

PREVALENCE AND THE EFFECT OF NON-STARTERS ON COURSE COMPLETION RATES OF THE B.SC. PROGRAMME: A PRELIMINARY STUDY

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INTRODUCTION

Graduation rate is an important measure of efficiency of an academic programme. In general completion rates for Open and Distance Learning (ODL) programmes are lower than their counterparts conducted in face-to-face mode. Open entry, students transferring to other institutes, student settling for intermediate qualifications and other commitments in life such as involvements at work, family responsibilities etc. are suggested as the causes of this “*distance education deficit*” (Simpson, 2013).

In ODL, defining a meaningful programme completion rate is not straightforward since some students may never intend to complete an entire programme of study. As such, often, individual course completion rates are used in such studies. A high individual course completion rate is a necessary condition for high programme completion rate. As such ODL institutions must strive in improving their course completion rates.

The quantity, $100 \times (\text{Number of students completing}) / (\text{Total number enrolled})\%$ may be considered as the simplest definition of completion rate of a course. This quantity is adversely affected by dropouts. About 80% of dropouts from an ODL course occur very early in the delivery of a course, typically within a week of the commencement of the course (Simpson, 2013, Bates, 2005). As such it has been suggested in using the “stable” student enrolment after initial dropouts (termed *non-starters*) in defining the course completion rates. Stable enrolment consists of the students who have demonstrably started the course; e.g. have completed some graded work (Giguère, 2007).

The student cohort in a course who obtains a zero Continuous Assessment Mark (CAM) includes all the students who have not participated in any graded activity. Experience at the Open University of Sri Lanka (OUSL) has shown that only a minute fraction of those who participates in continuous assessments in a course earns a zero CAM. One may argue that this minute fraction of students has not started engaging adequately with the lesson material. Hence in this preliminary study of *non-starters* in courses in the B.Sc. programme, we define a student who obtains a zero CAM in a course as a *non-starter* in that course. Also, this definition makes the identification of *non-starters* independent of the structure of the assessment activities which vary from course to course. Hence, *non-starters* could be identified easily using the available CAM data in the OUSL management information system.

The probability of a student dropping out is high in courses at the entry level to an academic programme. Ideally, any remedial measures in improving completion rates should be administered at this level. Hence, we have studied the prevalence of *non-starters* and their effect on the completion rates at the entry level (Level 3) of the B.Sc. programme at OUSL.

It has been shown that in designing activities for improving course completion rates it is useful to work with completion rates of students who register in a course for the first time, termed as *Fresh-student Completion Rates* (FCR) (Bandarage *et. al.*, 2012). Hence, we have studied the effect of non-starters on FCR.

Courses amounting to 9 OUSL credits (7.5 Carnegie credits) are offered, at Level 3 of the B.Sc., in each of the 7 disciplines, Botany (BOT), Chemistry (CHEM), Zoology (ZOO), Physics (PHY), Computer Science (COMP), Pure Mathematics (PMATH) and Applied Mathematics (AMATH). We studied non-starters in all these discipline based courses (a total of 18: BOU1101, BOU1200, CMU1121, CMU1200, ZLU1280, ZLU1181, PYU1160,

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PYU1161, PYU1162, CPU1140, CPU1141, CPU1142, PUU1140, PUU1141, PUU1142, APU1140, APU1141 and APU1142). Continuous assessment activities in these courses consist of tests, workshops, laboratory classes, student presentations and field visits.

Research questions:

1. How prevalent are *non-starters* in discipline-based courses at level 3 of the B.Sc. degree programme?
2. What is the effect of *non-starters* in discipline based courses at level 3 on Fresh-student Completion Rates?

METHODOLOGY

In studying the *non-starters* of a course, in a particular academic year, we have identified four categories of registrants in a course based on their level of experience with ODL as well as the course, at the time of registration: (a) *New registrants (N)* – those who register in the B.Sc. programme for the first time in that academic year, (b) *Old, non-repeaters (Onr)* – those who register in the course for the first time in that academic year but have registered in the B.Sc. programme in a previous academic year, (c) *Repeaters (R)* – those who register in the course in that academic year as repeat students and (d) *Fresh registrants (F)* – *New registrants* and *Old, non-repeaters* taken together. The last category consists of all who offer the course for the first time in the academic year under consideration. [*Fresh registrants* and *Repeaters* taken together is the total registrants in the course.] The prevalence of *non-starters* in the i^{th} course ($i = 1, 2, \dots, 18$), in student category, α ($= N, Onr, R, F$), in an academic year k , is

then calculated using $ns_{\alpha}(i;k) = (X_{\alpha}(i;k)/Y_{\alpha}(i;k)) \times 100\%$ where $X_{\alpha}(i;k)$ and $Y_{\alpha}(i;k)$ are the number of registrants with CAM = 0 and the number of registrants in category α in the i^{th} course in the academic year k , respectively. Prevalence of *non-starters* in registrant category

α in a discipline is calculated using $NS_{\alpha}(k;\Phi) = \left(\frac{\left[\sum_j X_{\alpha}(j;k) \right]}{\left[\sum_j Y_{\alpha}(j;k) \right]} \right) \times 100\%$

where the summations are performed over all the courses in that particular discipline. Here Φ indicates any one of the seven disciplines. When the summations are performed over all the courses, irrespective of the discipline (i.e. $i = 1$ to 18), one obtains the overall prevalence of *non-starters* in academic year k (in all discipline based courses) in the faculty. The prevalence of *non-starters* in a registrant population in a discipline over a number of academic years is

defined using $NS_{\alpha}(\Phi) = \left(\frac{\left[\sum_k \sum_j X_{\alpha}(j;k) \right]}{\left[\sum_k \sum_j Y_{\alpha}(j;k) \right]} \right) \times 100\%$ where the summation

over k is performed over the academic years under study. As mentioned earlier one can obtain the corresponding overall quantity for the faculty by performing the summation over j over all the courses. The number of *Active registrants*, $Z_{\alpha}(i;k)$, in the i^{th} course, in academic year k , in registrant category α is defined as $Z_{\alpha}(i;k) = Y_{\alpha}(i;k) - X_{\alpha}(i;k)$.

The *Fresh-student Completion Rate (FCR)* of the i^{th} course in academic year k is defined by $FCR(i;k) = (P_F(i;k)/Y_F(i;k)) \times 100\%$ where $P_F(i;k)$ is the number of *Fresh registrants* (out of $Y_F(i;k)$) who complete the course (i.e. obtains a pass grade) in that same year (Bandarage *et. al.*, 2012). FCR for a particular discipline, Φ , in academic year k , is then

defined by $FCR(k;\Phi) = \left(\frac{\sum_i P_F(i;k)}{\sum_i Y_F(i;k)} \right) \times 100\%$ where the summations are

performed over all the courses in discipline Φ . In order to estimate the effect of *non-starters* on FCR, we define *Active Fresh-student Completion Rate, AFCR*, by

$AFCR(i;k) = (P_F(i;k)/Z_F(i;k)) \times 100\%$ which indicates the number *Fresh registrants* completing the course as a percentage of the *Active registrants*. The discipline counterpart of it is then defined by $AFCR(k;\Phi) = \left(\sum_i P_F(i;k) / \sum_i Z_F(i;k) \right) \times 100\%$.

Using line plots and bar charts we have carefully studied $ns_\alpha(i;k)$ and $FCR(i;k)$ for the 18 discipline based courses and $NS_\alpha(k;\Phi)$, $NS_\alpha(\Phi)$, $FCR(k;\Phi)$ and $AFCR(k;\Phi)$ for the seven disciplines in the B.Sc for the academic years that began in 2011, 2012 and 2013.

RESULTS AND DISCUSSION

All registrants in the 18 discipline based courses during the academic years that began in 2011, 2012 and 2013 were used in the study. Discipline based summary of the registrations is given in Table 1. The total number of registrants in each registrant category, in each year, is indicated in the last row; "Overall".

Table 1: Course registrations at level 3 for the years 2011, 2012 and 2013

Subject	New registrants			Old, non-repeaters			Repeaters		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
BOT	636	798	924	707	599	473	68	98	134
CHEM	1160	1205	1360	559	472	312	382	374	460
ZOO	645	794	864	693	614	441	197	191	273
PHY	553	635	710	320	381	411	146	158	124
COMP	635	580	769	313	528	494	110	181	185
PMATH	373	470	643	276	251	181	92	144	180
AMATH	466	473	558	255	246	205	152	192	183
Overall	4468	4955	5828	3123	3091	2517	1147	1338	1539

It is observed that in any of the three academic years, *New registrants* and *Repeaters* form the largest and smallest cohorts of registrants in discipline based courses at level 3 in the faculty.

Prevalence of *non-starters* in the seven disciplines, $NS_\alpha(\Phi)$, over the three years in the above mentioned registrant categories are depicted in Figure 1. It is observed that the prevalence of *non-starters* is higher in the *New registrant* category compared to that in the *Old, non-repeat* category, in all seven disciplines, although both groups were offering the respective courses for the first time. Unlike the *New registrants*, the *Old, non-repeat* registrants have some ODL experience prior to registration in courses under consideration. Hence, this result is consistent with the general observation that the probability of dropping out of a course is less among students who have already followed some ODL courses (Bates, 2005). Similarly the prevalence of *non-starters* is higher in the *Repeat* registrant category compared to that in the *Old, non-repeat* category. High dropout may be due to the lack of motivation among course repeaters. Same observations have been made with corresponding quantities, $NS_N(k;\Phi)$, $NS_{Orr}(k;\Phi)$ and $NS_R(k;\Phi)$, each year.

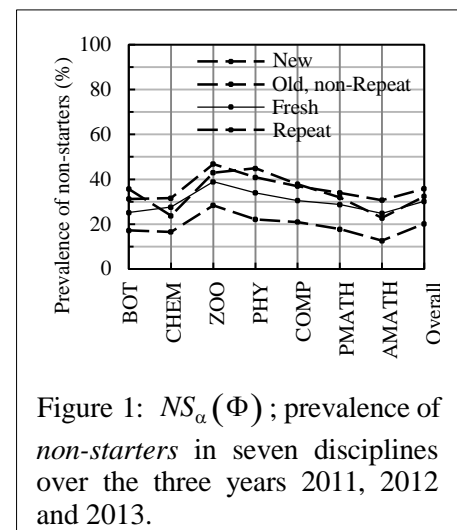


Figure 1: $NS_\alpha(\Phi)$; prevalence of *non-starters* in seven disciplines over the three years 2011, 2012 and 2013.

Figure 1 also shows that about quarter or more of *Fresh registrants* in each of the seven disciplines are *non-starters*. Furthermore, it is observed that about 30% of all the *Fresh registrants* and about 31% of *Repeat* registrants in the faculty at level 3 are *non-starters*.

[Calculations also show that for each of the three years, $28\% < NS_F(k; Overall) < 32\%$ and $30\% < NS_R(k; Overall) < 34\%$.] Figure 1 also shows that the prevalence of non-starters among *New registrants* in the faculty is about 38%. [It is interesting to note that about 38% of the new registrants in a course in Open University of United Kingdom (OUUK) leave before submitting the first assignment (Simpson, 2013).

Figure 1 also indicates that Zoology has the highest prevalence of *non-starters* among *Fresh registrants* (which is close to 40%). Similarly in any year, out of the 7 disciplines, Zoology has the highest prevalence of *non-starters* with $35\% < NS_F(k; ZOO) < 41.1\%$.

FCR, *AFCR* and $(AFCR - FCR)$ for all disciplines in the three years are shown in Figure 2. They form three groups of curves. As expected, in a given discipline $AFCR > FCR$. *FCR* within a discipline fluctuates from year to year. However, it is remarkably stable in Zoology which remains close to 32% over the three years. The gain in *FCR* by performing the course completion calculation using only the active students (to obtain *AFCR*) is shown as $(AFCR - FCR)$. The gain is more than 10% in each discipline in each year. At highest, it is close to 22% for Zoology and Physics in 2012. Overall faculty gain is about 15%. As such substantial improvement in course completion rates can be achieved by using *AFCR* in place of *FCR*.

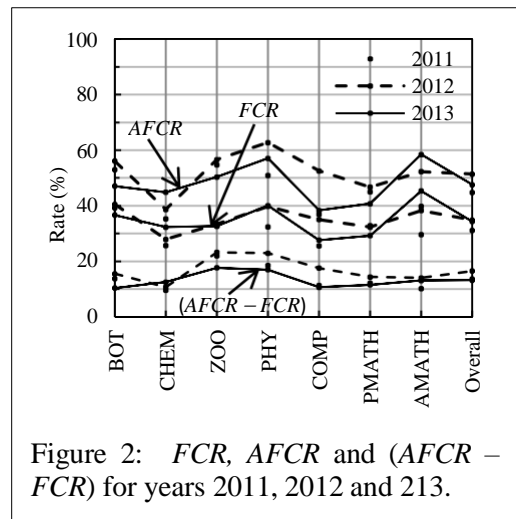


Figure 2: *FCR*, *AFCR* and $(AFCR - FCR)$ for years 2011, 2012 and 2013.

CONCLUSIONS/RECOMMENDATIONS

About 30% of the total set of registrants in discipline based courses in the B.Sc. programme at level 3 becomes *non-starters*. They have an adverse effect on the course completion rates. An overall improvement of about 15% in *Fresh-student completion rates* may be achieved by using only the *Active registrants* in evaluating the completion rate. At the same time it is desirable to study the underlying issues which make a large fraction of students *non-starters* and take remedial measures in minimizing early dropouts.

REFERENCES

- Bandarage, G., Peiris, P. K. D., Rajendra, J. C. N., Siriwardena, K. D. V. F., Tantrigoda, R. U., Wattavidanage, J. and Weerakoon, S. R. (2012). Effectiveness of revision of an academic programme based on course completion rates: A case study, *Proceedings of the Annual Academic Sessions of The Open University of Sri Lanka*, 80–83
- Bates, T. (2005). Chartering the evolution of lifelong learning and distance higher education: The role of research. pp 135, In: McIntosh, C (ed) *Lifelong learning and distance higher education*, Commonwealth of learning (Canada)/UNESCO Publishing (France). ISBN 1-894975-21-9
- Giguère, L. (2007). Benchmarking Course Completion Rates: A Method with an Example from the British Columbia Open University. *Journal of Distance Education*, 22(1); 73-86
- Simpson, O. (2013). Student retention in distance education: are we failing our students? *Open Learning* 28(2): 105–119.

