationship between Internet access and eLearning satisfaction, given the findings of Henderson (2005) who found that Internet access significantly explained 4.9% of the variance of student attitude towards eLearning.

The role of electricity and reliable power supply in eLearning delivery cannot be overestimated. The current study found that there exists a significant positive relationship between access to electricity and perceived eLearning satisfaction. It is extremely difficult, if not impossible, to experience effective eLearning system without reliable electricity. Consistent with the current finding was a study by Leary and Berge (2007) who indicated that new technologies become worthless for constant lack of electricity despite huge technological investments.

#### **5.0 Conclusions and Recommendations**

Based on the findings of the current study, the study recommends that since the study showed more male being satisfied than females, effort should be made at designing eLearning materials to encourage and engage more female students in eLearning. Graduate students compared to undergraduates tend to accept eLearning more easily. New eLearning implementations should target graduate students after which the undergraduates would be reached. It is also worth noting that learner access to ICTs such as computers, the Internet, and access to electricity is key to effective learner responsiveness.

The government should put measures in place to increase the minimum wage for workers in order to increase salaries. This would, in turn, affect students' ability to acquire ICT devices. Internet access should be made available and affordable to allow students access eLearning materials.

A reliable and uninterrupted power supply is vital to the sustainability of eLearning and other development. The Ghana government and the Electricity Company of Ghana (ECG) should endeavour to ensure reliable electricity supply to distance education institutions for effective eLearning delivery.

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