Students Flow in Private Universities in Nigeria: A Markov Chain Modelling Approach

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Abstract

The emergence of Private Universities in Nigeria is expected to help the flow and progression of students. Hence, this paper applies Markov Chain modelling to flows of students. The population of the study includes all students undertaking four-year programmes at a private University. The Faculty of Social and Management Sciences is chosen as a convenience sample. This Faculty has six departments for which secondary data are available for 2004/2005 to 2013/2014 sessions. Available data were analysed using the Matlab software. The results revealed that the probability of a student repeating a grade year influences the expected length of time of stay in the programme. Also, the study found that the average time a student spent at each level of the programme ranged from 1.14 to 1.43 sessions; the expected time it took a student to reach the wastage or graduation absorbing states ranged from a minimum of 1.4714 sessions (in 400 level) to a maximum of 4.7463 sessions (in 100 level). Furthermore, the probability of a student reaching a wastage absorbing state continuously decreased in all Departments and ranged from a maximum of 0.43 (in 100 level) to a minimum of 0.01 (in 400 level). A reverse trend in the probability of reaching a wastage absorbing state was however exhibited for the probability of a student reaching a graduating absorbing state. Finally, for the students sampled, the wastage ratio varied from 1.49 to 3.87, while the coefficient of efficiency was between 25.84 and 67.32.We concluded that Sociology and Anthropology Department has the highest level of efficiency of students progression in the Faculty.

Keywords: markov processes, absorption states, dropout rates, private universities, transition states.

1.0   Introduction

Education is a veritable tool for human development. This is not only because of its critical role in the development of human resources or the enhancement of the well-being of the individual. Rather because it creates prospects for better living as well as encouraging improved quality of life and enhanced productivity. For this reasons, education is now being regarded as the necessary first step in human activity (Battle & Lewis, 2002). This realization by governments at all levels, as well as individuals and the quest by the populace for formal education, have significantly aided the growth in the number of educational institutions across the globe. In Nigeria, this growth has been particularly witnessed in the number of new universities. This is especially with the active participation of the private sector, where the number of private universities has grown steadily from the initial three (3) universities founded in 1999 to seven (7) in 2002. The number increased to 23 in 2005. However, after a decade, the number of private universities has grown from 23 to 59 (National University Commission, 2015). This trend translates to about a hundred and fifty-six percent (156%) growth rate and can simply be described as phenomenal.

The emergence of private universities in Nigeria was well received as the development had its attendant benefits. First, the development ensured that people had more choices than previously. Secondly, it offered the learning public a more predictable and more stable academic calendar, thus providing an environment that enables students to complete their programs within the stipulated time periods than hitherto existed in government owned universities. Besides, it also enhanced competition between the public and private education service providers and by so doing engendering improved quality of teaching. However, attrition of students regarding withdrawals and dropout has been observed in private universities. Iyiomo and Olufunmilayo (2013) have identified this as a major problem confronting university education in Nigeria. Similarly, Olusi, Akahomen, and Otete (2013, p.187) describe student attrition as "… silent cancer affecting a segment of the students unnoticed". Several studies have been carried out on students flow. Most of them have examined such issues as attrition rates among students, students' admission and academic performance and wastage of secondary education in the nation's government-owned institutions, among others. None to the best of our knowledge has yet examined these issues in private universities. Hence, this study examines the process of students flow in private universities in Nigeria and focuses on the problem of wastages and attrition. Consequently, the following research questions are addressed:

i.   What is the average length of time a student spends at each level?
ii.   What is the expected time that a newly admitted student spends studying in the department?
iii.   What is the likelihood that a student admitted to a department would graduate from the department?
iv.   What is the probability that a student admitted to a department would withdraw from the department?
v.   What is the coefficient of efficiency of the university during the period under study?

2.0 Literature Review

Students are an essential asset to any educational organization, and the main output of an educational system is the graduate. It has become an important consideration at all levels of planning to pay attention to the process of students flows from the point of entry to point of exit from the educational institutions. Students flow according to Musiga, Owino and Weke (2011) depict how students move from grade year to the next higher grade year. In the process, a student could repeat the same grade year, or may drop out of the system before attaining the maximum qualification after an academic year or may leave the system successfully as a graduate. Those that drop out without completing their educational programme are often referred to as wastages from an educational system. Wastages occur in every academic session; this development is fueled by factors such as voluntary withdrawal by students, expulsion, withdrawal imposed by the institution and so on. Ekhosuehi and Osagiede (2013) observe that a transition matrix describes the flows of students in an educational system. They further affirm the existence of inflows into the educational system in the form of admission and outflows from the system into the environment in the form of dropout and completion (or graduation).

As previously noted, graduates are the desirable outputs of any educational system. It therefore means that the different categories of student wastages or drop-outs are undesirable outputs in any educational system. This is because they waste the time and other resources for both students and the institution. Mooney, Patterson, O'Connor, Chantler and Abigail (2010) reaffirm the undesirability of student wastages by asserting that the issue of successful progression and completion of higher education has become increasingly important. Iyiomo and Olufunmilayo (2013) on their part describe educational wastages as a premature withdrawal of students from school at any time before completion of the prescribed courses. They then assert that the inability of a student to obtain the desired certificate within the standard time for any reason whatsoever is termed wastage. Adeoye and Olumide (2014) enumerate the various categories of wastage to include dropouts, repeaters and premature withdrawals from schools.

Rafiq (1996) argues that the flow of students during an educational cycle depends on factors such as the number of new entrants in the first year of the cycle; the dropouts in the different classes; the repetitions in the various classes at the end of each year and the promotion from one class to the next at the end of each year. Similarly, researchers have reported that the success rate in higher education and the expected time taken to complete a course vary from university to university (Iyiomo & Olufunmilayo, 2013; Rafiq, 1996). This understanding has elicited studies on the flows of students through educational systems in order to determine various performance metrics (Armacost & Wilson, 2002; Al-Awadhi & Konosowa, 2007; Musiga, Owino & Weke, 2011; Rahim, Ibrahim, Kasim & Adnan, 2013). More also, all the researchers referred to above applied Markov Chain in their studies.

Markov chain is a discrete-time stochastic process where the outcome of a given state can affect the result of the next state. Mathematically defined as:

$$P(X_{n+1} = j | X_n = i, X_{n-1} = K_{n-1}, \ldots \ldots) = P(i,j) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \text{ i}$$

The computation of students flow is based on the theory of absorbing Markov chain. The theory is robustly discussed in (Tijms, 2003; Borokov, 2003; Taha, 2008). It is worthy of emphasis that the fundamental matrix of absorbing Markov chain serves as a tool for assessing the completion qualities of students.

3.0 Methods

The case study is the research design adopted in this study. The university used is one of the foremost Nigerian private universities that agreed to make their records available for the study on the condition of anonymity. The private university used for this has five (5) faculties. These are the Faculty Agriculture, Faculty of Education, Faculty of Applied Science, Faculty of Social and Management Sciences and the Faculty of Law. The university, also, has two schools. These are School of Postgraduate Studies and the School of Basic and Applied Studies. Purposive sampling was used to select the Faculty of Social and Management Sciences because it has the highest student population in the University and it is also a pioneering faculty.

The Faculty of Social and Management Sciences comprises of six (6) departments; Accounting, Business Administration, Economics/Banking and Finance, Mass Communication, Political Science/Public Administration and Sociology and Anthropology. A typical programme in the faculty requires a minimum of four (4) years or sessions and a maximum of six (6) years or sessions for a student to graduate from a programme. A student is promoted to the next level when he or she has clear passes in all the courses offered at that level or has passed 50% or more of the credits registered. A student repeats (probates) a class when he or she passes more than 25% but less than 50% of the credits registered. However, a student can only graduate when he or she had passed the required credit units. Also, a student may withdraw voluntarily, or undergo mandatory withdrawal on account of the awful performance in the sessional examination; for example when the student passes less than 25% of the credits registered in a session.

The study covered a period of nine (9) sessions (that is from 2004/2005 to 2013/2014 sessions) and

used Secondary data of Full-Time students in all Departments in the Faculty except the Mass Communication Department. The data on students' performance as reflected in the sessional results approved by the Senate of the university were accessed. The information on students' admissions into the first year and the second year of each academic year were obtained. The data were analyzed with the use of absorbing Markov Chain and wastage ratio reported in equations (ii) to (vi). Matlab software package was used in implementing the analysis by employing canonical matrix given in equation (ii). Other equations iii to vi depend on equation (ii).

$$P = \begin{bmatrix} Q & R \\ O & I \end{bmatrix}$$ ………………………………………………………… ii

The fundamental matrix (N) is defined as $N = (I - Q)^{-1}$ ……………………………….. iii

Average time in the System $T = N.C$ ……………………………………………….. iv

Probability of moving into absorbing state $B = NR$ ……………………………………… v

Where:

P = Canonical Matrix

Q = is a t-by-t matrix, expressing transitions between transient states;

R = is a non-zero t-by-r matrix, expressing transitions from transient states to absorbing states

I = an r-by-r identity matrix

O = is an r-by-t zero matrix

N = the mean time a process that commences in the state i remain in state j.

B = is a t-by-r matrix

C = a vector of 1's

$$Wastage = \frac{Actal\ input - output\ ratio}{Ideal\ input - output\ ratio}$$ ……..………………..………..……….vi

3.1 Assumptions

i. Promotion from one grade level to another after sessional examination is based on performance.

ii. Promotion is only permitted to the next higher class.

iii. The students who are currently enrolled into the first, second and third years of their study programme can for next year, either progress to a higher level, repeat the same level, or leave the system completely from the current level.

iv. A student cannot repeat the same grade level twice consecutively.

v. A student can only spend a maximum of 6 years studying in a programme.

vi. Students may leave at any of the grade year by withdrawal, explusion and death.

4.0 Results

In Table 1, aggregate enrollment and flow data for each level for nine (9) sessions is reported. The table shows the number of students with clear passes (CLRP), the number of students with carry-over (CRVR), the number of students on probation (PRPB) and the number of student withdrawing (WTDR) in each level for each session. The data obatined were summed up for the nine (9) years period under consideration.

Table 1: Aggregate Students Flow of the Faculty for the 2004/2005 to 2013/2014 sessions

Accounting	100L	200L	300L	400L	Total	Banking and Finance	100L	200L	300L	400L	Total
CLRP	146	163	225	346	880	CLRP	24	27	40	62	153
CRVR	377	429	367	300	1473	CRVR	79	92	85	83	339
PROB	30	43	15	0	88	PROB	14	15	3	0	32
WTDR	44	46	52	14	156	WTDR	23	24	9	7	63
Total	597	681	659	660		Total	140	158	137	152	
Business Administration	100L	200L	300L	400L	Total	**Economics**	100L	200L	300L	400L	Total
CLRP	45	72	103	154	374	CLRP	78	86	74	127	365
CRVR	261	252	210	208	931	CRVR	176	190	184	151	701
PROB	33	43	34	0	110	PROB	14	34	26	0	74
WTDR	40	58	42	7	147	WTDR	9	47	47	11	114
Total	379	425	389	369		Total	277	357	331	289	
Political Science and Public Administration	100L	200L	300L	400L	Total	**Sociology and Anthropology**	100L	200L	300L	400L	Total
CLRP	46	54	66	81	247	CLRP	12	35	59	69	175
CRVR	146	200	118	113	577	CRVR	75	68	42	33	218
PROB	26	18	11	0	55	PROB	5	3	0	0	8
WTDR	21	27	23	1	72	WTDR	5	1	2	1	9
Total	239	299	218	195		Total	97	107	103	103	

Source: Authors' Computation (2015)

Remarks: CLRP – Clear Passes; CRVR – Carryovers, PROB – Probation, WTDR - Withdrawal

Frequency transition data in Table 2 were computed from Table 1. The six (6) states comprising year 1(Yr1), year 2(Yr2), year 3(Yr3), year 4(Yr4), wastage (W) and graduation (G) were condensed from data in Table 1. States W and G are absorbing states while the others are transient states. Further computations were carried out to obtain the transition probabilities matrix. In obtaining the transition probabilities matrix, the frequency in each row was divided by the respective rows total. This transition probability matrix obtained is in canonical. The canonical matrix reveals the probabilities of a student remaining in an academic state, as well as the probabilities of moving to the next academic state.

The diagonal elements in the transient states of the transition probabilities matrix for the various departments are quite revealing. The probability of a student repeating the final year of study (that is 400 Level) is 0.46 in Accounting. The result for other department show that this is 0.55 in Banking and Finance, 0.56 in Business Administration, 0.52 in Economics, 0.58 in Political Science and Public Administration and 0.32 in Sociology and Anthropology. One distinct observation is that, for the final year (400 level) Sociology and Anthropology had the least failure rate while Political Science and Public Administration had the highest failure rate.

Table 2: Frequency Transition Data and Transitional Probabilities

		YR1	YR2	YR3	YR4	W	G	Transition Probabilities Matrix					
								Yr 1	Yr 2	Yr 3	Yr 4	W	G
Accounting	YR1	30	523	0	0	44	0	Yr1 0.0503	0.8760	0	0	0.0737	0
	YR2	0	43	592	0	46	0	Yr2 0	0.0631	0.8693	0	0.0675	0
	YR3	0	0	15	592	52	0	Yr3 0	0	0.0228	0.8983	0.0789	0
	YR4	0	0	0	300	14	346	Yr4 0	0	0	0.4545	0.0212	0.5242
	W	0	0	0	0	156	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	346	G 0	0	0	0	0	1.0000
Banking and Finance	YR1	14	103	0	0	23	0	Yr1 0.1000	0.7357	0	0	0.1643	0
	YR2	0	15	119	0	24	0	Yr2 0	0.0949	0.7532	0	0.1519	0
	YR3	0	0	3	125	9	0	Yr3 0	0	0.0219	0.9124	0.0657	0
	YR4	0	0	0	83	7	62	Yr4 0	0	0	0.5461	0.0461	0.4079
	W	0	0	0	0	6	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	62	G 0	0	0	0	0	1.0000
Business Administration	YR1	33	306	0	0	40	0	Yr1 0.0871	0.8074	0	0	0.1055	0
	YR2	0	43	324	0	58	0	Yr2 0	0.1012	0.7624	0	0.1365	0
	YR3	0	0	34	313	42	0	Yr3 0	0	0.0874	0.8046	0.1080	0
	YR4	0	0	0	208	7	154	Yr4 0	0	0	0.5637	0.0190	0.4173
	W	0	0	0	0	147	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	154	G 0	0	0	0	0	1.0000
Economics	YR1	14	254	0	0	9	0	Yr1 0.0505	0.9170	0	0	0.0325	0
	YR2	0	34	270	0	47	0	Yr2 0	0.0969	0.7692	0	0.1339	0
	YR3	0	0	26	258	47	0	Yr3 0	0	0.0785	0.7795	0.1420	0
	YR4	0	0	0	151	11	127	Yr4 0	0	0	0.5225	0.0381	0.4394
	W	0	0	0	0	114	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	127	G 0	0	0	0	0	1.0000
Political Science/Public Administration	YR1	26	292	0	0	21	0	Yr1 0.0767	0.8614	0	0	0.0619	0
	YR2	0	18	254	0	27	0	Yr2 0	0.0602	0.8495	0	0.0903	0
	YR3	0	0	11	184	23	0	Yr3 0	0	0.0505	0.8440	0.1055	0
	YR4	0	0	0	113	1	81	Yr4 0	0	0	0.5795	0.0051	0.4154
	W	0	0	0	0	72	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	81	G 0	0	0	0	0	1.0000
Sociology/ Anthropology	YR1	5	87	0	0	5	0	Yr1 0.0515	0.8669	0	0	0.0515	0
	YR2	0	3	103	0	1	0	Yr2 0	0.0280	0.9626	0	0.0093	0
	YR3	0	0	0	101	2	0	Yr3 0	0	0	0.9806	0.0194	0
	YR4	0	0	0	33	1	69	Yr4 0	0	0	0.3204	0.0097	0.6699
	W	0	0	0	0	9	0	W 0	0	0	0	1.0000	0
	G	0	0	0	0	0	69	G 0	0	0	0	0	1.0000

Source: Authors' Computation (2015)

Table 3 reports the average time a student spent in each grade level in the departments of the Faculty under study. The average duration spent in 100L to 300L in all the departments did not exceed 1.11 sessions or years. From the result, students in Accounting, Economics and Sociology and Anthropology departments spent the least time of 1.05 sessions or years in 100L. These departments were closely followed by Political Science and Public Administration (1.08 sessions), Business Administration student (1.10 sessions) and Banking and Finance (1.11 sessions), in that order. Students spent an average time greater that two sessions (years) in 400L in all the departments except in Accounting and Sociology and Anthropology departments.

Table 3: Average Length of Time a Student spent at each Level in the various Departments

Department	Year1	Year 2	Year 3	Year 4
Accounting	1.0529	1.0674	1.0233	1.8333
Banking and Finance	1.1111	1.1049	1.0224	2.2029
Business Administration	1.0954	1.1126	1.0958	2.2919
Economics	1.0532	1.1073	1.0852	2.0942
Political Science and Public Administration	1.0831	1.0641	1.0531	2.3780
Sociology and Anthropology	1.0543	1.0288	1.0000	1.4714

Source: Authors' Computation (2015)

The expected time a student spent at each level in the departments to reach an absorbing state is reported in Table 4. For example in Accounting Department, it took over four (4) years for a newly admitted (Year 1) student to reach any absorbing state. Similarly, it took a 200 Level student over three years to reach one

of the absorbing states. Also, it took over two years for a 300 level and 400 level students to reach any one of the absorbing states. A cursory look at the Table 4 reveals two important facts. Firstly, it took over four years in all the departments for a newly admitted (Year 1) student to reach any absorbing state. Secondly, the number of years it took a student to reach any one of the absorbing states decreased as the student progressed. However, it is observed that it took over two (2) years for students in the final year to reach any of the absorbing states in all departments except in Accounting and Sociology and Anthropology departments.

Table 4: Expected Duration of Time a Student at Each Level Spent Before Reaching an Absorbing State

Department	Academic Level			
	Year 1	Year 2	Year 3	Year 4
Accounting	4.3557	3.5807	2.7086	1.8333
Banking and Finance	4.1077	3.6658	3.0773	2.2029
Business Administration	4.4171	3.7559	3.1165	2.2919
Economics	4.4725	3.5404	2.8567	2.0942
Political Science and Public Administration	4.7463	3.9267	3.1670	2.3780
Sociology and Anthropology	4.3152	3.4482	2.4429	1.4714

Source: Authors' Computation (2015)

The probabilities of reaching the wastage state in the six (6) departments from the different academic levels are reported in Table 5. The trend in the result shows that the probabilities of reaching the wastage state decreases as the students progress in their course of study. In Table 6, the probabilities of reaching the graduation state in the six (6) departments from the different academic levels are reported. The likelihood of a student graduating from a programme has a positive relationship with the academic level of the student. The result in Table 6 seems to be a converse to the result in the preceding Table 5.

Table 5: Probabilities of Reaching the Wastage State (W)

Department	100L	200L	300L	400L
Accounting	0.24	0.18	0.12	0.04
Banking and Finance	0.43	0.30	0.16	0.10
Business Administration	0.37	0.29	0.16	0.04
Economics	0.36	0.34	0.22	0.08
Political Science and Public Administration	0.26	0.21	0.12	0.01
Sociology and Anthropology	0.09	0.04	0.03	0.01

Source: Authors' Computation (2015)

Table 7 reports both wastage ratios as well as the coefficients of efficiency. All the departments have wastage ratios greater than the ideal wastage ratio of 1. The implication of these values according to Ayodele (2005) is that the farther it is away from 1, the less efficient the school system is. Then the coefficient of efficiency further strengthens the position of wastage ratio, as only two departments, namely Accounting and Sociology have coefficients of efficiency greater than 50%and these two department are also the ones with the smallest values of wastage ratios. What can be adduced from this result is that most of the departments had low levels of efficiency.

Table 6: Probabilities of Reaching the Graduation State (G)

Department	100L	200L	300L	400L
Accounting	0.76	0.82	0.88	0.96
Banking and Finance	0.57	0.70	0.84	0.90
Business Administration	0.63	0.71	0.84	0.96
Economics	0.64	0.66	0.78	0.92
Political Science and Public Administration	0.74	0.79	0.88	0.99
Sociology and Anthropology	0.91	0.96	0.97	0.99

Source: Authors' Computation (2015)

Table 7: Wastage Ratio

Department	Wastage Ratio	Co-efficient of Efficiency (%)
Accounting	1.88	53.19
Banking and Finance	2.37	42.25
Business Administration	2.54	39.44
Economics	2.47	40.51
Political Science and Public Administration	3.87	25.84
Sociology and Anthropology	1.49	67.32

Source: Authors' Computation (2015)

4.   Discussion

A cursory look at Table 2 shows that the probabilities of a student remaining in a grade year for the different departments. The probabilities of repeating 100 level in the Faculty ranges between 0.053-0.1000. The maximum probability is recorded in the department of Banking and Finance. For 200 level and 300 level, Business Administration Department has the maximum probability of repeating those grade levels. Similarly, the probabilities of a final year student (400L) repeating final year for the different departments varies from 0.32 to 0.58 and Political Science Department recorded the highest value. It worthy of note here, that students do not repeat 300 level in the Department of Sociology and Anthropology as the probability of repeating that grade level is zero. An observable pattern seen in the canonical matrix shows that the probabilities of repeating an academic level decrease from year 1 to year 3 and increased in year 4 in three (3) departments. The departments are Banking and Finance, Political Science and Public Administration and Sociology and Anthropology. However, in Accounting, Business Administration, and Economics, the result showed a fluctuating pattern of dip and rise.

Answers to our first research question are presented in Table 3. The values are read from the diagonal entries of the computed Matrix N. Students in all the departments spent an average of over one year in 100 level through to 300 level. However, students in the final year (year 4) spent an average of over two (2) years in all the departments, except in Accounting and Sociology and Anthropology where students spent an average of over one year. The decreasing time pattern observed as students progressed through higher academic levels in the departments agrees with earlier research on students flow by Al-Awadhi and Konsowa (2007). The result reported and discussed in the preceding paragraph observed that students do not repeat 300 level in the Department of Sociology and Anthropology as the probability of repeating that grade level is zero. This result is further validated by Table 3. Students of that grade year in the Department of Sociology and Anthropology spend only a year in that level.

Research question two addresses expected time a newly admitted student spent studying in the department before reaching absorbing states. In Table 4, in all the departments studied, it took over an average of 4 years or session for a newly admitted student to graduate or drop-out. Research questions three and four have been answered by Tables 5 and 6 respectively. The probabilities of graduating from the different academic levels showed a progressive pattern while the probabilities of wastage (that is drop-out and withdrawal) showed a decreasing pattern. One observable trend in the result reported is that the probabilities of graduation at each academic level are greater in Sociology and Anthropology department than in any other department. In research question four, the high wastage ratio recorded in all the departments especially in Banking and Finance, Business Administration, Economics, Political Science and Public Administration accounted for the low efficiency reported. It is observed that Sociology and Anthropology, followed by Accounting, performed better than Banking and Finance, Business Administration, Economics, Political Science and Public Administration departments; this is because the level of wastages in these departments is lower.

Linking the results on the probability of repeating a state to the expected time spent in the state using 300L grade year in Sociology and Anthropology Department; we therefore, conclude that the probability of repeating a state influences the expected length of time of stay.

5.   Conclusion

Markov chain modelling of students flow in private tertiary institutions has been exemplified using a private University as a case study. From the study, the probability of a student repeating the final year (that is 400 level) ranged from a minimum of 0.32 in the Department of Sociology and Anthropology to a maximum of 0.58 in the Department of Political Science and Public Administration. While these values may appear high, in reality, these probabilities are considerably reduced because students have the opportunity of taking supplementary examination to redeem owed courses and so increasing the number of passes. From Table 3, it is seen that on the average for the Faculty, a student spent approximately one session (actually from 1.05 to 1.08 sessions) for Year 1 to Year 3. While this appears to be quite high in that order, the system would appear to be near perfect if this duration can be reduced to one session only. On the other hand, the final year (400 level) students in the Faculty spent on the average 2.05 at that level. While this value appears to be much higher than expected, the time actually spent in this level is much less. This is in view of the fact that students often take advantage of supplementary (resit) examinations to redeem courses owed, and thus reduce the total time spent on the programme. It is worth noting that the current study did not take into account three important operational issues: that is, the fact that some students (known as Direct Entry students) are admitted into the University directly into 200 levels; the University also handles Part-Time students; and the fact that the University also accommodates supplementary examinations. These factors may be taken into account in further research into students flow in private tertiary institutions.

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