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Mohammad Mamunur Rashid, Monira Jahan, Anwarul Islam and Meherin Munjarin Ratna

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Article abstract

The aim of this study is to investigate the present status of DCSA program focusing on student enrollment, dropout and completion trends. The study tries to explore the factors that attract or pull students to enroll in the program and push them to dropout from the program. Secondary data analysis and interview are used to generate data. Quantitative analysis for the secondary data is used to explore students' enrollment, dropout and completion trends. Qualitative approach is used to analyze the information generated from key participants' interviews. The findings of the study reveal that students' enrollment and completion trends are not at satisfactory level. The push factors identified from the study are mostly extrinsic or institution related. The factors that need to improve are current instructional strategy, timely delivery of learning materials and provide course related information, strengthen the activities of Regional Resource Centers (RRC) and Sub Regional Resource Centers (SRRC). The findings have some policy implications implying that the policy makers of BOU should take into account to improve the quality of DCSA program offered by BOU through the delivery mode of ODL.

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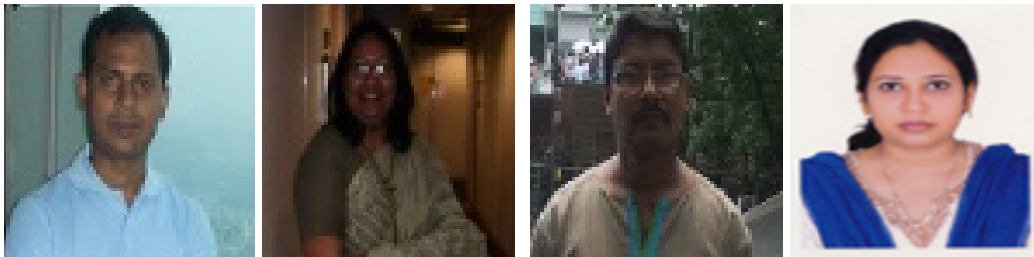


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October– 2015

Student Enrollment and Dropout: An Evaluation Study of DCSA Program at Bangladesh Open University



Mohammad Mamunur Rashid, Dr. Monira Jahan, Md. Anwarul Islam, and Ms. Meherin Munjarin Ratna

¹: Assistant Professor, School of Science and Technology, ^{2,3}: Associate Professor, School of Education, ⁴: Assistant Professor, Open School, Bangladesh Open University

Abstract

The aim of this study is to investigate the present status of DCSA program focusing on student enrollment, dropout, and completion trends. The study tries to explore the factors that attract or pull students to enroll in the program and push them to dropout from the program. Secondary data analysis and interview are used to generate data of the study. Quantitative analysis for the secondary data is used to explore students' enrollment, dropout, and completion trends. Qualitative approach is used to analyze the information generated from key participants' interviews. The findings of the study reveal that students' enrollment and completion trends are not at satisfactory level. The push factors identified from the study are mostly extrinsic or institution related. The factors that need to improve are current instructional strategy, timely delivery of learning materials and course related information, strengthen the activities of Regional Resource Centers (RRC) and Sub Regional Resource Centers (SRRC). The findings have some policy implications implying that the policy makers of BOU should take into account the findings of the study to improve the quality of DCSA program offered by BOU through the delivery mode of ODL.

Keywords: DCSA Program; Dropout Trend; Push-Pull Theory, Intrinsic and Extrinsic Factors, and ODL.

Introduction

The open and distance learning (ODL) is a new paradigm of education. In ODL system students are not restricted by time and space, since distance education is that kind of education, which covers the various forms of study at all levels, which are not under continuous and immediate supervision of tutors present with their students in lecture rooms on the same premises (Holmberg, 1995). The open and distance learning system has experienced a dramatic growth globally since the early 1980's. Looking at its rapid growth Bangladesh Open University (BOU) has conceived ODL as a mode of alternative education to create opportunity for education with disadvantaged groups, who are not able to continue education in the conventional system. Established in 1992, BOU carried with it the vision for a partial fulfillment of the national commitment "Education for all." BOU is the only public university in Bangladesh, of which the instructional method of delivery is ODL. At inception, BOU began its journey with the Bachelor of Education (B. Ed.) degree and gradually offered a wide range of programs, for example, a number of formal and non-formal programs from secondary to tertiary level of education in distance mode using both electronic and print media in a limited manner. To bring education to the mass door steps of the people in Bangladesh, BOU is operating its activities through 12 Regional Resource Centers (RRC), 80 Sub-Resource Centers (SRC), and 1381 Study Centers (SC) in urban and rural areas throughout the country. Currently, BOU is operating 27 formal and 19 non-formal programs through 6 different schools. Formal programs consist of certificate, diploma, degree, and masters level programs. Diploma in Computer Science Application (DCSA) is a diploma level formal program that belongs to School of Science and Technology (SST). This diploma program has been running since 1998. In the beginning, this program gained learners' attention for its flexible nature and of course, for the demand of ICT in 21st century. Unfortunately, due to decreasing trends of student enrollment and course completion; and increasing trend of dropout over the years, the program has drawn the concern and attention of academics to this issue. Focusing on this point, the researchers of this study has taken an attempt to evaluate DCSA program. The main intention of this study is to explore the underlying factors of enrollment and dropout in the program and to provide some guidelines for the improvement of the program. The study designed on the basis of push and pull theory developed by Everett Lee (1966), generally known as *A Theory of Migration*. The intention of using push-pull theory is to clarify the distinction between students' motives for enrolling in the DCSA program and level of incentive that push them to dropout from the program for not fulfilling their expectations.

An Overview of DCSA Program

This section presents a brief outline about Diploma in Computer Science and Application (DCSA) program offered by BOU. Application of ICT is making rapid strides in every conceivable field of our life as the Government of Bangladesh has declared a visionary goal to establish a *digital Bangladesh* by the year 2021. From this point, any ICT related program like DCSA has an importance to contribute in making *digital Bangladesh*. Basically, the DCSA program is slotted into three semesters, where each semester consists of six months. The core objectives of this

program are: (i) to provide technical education to those groups of people, who have missed out the opportunity of formal education (i.e. working persons, people living in rural or remote areas, housewives and the disadvantaged); (ii) to upgrade technical skills; (iii) to spread the latest technologies related to the field of Information and Communication Technology (ICT); and (iv) to produce expert IT professionals to meet the recent increasing demand in the field of computer science. In order to complete the DCSA program, students must have to complete 33 credits course, in which one-credit contains approximately 15 hours of learning activities that include textbooks, audio-visual supports, laboratory works and summative evaluation. Moreover, submission of a project paper is essential for all students as part of the requirement for successful completion of this diploma program. As a whole, to complete the program a student needs a minimum of one year and six months (3 semesters) to a maximum of 5 years.

Instructional Strategy of the Program

Instructional method of ODL system notably differs from the conventional education system. In the conventional education system, students learn in an on-campus environment, where teachers deliver lectures in line with regular class schedules in a face-to-face situation. Students are being monitored closely by their institution and it is mandatory for the students to attend classes regularly. Learners can enjoy frequent face-to-face contact with teachers in the conventional system but students have to complete their courses in a specific time period. On the other hand, in ODL system, there are no such regular class activities rather students have the opportunity to continue their study at any time, study in isolation, and communicate with instructors and classmates through asynchronous tools (Al-Fahad, 2009). The main education delivery tool of the BOU is the printed text book, generally known as module, is prescribed by the different schools of BOU. In addition to module, BOU also provides technology-based support to the students, such as- study related television and radio programs and weekly face- to-face tutorials. The radio and television programs are produced from the University Media Centre and transmitted by the national broadcasting and telecasting centre. Bangladesh Television (BTV) and Radio Bangladesh have allotted broadcasting time to the BOU programs with 20 minutes for television program and one hour for radio program. The TV and radio transmission slots are allotted for six days in a week. Face-to-face contact sessions or tutorials are usually held on each alternative Friday, i.e. twice in a month sessions in the selected study centers (SC) of the BOU. It is expected that in near future, the BOU students will have the access to the facilities of ICT-based Interactive Virtual Class Room (IVCR), Tele-conferencing, e-mail and Internet.

Objective of the Study

The objectives of the present study are:

- to investigate the current status of the DCSA program in term of enrollment, dropout and completion rates;
- to identify the pull factors that attract students to enroll in DCSA program;

- to explore the push factors, i.e. (i) intrinsic and (ii) extrinsic, which are responsible for student dropout from the program; and
- to identify the areas of improvement to increase the effectiveness of DCSA program.

Research Methodology

Research Design

The nature of this study is evaluative and descriptive. To conduct the study information was generated from two sources, i.e. primary and secondary. Quantitative and qualitative research approaches were used in this study to generate research information. The main reason for using both research approaches is to gain a broader and more credible understanding of the facts of the investigation. Secondary data was used to identify students' enrollment, dropout and completion trends. In-depth interview schedules were used to generate primary data from the key respondents.

Sample and Sampling Technique

The students of DCSA program constituted the main sample of this study. The sample of the study was selected using simple random sampling from three different RRC's, i.e. Dhaka, Rajshahi and Chittagong out of 12. There are 8 (eight) active study centers (SC) for DCSA programs located in Dhaka (3), Chittagong (2), Rajshahi (1), Khulna (1) and Jassore (1). Six study centers (3 from Dhaka, 2 from Chittagong and 1 from Rajshahi) from three RRCs were purposively selected for the current study. In total, 90 students were selected from six tutorial centers from the selected RRCs and 15 students ($15 \times 6=90$) from each study center participated in the study. It is important to note that 30% students in the sample were irregular students and the remaining 70% were regular students, who had no study break in their study tenure. Two categories of students were not considered in this study, such as newly admitted and dropout students. New students were excluded from this study due to their trivial knowledge and experience about ODL system. On the other hand, due to some practical reasons, dropout students were not included. Firstly, it was indeed a hard job for the researchers to reach the dropout students. Secondly, time and cost were also a big issue for the researchers.

Data Collection and Analysis Procedures

The researcher collected data from the research sample by visiting tutorial centers located in Dhaka, Rajshahi, and Chittagong divisions. The in-depth interview schedules were arranged with DCSA students after getting their consents. The question developed for interview was open to the participants. We used open questions for interview to derive broader and more credible information related to DCSA program. There were 10 students in one interview group, thus, 12 interview sessions were scheduled for 90 students. Two interview schedules for 15 students were conducted in each of the SCs. In one interview session seven students participated and the

remainder of the students (i.e. eight students) participated in a second interview session. Thus, two interview sessions were conducted simultaneously in each SC. Some open ended questions were developed for the interview schedules and a pilot was conducted to justify the validity of the interview questionnaire. After finalizing the questionnaire, students were interviewed to collect their opinions about DCSA program focusing on the reasons for choosing the program, reasons of dropout, quality of student support services and areas of improvement for effectiveness of the program. Ethical issues were considered strictly to ensure the students privacy and the students had the right to withdraw themselves from the study at any point of the study.

There was both quantitative and qualitative data in this study. The nature of secondary data was quantitative. As part of secondary data, students' enrollment data prepared in 2013 by the students support services (SSS) division and examination division of the BOU, was collected to explore students' enrollment, dropout and completion trends. There were about 6,471 students enrolled in DCSA program up to 2013 academic year. Among them 1,687 students were successfully awarded their diploma in Computer Science from 1998 to 2013.

Data was analyzed using Statistical Package of Social Sciences (SPSS) and Excel. Excel was used to produce graphical presentation. Simple frequency counting along with percentages was computed using SPSS software. To analyze the qualitative data collected from the interview schedules, only participants' opinion about DCSA program were presented in words.

Research Findings

Data was analyzed to find out the trends of student enrolment, dropout and completion rates, quality of student support service, and to identify the factors that are accountable for students' enrollment in the program and dropout from the program. The key findings of the study are presented in the following sections.

Student Enrollment, Dropout, and Completion Trends

Figure 1 shows the student enrollment trend for the DCSA program. The findings indicate that the enrollment trend is quite steady between years 1998 to 2001 (72.3% to 55.9%), whereas the enrollment figure dramatically falls from year 2001 to 2008 (33.3% to 37.3%). The trend noticeably increased in year 2009 and 2010 (58.5% to 53.8%) albeit the trend decreased again from the year 2011 and onwards. The fluctuating trend in student enrollment, particularly between years 2001 to 2008 and 2011 onward, might raise question about the program effectiveness. In favor of this point, it can be said that SST (School of Science and Technology) confronted some technical problems to run the program effectively during this period, which might cause this attenuation in student enrollment. However, the concern school is continuously trying to overcome the program related problems and students are again showing their interest to enroll in this program.

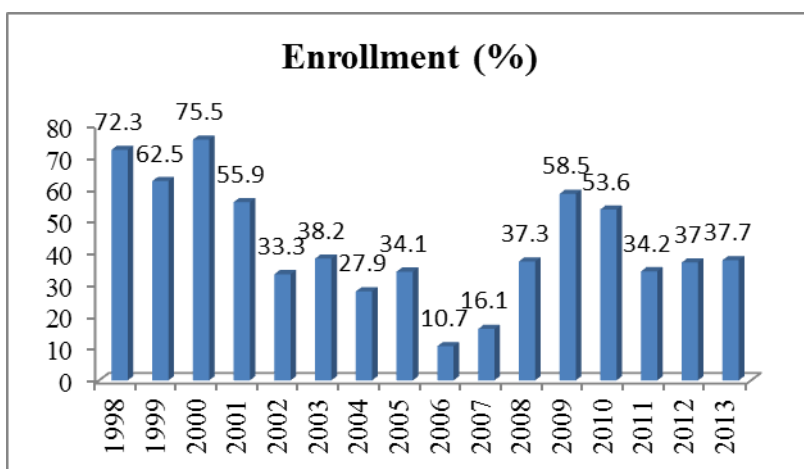


Figure 1: Student enrollment trend of DCSA program
[Source: Secondary data from SSS division, BOU, March 2014]

Looking at student admission and registration patterns over the last fourteen years presented in Table 1, it is seen that, on average, only 59.30% students enrolled for the second semester of their study and student enrollment for third semester was on average 38.03%. In each year, almost 20% to 40% of students' dropout from the program across the semesters and the retention rate is very poor over the years. In fact, in the ODL system, it is hard to use the term "dropout" like conventional system. Registration process of the students is more flexible in lifelong education system or in ODL system than conventional education system, The term "not registered", in the subsequent semesters, is more meaningful for ODL students rather than dropout. So, we can opine from the findings of Table 1 that a large number of students dropout (or do not register) for the full length of the program, which is undoubtedly alarming for effectiveness of DCSA program.

Table 1

Admission and Registration Pattern of DCSA students

Year	Admission trend			Completion trend
	1st semester	2nd Semester (%)	3rd Semester (%)	
1998	723	292 (40.39)	176 (24.34)	10.93%
1999	625	339 (54.44)	165 (26.4)	13.12%
2000	755	532 (70.46)	246 (32.58)	24.37%
2001	559	269 (48.12)	245 (32.45)	23.61%
2002	333	161 (48.34)	111 (33.33)	22.22%

2003	382	215 (56.28)	156 (40.84)	28.01%
2004	279	158 (56.63)	137 (49.10)	32.97%
2005	341	156 (45.74)	101 (29.61)	25.22%
2006	107	87 (81.31)	76 (71.03)	45.79%
2007	161	112 (69.56)	84 (52.17)	40.37%
2008	373	230 (61.66)	194 (52.01)	35.92%
2009	585	362 (61.88)	254 (43.42)	27.52%
2010	536	359 (66.98)	294 (54.85)	33.58%
2011	342	258 (75.44)	193 (56.43)	35.67%
2012	370	276 (74.59)	172 (46.47)
2013	377	255 (67.63)	-----
	Total= 6848	4061 (59.30%)	2604 (38.03%)	Average=26.19%

[Source: Secondary data from SSS division, BOU, March 2014]

Although the growing enrollment trend over the years (as shown in Figure 1) reveals that the program was well received by the students' but the survival rate was very low as presented in Figure 2. For example, only 1,687 (24.63%) students out of 6,848, enrolled in DCSA program between the years 1998 and 2013, successfully completed their study and were awarded the diploma in DCSA. In the year 1998, 723 students were admitted into semester 1 and among them, only 292 and 176 students registered in the 2nd and 3rd semesters respectively. That is, approximately 24% percent of students managed to reach their third semester, resulting in 10.93% students successfully completed the diploma. Table 1 clearly indicates that the student completion rate for the DCSA program is less than 50%.

To evaluate the program effectiveness, student enrollment, drop-out and completion trends are compared in Figure 2. The dual curve of the graph in Figure 2 indicates that the flow of enrollment was considerably higher between the years 2002 and 2007. After the slow growth of the program, students' enrollment and completion rates increased again from year 2008 albeit the dropout rate is still unsatisfactory. However, it is clear from Figure 2 that students' dropout trend (more specifically not registered) is noticeably increased over the years and the completion rate is not at a satisfactory level, which might raise question about the existence and effectiveness of the program.

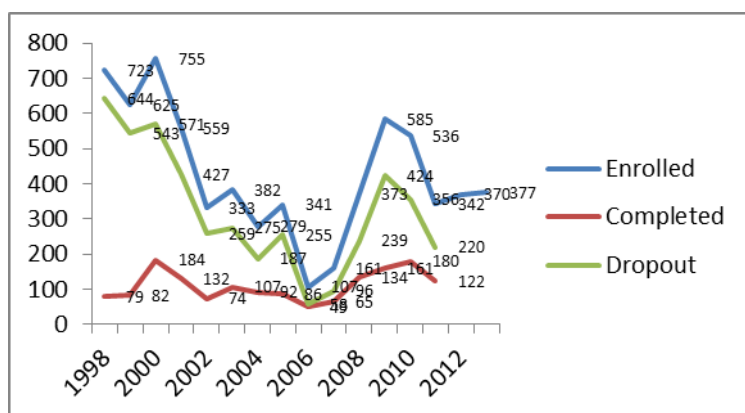


Figure 2: Enrollment, Dropout and Completion trends of DCSA Program

[Source: Secondary data from SSS and Examination divisions, BOU, March 2014]

Pull Factors that Attract Students to enroll in DCSA Program

The study also explores the pull factors that attract students to enroll in the DCSA program delivered through the ODL system. The factors identified from the students' interviews are:

- The flexible nature of the ODL system in regards to time and place; instructional approach and resources; open entry or easy entry requirements; pace and collaboration; choice of learning style; and choices in content and assessment (Collis, Vingerhoets, & Moonen, 1997; Ling, Arger, Smallwood, Toomey, Kirkpatrick, & Barnard, 2001 cited in Palmer, Holt and Farley, 2010).
- It is possible to continue their study and works simultaneously.
- This second chance to education creates an opportunity for further study.
- Students choose this program to achieve an ICT-based diploma in addition to their previous degree, which is not related to ICT. They need this course to compete with the job market and develop their professional skill.

Push Factors that Cause Student Dropout

It is evident that current facilities of the BOU study centers are less flexible and inadequate for effective teaching at a distance, which is particularly true for technical and science courses, such as- DCSA (Islam, Rahman & Rahman, 2006). Further, there are some predicament in providing effective student support services (SSS) and coordination among BOU faculties, students, the Regional Resource Center (RRC), the sub-regional center (SRC), the study center, and the BOU main campus. For these reasons, a huge number of students cannot continue their studies and ultimately dropout from the course. Focusing on this point, this study has tried to explore the push factors that create barriers for students completing courses. Two different push factors, i.e. intrinsic and extrinsic, are distinguished from the study (Figure 3), which shows that the

students believe these factors are responsible for students' dropping out. Findings derived from this study regarding reasons of dropping out are in line with the findings of other researchers (Bean & Metzner, 1985; Tinto, 1993; Kember, 1989; Vergidis & Panagiotakopoulos, 2002; Packham, Jones, Miller & Thomas, 2004; Willging & Johnson, 2004; Pierrakeas, Xenos, Panagiotakopoulos, and Vergidis 2004; Park, 2007). The intrinsic factors identified from the study are related to students' personal reasons. On the other hand, extrinsic factors are mostly institution related. The intrinsic and extrinsic factors identified from the study are described in the subsequent paragraphs.

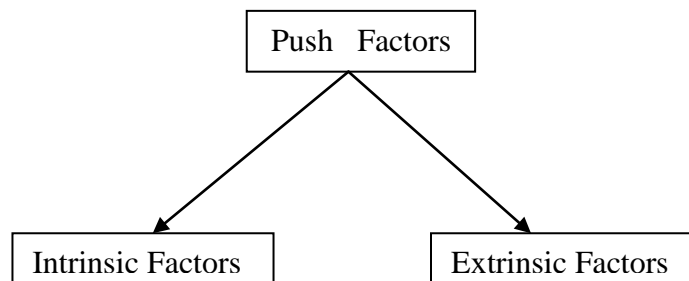


Figure 3: Push factors accountable for student dropout from the course.

Intrinsic Factors

Personal reasons.

- ❑ Personal work load is one of the main reasons of student dropout. Most of the ODL students are involved in service or engaged in other income generating activities or other conventional academic programs. So, it is difficult to manage adequate free time for self-reading at home and attending tutorial sessions.
- ❑ For some students financial constraint is considered as a barrier to continue three semesters of the course.
- ❑ Examination related factors, such as-failure in examination, attend in examination and re-sit examination, also push the students out from the course.
- ❑ One of the major reasons is students' inability to understand the course materials, which is mainly due to their low academic capability, language deficiency or content suitability.
- ❑ Other factors are: (i) distance between students' residence and tutorial center, (ii) health problem, (iii) death of a family member, (iv) separation or

divorce and (v) problems particularly related to female students are marriage, pregnancy, childbirth and maintaining family.

Extrinsic Factors

Student support service related reasons. This study attempted to discover the students' views regarding the students support services. About three quarters of the students (75%) reveal that student support service (SSS) of the BOU is very poor and similar evidence was found from study of Sultana, Jahan and Numan (2011). The students in the sample identified the following areas that cause the hindrance for effective operation of a skill development program like DCSA.

- ☐ Insufficient academic support from the study center (SC).
- ☐ Lack of assistance, cooperation, responsiveness, motivation from the tutors, study center, regional resource center (RRC), head office, and other supporting staff.
- ☐ Inadequate number and duration of tutorial and practical classes.
- ☐ Less interaction between the BOU faculties and students.
- ☐ Distance of the study center. A good number of students (75%) states that the SC (Study Center) is too far from their residence to continue the study.

In order to improve the quality of Student Support Service (SSS), the authority of BOU should take appropriate initiatives to solve the above problems.

Program related reasons.

- ☐ Difficulty in learning science through ODL mode.
- ☐ Insufficient learning materials, facilities and not getting information in right time.
- ☐ Language (English) barrier of the students. Please note that the prescribed modules for the DCSA program are written in English. It is a common belief that the students of BOU are not academically sound and so are vulnerable. Basically, their previous mode of study and instruction was in Bengali, whereas the modules written in English create a barrier for the students to understand their study materials. As a result, they dropout from their course.
- ☐ Delay in publishing' examination result and delivering study materials.
- ☐ Lack of proper recognition for job opportunities. Sometimes academic qualification they earned from the BOU is not accepted by the other organizations.
- ☐ The program cannot fulfill the students' expectation. There might be several other causes, which can create barriers in student enrollment and completion of the course.

Areas of Improvement of the Program

Students in the sample were asked to provide their opinions about how and where BOU authority should pay attention to improve the program effectiveness. Areas of improvement identified from their opinions are given below:

- Increase number of laboratory and tutorial classes;
- Provide up-to-date syllabus of DCSA program;
- Ensure timely delivery of study materials, maintaining tutorial class schedules properly, and conducting examination and publishing result in a timely manner;
- Create effective communication between faculty and students; and
- Maintain strong co-ordination among the BOU main campus, RRC, SRC and SC.

Policy Recommendations

It was discovered from the findings that the main reasons for student dropouts from the course were: (i) failure to balance their academic workload with their employment commitments and (ii) lack of supports from BOU in term of program management, such as-(a) provide sufficient amount of time for conducting and publishing examination result, and delivery of learning materials, (b) insufficient academic support from study center (SC), (c) duration and inadequate number of tutorial and practical sessions, (d) inadequate facilities for practical sessions and (e) lack of interaction among BOU faculties, tutors, and students. The findings of this study have some policy implications. The following recommendations can be considered to foster the effectiveness of the DCSA program and to maintain quality education:

- ☐ Strong and cooperative student-support services are an important pre-requisite for improving completion rate and reducing dropout rate.
- ☐ Program materials and other related information should be delivered to the student at the beginning of the program.
- ☐ Laboratory facilities, number and duration of practical classes, and tutorial sessions should be increased to fulfill students' needs and provide quality education. At the same time, BOU authority should think to establish its own laboratories either in the BOU main campus or in the RRC's for practical classes.
- ☐ Direct interaction between BOU faculties and students are imperative. To increase interaction between faculties and students, following initiatives can be introduced: facilities of ICT-based Interactive Virtual Class Room (IVCR), Tele-conferencing, e-mail, web-based lecture and discussion panel for the students.
- ☐ Select quality institutions as study centers and appoint skilled teachers as tutors, who can motivate students' and also prepare them properly for their semester-end examination.
- ☐ There should be a strong coordination between BOU academics, tutors and administrative staff at the main campus, RRC and LC levels.

- ❑ Service incentives to the diploma graduates can be suggested to reduce the attrition rate.
- ❑ BOU authority needs to be more efficient in arranging examinations, publishing results, and distributing materials, so that these tasks can be completed in optimum time.
- ❑ Finally, it is important to conduct a needs assessment survey at regular intervals during the program to evaluate the program's needs, weaknesses and opportunities, and to improve the quality of the DCSA program in order to fulfill the students' expectation.

Conclusion

As a new method of education, ODL is gradually gaining acceptance in Bangladesh like other developed and developing countries for its “flexible opportunities of cost-effective continuing education to a large segment of its population” (Jahan, Habib, and Akhter 2010, p.61). Bangladesh Open University is the first and only university that delivers flexible open and distance education offering certificate, diploma and graduate programs for the population of Bangladesh, who require further education for their professional development or seek a second chance of education. DCSA program is one of these programs offered by School of Science and Technology (SST) intending produce graduates, who will be skilled in the field of computer science. In order to identify the program effectiveness, this study has tried to evaluate the existing status of the DCSA program by exploring-(i) the trends of student enrollment, dropout, survival and (ii) reasons for dropping out of the program based on the push-pull theory. Findings of the study suggest that possible recommendations obtained from the students' opinions have policy implications to fulfill the Government's visionary goal to establish a “digital Bangladesh” by the year 2021. This study also identified the factors that pulled the students to choose this flexible nature of education. In addition, some intrinsic and extrinsic factors, i.e., personal, student support service and program related factors were also identified from this study, which created barriers to the effective delivery of the program. Suggestions received priority is mostly related to quality student services. It is believed that effective student support services lower the dropout rate and increase the completion rate. We expect that the existing problems and drawbacks of DCSA program can be solved taking appropriate and timely steps.

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Appendix-1

Questions for Interview Schedule

Dear participants,

We are collecting your opinions about choosing ODL system as method of your study over traditional system. The questionnaires are about- why do you choose this system? or what are the factors that attract you to enroll in BOU DCSA program? or your opinions and suggestions about student dropout and program improvement. Please feel free to answer each question clearly, honestly and according to your own opinion.

1. Name of Regional Resource Center:
2. Name of tutorial Center:
3. Number of participants for interview schedule:

Questions for Interview:

1. (a) Why do you choose open and distance learning system for your study rather than traditional system?
(b) Please indicate the factors that attract you/students to study DCSA program in ODL system.
2. (a) Can you tell me which of the following factors is responsible for student dropout from ODL system?
☐ Personal reasons ☐ Academic/ institution related reasons Bot ☐
(b) Please tell in details about personal and institutional factors, which are responsible for student dropout from this DCSA program offering by ODL system?

Personal reasons: 1.....
2.....
3.....
4.....

Academic/ institution related reasons:
1.....
2.....
3.....
4.....

3. Please identify some area/s, which are important to improve the quality of DCSA program and the BOU authority should account for.

--Thank you for your help--

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