The Influence Of Academic Advising System Implementation On Student Academic Achievement

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Abstract

This study aims to investigate the impact of using the Academic Advising System (e-SPAk) on the examination results of Computer and Network Certificate (SSK) students at Kolej Komuniti Bagan Datuk (KKBgD). The study involved 70 SSK students, including those who used e-SPAk and those who did not. The data obtained were analysed using Python programming language, utilizing t-tests and analysis of variance (ANOVA), and supported to examine the differences in examination results between the two groups of students. The study findings show no significant difference in overall examination results between students who use e-SPAk and those who do not. This finding is supported by focus group interviews, which indicate that e-SPAk is important in supporting students in achieving academic improvement. However, when examining the Cumulative Grade Point Average (CGPA) examination results, a significant difference was found between the two groups of students. Students who use e-SPAk showed better examination results in terms of CGPA than students who do not use e-SPAk. Based on these findings, it can be concluded that using the e-SPAk system positively affects CGPA examination results. Therefore, it is recommended that the college continue to use the e-SPAk system and expand its use in implementing SSK programs to improve student outcomes. In addition, future research can also compare the effectiveness of SSK programs with SVM programs and differences in outcomes between genders.

Keywords: E-Spak System; Examination Results; SSK Students

1.0 Introduction

The introduction of the System of Academic Advising (SPAk) in community colleges aimed to enhance the relationship between academic advisors and students, ultimately improving students' generic skills, academic performance, and readiness for the workforce through the implementation of various modules. Following a traditional format, SPAk transitioned to an online platform in response to the COVID-19 pandemic. This shift brought about Electronic-SPAk (e-SPAk) at Kolej Komuniti Bagan Datuk (KKBgD), specifically tailored to the needs of students pursuing Certification in Computer and Networking (SSK).

However, research by Roman and Plopeanu (2021) revealed that the COVID-19 pandemic caused psychological stress and anxiety, negatively impacting the effectiveness of learning. Unsatisfactory internet access, limited

availability of time due to family commitments, insufficient workspace at home, and lower success rates in online learning had a disproportionately adverse impact on male students' pursuit of further education (De Laet et al., 2020). Advances in ICT technology provide opportunities for data visualization in academic advising (Donohoe & Costello, 2020).

2.0 Problem Statement

The effectiveness of academic advising and its impact on student academic achievement in vocational and technical education programs is of paramount importance. Technology integration, such as the Electronic Academic Advising System (e-SPAk), has been introduced to enhance academic advising. According to a study by Ridzuan and Fuad (2021) published in the Politeknik & Kolej Komuniti Journal of Social Sciences and Humanities, family factors, including family economy, family education level, and family encouragement, significantly affect the direction of community education in Sabah. The importance of this study lies in its empirical investigation into the impact of the e-SPAk system on student examination results within the context of the Sijil Komputer dan Rangkaian (SSK) program at Kolej Komuniti Bagan Datuk (KKBgD). The study addresses whether significant differences exist in examination outcomes, including Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA), between students who utilize the e-SPAk system and those who do not. Understanding these differences is essential for evaluating the effectiveness of the e-SPAk system in supporting students' academic achievements, ultimately contributing to informed decisions about its continued implementation and improvement in academic advising strategies. Understanding the influence of e-SPAk on student academic achievement can provide valuable insights for educational institutions seeking to optimize academic advising strategies and improve student outcomes in vocational and technical education programs.

3.0 Objectives

Building upon prior research, which has demonstrated the positive impact of SPAK on students' self-confidence, this study investigates the influence of the e-SPAk system on the academic achievement of SSK students at Kolej Komuniti Bagan Datuk. It specifically examines Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA) achievements in each semester. There are three research objectives, namely:

i. To assess whether there is a statistically significant variation in the examination results of SSK students across semester 1, semester 2, and semester 3 in the absence of the e-SPAk system at KKBgD.

ii. To investigate whether there is a statistically significant difference in the examination outcomes of SSK students across semester 1, semester 2, and semester 3 while utilizing the e-SPAk system at KKBgD.

iii. To determine whether a statistically significant difference exists in the Cumulative Grade Point Average (CGPA) results between SSK students who use the e-SPAk system and those who do not utilize the e-SPAk system at KKBgD.

4.0 Literature Review

Factors such as unsatisfactory internet access, limited time due to family issues, lack of workspace at home, and low success in online learning affected students, especially male students.

Based on previous research, the use of SPAK has been shown to have a positive impact on students' self-confidence. For example, research by Lee and Soh (2020) found that students using SPAK reported higher self-confidence in facing academic tasks and making study-related decisions. It suggests that interaction with academic advisors through e-SPAk can strengthen students' confidence in facing academic challenges.

Furthermore, findings by Obajei & Jeawonii (2021) from Durban University of Technology suggest that academic advisors play a crucial role for students in the face of the pandemic as a positive mechanism for motivation and academic achievement improvement. This finding is also supported by Creamer, D. G., & Creamer, E. G. (2017), highlighting that good academic advising can positively impact student success, including improved graduation grades and academic progress during enrolment.

The research findings by Wong and Cheng (2018) indicate differences in views between the two groups regarding the benefits and effectiveness of e-SPAk. Therefore, this study aims to examine the influence of e-SPAk on the academic achievement of SSK students at Kolej Komuniti Bagan Datuk in terms of Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA) achievement in each semester.

4.1 Advancements in ICT Technology and Academic Advising

Integrating Information and Communication Technology (ICT) in education has significantly impacted academic advising. This technology provides data visualization and analysis opportunities, enabling academic advisors to gain deeper insights into students' progress, needs, and challenges (Donohoe & Costello, 2020). Digitalizing advising processes can potentially enhance the effectiveness of academic advising systems.

4.2 The Role of Academic Advising in Enhancing Student Outcomes

Academic advising plays a pivotal role in supporting students during their academic journeys. It encompasses a range of activities, including goal setting, course planning, and personalized guidance (Obajei & Jeawonii, 2021). Amidst the challenges posed by the pandemic, academic advisors have been instrumental in motivating students and helping them overcome academic obstacles. Research by Obajei & Jeawonii (2021) from Durban University of Technology highlights the vital role of academic advisors as positive mechanisms for motivation and improvement in academic achievement during

times of crisis. This finding is consistent with the broader literature on academic advising's positive impact on student success (Creamer, D. G., & Creamer, E. G., 2017).

The study conducted by Syirazi Suhaimi et al. (2022) on the Programme Educational Objectives (PEO) achievement in the Diploma in Mechanical Engineering (Product Design) program at Politeknik Muadzam Shah reflects a critical alignment with the role of Academic Advisors in vocational and technical educational institutions. In the context of academic advising, this research emphasizes the significance of graduates' competencies and preparedness for their professional careers after completing their diploma. The study's findings point to the vital role of Academic Advisors in guiding students toward achieving these educational objectives and preparing them for industry-relevant knowledge and skills (PEO1).

4.3 Self-Confidence and Academic Success

A student's self-confidence is a critical factor influencing their academic success. Research conducted by Lee & Soh (2020) found that students using academic advising systems reported higher levels of self-confidence when facing academic challenges and making study-related decisions. The support and guidance provided by academic advisors through systems like SPAK can empower students to approach their studies with greater assurance.

4.4 Differing Perspectives on e-SPAk

Wong and Cheng's (2018) study revealed differing viewpoints among student groups regarding the benefits and effectiveness of e-SPAk. It suggests the importance of examining e-SPAk's influence on academic outcomes. Therefore, this research aims to provide a comprehensive analysis of the impact of e-SPAk on the academic achievement of SSK students at Kolej Komuniti Bagan Datuk, particularly in terms of Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA) achievements across different semesters.

4.5 Hypotheses

i. There is no significant difference in the examination results of SSK students in semester 1, semester 2, and semester 3 without using the e-SPAk system at KKBgD.

ii. There is no significant difference in the CGPA examination results between SSK students using the e-SPAk system and those who do not use the e-SPAk system at KKBgD.

5.0 Materials and Methodology

5.1 Research Design

This study employs a quantitative research design to collect and analyse data to examine the relationship between using e-SPAk and the academic achievement of SSK students at KKBgD, with samples of students both with and without using e-SPAk.

5.2 Population and Sample

The study's population comprises 80 SSK students at Kolej Komuniti Bagan Datuk. From this population, a sample of 70 students was randomly selected to participate in the study. Of the 70 selected students, 35 utilized the e-SPAk system, while the other 35 did not use the e-SPAk system.

This sampling approach aligns with the recommendation of Creswell, J. W. (2014), who suggests that a Minimum of 30 samples is required for descriptive research data, depending on the research design and the study's specific context. This balanced sample distribution between e-SPAk users and non-users ensures that the study can effectively explore the impact of the e-SPAk system on SSK students' academic achievements.

5.3 Data Collection and Analysis

5.3.1 Examination Results of SSK Students

Academic performance data for each semester will be collected from the official academic records of SSK students. These records are maintained by the community college, providing reliable and comprehensive insights into students' performance in each semester.

5.3.2 Cumulative Grade Point Average (CGPA) Data

Cumulative Grade Point Average (CGPA) data for individual students will be obtained from their academic records. CGPA is a holistic indicator of each student's overall academic achievements throughout their study.

5.3.3 E-SPAk Usage Data

To assess the influence of the e-SPAk system, data on students' interaction with this platform will be gathered. This usage data is vital for understanding how students engage with the e-SPAk system and whether their usage patterns correlate with their academic performance. This section summarises the research sample and the specific data sources essential for the study. It clarifies the origin and significance of each data component, ensuring transparency and accuracy in the research process.

5.4 Statistical Analysis

The collected data will be analysed using Python software as a statistical analysis tool, following the approach used by McKinney et al. (2020), who used Python for genomic analysis to identify the relationship between genetic variants and disease risk. Several statistical analyses will be conducted, including:

i. T-test: Used to compare academic achievement between students using e-SPAk and students not using e-SPAk.

ii. ANOVA (Analysis of Variance): Used to examine differences in academic achievement among SSK students in semester 1, semester 2, and semester

6.0 Result and Discussion

The culmination of rigorous investigation and analysis is presented in this section, where the study outcomes are scrutinized and discussed. The research focused on understanding the impact of the Electronic Academic Advising System (e-SPAk) on the academic performance of students enrolled in the Sijil Komputer dan Rangkaian (SSK) program at Kolej Komuniti Bagan Datuk (KKBgD). The results obtained from the examination data and the e-SPAk usage patterns are dissected to draw meaningful insights into the efficacy of this technology-driven advising system.

In this section, we delve into the statistical findings, illuminating whether significant disparities exist in examination outcomes, including Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA), between students who engaged with the e-SPAk system and those who did not. The study aims to comprehensively understand how technological integration, such as the e-SPAk system, influences academic achievements in the context of vocational and technical education programs.

Additionally, the results will be contextualized within the broader landscape of academic advising strategies. This discussion aims to contribute nuanced perspectives to the ongoing discourse on optimizing educational support mechanisms. By interpreting the findings with existing literature and educational practices, this section seeks to provide actionable insights for educational institutions looking to enhance academic advising strategies and improve student outcomes.

The findings of this study address the research questions posed at the beginning of the study.

6.1 Examination Results without e-SPAk

In Table 1, the data used for the ANOVA analysis were derived from the examination results of previous students who had taken the exam without utilizing the e-SPAk Program.

Table 1: Python ANOVA Analysis Statistical result without the e-SPAk Program

No	Result	Standard Deviation	Mean	One-way ANOVA Results
1	Semester 1	0.43	3.52	F-statistic: 0.544
2	Semester 2	0.39	3.40	P-value: 0.0852
3	Semester 3	0.43	3.44	

The study aimed to determine if there was a significant difference in the examination results of SSK students in semester 1, semester 2, and semester 3 without using the e-SPAk system at KKBgD. In Table 1.1, we observe the minimum examination scores for each semester and their respective standard deviations. The descriptive statistics show that the mean CGPA (*Himpunan Purata Nilai Mata* or Average Grade Point) among semesters 1, 2, and 3 do not

differ significantly. Additionally, the standard deviations indicate relatively similar variations among the three groups.

To statistically test for significant differences, an ANOVA test was conducted. The results showed an F-Value of 0.544 and a corresponding P-Value of 0.582. An F-value of less than 1 indicates that there is not much variation between the groups, and a high P-value suggests that there is no statistical evidence to support a significant difference in the effectiveness of academic advising based on the CGPA semester.

This finding aligns with the literature review, highlighting the traditional academic advising format that, Without Using e-SPAk, does not significantly impact students' academic performance in different semesters. The study supports the notion that while academic advising is important, the delivery method, in this case without e-SPAk, does not lead to significant variations in student outcomes.

6.2 Examination Results with e-SPAk

In Table 2, the data used for the ANOVA analysis were derived from the examination results of previous students who had taken the exam utilizing the e-SPAk Program.

From the Python analysis, the statistical results are as follows:

Table 2: Python ANOVA Analysis Statistical result with the e-SPAk Program

No	Result	Standard Deviation	Mean	One-way ANOVA Results
1	Semester 1	0.43	3.61	F-statistic: 2.52
2	Semester 2	0.39	3.65	P-value: 0.0852
3	Semester 3	0.23	3.80	

The research also aimed to determine if there was a significant difference in the examination results of SSK students in semester 1, semester 2, and semester 3 using the e-SPAk system at KKBgD. Table 2.1 displays the minimum examination scores for each semester and their respective standard deviations for students using the e-SPAk system. Like the group without e-SPAk, the descriptive statistics show that the mean CGPA among semesters 1, 2, and 3 does not significantly differ. The standard deviations indicate relatively similar variations among the three groups.

An ANOVA test was conducted to assess any significant differences statistically. The results showed an F-Value of 2.52 and a corresponding P-Value of 0.0852. The F-Value, although greater than 1, still indicates that there is not a substantial amount of variation between the groups. The high P-Value suggests that no statistical evidence supports a significant difference in the effectiveness of academic advising based on CGPA semester for students using the e-SPAk system.

This finding is consistent with the literature review, which suggests that using e-SPAk does not necessarily lead to significant variations in academic performance among students in different semesters. It appears that, in this context, e-SPAk has not significantly altered the effectiveness of academic advising compared to traditional methods.

6.3 Examination Results with and without e-SPAk

The study aimed to determine if there was a significant difference in the CGPA examination results between SSK students using the e-SPAk system and those who do not use the e-SPAk system at KKBgD.

Table 3: Python T-test Analysis Statistical result without the e-SPAk Program

No	Result	Standard Deviation	Mean	T-Test Results
1	CGPA Without e-SPAK	0.42	3.38	F-statistic: 2.52
2	CGPA With e-SPAK	0.33	3.69	P-value: 0.0852

The study aimed to determine if there was a significant difference in the CGPA examination results between SSK students using the e-SPAk system and those who do not use the e-SPAk system at KKBgD.

Table 3 presents data that show a clear difference in the CGPA examination results between students with and without e-SPAk. The T-Statistic value of 2.40 and the low P-Value of 0.001 demonstrate statistical significance. This result means a substantial and statistically significant difference in CGPA examination results between these two groups.

This finding strongly supports the notion that implementing the e-SPAk system positively and significantly impacts student examination results compared to students who do not use e-SPAk. It also aligns with the literature review, suggesting that technological advancements, like e-SPAk, can enhance academic advising and improve student outcomes. In summary, based on this analysis, there appears to be a statistically significant difference in CGPA between students without SPAK and students with SPAK. The mean CGPA for students with e-SPAk is higher than for students without e-SPAk, and this difference is statistically significant. The research by Syirazi Suhaimi et al. (2022) and the findings on PEO achievement within the Mechanical Engineering diploma program at Politeknik Muadzam Shah provide a deeper understanding of how educational objectives align with graduates' competencies and professional readiness, complementing the ongoing exploration of the impact of technology, like the e-SPAk system, on educational outcomes within vocational and technical programs.

7.0 Conclusion(s)

In conclusion, this research yields several crucial findings. First, it reveals no statistically significant differences in the examination results of SSK students when comparing semester 1, semester 2, and semester 3 without using the e-SPAk system at KKBgD. This result suggests that, in the absence of e-SPAk,

students' academic performance remains relatively consistent across these semesters. Moreover, it implies that other factors or variables not considered in this study might influence their performance across different semesters. On the other hand, when considering SSK students who utilized the e-SPAk system, the results indicate a similar lack of statistically significant differences in examination outcomes across these semesters. This finding suggests that the e-SPAk system alone may not substantially impact the academic performance of SSK students in the earlier semesters, as their results remain consistent with or without its use. However, it is essential to note that these findings specifically pertain to semester-by-semester performance within the program. This study did not investigate other potential benefits of e-SPAk, such as improved study habits or career guidance. The use of the e-SPAk system has a significant impact on improving the CGPA examination results of SSK students, consistent with the research findings of Van Rensburg et al. (2019), which suggests that comprehensive and regular academic advising can have a positive effect on student's academic achievement. Students can enhance their performance in examinations by advising focused on learning goals, assignment completion, and learning strategies. This finding aligns with prior research emphasizing the positive impact of comprehensive and well-structured academic advising on student achievement and progress during their academic journey. For future research endeavours, exploring the comparative effects of e-SPAk on academic performance across different programs, such as SSK and SVM (Sijil Motosikal Berkuasa Tinggi), is recommended.

Additionally, investigating potential variations in outcomes based on gender and ethnicity could provide valuable insights into the diverse effects of e-SPAk. Understanding how these factors interact with e-SPAk can lead to more tailored and effective academic support strategies for various student groups, ultimately promoting equitable academic success. In Future research focusing on the impact of e-SPAk or similar systems at community colleges may have limited generalizability to other types of educational institutions, such as universities or vocational schools. Therefore, the findings might not apply to a broader educational context.

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Author Contributions
Norzalina M. Y.: Conceived and designed the study, collected and analysed the data, and contributed to the writing of the manuscript.
Muhammad Afiq N.: Assisted with data analysis, provided critical feedback on the manuscript, and contributed to interpreting the results.
Muhamad Azlin I.: Supervised the research, provided guidance on the study design and methodology, and critically reviewed and edited the manuscript.

Conflicts Of Interest

The authors declare no conflicts of interest regarding this study's research, authorship, and publication.

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