Comparison of Students Learning Outcomes for SNMPTN and SBMPTN Selection Pathways of the Automotive Engineering Education Study Program

Ahmad Arif[*], Nuzul Hidayat, Nizwardi Jalinus, Ridwan, Rijal Abdullah, M. Yasep Setiawan, Wawan Purwanto, Wagino, Martias

Universitas Negeri Padang
[*]*Email: ahmadarif@ft.unp.ac.id*

ABSTRACT

The different student learning outcomes of the Automotive Engineering Education Study Program FT UNP, serve as the context for this research. Several factors, both internal and external to the student, influence learning results, one of which is the decision to participate in PTN. This study is a comparative descriptive study that compares the learning results of 74 students accepted into the Automotive Engineering Education Study Program FT UNP, through the SNMPTN and SBMPTN entering years in 2019 and 2020. The sampling technique used total sampling, which sampled the entire population, comprising 74 people, with details of SNMPTN and SBMPTN pupils totaling 37 people each. The t-test is used in the data analysis technique, which was formerly performed by the normalcy test. Based on the results of the t-test, the null hypothesis (Ho) is accepted and the working hypothesis (Ha) is rejected ($-t_{table} \leq t_{count} \leq +t_{table} : -1.980 \leq -0.1267 \leq 1.980$). It can be concluded that there is no significant difference in learning outcomes between SNMPTN and SBMPTN students in the 2019 and 2020 batches of the FT UNP Automotive Engineering Education Study Program at the 95% confidence level. Those entering SNMPTN generally have a higher mean value than those entering SBMPTN.

Keywords: Comparisons, Learning Outcomes, Selection Pathways, Students.

1. INTRODUCTION

The Automotive Engineering Education Study Program, Department of Automotive Engineering, Faculty of Engineering, Universitas Negeri Padang (FT UNP) has made numerous efforts to improve the quality and quality of its graduates, such as improving lecturer performance, quality of input, curriculum, student services, and facilities and learning infrastructure in order to improve student learning outcomes.

Learning outcomes describe what a person has learned after going through the learning process. Learning outcomes or learning attainment are things that are acquired, mastered, and are the result of the learning process [1] [2]. On campus, the teaching and learning process is constantly being enhanced in order to get the best results, which can be accomplished if all components of a strong teaching and learning process are supported. These teaching and learning components include the instructor's teaching environment, which comprises

teaching objectives, teaching materials, teaching methods, and final assessment (evaluation) [1][3].

Tests, quizzes, assignments, midterm tests, final semester exams, and other methods tailored to the nature of the subject of science and the features of each course are used to measure student learning outcomes. Every semester, the evaluation procedure is used to determine student academic achievement. Indeks Prestasi Kumulatif (IPK) of pupils determines their success rate [4].

In 2019 and 2020, UNP will admit new undergraduate students through three selection pathways: Seleksi Nasional Masuk Perguruan Tinggi Negeri (SNMPTN), Seleksi Bersama Masuk Perguruan Tinggi Negeri (SBMPTN), and independent selection. SNMPTN is based on the outcomes of tracking academic, non-academic, or prospective student portfolios. The SBMPTN is based on the results of Ujian Tulis Berbasis Komputer (UTBK) and can be reinforced with other criteria specified by the Perguruan Tinggi Negeri (PTN)

in question. Independent selection is conducted in accordance with the procedures established by each PTN leader. At PTN, SNMPTN receives a minimum of 20% of the capacity quota for each study program, whereas SBMPTN receives a minimum of 40% and a maximum of 30% independent selection. [5]. In 2019 and 2020, the SNMPTN route accepts 37 students, while the SBMPTN route accepts 37 students, for a total of 74 students.

Students from the SNMPTN and SBMPTN routes are treated equally in the FT UNP Automotive Engineering Education Study Program. Students from the SNMPTN and SBMPTN pathways are joined and compete to demonstrate their respective learning achievements during the implementation of lectures. Each student's learning achievement, as measured by their IPK, differs substantially. SNMPTN is carried out based on the outcomes of tracking the academic achievements of the school of origin, as shown from the PTN entry selection route. This implies that students who enter through the SNMPTN route have higher learning outcomes than students who enter through other selection routes. This circumstance also begs the question of whether the disparities in admission pathways adopted by students would affect the learning outcomes they receive after enrolling in the Automotive Engineering Education study program, FT UNP.

Previous study has revealed that there is disagreement on the learning results of the two groups of this selection process. Several previous studies found differences in the learning outcomes of students accepted through the SNMPTN and SBMPTN pathways [6] [7] [8] [9] [10], while other studies found no differences in the learning outcomes of students accepted through the SNMPTN and SBMPTN [11] [12] [13] [14].

Based on the findings of this study, it is unclear if students accepted into the Automotive Engineering Education Study Program at FT UNP via the SNMPTN and SBMPTN paths have different or equal academic performance. There has been no research in the Automotive Engineering Education Study Program, FT UNP that raises the topic of variations in student accomplishment based on the admission selection procedure. This study is needed to determine whether there are changes in student achievement based on the SNMPTN and SBMPTN routes.

This research is expected to be useful for the FT UNP Automotive Engineering Education Study Program as an illustration of the quality of new student admissions and for other study programs, as well as for the Ministry of Education, Culture, Research, and Technology in developing new student admission policies and improving the quality of education services and research.

2. METHOD

The descriptive comparative research approach was utilized, with the goal of comparing learning outcomes between students accepted through the SNMPTN and SBMPTN routes in the Automotive Engineering Education Study Program FT UNP [15]. This study was carried out by collecting data on student learning outcomes in the form of IPK in semesters I and II of students enrolled in the Automotive Engineering Education Study Program in 2019 and 2020, after which statistical tests were performed on the data and conclusions were drawn from the research results.

The research population consisted of all 74 students enrolled in the Automotive Engineering Education Study Program in 2019 and 2020 who were registered with the Biro Akademik dan Kemahasiswaan (BAK) UNP. This study used the full population as the research sample (total sampling), namely 74 participants, 37 of whom were accepted via the SNMPTN route and 37 via the SBMPTN line [16]. Secondary data is received from BAK UNP in the form of student learning outcomes records and data collecting directly from students.

Data collection strategies employ documentation techniques by gathering and tabulating all student grade archives. Exploratory and descriptive techniques were utilized to describe the data from each research variable. The mean, mode, median, standard deviation, and frequency distribution tables were determined using descriptive statistical analysis [17] [18]. The requirements analysis test is used to test hypotheses. The normality test is the analytical test requirement that is used to assess if the distribution of data originates from a regularly distributed population or not. The chi square formula is used in the normalcy test [16].

This study used the t-test hypothesis testing to compare the two sample groups, namely the sample groups of students accepted via the SNMPTN and SBMPTN pathways [16]. The t-test seeks to distinguish between two sample groups. The decision-making criterion is as follows: if $-t_{table} \leq t_{count} \leq +t_{table}$, Ho is approved and Ha is rejected with a significant $= 0.05$. The Polled Variance t test formula is used for the hypothesis test t-test [16].

3. RESULT

SNMPTN students have the lowest IPK of 2.19 and the greatest IPK of 3.84 in the Automotive Engineering Education Study Program in 2019 and 2020, whereas SBMPTN students have the lowest IPK of 2.38 and the highest IPK of 3.80. The mean was 2.93, the mode was 3.23, and the standard deviation was 0.375 for SNMPTN. SBMPTN's mean was 2.92, mode was 2.95, and standard deviation was 0.300.

Table 1. Statistical calculation of variables X1 and X2 (SNMPTN and SBMPTN).

| Statistic	Variable X1 (SNMPTN)	Variable X2 (SBMPTN)
Number of Samples	37	37
Standard Deviation	0.375	0.300
Mean	2.93	2.92
Range	1.67	1.42
Variance	0.1410	0.0901
Total Score	108.07	107.73
Highest Score	3.86	3.80
Lowest Score	2.19	2.38
Median	2.93	2.88
Mode	3.23	2.95

Tables 2 and 3 as well as images 1 and 2 provide a clear picture of the variable values of student learning outcomes accepted through the SNMPTN and SBMPTN pathways.

Table 2. Frequency distribution of student learning outcomes SNMPTN (X1).

Class Intervals	F Absolute	F Relative (%)
2.19 – 2.43	4	0.108108108
2.44 – 2.68	5	0.135135135
2.69 – 2.93	11	0.297297297
2.94 - 3.18	7	0.189189189
3.19 - 3.43	7	0,189189189
3.44 - 3.68	2	0.054054054
3.69 - 3.93	1	0.027027027
Total	37	100%
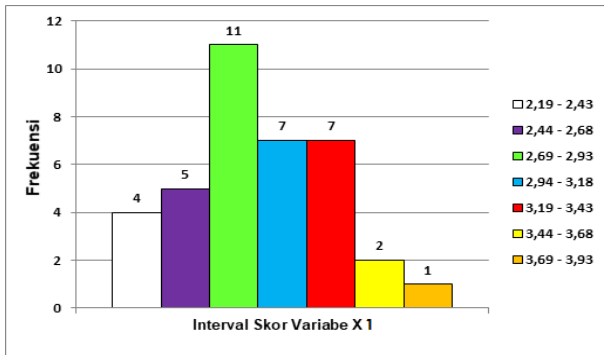
Picture 1 Histogram of student learning outcomes SNMPTN (X1).
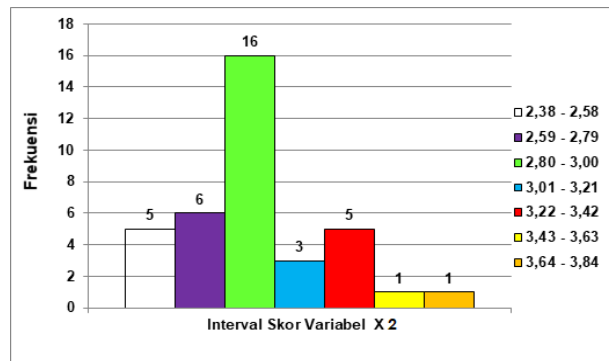
Picture 2 Histogram of student learning outcomes SBMPTN (X2).

Table 3. Frequency distribution of student learning outcomes SBMPTN (X2).

Class Intervals	F Absolute	F Relative (%)
2.38 - 2.58	5	0.135135135
2,59 - 2.79	6	0.162162162
2.80 - 3.00	16	0.432432432
3.01 - 3.21	3	0.081081081
3.22 - 3.42	5	0.135135135
3.43 - 3.63	1	0.027027027
3.64 - 3.84	1	0.027027027
Total	37	100%

Data on student scores for SNMPTN and SBMPTN entering years 2019 and 2020 were subjected to normality testing for each group. The normality test is designed to put to the test the assumption that data is normally distributed. The chi square formula is used to perform the normalcy test. The significant level for rejecting or accepting a typical judgment whether or not a data is 0.05 and $\chi^2_{count} < \chi^2_{table}$. Table 4 shows the results of the normalcy test. The chi squared value for all variables is less than the chi squared value for the table. All data can be concluded to be regularly distributed.

The findings of this study are consistent with previous similar studies that found no differences in the learning outcomes of students accepted through the SNMPTN and SBMPTN paths [11] [12] [13] [14]. This demonstrates that students that enroll via the SNMPTN route do not always excel in their learning outcomes. Factors within and outside of the student can influence learning outcomes. Internal elements such as learning interest, learning motivation, and talents, as well as external factors such as surroundings and educational background [1], play a role. It is hoped that the percentage of student

Table 4. Summary of normality test results.

Variable	χ^2 count	χ^2 table	Information
Variable (X1)	12.323	12.592	Normal
Variable (X2)	12.485	12.592	Normal

The t-test is used to test the hypothesis or the significance of the association. The null hypothesis (Ho) is accepted and the working hypothesis (Ha) is rejected if $t_{count} < t_{table}$. If the t_{count} is greater than the t_{table}, the null hypothesis (Ho) is rejected and the working hypothesis (Ha) is accepted. The calculation yielded t_{count} -0.1267 and t_{table} = 1.980 at a significance level of 0.05 based on the t distribution table for degrees of freedom (dk) = n1+n2-2 (37+37 - 2 = 72). Because the value of t_{count} +t_{table} is greater than the value of t_{table} (-1.980 ≤ -0.1267 ≤ 1.980), Ho is accepted and Ha is rejected, so the hypothesis states there is no significant difference between student learning outcomes received through SNMPTN and SBMPTN pathways in the Automotive Engineering Education Study Program, Department of Automotive Engineering, FT UNP, as shown in table 5.

admissions via the SNMPTN and SBMPTN routes would be given greater consideration and will be more fair.

5. CONCLUSION

The t-test was obtained at a 95% confidence level of = 0.05 t_{count} is smaller than +t_{table} and greater than -t_{table} (-1.980 ≤ -0.1267 ≤ 1.980) from the results of comparative data analysis of student learning outcomes received through the SNMPTN and SBMPTN entrance years in 2019 and 2020 in semesters I and II. Based on the existing criteria, the null hypothesis (Ho) is accepted and the working hypothesis (Ha) is rejected, so there is no significant difference in the 95% confidence level in learning outcomes between students from the SNMPTN and SBMPTN selection pathways for 2019 and 2020 entry in the Engineering Education Study Program

Table 5. Statistical hypothesis test results.

Comparison	t count	t table	Information
X1 : X2	-0,1267	1,980	H_0 Accepted and H_a Rejected

4. DISCUSSION

Data analysis calculations demonstrate that the null hypothesis (Ho) is accepted and the working hypothesis (Ha) is rejected for the 2019 and 2020 entry years received via the SNMPTN and SBMPTN pathways, -t_{table} ≤ t_{count} ≤ +t_{table}, (-1.980 ≤ -0.1267 ≤ 1.980) As a result, at the significance level of 0.05, there is no significant difference between students of the Automotive Engineering Education Study Program through SNMPTN and SBMPTN. SNMPTN students have a higher mean of 2.93 and a standard deviation of 0.375, whereas SBMPTN students have a lower mean of 2.92 and a standard deviation of 0.300. There is no difference in learning outcomes between students chosen for the SNMPTN and SBMPTN for the 2019 and 2020 admission years.

Automotive Department of Automotive Engineering FT UNP. In general, SNMPTN students have a higher mean value than SBMPTN students, namely 2.93 and 2.92.

The percentage of student applications accepted through the SNMPTN and SBMPTN pathways is expected to be fairer. Further research including various additional variables, such as more subjects reviewed to compare these two groups of students, or one study program and one generation, is required to produce more precise and dependable research results.

REFERENCES

[1] Slameto. 2010. Belajar dan Faktor-Faktor yang Mempengaruhinya. *PT. Rineka Cipta.*

[2] Deden. N. 2009. Studi Perbandingan Hasil Belajar Antara Mahasiswa yang Berasal dari SMA dan SMK Dalam Mata Kuliah Kimia Teknik di Jurusan Teknik Mesin FT UNP. *Skripsi. Universitas Negeri Padang.*

[3] Arif, A., Jalinus, N., Refdinal, R., Maksum, H., Martias, M., Sugiarto, T., ... & Lisna, Y. P. (2022). The Correlation of Interest in Becoming a Teacher with Learning Outcomes in the Educational Field of Automotive Engineering Education Students. *AEEJ: Journal of Automotive Engineering and Vocational Education*, *3*(2), 151-156.

[4] Rektor Universitas Negeri Padang. 2019. Pedoman Akademik Universitas Negeri Padang. *UNP Press.*

[5] Peraturan Menteri Pendidikan dan Kebudayaan Nomor 6 Tahun 2020 tentang Penerimaan Mahasiswa Baru Program Sarjana pada Perguruan Tinggi Negeri, Mendikbud, 2020.

[6] Idris, M. (2021). Analisis Prestasi Akademik Mahasiswa Teknik Informatika Institut Teknologi Sumatera (ITERA) Berdasarkan Jalur Seleksi Masuk Perguruan Tinggi Negeri. *Journal of Science and Applicative Technology*, *5*(1), 126-130.

[7] Priyougie, P., Haq, A., & Iriawan, S. (2019). Analisis Perbedaan Prestasi Belajar Mahasiswa Berdasarkan Seleksi Masuk Jurusan Akuntansi Politeknik Negeri Banjarmasin. *Jurnal INTEKNA: Informasi Teknik dan Niaga*, *19*(1), 53-59.

[8] Suwena, K. R. (2017). Jalur Penerimaan Mahasiswa Baru Bukan Penentu Prestasi Belajar Mahasiswa. *Ekuitas: Jurnal Pendidikan Ekonomi*, *5*(2), 1-10.

[9] Yozza, H. Perbandingan Prestasi Akademis Mahasiswa Jurusan Matematika Universitas Andalas yang Diterima Melalui Jalur SNMPTN dan SBMPTN dengan Uji Khi Kuadrat.

[10] Usman, U. (2015). Analisis Perbandingan Prestasi Belajar Fisika Dasar Mahasiswa Berdasarkan Jalur Penerimaan Mahasiswa Di Jurusan Fisika Fakultas Matematika Dan Ilmu Pengetahuan Alam Universitas Negeri Makassar. *Jurnal Sains dan Pendidikan Fisika*, *11*(1), 319181.

[11] Lestari, D., Anis, H., & Khaeruddin, K. (2019). Analisis Hasil Belajar Mahasiswa Jurusan Fisika Berdasarkan Jalur Masuk (Snmptn, Sbmptn Dan Mandiri) Universitas Negeri Makassar. *Jurnal Sains dan Pendidikan Fisika*, *14*(3), 319088.

[12] Claudya, Y., Ngadimin, N., & Melvina, M. (2017). Perbedaan prestasi belajar mahasiswa berdasarkan jalur seleksi masuk Jurusan Pendidikan Fisika Universitas Syiah Kuala. *Jurnal Ilmiah Mahasiswa Pendidikan Fisika*, *2*(3), 321-325.

[13] MAWARNI, P. I. (2017). Perbandingan Hasil Belajar Akuntansi Mahasiswa Pendidikan Akuntansi Universitas Negeri Surabaya Ditinjau Dari Latar Belakang Pendidikan Dan Jalur Seleksi Masuk Perguruan Tinggi. *Jurnal Pendidikan Akuntansi (JPAK)*, *5*(2).

[14] Arfiahera. 2003. Perbandingan Hasil Belajar Antara Mahasiswa Melalui Seleksi UMPTN dan Hasil Seleksi PMDK di Juruan Teknik Sipil Program Studi Pendidikan Teknik Bangunan. *Skripsi. Universitas Negeri Padang.*

[15] Suharsimi A. 2006. Prosedur Penelitian. Rineka Cipta.

[16] Riduwan. 2005. Belajar Mudah Penelitian Untuk Guru-Karyawan dan Peneliti Pemula, Alfabeta.

[17] Sugiyono. 2009. Statistika Untuk Penelitian, Alfabeta.

[18] Nana S. 2006. Tuntunan Penyusunan Karya Ilmiah, Sinar Baru Alqensindo.