



# **A Multiple Criteria Analysis of Customers Satisfaction of Distance Education in Ghana: Evidence from Bolgatanga Centre of University of Cape Coast**

**Joseph Akanyako<sup>1</sup>, Simon Akumbo Eugene Mbilla<sup>2,3\*</sup>,  
Redruth Nyaaba Ayimpoya<sup>3</sup> and Baba Blonch Adombilla<sup>4</sup>**

<sup>1</sup>*Department of Marketing, Bolgatanga Polytechnic, P.O. Box 767, Bolgatanga, Ghana.*

<sup>2</sup>*Department of Business Studies, Regentropfen College of Applied Science, Bolgatanga, Ghana.*

<sup>3</sup>*Department of Accountancy, Bolgatanga Polytechnic, P.O. Box 767, Bolgatanga, Ghana.*

<sup>4</sup>*Department of Secretaryship and Management, Bolgatanga Polytechnic, P.O. Box 767, Bolgatanga, Ghana.*

## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author SAEM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript.*

*Authors JA and RNA managed the analyses of the study. Author BBA managed the literature searches. All authors read and approved the final manuscript.*

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## **ABSTRACT**

Distance education continues to be very popular among workers and students who want to further their education. It is particularly popular among workers because they can still work while schooling to add value to themselves and progress in their career. Disaggregation in Multiple Criteria Decision Analysis was employed in the study. The assessment of students' satisfaction with service at the centre was done using tuition, administration, examination, teaching and learning environment. Students in general were satisfied with the tuition they received and the way examinations were conducted. The nature of examinations was found to be acceptable to the students, a majority of the students agreed that questions were normally set within syllabus and

\*Corresponding author: E-mail: [eugenembilla90@gmail.com](mailto:eugenembilla90@gmail.com);

that the results they obtained actually reflected their own performance. Most students expressed dissatisfaction with the learning centre, students were generally dissatisfied with the classrooms, furniture, serenity of the environment and security at the learning centre.

*Keywords: Multiple criteria; satisfaction; students (customers); distance education.*

## 1. INTRODUCTION

Distance education started in the 2001/2002 academic year in Ghana [1]. Currently, four public universities are offering distance education in Ghana. These universities were originally set-up to provide conventional face-to-face education but have now found it necessary to bring education to the doorstep of qualified and interested individual in all parts of the country. The modules for these programmes are usually developed by the lecturers who are charged with the responsibility of overseeing the teaching and assessment of these courses. Tuition is then ceded to other lecturers at designated centres where the programmes take place to facilitate teaching and learning. Face-to-face meeting with the facilitators are done mostly over the weekends to afford all students the opportunity to participate.

Mensah and Owusu-Mensah [2] highlighted the merits of distance education to include; the provision of tertiary education to qualified applicants who otherwise would not have the opportunity to gain access to direct face-to-face contact in the premises of those universities due to limited facilities. Additionally, Mensah and Owusu-Mensah [2] reported that distance education offers working adults the opportunity to combine work and study. This creates an avenue for the universities to generate more income. The coming into being of distance education programmes has afforded many individuals the chance to further their education while still at work who otherwise would have found it difficult to achieve because of their work schedule. The programmes are usually held on weekends in centers located mostly in the various regional capitals.

For instance, in Upper East region four universities have established centers where face-to-face interaction with the facilitators take place. The university of Cape Coast (UCC) [www.ucc.edu.gh](http://www.ucc.edu.gh) use the Zamse Senior High/ Technical school located in the heart of the capital Bolgatanga, the Kwame Nkrumah University of Science Technology [(KNUST) [www.knust.edu.gh](http://www.knust.edu.gh)] use the Bolgatanga Senior High School, University of Ghana (UG) [www.ug.edu.gh](http://www.ug.edu.gh) have their own study center

which was used for adult education for several years now, while the University of Education, Winneba (UEW) [www.uew.edu.gh](http://www.uew.edu.gh) use the St. John Bosco College of Education in Navrongo. Facilities in these institutions, especially in the High Schools are not up to the standard for university education as they are meant for students and purposes of Senior High education.

The University of Cape Coast established the College of Distance Education as the Centre for Continuing Education (CCE) in 1997 [3]. The CODE is an affiliated member of the West African Distance Education Association (WADEA). The CODE, apart from being asubvented sector of the Ministry of Education, maintains active collegial relationship with the sister universities in Ghana and Simon Fraser University of Canada. The Centre was established primarily to provide opportunities for people to pursue higher education; train more professional teachers for all levels of Education in the Ghana Education Service (GES). The CODE has centres in all the regional capitals and some district capitals in the country. It currently has 33 study centres nationwide [3]. These centres form a major component of the administrative structure of the programme. The College is headed by a Director. At the regional centres, there are regional resident tutors. In regions where there are no resident tutors, there are coordinators who facilitate the smooth running of the programmes. The main function of these study centres are essentially, to serve as avenues for interaction with staff and students, tutoring and counseling.

Customer satisfaction has been widely accepted as the driving force of businesses at any level and industry. The customer is a central point of focus in business as most industries have become very competitive, and it is the customer who ultimately determines the success of a business. Customer satisfaction is the emotional response to a product or service and a complex human process involving cognitive and affective processes as well as other psychological and physiological influences [4]. It is broadly understood that it is more expensive to attract new customer than keep existing ones [5]. Hence every business is making a frantic at

keeping their customer by promoting customer loyalty.

Customer satisfaction and service quality have become a major area of attention to practitioners and academic researchers. Service quality leads to higher profitability and customer satisfaction [6]. Quality of services provided and customer satisfaction are essential for gaining competitive advantage and keeping customers are critical success factors in any business [7,8]. Customer satisfaction has become crucial driver of the marketing budget since much attention has to be devoted to the element of customer service and customer relationship management. Most businesses are striving to make transactions more convenient for their customers by employing technological tools and platforms to help customers have easy access to services. Customers are increasingly made to co-produce the service at their convenience, for instance doing mobile banking using mobile phone applications, shopping online, booking tickets and hotel accommodation online.

The lifestyles and preferences of potential students in contemporary times are varied as they are being bombarded with offers from schools both within and outside the country. Technology has fueled globalization and made the world a global village; consumers are now more exposed to the world as compared to two decades ago. People can now sit anywhere in the world and study for degrees in any discipline through online and distance learning. The study concentrates on students of UCC who constitute majority of enrolment among all four public universities that run distance education. There is limited or no information on student satisfaction with distance education in Ghana especially in the northern part of the Ghana. This study therefore seeks to: (i) investigate how students are satisfied with distance education services in the Bolgatanga Centre of Distance Learning. (ii) Assess students' satisfaction regarding the learning environment in which lectures were held. (iii) Determine the quality of teaching and learning at Bolgatanga Distance Learning Centre.

## 2. MATERIALS AND METHODS

### 2.1 Research Design

The study employs a survey of students for primary in a cross sectional study. A mixed method approach was adopted first; run a

multinomial regression analysis on data gathered to test the level of satisfaction of students with the service they receive, and second; detailed results on each of the independent variables were analysed in a qualitative approach using cross-tabulation and graphs.

### 2.2 Population and Sampling

The target population for this study is the students of the CODE, UCC, in the Bolgatanga study centre who are pursuing business and management studies. A total of 240 students are currently enrolled at the study center out of which a random sample of 120 students were selected for this interview. A questionnaire was administered to the students sampled containing questions on personal profile and an assessment of each of the independent variables on a Likert scale. This gave the respondents the opportunity to do a detailed assessment of each aspect of the service they received as distance education students.

### 2.3 Model Specification

The Multicriteria Satisfaction Analysis (MUSA) method proposed by Mitroulis and Kitsios [9] was used to measure students' satisfaction of distance education in Ghana. The basic principle of MUSA is the aggregation of individual judgments into a collective value function, assuming that customer's global satisfaction depends on a set of criteria representing service quality dimensions. The major advantage of the MUSA model is that it measures customer satisfaction from several angles that predict how customers view the service they are receiving.

This study measures customer (student) satisfaction (Global Satisfaction) using four independent variables: Tuition, Teaching and Learning Environment, and Examinations, Administration (Fig. 1). The model has been adapted to suit the purpose of this study in an academic environment.

### 2.4 Definition of Constructs

The Dependent Variable is the Global Satisfaction (GS).

Independent Variables:

1. Tuition – How students perceive the quality of tuition they receive, based on tutors' knowledge on course area, response to questions, feedback, and mode of delivery.

2. Teaching and Learning Environment – Measure of students’ perception of the learning environment considering the classrooms, furniture for studies, serenity of the environment, sense of security around the learning environment and access to the study centre.
3. Examinations – Seeks to measure students’ perception of the nature of assessment by the University. Variables measured here include the relationship between examination questions and syllabus, the environment under which examination is conducted, timely release of examination results and how students perceive their examination results against their performance.
4. Administration – A measure to the general administration of the university and its responsiveness to students demand. Variables tested here include response to student complaints, general attitude towards students and access to information.

[11] This is a relatively younger age group who have found distance learning more attractive than going for full time on-campus education, this probably explains the relative high number of respondents who are students (not employed) who make up about 24% of respondents. Though the main objective of distance education is to target those who are working and are unable to go for full time education, more and more people who are young and still schooling also find this as an opportunity to further their education. In terms of sex, the results revealed that there were more males (72) compared to the females (48). This is in concord with the findings of Ross and Powell [12] who reported similar trend. (Table 1).

### 3. RESULTS AND DISCUSSION

#### 3.1 Profile of Respondents

A brief profile of the students presented in Table 1 was conducted to establish the demographic characteristics of the students at CODE business and management division. Persons within 26 – 35 were dominant, making up 65.8% of respondents, this concurs with the findings of

#### 3.2 Evaluation of Learners Satisfaction of Distance Education

The satisfaction rate of students with the service they receive was measured using the parameters specified in the adapted MUSA model stated above; tuition, learning environment, Examination and Administration. In a general assessment using this criterion, majority of the respondents who expressed satisfaction with regards to tuition at the study centre was significantly higher ( $p < 0.05$ ) compared with those who expressed dissatisfaction (Table 2). This finding is in line with Sampong [13] who reported similar result in a study in which he evaluated the effectiveness of distance teacher education. With regards to the learning environment, the least fancied;

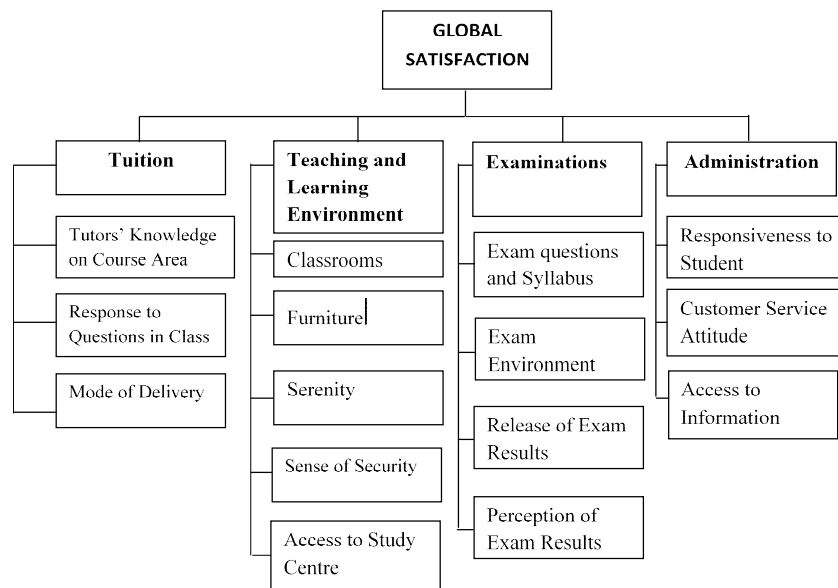


Fig. 1. Disaggregation in multiple criteria decision analysis [10]

**Table 1. Socio-demographic characteristics of respondents who enrolled as distance education students in some Ghanaian Universities in the Bolgatanga centre**

Socio-demographic characteristics	Parameters	Frequency	Marginal percentage (%)
Age	18 – 25	18	15.0%
	26 – 35	79	65.8%
	36 – 45	19	15.8%
	46 – 55	3	2.5%
	>56	1	0.8%
Professions	Teaching	8	6.7%
	Civil/Public service	53	44.2%
	Banking/Financial service	20	16.7%
	Student	29	24.2%
	Self employed	10	8.3%
Gender	Male	72	60%
	Female	48	40.0%
Residence		71	59.2%
		49	40.8%

respondents who indicated they were very dissatisfied and dissatisfied with the learning environment were significantly higher ( $p < 0.05$ ) compared to those who said they were satisfied and very satisfied (Table 2). This outcome indicates a general dissatisfaction with the learning environment of the study centre. In terms of the general administrative activities of the university, from the students' perspective was not encouraging as majority of students interviewed expressed dissatisfaction with the services they receive from those who are in charge of administration of the centre. Significant differences ( $p < 0.05$ ) was observed between those who expressed dissatisfaction and those who responded that they were satisfied. Students in general expressed satisfaction with the manner in which the examinations were conducted, as there were significant differences ( $p < 0.05$ ) between students who responded that they were satisfied or very satisfied compared to those who respondents who felt they were not satisfied with the examinations results they receive (Table 2).

### 3.3 Teaching and Learning Environment

The environment of the study centre was determined from the following perspectives; Location, classrooms, furniture, serenity of the environment and security. In terms of the location 48 respondents rated the location to be good and these was significantly ( $p < 0.05$ ) different compared to those who rated the location to be poor, fair, very good and excellent (Fig. 2). Thirty-two students rated the location to be very

good and this was also significantly ( $p < 0.05$ ) different from those who said it was poor and excellent. From the study, it was revealed that there were significant differences ( $p < 0.05$ ) among all the responses in terms of the nature of the classroom of the centre, with those who responded that the center was poor leading the chart (Fig. 2). These findings suggest that the teaching and learning environment can be a barrier there are. These results are in agreement with Galusha[14]. The study indicated that, furniture was the worst facility rated by the students as there were 70 students who rated the furniture provided in the classroom as being poor. It was however noticed that there were no significant differences ( $p < 0.05$ ) between students who responded that the furniture in the classroom was good and those who said the furniture was very good (Table 2). In respect to the serenity of the environment, most respondents however, indicated a general dissatisfaction with no significant difference ( $p < 0.05$ ) between those who rated it poor and fair. The serenity of the learning environment is essential when comes to teaching and learning [15]. This may explain the reason why a lot of premium is placed on the learning environment. Majority of the students also indicated that the classroom was no secured in terms of their personal security (Fig. 2).

### 3.4 Tuition

In the general assessment, students expressed satisfaction with the tuition they received from the tutors at the study centre, a further break down of

the tuition factor was done using knowledge of tutors on the course area, feedback in class, mode of delivery and commitment (Fig. 3). An average of 73 respondents rated tutors' commitment to teaching and learning as very good and this was significantly different ( $p < 0.05$ ) from those who rated teachers' commitment as poor, fair or excellent. This finding shows that teacher's commitment is very important when it comes education. This may explain the reason why Shann [16] emphasized the fact that professional commitment on the part of teachers is critical and all stakeholders must put in effort to ensure that this is achieved. What stands out is that most of the respondents perceive as very good the quality of tuition received at the study centre. Even though the learning environment was not popular with the students, the tutors were believed to be living up to the expectations

of the students. There was significant difference ( $p < 0.05$ ) between how the students rated tutors' mastery of the courses that they teach (Fig. 3).

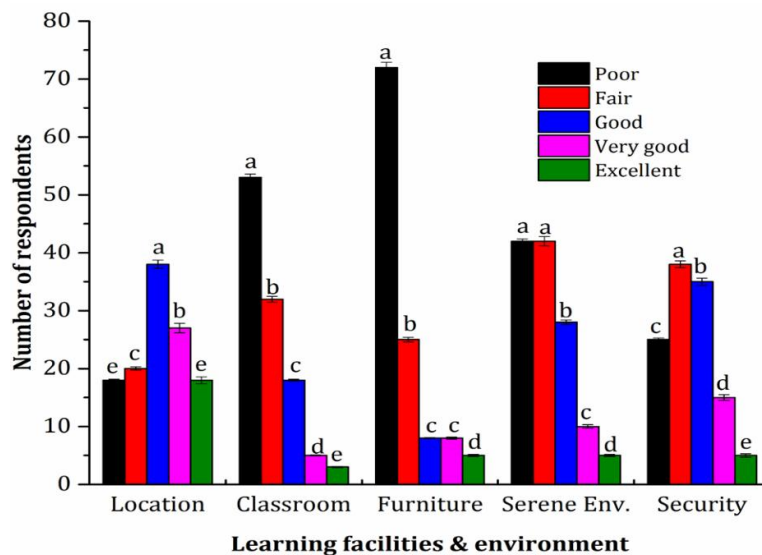
### 3.5 Examinations

A chunk of the students interviewed (83%) felt that questions set by various course examiners fell within the syllabus, most of them also agreed that examinations were conducted under a conducive atmosphere and that the results they got reflects their own performance. The major problem however was the timing of the examination results, timing of release of examination results is the only factor that tilted towards the 'disagree' direction in the diagram. More than 10% of the respondents were of the view that examination results were not released on time (Fig. 4).

**Table 2. General response of students on distance education center in Bolgatanga**

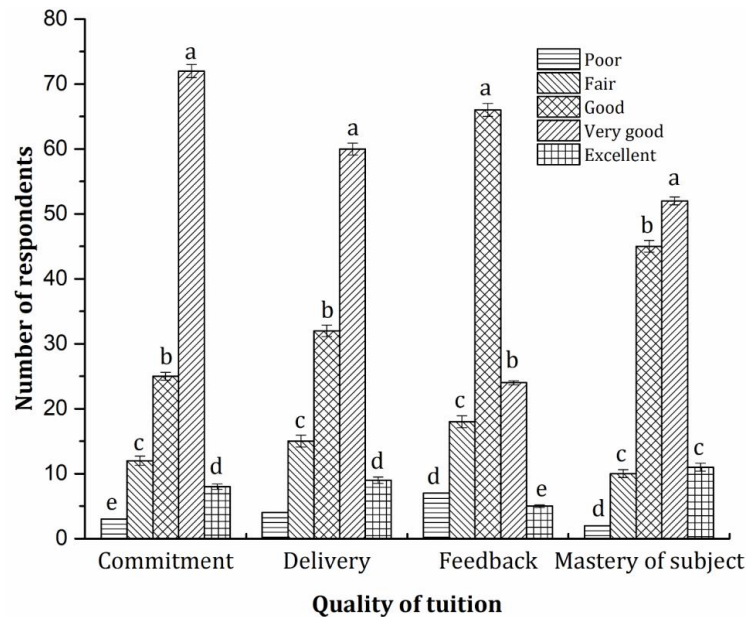
Factor rating	Tuition	Learning environment	Examinations	Response to complaints	Administrative Issues
Very dissatisfied	2.33 ± 0.58 <sup>d</sup>	31.33 ± 1.52 <sup>b</sup>	7.67 ± 1.15 <sup>c</sup>	22.33 ± 2.08 <sup>c</sup>	5.00 ± 1.00 <sup>e</sup>
Dissatisfied	17.00 ± 1.00 <sup>b</sup>	40.33 ± 1.52 <sup>a</sup>	11.00 ± 1.00 <sup>b</sup>	44.33 ± 1.53 <sup>a</sup>	37.67 ± 0.58 <sup>b</sup>
Undecided	8.67 ± 0.58 <sup>c</sup>	13.00 ± 1.00 <sup>c</sup>	21.00 ± 1.00 <sup>b</sup>	16.67 ± 0.58 <sup>d</sup>	11.33 ± 0.58 <sup>d</sup>
Satisfied	73.67 ± 1.52 <sup>a</sup>	22.00 ± 1.00 <sup>b</sup>	57.00 ± 1.00 <sup>a</sup>	31.67 ± 1.53 <sup>b</sup>	45.67 ± 1.53 <sup>a</sup>
Very Satisfied	16.00 ± 1.00 <sup>b</sup>	3.33 ± 0.57 <sup>d</sup>	25.00 ± 1.00 <sup>c</sup>	6.00 ± 1.00 <sup>e</sup>	23.00 ± 1.00 <sup>c</sup>

Values followed by the same superscript letter within each column and for each parameter do not significantly differ for Tukey test at  $P < 0.05$



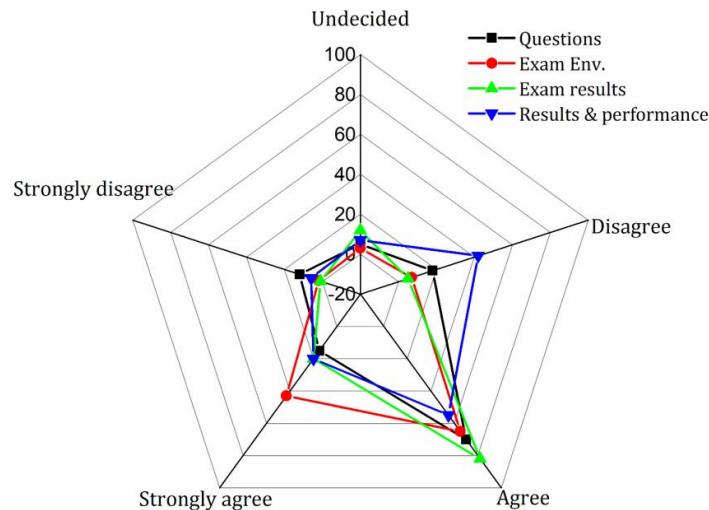
**Fig. 2. Assessment of teaching and learning environment of distance education center in Bolgatanga**

Letters on each bar indicate the results of Tukey's test ( $p < 0.05$ ); Bars with the same letters are not significantly different



**Fig. 3. Assessment of the quality of tuition of distance learning education by students of Bolgatanga centre**

Letters on each bar indicate the results of Tukey's test ( $p < 0.05$ ); Bars with the same letters are not significantly different

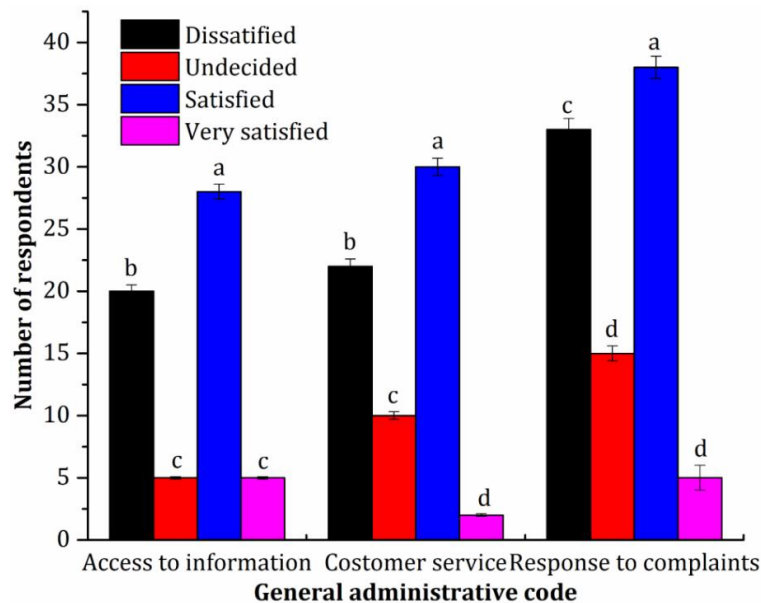


**Fig. 4. Distance students' perception of distance education examination in Bolgatanga centre**

### 3.6 General Administration of the University

Interviewees responded to the question of how satisfied students were with the services provided by administrative staff of the university, four variables were measured; Response to Complaints, Customer Service, and Access to Information. It was revealed that 28 respondents and 20 respondents said they were satisfied and

dissatisfied respectively when it comes to access to information at the distance education centre. those who said they were satisfied with access to information were significantly different ( $p < 0.05$ ) compared with those who said they were dissatisfied. On the contrary, there was no significant difference ( $p < 0.05$ ) between those who said they were undecided and those who said they were very satisfied. It also came to light that there was significant difference ( $p < 0.05$ )



**Fig. 5. Assessment of the general administration of the CODE of distance education centre in Bolgatanga**

Letters on each bar indicate the results of Tukey's test ( $p < 0.05$ ); Bars with the same letters are not significantly different

observed among all the respondents in terms of customer service (Fig. 5). Thirty (30) student indicated that they were satisfied with the services provided. Similar observation was made by Gyamfi and Gyaase [17]. What is notable is that those who generally expressed satisfaction is a little more than those who expressed the opposing opinion. These findings suggest that administrative staff were generally responsive to the needs of the students (Fig. 5).

#### 4. CONCLUSIONS AND RECOMMENDATIONS

The Centre for Distance Education (CODE) attracts several students each year into their education, business and management models of education. Most of the students are workers and people who are self-employed, and fall between the ages of 26 - 35 make up a majority of the students. The results revealed that most students expressed dissatisfaction with the learning centre, classrooms, furniture, serenity of the environment and security at the learning centre. However, students were satisfied with the location of the study centre. This could be due to the fact that most of the students stay within the capital, and the fact that they could travel from their base to attend lectures over the weekend at a central location. The quality of tuition at the centre was generally rated high among students, the students find the knowledge of the tutors,

mode of delivery and commitment to be at acceptable levels.

Majority of the students agreed that questions are normally set within syllabus and that the results they get actually reflect their own performance. They are however dissatisfied with the delay in the release of examination results. The number of students who expressed dissatisfaction with general administrative activities was quite high. The model adopted in this study has proven to effectively predict students' level of satisfaction with the service they receive as distance learning students. Students at the CODE (UCC) were generally satisfied with the service they receive at the centre.

Essential issues relating to the learning centre such as furniture, conducive classrooms, need to be addressed. There is also the issue of delay in release of examination results, in the era of technology, systems should be put in place to enable students access their interim assessment and end of semester results online. Internet usage is very high among students, so using the internet as an interactive tool will certainly help in this regard. Besides, putting measures in place to ensure examination scripts are marked promptly will make the university release results on time to enable students plan their studies well.



Student service and access to information also need improvement. An interactive system needs to be put in place to enable constant communication between the university and the students. This will help address individual student needs more promptly than having the students pass their concerns through the coordinator and the resident tutor to the appropriate authorities to have them addressed. These solutions will help enhance customer experience with the CODE and increase enrolment as well as revenue.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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