
PERCEPTIONS OF SEMESTER 1 STUDENT SESSION II 2024/2025 POLITEKNIK KUCHING SARAWAK (PKS) ON THE USE OF *KALKULATOR PNM* APPLICATION

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Abstract

This research aims to evaluate the effectiveness of the *Kalkulator PNM* application in assisting students in estimating their *Purata Nilai Mata* (PNM) efficiently. The research was conducted among 162 students from Politeknik Kuching Sarawak (PKS), primarily from Semester 1, covering various programs and academic backgrounds. The research integrates quantitative data collected through surveys and qualitative insights gathered from the open-ended feedback section, utilizing a mixed-methods approach. The main objectives of this research are to assess the ease of use, accuracy of calculations, and the impact of the application on students' academic performance and planning. The findings indicate that most of the students found the application beneficial in simplifying the PNM estimation process, significantly reducing the time spent on manual calculations. The automation provided by the application helps students focus more on their academic goals rather than struggling with complex calculations. Additionally, the application facilitates students in tracking their academic progress over multiple semesters and setting performance targets, which can contribute to improved academic outcomes. The research also highlights that students who use digital tools like *Kalkulator PNM* demonstrate better time management and academic planning. User feedback highlights that the application is intuitive and accessible, making it a valuable academic tool. However, some challenges remain, such as the need for a more refined user interface and the inclusion of additional features to enhance usability and flexibility. Some students reported difficulties in adapting to the application initially, but with time, they found it helpful in organizing their coursework. Further research and development could focus on integrating more academic planning functionalities, such as predictive analytics for future Grade Point Average (GPA) trends and personalized research recommendations. Moreover, incorporating real-time synchronization with institutional academic databases could further enhance its efficiency. Overall, the research supports the potential of the *Kalkulator PNM* application as an essential digital tool that enhances students' academic experiences by providing an efficient and accurate means of tracking academic performance. The implications of this research emphasize the importance of digital transformation in higher education, particularly in streamlining academic computations for students. Future improvements should also consider user experience enhancements and additional customization options to cater to a wider range of student needs. In conclusion, the research highlights that digital academic support tools like *Kalkulator PNM* will remain essential in modern education, assisting students in making informed decisions about their academic journey.

Keywords: *academic calculation; digital learning tools; GPA estimation; Kalkulator PNM; student performance*

I. INTRODUCTION

Academic performance is a key concern for students in higher education institutions, as it determines their progression, scholarship opportunities, and career prospects. One of the critical indicators of academic performance is the Grade Point Average (GPA), known as *Purata Nilai Mata* (PNM) in Malaysian institutions. Calculating PNM manually

requires students to sum up grade points, multiply by credit hours, and divide by total credit hours, a process that is prone to human error and time-consuming [1], [2].

With the rapid advancement of digital tools, automation in academic calculations has become increasingly essential [3]. Traditional methods of GPA calculation require substantial

manual effort, which can lead to errors that negatively affect students' understanding of their academic standing. The *Kalkulator PNM* is designed to facilitate this process, allowing students to quickly and accurately compute their PNM without manual effort. This application provides a user-friendly interface where students can input their grades and credit hours, generating instant results with high accuracy [4].

Several studies have highlighted the role of academic support tools in improving students' efficiency and reducing calculation errors [5], [6]. Research indicates that students who utilize digital tools for academic planning exhibit better time management and strategic goal setting. Digital education applications have been instrumental in assisting students with tracking their progress and identifying areas for improvement, ensuring that they remain on course toward academic excellence [7].

Higher education institutions are increasingly adopting technology to support student learning and administrative tasks. The use of digital learning tools has expanded significantly in recent years, providing students with a more interactive and accessible learning experience. Studies suggest that digital tools not only enhance efficiency but also promote self-regulated learning by providing real-time feedback and enabling students to set academic goals based on their performance trends [8].

This research explores the usability, efficiency, and impact of the *Kalkulator PNM* application among students, specifically focusing on Semester 1 students at Politeknik Kuching Sarawak [9]. By gathering data from 162 respondents, the research aims to determine how effectively the tool aids students in tracking their academic progress, setting academic targets, and reducing errors in PNM calculations. Additionally, this research seeks to identify challenges faced by users and areas for improvement to enhance the application's functionality.

The findings of this research will contribute to the ongoing development of digital academic support tools, ensuring they align with students' needs and expectations. The insights derived from this research can also provide recommendations for further digital integration in academic institutions, ensuring that students have access to reliable and efficient educational tools [10].

II. LITERATURE REVIEW

The use of digital learning tools has become increasingly prevalent in higher education, providing students with accessible and efficient means of managing their academic responsibilities. The *Kalkulator PNM* is one such tool that aims to streamline the calculation of PNM, reducing human error and improving academic planning. This

section reviews relevant literature regarding digital learning tools, the importance of GPA calculators, self-regulated learning, challenges in implementation, and future trends in academic support systems.

A. The Role of Digital Learning Tools in Academic Performance

Digital applications have transformed academic processes, particularly in improving learning efficiency and minimizing computational errors. Research suggests that the integration of technological tools allows students to focus on conceptual understanding rather than manual calculations [11]. Studies indicate that students using digital tools exhibit better academic planning skills and improved time management [12].

B. Importance of GPA Calculators in Higher Education

Automated GPA calculators have gained significant attention due to their role in academic progress tracking. Research by [13] found that these tools offer real-time feedback, enabling students to set realistic academic goals. Additionally, research by [14] highlights that automated tools reduce human errors, making academic calculations more reliable.

C. Self-Regulated Learning and Digital Assistance

Self-regulated learning is critical for student success, and digital applications provide significant support in this area. Research by [15] emphasizes that academic tools that offer instant results and predictive analytics help students monitor their academic progress effectively. Tools like *Kalkulator PNM* align with these findings by offering structured academic tracking features [16].

D. Challenges in Implementing Digital Academic Tools

Despite the benefits, digital academic tools often face challenges, including user interface complexity, accessibility issues, and limited functionalities. According to [17], students may struggle with usability issues if the application is not well-designed. Enhancements such as improved user interface design and additional customization options could improve user experience and increase adoption rates [18].

E. Future Trends in Digital Academic Support Systems

The future of digital learning tools is moving towards AI-driven predictive analytics, real-time data synchronization, and personalized recommendations. Research by [19] predicts that

integrating AI with academic tracking applications could provide students with dynamic and personalized learning pathways, enhancing their educational experiences.

III. RESEARCH METHODOLOGY

This research employed a mixed-method research approach that combines both quantitative and qualitative methodologies to analyse students' perceptions and experiences with the *Kalkulator PNM* application. The combination of these two methods allows for a more comprehensive understanding of the tool's effectiveness by integrating statistical data with user feedback.

A. Quantitative Approach

Quantitative data were collected through an online survey distributed to 162 students from Semester 1 at Politeknik Kuching Sarawak. The survey consisted of multiple-choice and Likert-scale questions designed to measure usability, accuracy, time efficiency, and overall satisfaction levels. Data obtained from the survey were analyzed using statistical methods such as mean, standard deviation, and correlation analysis to identify trends and patterns among respondents.

B. Qualitative Approach

To complement the survey data, qualitative data were gathered through open-ended questions and structured interviews with selected students. These interviews provided deeper insights into user experiences, including challenges faced while using the application and suggestions for improvement. Thematic analysis was used to categorize recurring themes from qualitative responses, highlighting key strengths and limitations of the application.

IV. RESULT AND DISCUSSION

This section presents the findings on the perceptions of Semester 1 students from Session II 2024/2025 at PKS regarding the use of the *Kalkulator PNM*. The analysis explores students' views on its usability, effectiveness, and overall contribution to both learning outcomes and teaching practices. By examining these perspectives, this research provides a comprehensive understanding of the tool's impact within the academic setting.

The results reveal a range of opinions influenced by factors such as familiarity with digital tools, ease of integrating the *Kalkulator PNM* into academic routines, and the availability of technical support. These insights are essential in identifying the app's strengths while addressing any potential challenges that may affect its adoption. Ultimately,

the findings aim to guide improvements in its functionality and integration, ensuring that it effectively supports students in achieving their academic goals at PKS.

The dataset consists of survey responses detailing the usage and perceptions of the *Kalkulator PNM*. Key data points include respondent demographics, feedback on usability, and time comparisons between manual GPA calculations and those performed using the app. The following sections present preliminary observations based on these responses:

A. Quantitative Analysis

The quantitative findings from the survey highlight the strong positive reception of the *Kalkulator PNM* application among respondents. A significant majority (95.1%) found the app highly effective in setting their academic targets, indicating that it serves as a valuable tool for planning and tracking academic progress. Additionally, 93.8% of respondents appreciated the app's ease of use, suggesting that its interface and functionality are designed to be user-friendly and accessible, even for those unfamiliar with GPA calculation tools.

Moreover, 94.4% of respondents believed that the app simplifies the process of achieving their semester target GPA. This suggests that the *Kalkulator PNM* not only helps users set goals but also provides a structured and efficient way to monitor and adjust their academic performance throughout the semester. The app's ability to streamline the GPA calculation process is further reinforced by the fact that 72.2% of respondents reported being able to use it effectively without any prior knowledge of manual GPA calculation methods. This finding highlights the app's intuitive design, which allows users to rely on its automated features rather than manually performing complex calculations.

Furthermore, 93.2% of respondents believed that the app is suitable for use throughout their entire academic journey. This indicates that the *Kalkulator PNM* is not just a short-term solution but a long-term academic companion that can support students in managing their GPA over multiple semesters. The high percentage of positive responses suggests that the app is well-received and has the potential to play a crucial role in academic planning, helping students stay on track with their goals and improve their overall academic performance.

1) **Demographics:** Gender, age, state, program and department group distribution of respondents.

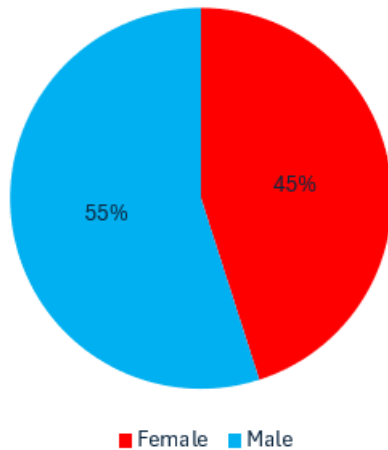


Figure 1: Gender Distribution

Figure 1 shows the gender distribution of the respondents, which includes 89 males and 73 females. Males accounted for 55% of the total participants, indicating a slight majority in representation. This suggests that either more male students were interested in the research or that they were more inclined to participate in the survey. Meanwhile, female respondents made up 45% of the total, reflecting a substantial portion of the sample. Although there is a minor skew towards male participants, the distribution remains relatively balanced, ensuring diverse perspectives in the research.

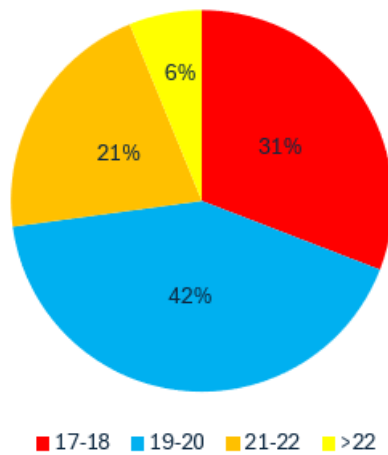


Figure 2: Age Distribution

Figure 2 illustrates the age distribution of the respondents. The majority were between 19 and 20 years old (68 respondents, 42.0%), followed by those aged 17 to 18 years (50 respondents, 30.9%). Respondents aged 21 to 22 years accounted for 34 individuals (21.0%), while those over 22 years made up the smallest group (10 respondents, 6.2%).

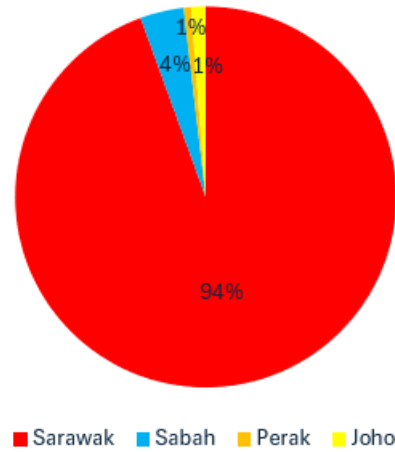


Figure 3: State Distribution

Figure 3 presents the state distribution of the respondents. The majority were from Sarawak (153 respondents, 94.4%), followed by Sabah (6 respondents, 3.7%), Johor (2 respondents, 1.2%), and Perak (1 respondent, 0.6%). The high representation of Sarawak respondents suggests that the survey may have drawn greater participation from this state.

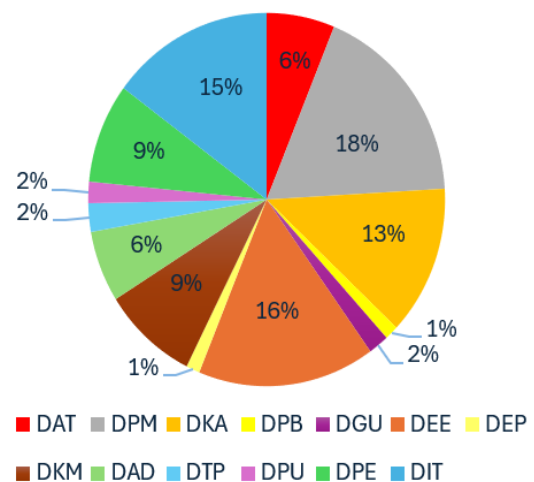


Figure 4: Program Distribution

Figure 4 illustrates the program distribution of the respondents. The largest group consisted of 29 respondents (17.9%) from DPM, followed by 26 respondents (16%) from DEE, 24 respondents (14.8%) from DIT, and 21 respondents (13%) from DKA. Additionally, 14 respondents (8.6%) were from both DKM and DPE, while 10 respondents (6.2%) were from DAD and DAT. Smaller groups included 4 respondents (2.5%) from DTP, 3 respondents (1.9%) from DPU and DGU, and 2 respondents (1.2%) from DPB and DEP. Overall, the highest representation came from the Department of Commerce, accounting for 24.1% of the total sample.

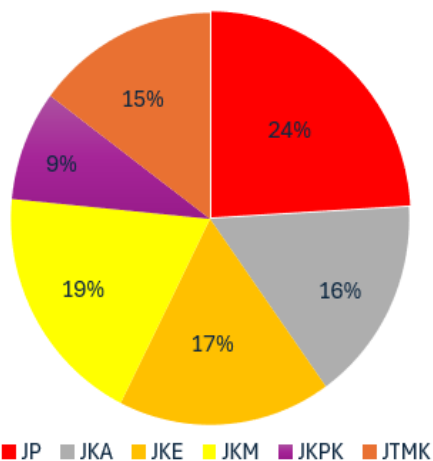


Figure 5: Department Distribution

Figure 5 illustrates the department distribution of the respondents. The majority were from the Department of Commerce (39 respondents, 24.1%), followed by the Department of Mechanical Engineering (31 respondents, 19.1%), the Department of Electrical Engineering (28 respondents, 17.3%), the Department of Civil Engineering (26 respondents, 16%), the Department of Information Technology and Communication (24 respondents, 14.8%), and the Department of Petrochemical Engineering (14 respondents, 8.6%). The highest representation was from the Department of Commerce, accounting for 24.1% of the total sample.

2) **Perceived Benefits:** Responses to questions on usefulness, ease of use, effectiveness, ability to use, ease of downloading and suitability of the *Kalkulator PNM*.



Figure 6: Usefulness of GPA calculations for setting academic targets

Figure 6 shows that most respondents (154 respondents, 95.1%) agreed that GPA calculations are highly useful for setting academic targets. A smaller portion (7 respondents, 4.3%) were unsure, while only 1 respondent (0.6%) disagreed. These findings indicate that most respondents recognize the importance of GPA calculations in academic goal setting, with only a minimal percentage expressing uncertainty or disagreement.

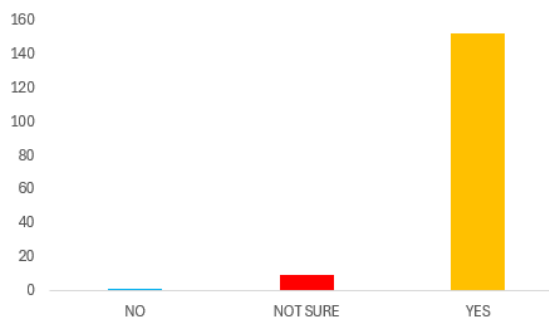


Figure 7: Ease of using the *Kalkulator PNM*

Figure 7 shows that most respondents (152 respondents, 93.8%) agreed that the *Kalkulator PNM* simplifies and speeds up GPA estimation. A smaller portion (9 respondents, 5.6%) were unsure, while only 1 respondent (0.6%) disagreed. These findings suggest that most users find the app effective for quick and easy GPA calculations, with only a minimal percentage expressing uncertainty or disagreement.



Figure 8: The *Kalkulator PNM* effectiveness in simplifying GPA achievement process

Figure 8 shows that most respondents (94.4%) believe the *Kalkulator PNM* app simplifies the process of achieving their semester target GPA. This suggests that most users find the app helpful in managing their academic goals, likely providing an efficient way to track progress and make necessary adjustments. A smaller portion (4.9%) were uncertain about its effectiveness, possibly due to limited experience with the app or a lack of clarity on how it functions. This highlights a potential area for further exploration, such as gathering user feedback or providing additional resources to improve understanding of the app's features and benefits.

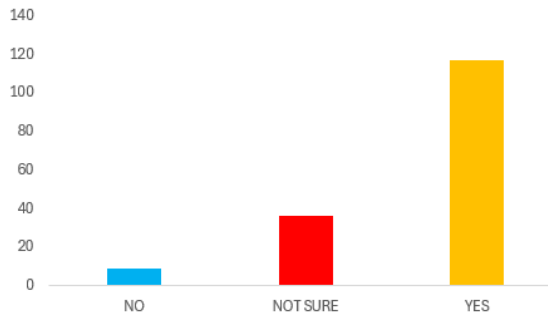


Figure 9: Ability to use the *Kalkulator PNM* without prior knowledge of GPA calculation methods

Figure 9 shows that most respondents (72.2%) confirmed they could effectively use the *Kalkulator PNM* app without prior knowledge of manual GPA calculation methods. This suggests that the app is user-friendly and accessible, even for those unfamiliar with the manual process. A significant portion (22.2%) were unsure, possibly indicating uncertainty about the app's functionality or their own confidence in using it. A small percentage (5.6%) disagreed, suggesting they felt an understanding of manual GPA calculations was necessary to use the app effectively.

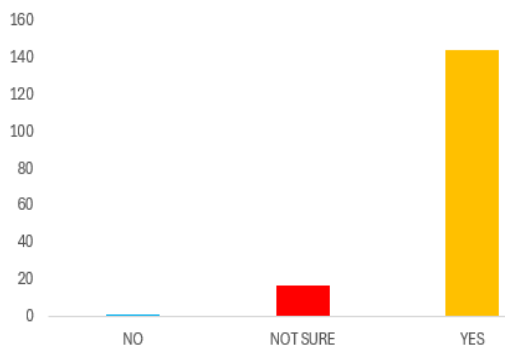


Figure 10: Ease of downloading the *Kalkulator PNM* app

Figure 10 shows that most respondents (88.9%) found it easy to download the *Kalkulator PNM* app on their smartphones. This suggests that the app is user-friendly in terms of availability and installation, likely due to a straightforward download process from app stores or clear installation instructions. A smaller percentage (10.5%) were unsure, possibly indicating that some users encountered minor issues, did not attempt the download themselves, or were unclear about the process. Only 0.6% of respondents disagreed, suggesting that a very small group faced challenges, potentially due to app store availability, device compatibility, or technical issues.

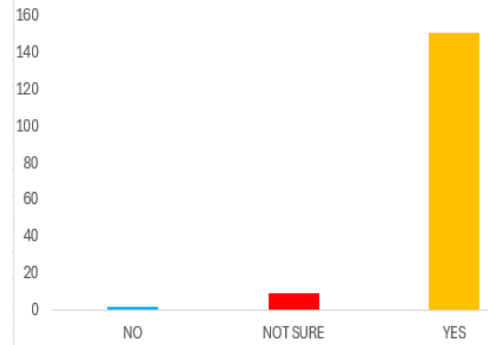


Figure 11: Suitability of the *Kalkulator PNM* throughout academic journey

Figure 11 shows that most respondents (93.2%) believe the *Kalkulator PNM* app is suitable for use throughout their academic journey. This suggests that most users find the app valuable and see it as a helpful tool for managing their academic goals over time. A smaller percentage (5.5%) were uncertain about its long-term suitability, possibly indicating that some users are still exploring its full potential or view it as more beneficial for short-term academic needs.

3) **Time Efficiency:** Time required for manually GPA calculations versus using the application.

- **Manual GPA Calculations:**

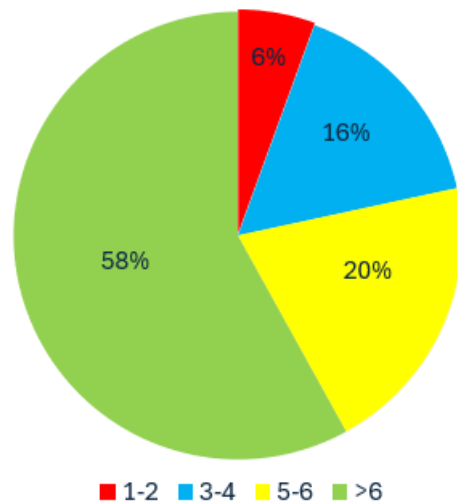


Figure 12: Time taken to manually calculate GPA

Figure 12 shows that the largest group of respondents (58.0%) reported taking more than 6 minutes to manually calculate their GPA. This suggests that most students find manual GPA calculation time-consuming, likely due to the multiple steps involved, such as summing grades, applying weightings, and performing calculations. A smaller portion (20.4%) indicated that it takes them between 5 to 6 minutes, suggesting they may be more

efficient but still find the process lengthy. Meanwhile, 16.0% of respondents reported completing the manual calculation in 3 to 4 minutes, likely reflecting those who are more familiar with the process or have developed a streamlined approach, though it still requires a moderate amount of time.

• **Using the *Kalkulator PNM* Application:**

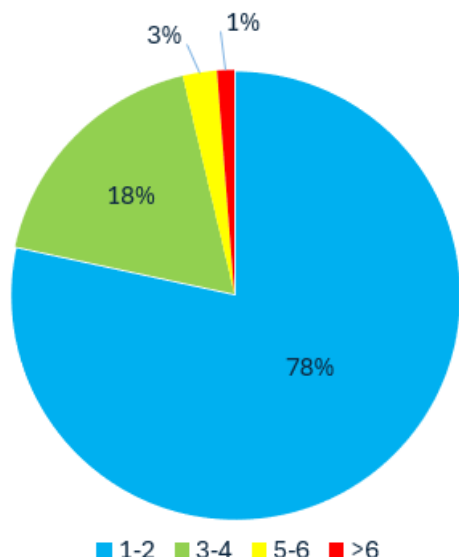


Figure 13: Time taken to use the *Kalkulator PNM*

Figure 13 indicates that the majority of respondents (78.4%) reported that using the *Kalkulator PNM* reduced their GPA calculation time to just 1–2 minutes. This suggests that the app significantly enhances calculation speed, likely due to its user-friendly interface and automation, making it far more efficient than manual calculations. A smaller portion of respondents (17.9%) stated that the process took them 3–4 minutes, which, while still faster than manual calculation, may indicate varying levels of familiarity with the app or additional steps required based on their academic data. Only 3.7% of respondents reported taking 5 minutes or more, possibly due to difficulties with the app or the use of extra features. Despite this, the *Kalkulator PNM* remains a much quicker alternative to manual GPA calculation.

B. Qualitative Analysis

Qualitative feedback indicated that while most students appreciated the simplicity and accuracy of the tool, some suggested improvements such as additional customization features and enhanced user interface design. Recurring themes in user feedback include:

- **Usability and Interface Preferences:** While the application is intuitive, some students suggested a more visually appealing interface with better navigation options.
- **Customization and Flexibility:** Several respondents noted the need for features that allow them to personalize their academic planning, such as adding elective courses or predicting future GPA trends.
- **Initial Learning Curve:** Some students experienced initial difficulty adapting to the application but found it useful over time in managing their coursework efficiently.

C. Comparison of Findings

The combination of quantitative and qualitative findings underscores the effectiveness of the *Kalkulator PNM* application in supporting students' academic calculations. While statistical data confirm increased efficiency and accuracy, qualitative feedback highlights the need for continuous improvements to enhance the user experience further. The results suggest that integrating additional features, such as academic performance tracking and predictive analytics, could make the application even more beneficial for students.

V. CONCLUSION

The findings of this research confirm that the *Kalkulator PNM* application significantly enhances students' ability to estimate their GPA efficiently, improving both accuracy and academic planning. The combination of quantitative and qualitative analyses highlights the tool's effectiveness in reducing manual calculation time, minimizing errors, and promoting better academic tracking. However, challenges such as user interface improvements and additional functionalities remain key areas for enhancement.

Future developments should focus on incorporating real-time integration with institutional academic systems, enhancing customization options, and refining the user interface to accommodate a broader range of student needs. Additionally, further research could explore how digital academic tools like *Kalkulator PNM* influence long-term student performance and learning behaviours.

With continuous improvements and technological advancements, the *Kalkulator PNM* application has the potential to become a fundamental academic tool in higher education institutions, contributing to improved student engagement, academic success, and strategic planning. This research highlights the broader impact of digital transformation in education and underscores the need for innovative solutions to support students in achieving their academic goals.




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