

Evaluation of Student Dropout Rate in Alternative Higher Education Sector of Sri Lanka: A Case Study

W. B. K. Bandara^{1*}, B. M. T. Chandike² and G. C. Samaraweera³

^{1,2}*Sri Lanka Institute of Advanced Technological Education, Colombo, Sri Lanka*


³*Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Sri Lanka*

Abstract

The main objectives of this study were to assess the average student dropout rate of the Sri Lanka Institute of Advanced Technological Education (SLIATE) and its regional centers by analyzing five years of data on student intake and convocation relevant to 14 Higher National Diploma (HND) programmes in 19 centers.

*Corresponding should be addressed to **Dr. W. B. K. Bandara**, Sri Lanka Institute of Advanced Technological Education, Colombo 10, Sri Lanka.

Email: bimanip@yahoo.com

 <https://orcid.org/0000-0001-9586-8264>

(Received 17th January 2022; Revised 02nd December 2022; Accepted 23rd December 2022 © OUSL)



This article is published under the Creative Commons Attribution-Share Alike 4.0 International License (CC-BY-SA). This license permits use, distribution and reproduction in any medium; provided it is licensed under the same terms and the original work is properly cited.

Student recruitment and convocation data were collected and the total population of the students were considered in calculating the dropout rate. Data were analyzed using SPSS statistical software. One sample t-test, ANOVA and descriptive statistics were used for the analysis. The mean population dropout rate was compared with the sample dropout rate of each HND programme. The significance of the sample pass rate and the dropout rate was compared with the population pass rate and dropout rate to identify the significance level at $p = 0.05$ level.

Findings revealed that Civil and Electrical Engineering programmes have the lowest (< 27%) student dropout rate and the Quantity Surveying programme showed the second lowest (29%) student dropout rate. Agriculture, Food Technology, Business Administration, Business Finance, Mechanical Engineering, English and Accountancy programmes showed a <50% dropout rate. The average student dropout rate of SLIATE was 48%. Out of 19 centers, the Colombo center showed the lowest student dropout rate (35%) whereas Tangalle and Batticaloa centers showed the highest student dropout rate (65%). It is recommended to identify the reasons for student dropout to develop strategies to minimize student dropout.

Keywords: *Student dropout rate, Student pass rate, Performance level*

Introduction

In Sri Lanka, State Universities provide higher educational opportunities free of charge for Advanced Level qualified students. However, due to limited capacities in state universities, some of the qualified students will not get the opportunities for a government university education. Hence, such students may select their higher educational journey through private universities, foreign universities, and other alternatives higher educational or vocational education pathways. Even though, students registered for higher educational programmes, student dropout is a common scenario in many educational institutes. However, a considerable dropout rate affects the performance of the institute.

Dropout occurs when students enrolled at an educational institution and give up their studies without completing their qualifications (Bonneau, 2015). This has been identified in many higher educational institutes and it will directly affect the effectiveness and efficiency of the institutes. Further, it affects the academic performance of the institute. There may be many reasons for student dropout such as financial issues of the students, non-availability of job opportunities for the programmes, outdated syllabuses, less physical and human resource availability, ragging incidences, poor administration, and so on.

Any institute has a strategic plan to move forward and analyzing the internal and external environment of the institute help in many ways to develop or revise the strategic plan. Therefore, strategies should be developed or revised by analyzing the internal and external environment of the organization. SWOT analysis, PESTAL analysis and Porter's five force analysis are key tools for analyzing the internal and external environment and developing strategies for an organization.

This study was mainly focused on the identification of the average dropout rate of the Sri Lanka Institute of Advanced Technological Education (SLIATE) and identifying the student dropout rate institute-wise and programme-wise. It is a kind of internal environmental analysis.

Sri Lanka Institute of Advanced Technological Education (SLIATE) is a statutory body operating under the purview of the Ministry of Education and is one of the leading alternative higher educational institutions in Sri Lanka. SLIATE has been focusing on the development of Advanced Technological Education at the post-secondary level. At present, it manages and supervises 19 regional institutes in Ampara, Anuradhapura, Badulla, Batticaloa, Colombo, Dehiwala, Galle, Gampaha, Jaffna, Kandy, Kegalle, Kurunegala, Mannar, Nawalapitiya, Rathnapura, Sammanthurai, Tangalle, Trincomalee and Vavuniya (Annual Report, 2018). The institute offers Higher National Diploma (HND) programmes for Advanced-level qualified students especially concerned with

students who have not been able to enter state universities due to the unavailability of enough spaces. There are 16 HND programmes offered by SLIATE, they are: Accountancy, Business administration, Business Finance, Project Management, English, Management, Tourism & Hospitality Management, Building Service Engineering, Quantity Surveying, Engineering Civil, Electrical Engineering, Mechanical Engineering, Information Technology, Food Technology, Agriculture and Consumer Science and Product Technology.

As a higher educational institute and a government-funded institute, SLIATE needs to identify the dropout rate of each regional institute governed by SLIATE. Further, the dropout rate relevant to each educational programmes needs to be identified in order to identify the issues of the programmes and to identify strategies to minimize the student dropout rate and to achieve the targets of the institute and the country.

When comparing the student enrollment and student pass-out rate yearly, it is evident that there is a considerable gap between student enrolment and the pass-out rate of SLIATE (Annual Report, 2018). Even though, students for all programmes registered in an academic year, they will pass out in different years based on the programmes durations. Hence, dropouts should be analyzed separately for different programmes.

As the regional centers of the SLIATE are located in different locations, it is needed to assess the student dropout rate to take corrective measures to overcome the dropouts of the students, region-wise. As an initial step, this study was focused to identify the student dropout rate of each programme and in each institute governed by the SLIATE. The results of the study are expected to be used in developing the strategic management plan for the SLIATE.

Significance of the Study

Education is the spirit of a country which leads to social and economic development. Low quality of education will lead to wasting of public money, reduction of competency of the young generation and become unfavorable for the development of a

country. There are many internal and external factors that may directly or indirectly influence the performance of the institute. Student dropout also enormously affects the performance of an educational institute as the investment for such programmes may not achieve the target objectives of the institute. Therefore, analyzing the student dropout rate of an institute along with reasons for such dropouts is important to enhance the performance of the educational institute. Furthermore, it is very much important to take corrective actions for student dropouts to direct the institute to achieve its vision and to achieve the sustainable development of the country by adjusting its mission.

Research Objectives

The primary objective of this study was to determine the dropout rate of SLIATE with a view of identifying the dropout rate institute-wise and programme-wise.

Specific Objectives were;

1. To determine the average student dropout rate of SLIATE.
2. To identify the student dropout rate programme-wise and institute-wise which are governed under SLIATE.

Research Problem

What is the gap between student intake and student pass-out relevant to each HND programme and relevant to each regional institute of SLIATE?

Table 1.

Student intake and student pass-out information

Year	Intake	Diploma awarded
2019	9,845	3,664
2018	11,474	3,454
2017	13,436	3,299
2016	8,008	3,088
2015	6,942	2,077

SLIATE governs 19 regional institutes and offers 16 HND programmes. In each academic year, average student recruitment exceeds 6,000. However, only around 3,500 students qualify for the convocation each year. Hence, there is a huge gap between student intake and student pass rate. Due to the different durations of the educational programmes, it is not possible to directly identify the student pass rate and the dropout rate for each HND programme and for each institute. Hence, investigation of the student average dropout rate for each HND programme and each institute is important to identify the performance level of the individual institute and HND programmes and to identify demand for each HND programme regional-wise.

Review of Literature

Education in Sri Lanka

Sri Lanka provides free education to all children from age of five to sixteen. In addition, students can continue the free education privilege up to the undergraduate level. This has paved the way for a higher literacy rate in Sri Lanka. This free education policy was introduced in Sri Lanka by the late Dr C. W. W. Kannangara, the Minister of Education in 1945 (Alawattegama, 2020). This free education concept plays a major role in the development of the country by enabling students of low-income families to continue their studies up to graduation and help to minimize poverty.

According to the Central Bank of Sri Lanka Annual Report 2019, the government expenditure on education as per cent of GDP is 1.9. A limited number of students who pass the Advanced Level (A/L) examination become selected for university entrance. In 2019, 62.9% of students became eligible for higher education. Out of that figure, 19.1% of students were selected for state universities (Central Bank Annual Report, 2019). This reveals that a limited number of students gain opportunities for university education. In addition to the universities, there are other higher educational institutes that provide higher education under the purview of the Ministry of Education in Sri Lanka. The alternative higher education sector provides opportunities for students who

were not selected for state universities but are eligible to follow higher educational programmes. SLIATE is a government-funded higher education institute which provides alternative higher education opportunities for such students. Whatever the education provided by an institute, the success of the academic activities plays a key role in the final output.

The academic success of any higher educational institute is a key factor which reflects the quality of the education provided by that institute. Sri Lanka mainly provides free education at the primary and secondary levels. Government schools and institutes provide free education to students. There are privately owned educational institutes which provide education for a fee. The Constitution of Sri Lanka defines education as a fundamental right. The government institutes which provide free education offer a service to the community and the objectives are not profit oriented. Hence, concern about business principles is less. Private-owned educational institutes are business oriented and they apply business principles to make them profitable for sustainability. However, strategic planning, implementation and evaluation are important areas to be considered for government or privately owned institutes to achieve the desired long-term goals of the organization. There are many methods to evaluate the academic success of an educational institute. The dropout rate is only one such method that could use to evaluate academic success.

Methods of Evaluating Academic Performance

Many studies have been conducted by researchers to identify factors that affect student performance and institutional performance. A study by Abu et al. (2019), to identify factors affecting students' performance in higher education and to identify the most suitable predictive data mining techniques showed that students' previous grades and class performance, e-Learning activity, demographics, and social information are the major categories of factors affecting performance. The most common data mining techniques used to predict and classify students' factors

were decision trees, Naïve Bayes classifiers, and artificial neural networks. Data mining is an information-analysis technique that involves the automated discovery of patterns and relationships in a data warehouse.

Alyahyan & Duştegor (2020) have used the education data mining technique for the early prediction of students' performance. They have considered prior-academic achievement, student demographics, e-learning activity, psychological attributes, and environments. This study focused on student academic activities at different levels. However, it has not focused on the overall academic performance of the institute. The data mining method was further used by Superby et al. (2006) to determine the factors influencing the achievement the first-year university students. They evaluated the personal history of the student, the implication of student behaviour, and perceptions of the student using a decision tree, random forests, neural networks and linear discriminant analysis.

However, the present study is more focused on the actual situation in the past five years than on future predictions and attempts to identify the gaps that could be improved for future development as per the goals of the organization.

A study by Li & Carroll (2019) examined the higher education academic performance of equity groups in the Australian higher education sector. They used actual dropouts and marks to assess the performance. The influence of student satisfaction on academic outcomes was also examined. Results revealed that students from equity groups tend to have poor academic marks and are more likely to consider the option of a dropout with health and financial reasons as important determinants. This approach could be used to assess the performance of higher education institutes, especially in developing countries.

A study was conducted by Al-haimi et al. (2018) to inspect current problems and factors that affect the performance of the higher education intuitions sector of Yemen which cause them not to be listed among World Class Universities. The findings of this study

showed that lack of national vision of government, leadership, financial support, research and development funding, autonomy, governance, academic staff development, the ratio of student enrollments and quality of academic programs as some of the major issues that the Yemen higher education institutions currently experience. The research problem of this study is directly relevant to the present study and the study also uses a qualitative approach. Hence, the results will depend on the opinion of experts, sample size and sampling method. The lack of a quantitative approach to identify the lapses in a measurable way which could be used in future development is a weakness in this research.

A study conducted by Sriyalatha (2013), to identify factors contributing to students' academic performance at the University of Sri Jayewardenepura, Sri Lanka found that mothers' education levels made a significant contribution to the student's academic performance. Further, the English knowledge of the students became the second important factor which influenced students' academic performance. Students with higher levels of attendance for lectures showed a positive effect on their academic performance. Further, higher socio-economic status exhibited a positive significant impact on students' performance. Sriyalatha (2013) only focused on a few external and internal factors to assess student performance. The present study focuses on the dropout rate and reasons for student dropout as a performance criterion of the institute.

Xenos et al. (2002) investigate the dropout in university-level education relevant to distance learning education at the Hellenic Open University. Results showed that dropouts are correlated to the use of technological means. They found that a correlation exists between dropouts and students' age, but not with gender. It also revealed that female students' commitment to a programme was stronger and the dropout rate was lower compared to male students. This study was focused on the dropout rate of students in distance learning education whereas the present study focused

on the dropout of students in in-class teaching and learning programmes. Factors affecting both modes of education are not the same. Hence, the same criteria cannot be used to evaluate the dropout rate of students in the higher education sector.

Ranjan et al. (2015) have developed a multi-criteria decision-making framework for performance evaluation and ranking of 16 engineering departments in an Indian university. It dealt with the inter-relationships between the selection criteria with the aid of the decision-making trial and evaluation laboratory (DEMATEL) method and built a relationship structure. The entropy method was used to determine the relative criteria weights and a compromise ranking method was applied to prioritize and rank departments. They have focused on analytical results, faculty/student ratio, infrastructural development, student results and international research publications in evaluating the performance of selected departments. Vakkuri & Meklin (2003) presented a conceptual model to demonstrate the relationship between the cultural features of a knowledge-intensive organizational context, the uncertainties in the objectives of performance measurement systems and the behavioural consequences of performance measurement in higher education. They have not discussed the method used to identify the performance of educational institutes. It emphasizes that cultural factors make an impact on performance evaluation.

Frenken et al. (2017) analyzed the factors underlying university research performances such as a number of highly cited publications, international co-publications, and university-industry co-publications. Results showed that research performance differences among universities mainly stem from size, disciplinary orientation and country location. Simon et al. (2015) investigated the relationship between research performance and the teaching quality of academic staff. They used a large cross-disciplinary sample of academics within a research-oriented university for the study and found that research productivity is not related to teaching quality, but research quality is positively related to teaching quality. However, the present study does not focus on

research publications as it is not a compulsory component at the diploma level.

The present study primarily focuses on the output of the institute compared to the input and the factors that affect the performance of output. The results of this study are important to develop the strategic movement needed to compete with rival institutes and to get the maximum benefit from government investment for free education.

Methodology

Theory and conceptual framework

The theory adopted in this study was Strategic Management. It is the art and science of formulating, implementing and evaluating, cross-functional decisions that enable an organization to achieve its objectives (David, 2011). Strategy formulation, implementation and evaluation are important aspects of strategic management. Any organization should have a strategic plan and after implementation, it is needed to evaluate the performance. This study is an evaluation of an educational institute with reference to its input and output. If there is any gap between input and output, strategies should be revised by analyzing the internal and external environment of the organization.

Research Design

The research design used for the study was a quantitative research design with a descriptive case study approach.

This study was conducted at SLIATE which is the main alternative higher educational Institute governed under the higher education section of the Ministry of Education. The objectives of the study were to determine the average student dropout rate of the SLIATE and to identify the student dropout rate programme-wise and institute-wise. All 19 regional centers governed under SLIATE were selected for the study. Out of 16 HND programmes, 14 HND

programmes were selected which have produced diploma holders for at least five years. The study consisted of quantitative data analysis by collecting secondary data.

Selected HND programmes for the study were: Accountancy, Business administration, Business finance, English, Management, Tourism & Hospitality Management, Building Service Engineering, Quantity Surveying, Engineering Civil, Electrical, Mechanical, Information Technology, Food Technology and Agriculture. Selected regional centres for the study were: Ampara, Anuradhapura, Badulla, Batticaloa, Colombo, Dehiwala, Galle, Gampaha, Jaffna, Kandy, Kegalle, Kurunegala, Mannar, Nawalapitiya, Rathnapura, Sammanthurai, Tangalle, Trincomalee, Vavuniya

Data collection

Student pass rate and dropout rate:

To determine the average student pass rate and a dropout rate of each Higher National Diploma (HND) programme, secondary data was collected from the academic affair branch of SLIATE. Student recruitment data for the past five years and convocation data for the last five years were collected relevant to 19 regional institutes and for selected HND programmes. The duration of each 14 programme was identified. The total population of the students who registered and participate in the convocation from 2015 to 2019 was considered in data collection and analysis.

Data Analysis

One sample t-test, ANOVA and descriptive statistics were used for the analysis. The total student population of the SLIATE was used and students of each HND programme were considered as the sample. The mean population dropout rate was compared with the sample dropout rate of each HND programme. The significance of the dropout rates was compared with the population dropout rate to identify the significance level at $p = 0.05$ level. The significance of the mean dropout rate of HND programmes was analyzed using one sample T-test. Descriptive analysis was used to identify the institute-wise student dropout rate of each HND programme and

to identify the mean dropout rate of each institute. Multiple comparison analysis tests were used to compare the significance of the dropout rate of each HND programme compared to other programmes.

Calculations

Dropout rate of a programme = $[(\text{Input} - \text{Output})/\text{Input}] \times 100$

Results and Discussion

Programme-wise student dropout rate

HNDT Agriculture programme

Figure 1 shows the mean dropout percentage of the HNDT Agriculture programme. The Ampara centre has achieved the least dropout percentage (32%) compared to Galle and Gampaha centres (40%). There were no significant differences in mean dropout percentage among the centres. Hence, the Ampara centre is the most popular centre for Agriculture programme compared to the other centres.

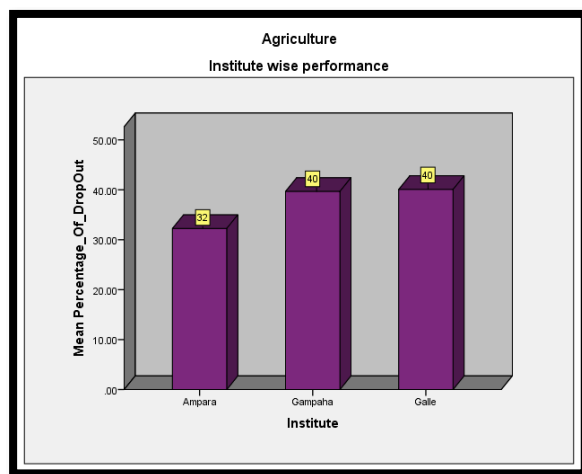


Figure 1. Mean dropout percentage of the HNDT Agriculture programme

HNDM programme

HNDM programme is offered by seven centres. The dropout rate for the HNDM programme is shown in Figure 2 the highest dropout rate was recorded from the Ampara centre (72%) and the lowest was recorded from the Dehiwala centre (38%). It shows that conducting a Management programme in Ampara requires rethinking due to the severe dropout rate of students.

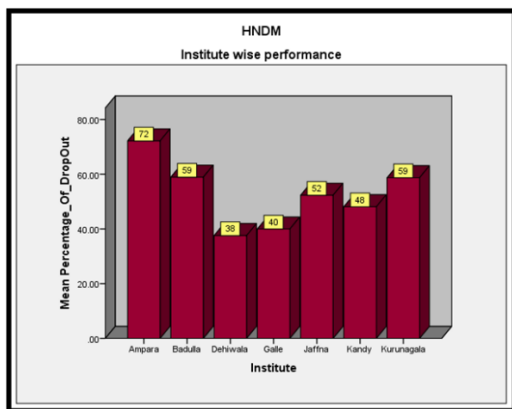


Figure 2. Mean dropout percentage of HNDM programme

HNDTHM programme

HNDTHM programme is offered by seven centres SLIATE. Figure 3 shows the mean dropout rate of the HNDTHM programme for the last five years. The Dehiwala centre showed the least dropout rate (39%) whereas Ampara centre showed a significantly higher student dropout rate in the HNDTHM programme. Hence, the demand for the HNDTHM programme in Ampara is low.

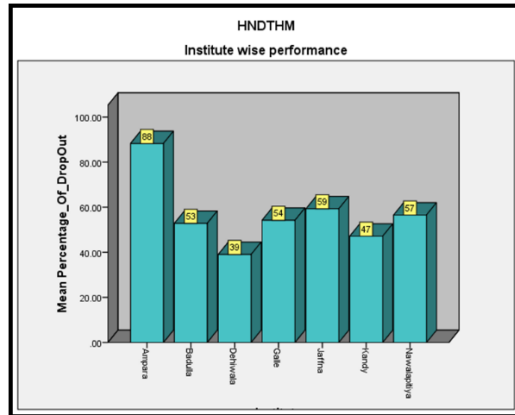


Figure 3. Mean dropout percentage of the HNDTHM programme

HNDIT programme

Figure 4 shows the mean dropout rate of the HNDIT programme for the past five years. Hence, it is important to look into the reasons for the huge dropout of students from this programme. When considering the entry qualification of the HNDIT programme, students who pass the A/L from any stream could apply for this programme and there is a selection test to select students for the HNDIT programme. A huge number of A/L art stream students applied for this programme and were selected to follow the programme. This may be one reason for the higher dropout rate as IT is a science-based subject and art stream students face difficulties when following certain subjects of the programme. It is important to revisit the entry qualification of the students and the introduction of different majoring tracts for the students based on their capabilities also would help to retain students.

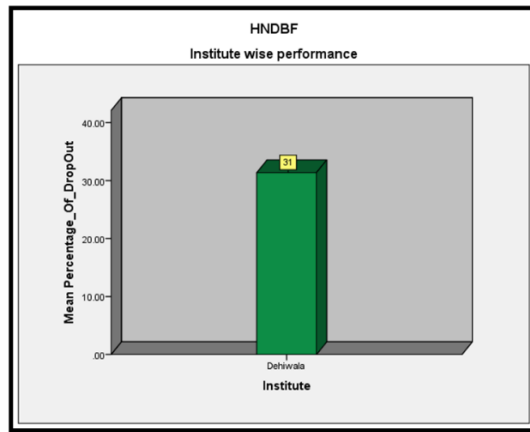


Figure 6. Mean dropout percentage of the HND BF programme

HNDBA programme

The HNDBA programme is offered by three centres. Figure 7 shows the mean dropout rate of the HNDBA programme. The highest dropout rate was noted in the Kandy centre (50%).

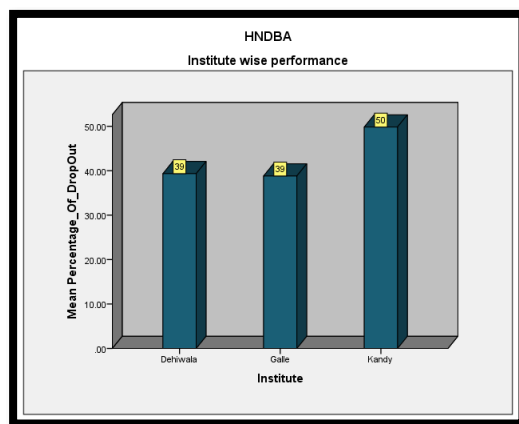


Figure 7. Mean dropout percentage of the HNDBA programme

HNDQS programme

Colombo and Galle centres offer the HNDQS programme and figure 8 shows the mean dropout rate of the HNDQS programme. Compared to other courses less dropout rate could be observed in the HNDQS programme.

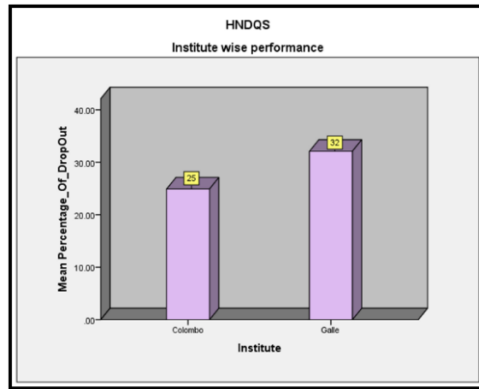


Figure 8. Mean dropout percentage of the HNDQS programme

HND English programme

The HND English is offered by 16 regional centres of SLIATE. Students qualified in any A/L stream could apply for the programme and there is a selection test to recruit students to the programme. The lowest dropout rate (25%) was recorded from Rathnapura centre and the highest dropout rate was recorded (64%) from Batticaloa centre (Figure 9).

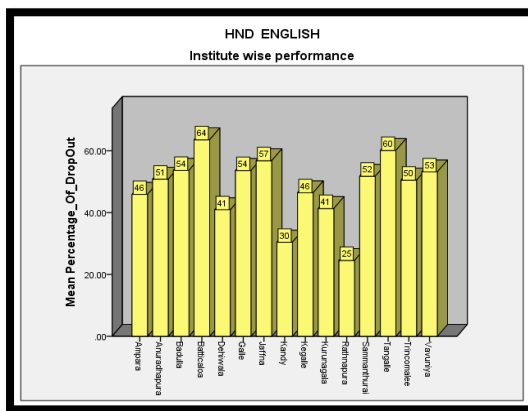


Figure 9. Mean dropout percentage of the HND English programme

HNDA programme

The HNDA programme is offered by 16 centres and students qualified in the commerce stream T A/L are eligible to apply. Students were recruited based on the Z score of A/L results. The highest dropout rate (66%) was recorded from the Ampara centre and the lowest dropout rate (28%) from the Kegalle centre (Figure 10). HNDA is a four-year programme and According to the Public Administration Circular No. 46/90, the Higher National Diploma in Accountancy has been recognized to accept as an alternative qualification to a General Degree in Commerce awarded by a recognized university for recruitment purposes. Hence, there is demand for this programme in student recruitment. However, the result revealed that most of the students do not complete the diploma after registration. The programme is offered as a full-time programme and as a part-time programme. Only Kegalle and Dehiwala centres showed lower student dropout rates compared to the other institutes.

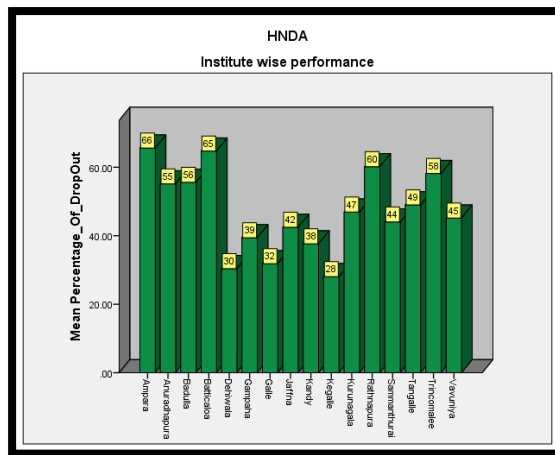


Figure 10. Mean dropout percentage of the HNDA programme

HNDBSE Programme

The HNDBSE programme is offered by the Colombo centre and physical science stream students are eligible to apply for the programme and Z score is the basis for selection. The mean dropout rate was 54% which is considerably a higher rate (Figure 11). This programme is a 3 ½ year programme.

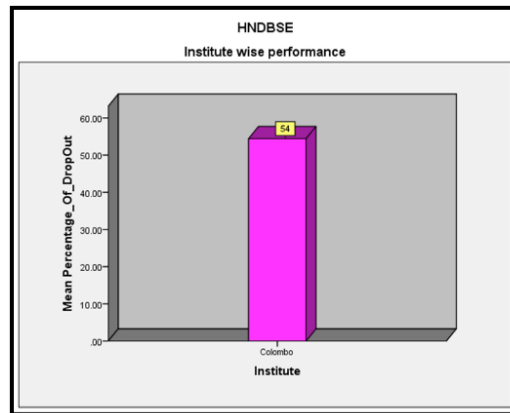


Figure 11. Mean dropout percentage of the HNDBSE programme

HNDE Civil programme

Figure 12 shows the dropout rate of the HNDE Civil programme. Accordingly, the Gall centre recorded the lowest dropout rate (20%) and the Colombo centre reported the highest (31%). Considering other HND programmes, the Civil engineering programme showed the highest demand due to the lowest dropout rate. This reveals that around 70% of students complete the programme in all three institutes.

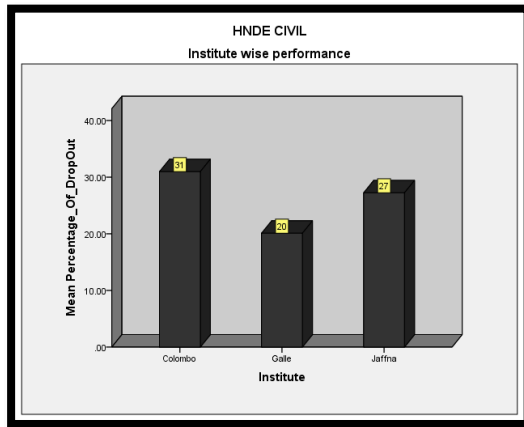


Figure 12. Mean dropout percentage of HNDE Civil programme

HNDE Electrical programme

Students qualified in the mathematics stream in A/L are eligible to apply for this programme and the Z score is the base for the selection of students. The dropout rate of all three institutes was almost the same and there was no significant difference at the $p = 0.05$ level (Figure 13). The Jaffna centre showed the highest dropout rate which was not significantly different to the dropout rate of the other centres.

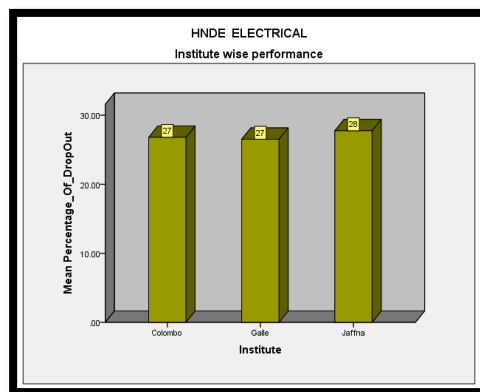


Figure 13. Mean dropout percentage of the HNDE Electrical programme

HNDE Mechanical programme

The HNDE Mechanical programme is offered by only two centres. The Colombo centre showed the highest dropout rate compared to Galle (Figure 14). There were no significant differences in dropout rates among institutes.

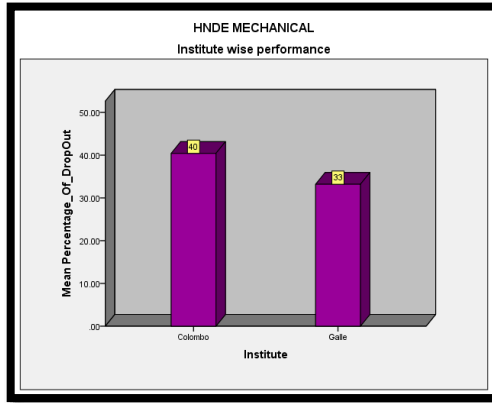


Figure 14. Mean dropout percentage of the HNDE Mechanical programme

Programme wise performance

The significance of the mean dropout rate of the HND programmes was analysed using one sample T-test. As per the SPSS descriptive analysis, the mean dropout rate was 48 per cent. The mean student dropout rate (48%) was compared with the sample mean dropout rate of each programme and checked whether the sample dropout rate is significantly different from the population dropout rate.

Table 2 showed the results of one sample T-test for the dropout percentage of HND programmes. Accordingly, the significantly highest mean dropout rate was noted in the HNDIT programme compared to other programmes and it was 67%. Out of all HND programmes, HNDE Civil and HNDE Electrical programmes showed the significantly lowest dropout rate and those dropout rates were 26% and 27% respectively for the last five years. However, dropout rates of Civil and Electrical Engineering

programmes did not show a significant difference at a $p = 0.05$ level. HNDBF programme also showed a significantly lower dropout rate at $p = 0.05$ level except for Civil and Electrical programmes. All the other programmes were not significantly different to each other and they were not significantly different from the mean population dropout rate.

According to the results, it is clear that most of the students recruited for the HNDIT programme give up the programme without completing the diploma and the annual percentage is 67%. Students who complete the diploma and received the diploma was 33% annually. When considering the background of the students, they were from the art stream. However, there is a selection test to recruit students to this programme. On the other hand, students who were recruited to HNDE civil and HNDE electrical programmes continued their education and the majority of them become eligible for diplomas. When considering the student demand, HNDE civil and HNDE electrical programmes recorded high demand whereas the HNDIT programme was lower.

Table 2.

Results of one sample T-test for dropout percentage of HND programmes

HND programme	Mean Dropout %	Significance (2-tailed)	Std. deviation	Mean difference	95% Confidence Interval of the Difference	
					Lower	Upper
HNDDT Agriculture	43.0642	0.320	17.14723	-4.93581	-15.2978	5.4262
HNDDM	52.5382	0.166	18.98167	4.53821	-1.9822	11.0586
HNDDTHM	52.2574	0.270	18.44793	4.25743	-3.5325	12.0473
HNDDIT	66.6612	0.000*	13.47456	18.66121	15.2393	22.0831
HNDDFT	41.1728	0.254	11.47251	-6.82716	-21.0722	7.4178
HNDDBF	31.3707	0.011*	8.196	-16.6293	-26.8060	6.4526
HNDDBA	42.6618	0.201	15.40337	-5.33822	-13.8683	3.1919
HNDDQS	28.5008	0.020*	21.88387	-19.49919	-35.1540	-3.8444
HND English	48.3655	0.873	18.67590	.36548	-4.1899	4.9209
HNDA	46.7236	0.654	21.38850	-1.27636	-6.9515	4.3988
HNDE civil	25.8760	0.000*	16.97505	-22.12405	-30.0686	14.1795
HNDE electrical	27.0266	0.000*	14.06166	-20.97341	-29.9078	12.0391
HNDE mechanical	36.8037	0.167	20.52586	-11.19630	-28.3564	5.9637
HNDBSE	54.4260	0.705	30.90760	6.42597	-42.7549	55.6069

Note. *Significant at p <0.05 level

Institute wise performance

Table 3 shows institute wise mean student dropout rate of each Institute. The lowest student dropout rate (35%) was observed in Colombo. The second lowest dropout rate (39%) was recorded by the Dehiwala and Galle centres. Tangalle and Batticaloa centres achieved the highest dropout rate (65%) out of all centres. When considering the dropout rate as a performance indicator, Colombo, Dehiwala and Galle centres could be identified as centres with the best performance and higher demand centres.

Table 3.

Institute-wise Mean student Dropout percentage

Institute	Mean Dropout %	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Ampara	59.2527	23.68632	4.73726	49.4755	69.0300
Anuradhapura	57.2592	19.60016	6.19812	43.2381	71.2803
Badulla	60.0388	13.17006	2.80787	54.1995	65.8781
Batticaloa	65.0319	19.51895	6.17243	51.0689	78.9949
Colombo	35.2875	23.30770	4.57102	25.8733	44.7017
Dehiwala	39.3796	14.45266	2.47861	34.3368	44.4224
Gampaha	47.1919	13.84306	3.26284	40.3080	54.0759
Galle	39.1238	19.18725	2.61105	33.8867	44.3609
Jaffna	47.1909	22.85335	4.03994	38.9514	55.4304
Kandy	44.8924	18.71428	3.53667	37.6358	52.1491
Kegalle	51.1815	25.29443	7.01541	35.8963	66.4668
Kurunegala	53.4451	16.57426	3.80240	45.4566	61.4337
Nawalapitiya	56.5217
Rathnapura	50.8538	25.19958	8.90940	29.7864	71.9211
Sammanthurai	52.2556	23.11868	7.31077	35.7175	68.7937
Tangalle	65.7272	16.40638	5.80053	52.0111	79.4433
Trincomalee	59.1886	19.98150	5.34028	47.6516	70.7256
Vavuniya	59.8640	17.60171	7.87173	38.0086	81.7194
Total	48.4605	21.15610	1.15245	46.1936	50.7275

Note. Percentage of Dropout is constant when Institute = Nawalapitiya. It has been omitted.

Multiple Comparisons of HND programmes

Results of multiple comparisons of HND programmes (Table 4) reveal that HNDFT and HNDBSE programmes have not shown significant dropout rates compared to other HND programmes. When comparing the HNDT agriculture programme with other programmes, only a significant difference in dropout rate was identified with the HNDIT programme. Similarly, HNDBA, HNDBF and HNDE Mechanical programmes also showed significantly lower dropout rates compared to the HNDIT programme. HNDIT

programme showed a significantly higher dropout rate compared to all HND programmes except HNDFT and HNDBSE programmes. HNDE Civil and Electrical programmes showed a significantly lower dropout rate compared to HNDM, HNDTHM, HNDIT, HNDENGL and HNDA programmes.

Table 4.
Multiple Comparisons of HND programmes

Programme Type		Mean Difference	Std. Error	Sig.	95% CI	
					LB	UB
HNDT Agric.	HNDIT	-23.59702*	5.5054	.002	-42.203	-4.991
HNDM	HNDIT	-14.12300*	3.8158	.018	-27.019	-1.227
	HNDQS	24.03740*	6.4714	.017	2.167	45.908
	HNDEcivil	26.66226*	5.0589	.000	9.565	43.759
	HNDEelectrical	25.51162*	6.0374	.002	5.106	45.915
HNDTHM	HNDQS	23.75661*	6.7930	.035	.799	46.714
	HNDEcivil	26.38147*	5.4643	.000	7.915	44.848
	HNDEelectrical	25.23084*	6.3809	.007	3.666	46.796
HNDIT	Agriculture	23.59702*	5.5054	.002	4.991	42.203
	HNDM	14.12300*	3.8158	.018	1.227	27.019
	HNDBF	35.29050*	8.3904	.003	6.935	63.646
	HNDBA	23.99943*	5.1932	.000	6.449	41.550
	HNDQS	38.16039*	6.1503	.000	17.375	58.946
	HNDENGL	18.29573*	3.1804	.000	7.547	29.044
	HNDA	19.93757*	3.3118	.000	8.745	31.130
	HNDEcivil	40.78525*	4.6411	.000	25.100	56.470
	HNDEelectrical	39.63462*	5.6919	.000	20.398	58.871
	HNDEmechanical	29.85751*	6.7801	.001	6.944	52.771
	HNDBF	HNDIT	-35.29050*	8.3904	.003	-63.646
HNDBA	HNDIT	-23.99943*	5.1932	.000	-41.550	-6.449
HNDQS	HNDM	-24.03740*	6.4714	.017	-45.908	-2.167
	HNDTHM	-23.75661*	6.7930	.035	-46.714	-.799
	HNDIT	-38.16039*	6.1503	.000	-58.946	-17.375
HNDENGL	HNDIT	-18.29573*	3.1804	.000	-29.044	-7.547
	HNDEcivil	22.48952*	4.5987	.000	6.948	38.031
	HNDEelectrical	21.33889*	5.6573	.014	2.219	40.458
HNDA	HNDIT	-19.93757*	3.3118	.000	-31.13	-8.745
	HNDEcivil	20.84769*	4.6905	.001	4.996	36.699

	HNDElectrical	19.69705*	5.7322	.042	.325	39.069
HNDE	HNDM	-26.66226*	5.0589	.000	-43.76	-9.565
Civil	HNDTHM	-26.38147*	5.4643	.000	-44.85	-7.915
	HNDIT	-40.78525*	4.6411	.000	-56.47	-25.100
	HNDENGL	-22.48952*	4.5987	.000	-38.031	-6.948
	HNDA	-20.84769*	4.6905	.001	-36.699	-4.996
HNDE	HNDM	-25.51162*	6.0374	.002	-45.915	-5.108
Electrical	HNDTHM	-25.23084*	6.3809	.007	-46.796	-3.666
	HNDIT	-39.63462*	5.691	.000	-58.871	-20.398
	HNDENGL	-21.33889*	5.6573	.014	-40.458	-2.219
	HNDA	-19.69705*	5.7322	.042	-39.069	-.326
HNDE	HNDIT	-29.85751*	6.7801	.001	-52.771	-6.944
Mech.						

Note. * The mean difference is significant at the 0.05 level.

Further, HNDENGL and HNDA programmes showed a significantly lower dropout rate compared to the HNDIT programme and a significantly higher dropout rate compared to HNDE Civil and Electrical programmes. Further, the dropout rate of the HNDQS programme was significantly lower than the HNDM, HNDTHM and HNDIT programmes.

The dropout rate of the HNDTHM programme was significantly higher than HNDQS, HNDE Civil and HND Electrical programmes. The dropout rate of the HNDM programme was significantly lower than HNDIT programmes and significantly higher than HNDQS, HNDE Civil and HNDE Electrical programmes. Results revealed that the HNDIT programme was the programme that showed the highest dropout rate and HNDE Civil and HNDE Electrical were the programmes that showed the lowest dropout rate compared to other programmes.

Conclusions

Based on the results of this study, the following conclusions were arrived at:

The average student dropout rate of SLIATE for the past five years (2015-2019) is 48%. This average dropout rate reflects the dropout from all HND programmes of the SLIATE. When considering the dropout rate programme-wise, HNDIT programme showed a significantly higher dropout rate (67%) compared to all other HND programmes and the mean dropout rate of SLIATE. This is a considerably higher amount as it exceeds the 50% dropout rate. HNDBF, HNDQS, HNDE Civil and HNDE Electrical programmes showed significantly lower mean dropout rate (<31%) compared to the overall population mean dropout rate (48%) SLIATE. These programmes can be identified as the most demanding programmes of the SLIATE. When consider the institute-wise student dropout rate, the lowest student dropout rate (35%) was observed from Colombo compared to other institutes. The Colombo center only offers Engineering programmes (HNDQS, HNDE Civil and HNDE Electrical, HND Mechanical and HNDBSE programmes) and less student dropout rate of Engineering programmes contributed to less dropout rate of the institute. The second lowest dropout rate was noted from Dehiwala and Galle centers and it was 39%. These centres offer a higher number of programmes compared to other institutes. Tangalle and Batticaloa centres have recorded the highest student dropout rate (65%) out of all centres. This reflects the less demand for the centre may be due to the remote location of the institute. The programmes with the highest demand at SLIATE are Civil and Electrical Engineering programmes offered by the Colombo center.

Recommendations

Further studies are recommended for identifying the reasons for such student dropouts to develop strategies to minimize dropouts from the alternative higher education sector. A survey to identify the reasons for student dropouts should be implemented targeting the stakeholders specially targeting the student community. Such identified reasons can be used to develop strategies to minimize student dropout of the Institute. Further SWOT analysis and PESTEL analysis also will be helpful to identify the present

situation of the institute and to develop strategies to compete with rival institutions.

References

- Abu S. A., Al-Emran, M. and Shaalan, K. (2019). Factors Affecting Students' Performance in Higher Education: A Systematic Review of Predictive Data Mining Techniques. *Technology, Knowledge and Learning*, 24, 567–598.
doi: <https://doi.org/10.1007/s10758-019-09408-7>.
- Annual Report (2018). *Sri Lanka Institute of Advanced Technological Education (SLIATE)*. No. 320. T. B. Jayah Mawatha, Colombo 10. Sri Lanka. 17-31.
- Alawattagama, K. K. (2020). Free Education Policy and its Emerging Challenges in Sri Lanka. *European Journal of Educational Sciences*, 7(1), 3-5. doi:10.19044/ejes.v7no1a1.
- Al-haimi, Basheer, Ab, Hamid & Fadhl H. (2018). Factors Affecting Yemen Higher Education Institutions Performance: Challenges & Obstacles. *International Journal of Engineering & Technology. Science Publishing Cooperation*, 7, 256- 260.
doi: <https://doi.org/10.14419/ijet.v7i3.21.17169>.
- Alyahyan, E.& Duştegor, D. (2020). Predicting academic success in higher education: literature review and best practices. *Int J Educ Technol High Educ.*, 17(3), 3-5.
doi: <https://doi.org/10.1186/s41239-020-0177-7>.
- Bonneau, K. (2015). Brief 3: What is a Dropout? North Carolina Education Research Data Center, Center for Child and Family Policy.
Retrieved from:https://www.purdue.edu/hhs/hdfs/fii/wp-content/uploads/2015/07/s_ncfis04c03.pdf.
- Central Bank Annual Report. (2019). Central Bank of Sri Lanka. Colombo. Retrieved from:
<https://www.cbsl.gov.lk/en/publications/economic-and-financial-reports/annual-reports/annual-report-2019>
- David, F. R., (2011). *Strategic Management: Concepts and Cases*. Pp. 13, illustrated Publisher: Prentice Hall, 2011.

ISBN 0136120989, 9780136120988. Retrieved from:
<http://lms.aambc.edu.et:8080/xmlui/bitstream/handle/123456789/259/strategic-management-sixteenth-edition-concepts.pdf?sequence=1>.

- Frenken, K., Gaston, K., Heimeriks, J. & Hoekman, J. (2017). What drives university research performance? An analysis using the CWTS Leiden Ranking data. *Journal of Informatics*, 11(3), 859-872.
doi: <https://doi.org/10.1016/j.joi.2017.06.006>.
- Li, I. W. & Carroll, D. R. (2019). Factors influencing dropout and academic performance: an Australian higher education equity perspective. *Journal of Higher Education Policy and Management*, 42, 14-30.
doi: <https://doi.org/10.1080/1360080X.2019.1649993>.
- Ranjan, R., Chatterjee P., & Shankar C. S. (2015). Evaluating performance of engineering departments in an Indian University using DEMATEL and compromise ranking methods. *International Entrepreneurship and Management Journal, OPSEARCH*, 52, 307-328.
doi: DOI 10.1007/s12597-014-0186-1.
- Shin, J. C., Toutkoushian, R. K. & Teichler, U. (Eds.) (2011), *University rankings*. Theoretical basis, methodology and impacts on global higher education, Springer, Berlin. Pp. 2.
doi: <https://doi.org/10.1007/978-94-007-1116-7>.
- Simon, C., Vlado D., & Maja, Z. G. (2015). Research, teaching and performance evaluation in academia: the salience of quality. *Journal of Studies in Higher Education*, 42(8), 1455-1473.
doi: <https://doi.org/10.1080/03075079.2015.1104659>.
- Sriyalatha, M. A. K. (2016). Factors contributing to students' academic performance: a case of university of Sri Jayewardenepura, Sri Lanka. Retrieved from:
<http://dr.lib.sjp.ac.lk/handle/123456789/5285>.
- Superby, J. F., Vandamme, J. P. & Meskens, N. (2006). Determination of factors influencing the achievement of the first-year university students using data mining methods. Retrieved from:
https://www.researchgate.net/publication/228346963_Determination_of_factors_influencing_the_achievement_of_the_firstyear_university_students_using_data_mining_methods.

- Vakkuri, J. & Meklin, P. (2003). The impact of culture on the use of performance measurement information in the university setting. *Management Decision*, 41(8), 751-759.
doi: <https://doi.org/10.1108/00251740310496260>.
- Xenos, M., Pierrakeasa, C. & Pintelas, P. (2002). A survey on student dropout rates and dropout causes concerning the students in the Course of Informatics of the Hellenic Open University. *Science Direct.*, 39(4), 361-377.
doi: [https://doi.org/10.1016/S0360-1315\(02\)00072-6](https://doi.org/10.1016/S0360-1315(02)00072-6).