Designing an Integrated Information System with a Fast and Attractive Interface to Improve Performance and User Experience

Didi Kurnaedi

STMIK PGRI Tangerang
Jl. Perintis Kemerdekaan II, RT.007/RW.003, Cikokol, Kec. Tangerang, Kota Tangerang, Banten 15118
[1)]ddk@pgri.id

Abstract

The Integrated Information System (Sister Fani) represents a significant innovation within the educational framework of SMK PGRI 1 Tangerang. Recognizing the imperative for a swift and engaging interface, this research endeavours to conceptualize and execute Sister Fani to adhere to elevated standards of performance and user satisfaction. Employing a qualitative methodology, data collection was facilitated through observation, interviews, and documentary research. The findings of this study underscore the pivotal role of a rapid and captivating interface design in enhancing user efficiency and enriching the overall user experience. By streamlining the process of accessing and utilizing information, the redesigned Sister Fani platform emerges as a catalyst for heightened productivity and improved service quality within the educational context of SMK PGRI 1 Tangerang. The practical implications of this research are manifold. The integration of Sister Fani into the operational framework of SMK PGRI 1 Tangerang promises to yield tangible benefits, including heightened productivity and enhanced educational service quality. By optimising the interface design to align with user expectations and requirements, educational institutions can cultivate an environment conducive to seamless information dissemination and utilisation. In conclusion, the successful implementation of Sister Fani stands poised to revolutionize the educational landscape of SMK PGRI 1 Tangerang, offering a paradigmatic shift towards efficiency, accessibility, and user-centricity.

I. INTRODUCTION

SMK PGRI 1 Tangerang is a school that can take advantage of various activities to improve the quality of education and student development[1], The Integrated Information System (Sister Fani) has become a crucial element in various educational institutions, including SMK PGRI 1 Tangerang, in facilitating information management and learning processes. In an era where speed and attractive interfaces are the main focus, educational institutions need to ensure that the information systems used are not only effective but also efficient.[2]

Improving performance and user experience is a priority in the development of integrated information systems, considering its significant impact on productivity and user satisfaction. Therefore, this research aims to design and implement Sister Fani by focusing on speed and an attractive interface, as well as analyzing its impact on system performance and user experience at SMK PGRI 1 Tangerang[3].

By understanding the need for an information system that can be accessed quickly and uses an attractive interface, it is hoped that the results of this research can provide a valuable contribution to the development of Sister Fani and increase the effectiveness of its use in the educational environment of SMK PGRI 1 Tangerang [4].

Through a qualitative approach and comprehensive data collection, this research will present findings that can become the basis for further improvement and development in meeting the demands for quality integrated information systems in educational institutions[5].

[*] Corresponding author

The use of information technology in the educational context has brought significant changes in information management and learning processes. One important aspect of information technology in educational administrative and academic functions into one coordinated system[6].

At SMK PGRI 1 Tangerang, Sister Fani has become the backbone in supporting various school activities, from student and employee data management to technology-based learning processes. However, with the continuous development of technology, speed and user interface are two aspects that are increasingly emphasized to improve performance and user experience[7].

Improving performance and user experience is a top priority in the development of Sister Fani, given its significant impact on operational efficiency and user satisfaction. Therefore, this research aims to design and implement Sister Fani with a focus on aspects of speed and attractive interface, as well as analyzing its impact on system performance and user experience in the SMK PGRI 1 Tangerang environment[8].

In this context, it is important to understand how fast and attractive interface design can influence the effectiveness of using Sister Fani in educational environments. Thus, this research will provide a valuable contribution to the development of Sister Fani and provide in-depth insight into the needs and expectations of users in using the integrated information system at SMK PGRI 1 Tangerang[9].

Through a qualitative approach and comprehensive data collection, this research will present findings that can become the basis for further improvement and development in meeting the demands for quality integrated information systems in educational institutions[10].

II. RELATED WORKS/LITERATURE REVIEW

A. *The Role of Integrated Information Systems in Education*

Integrated Information Systems in improving administrative efficiency and learning effectiveness in educational institutions. Integrated Information Systems emphasize that the integration of various administrative and academic functions into one platform can optimize resources and provide a better user experience[11].

The role of Integrated Information Systems (SIT) in education is very significant. SIT is a platform or system that integrates various administrative and academic functions in educational institutions, such as student data management, financial management, human resource management, and learning processes[6].

SIT helps improve administrative efficiency in educational institutions by providing an integrated system to manage various administrative aspects, such as managing student data, managing attendance, and tracking academic achievement. This helps reduce the workload of administrative staff and ensures that data is available accurately and promptly [12].

SIT enables the use of technology in the learning process by providing easy access to digital learning resources, online management of assignments and exams, and tracking of student progress. Thus, SIT helps increase learning effectiveness by harnessing the potential of technology to provide a more interactive and personalized learning experience[13].

SIT provides complete and detailed data on various aspects of school activities, from student performance to operational efficiency. This enables stakeholders, such as teachers, administrative staff, and school management, to make better and more informed decisions based on accurate data analysis[14].

SIT facilitates communication and collaboration between all stakeholders in educational institutions, including teachers, students, parents, and administrative staff. Through features such as an internal messaging system, parent portal, and online discussion rooms, SIT helps strengthen relationships between members of the educational community and increase information transparency[15].

Some SITs also provide online resources and training for teacher professional development, such as online courses, webinars, and other learning resources. This helps teachers to continue to improve their skills in teaching and utilize technology in the learning process[16].

B. *Interface Design*

Attractive User Interface (UI) design is an approach to designing the appearance and interaction of a system or application that can attract user attention, facilitate use, and increase overall user satisfaction and experience[17].

An attractive user interface design must also address accessibility for all users, including those with physical or sensory limitations. This includes the use of sufficient colour contrast, easy-to-read text, as well as alternative navigation for users using screen readers[18].

Investigated factors influencing technology adoption in educational contexts. They found that users' perceptions of usefulness, ease of use, and organisational support play an important role in the successful implementation of integrated information systems[19]

The impact of system speed on user experience is significant. System speed refers to the responsiveness and performance of an application or system in responding to user input and delivering expected results[20].

System speed affects usage efficiency, that is, how quickly users can complete their tasks with the system. A slow or lagging system can disrupt users' workflow and hinder their productivity[21].

Responsive and fast systems tend to attract more engagement from users. Users will be more likely to use the system regularly and even recommend it to others if they have a positive experience with the system's speed[22].

Overall, Integrated Information Systems play a key role in improving the efficiency, effectiveness and quality of education by providing an integrated platform for managing various aspects of activities in educational institutions[23]

III. METHODS

A. *Research Methodology*

In explaining the research method, I will detail the approach, data collection techniques and data analysis that will be used in research on the design and implementation of the Integrated Information System (Sister Fani) at SMK PGRI 1 Tangerang with a focus on speed and user interface:

1. Research Approach:
   This research will use a qualitative approach, which allows for an in-depth understanding of user perceptions, attitudes and experiences towards Sister Fani. A qualitative approach allows for a more detailed and contextual exploration of how system speed and interface design impact user experience[24].
2. Data Collection Techniques:
   a. Interviews:
      Conduct interviews with various stakeholders at SMK PGRI 1 Tangerang, including teachers, students, and administrative staff, to understand their perspectives on using Sister Fani, their experiences with system speed, and their preferences for interface design[24].
   b. Observation:
      Conduct direct observations of the use of Sister Fani in the school environment to gain a deeper understanding of how students and school staff interact with the system in a real context[25].
   c. Document Study:
      Analyzing documents related to the implementation of Sister Fani, such as system usage reports, training records, and system evaluations carried out previously[26].
3. Data Analysis:
   a. Thematic Analysis:
      Analyze qualitative data from interviews and observations to identify key themes related to user experience of system speed and interface design. This involves coding data, looking for patterns, and thematic interpretation to explore the main findings in the research[27].
   b. Document Analysis:
      Conduct document analysis to understand the context of Sister Fani's implementation at SMK PGRI 1 Tangerang, evaluate the effectiveness of the current system, and identify areas that require further improvement or development[28].

By combining various relevant data collection and analysis techniques, this research is expected to provide a holistic understanding of how system speed and interface design can influence user experience in the educational context at SMK PGRI 1 Tangerang.

IV. RESULTS AND DISCUSSION

SisterFani is an abbreviation for Integrated Information System, Fast and Nice Interface. Starting from the motivation to create a general information system about a school, where the information must be presented quickly, and must also be easy to operate by anyone, including laypeople. Thus, SisterFani must be smart. Users try to touch the mouse and keyboard as little and as briefly as possible.
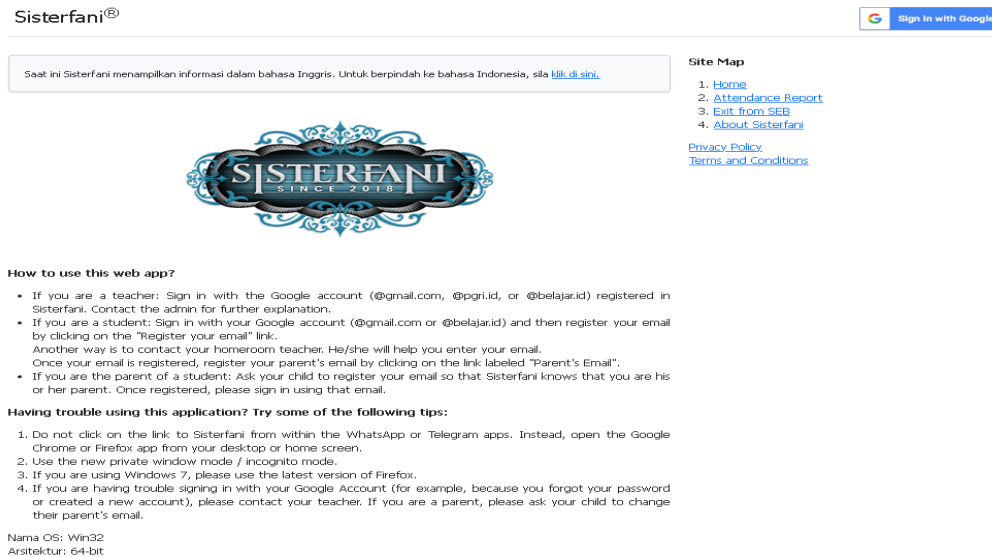
Fig. 1 SisterFani Main Menu

Figure 1 explains that long-winded multilevel menus have been removed and replaced with menus that can predict what the user wants, and then immediately display it even though the user has not clicked the Submit button.

.

Fig. 2 Menu explaining Sisterfani

Figure 2 explains that Sisterfani is different from other applications built using sophisticated frameworks such as CodeIgniter, Laravel, and CakePHP — SisterFani can run with only minimal configuration, namely Apache or Nginx, PHP, MySQL, Bootstrap, and JQuery. It is also designed to be multisite which means multiple schools can use it without needing to copy PHP files to another folder or web server. The problem is, that every school has its own rules and systems. This is a challenge that SisterFani must be able to overcome.

SisterFani is a liaison between various systems. As shown in the picture above, SPP bills are managed by Edupay Bank Syariah Indonesia (BSI). To make it easier for students to find out the nominal tuition bill, students access SisterFani. Sister Fani then asked BSI. BSI answers are forwarded to students.

In Moodle LMS, the login system is managed by SisterFani. Students cannot directly login to Moodle but must log in via SisterFani. SisterFani asked BSI about the SPP status of students. Then students are automatically logged into Moodle.
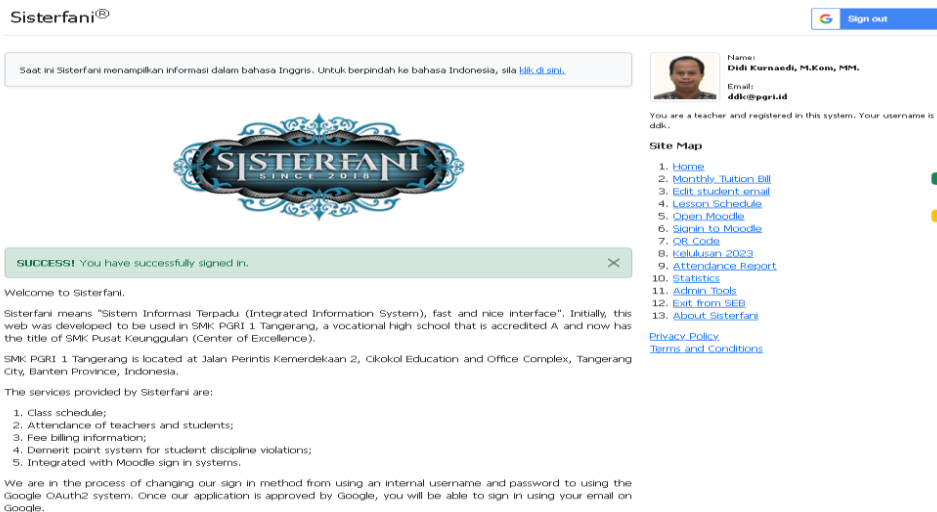
Fig. 3 Main Menu

On the main menu, users have entered the sisterfani system and can use the facilities listed on the site map such as: About, displaying tuition fees for each class, editing email data, teaching schedules, opening the E-Learning system at SMK PGRI 1 Tangerang, opening Learning Management System (LMS), and attendance reports are explained in Figure 3.

Fig. 4 Lesson Schedule Menu

In Figure 5, students and teachers can see the daily learning schedule.
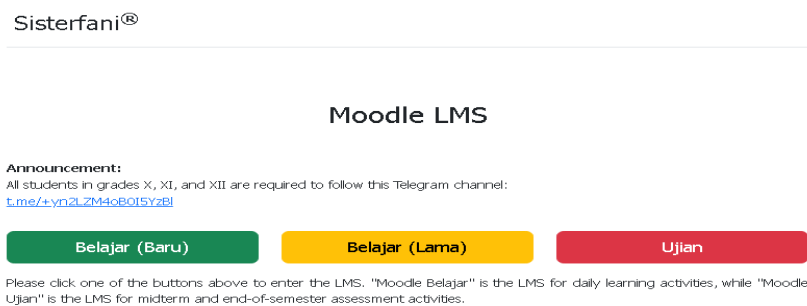

Fig. 4 Moodle LMS

The Moodle LMS in Figure 5 consists of 3 menus, the New Learning menu is intended for students who are registered as students in 2022 using the new model, while the old learning menu is used by teachers to create teaching materials for each subject and the test menu is used to bring out Midterm Assessment, End of Semester Assessment, Student and Teacher Assessment..

Sisterfani®

Attendance Report

Date: April 18, 2024

Arrival

Departure

This data is collected from the attendance machine. The initial scan is recorded as arrival and the final scan is recorded as departure from the school.

Bulk data

Name	Time

In order to optimize server performance, the report will be limited to displaying a maximum of 20 lines.

Fig. 6 Attendance Report Menu

In Figure 6, it is explained that the school start time is 06.30 WIB and leaves at 15.00 every day. Students and teachers are required to take attendance using a finger machine and record it on Sisterfani, both students and parents can monitor students at any time.

V. DISCUSSION

The discussion of the results of this research opens up insight into the factors that influence the user experience when using Sister Fani in an educational environment. Analysis of these findings provides a basis for improvement efforts that can increase the performance and acceptance of integrated information systems in schools. Factors that influence user experience include a variety of elements, such as interface design, speed of access, and the quality of information provided. By understanding these factors, schools can design strategies to improve the user experience with Sister Fani. For example, by paying attention to an attractive and intuitive interface design, as well as ensuring optimal access speed, schools can improve the use of Sister Fani by students and teaching staff.

The positive impact of increasing acceptance and performance of integrated information systems such as Sister Fani in the educational environment can be felt in various aspects. In particular, increasing the efficiency and effectiveness of the educational process is the main goal. With wider adoption and a better understanding of user needs, information systems like Sister Fani can become more effective tools in supporting learning, administration and communication processes in schools. Thus, this discussion underlines the importance of developing integrated information systems that are responsive to user needs in the educational environment. By strengthening the factors that influence user experience, schools can achieve a greater positive impact in improving the efficiency and effectiveness of their educational processes.

VI. CONCLUSIONS

Based on the results of research regarding the implementation of Sister Fani at SMK PGRI 1 Tangerang, the conclusions that can be drawn are as follows: System speed has a significant impact on user experience: Findings show that Sister Fani's system speed impacts user efficiency and satisfaction. Delays in responding to user commands and loading pages cause frustration and hinder productivity. User interface design plays an important role in system acceptance: Although most respondents liked the clarity and consistency of the design, there was still a need to improve visual appeal and innovation in interface layout. Supporting and inhibiting factors influence system implementation: Support from school management and adequate user training are important factors in successful implementation. However, technological infrastructure constraints, such as slow internet connections, are the main obstacle to improving system performance.

The gap between expectations and reality needs to be addressed: There is a gap between users' expectations of system performance and the reality they experience in daily use. Improvement and adjustment steps must be taken to meet user expectations and increase system acceptance. Recommendations for improvement: Based on the findings, several recommendations have been put forward, including improving the technology infrastructure, improving user interface design, and improving user training. It is hoped that the implementation of these recommendations can increase the effectiveness of using Sister Fani at SMK PGRI 1 Tangerang.

REFERENCES

[1]   D. Kurnaedi, A. Gumiwa, and P. S. Informasi, "THE INFLUENCE OF MEDIA ON THE PROMOTION OF," vol. 9, no. 1, pp. 79–87, 2023.

[2]   D. Kurnaedi, "Cyber School SMK PGRI 1 Kota Tangerang," in *Aplikasi Sains & Teknologi Yang Berwawasan Lingkungan Untuk Meningkatkan Daya Saing Bangsa*, 2018, vol. 2018, no. September, pp. 315–327.

[3]   H. Ilham, B. Wijayanto, S. P. Rahayu, F. Teknik, and U. J. Soedirman, "ANALYSIS AND DESIGN OF USER INTERFACE / USER EXPERIENCE WITH THE DESIGN THINKING METHOD IN THE ACADEMIC INFORMATION SYSTEM OF," *J. Tek. Informtika*, vol. 2, no. 1, pp. 17–26, 2021.

[4]   A. Effendi, "Jurnal Mantik Accounting Information System Effectiveness : Improvement Of Education And Training Services At Olx Autos Bandung," *J. Mantik*, vol. 4, no. 36, pp. 1476–1486, 2020.

[5]   R. Abenoja, "The Experiences of Working While Studying: A Phenomenological Study of Senior High School Students," vol. 1573, no. 082, 2019.

[6]   P. S. Negi, "Impact of Information Technology on Learning, Teaching and Human Resource Management in Educational Sector," *Int. J. Comput. Sci. Telecommun.*, no. July 2011, 2014.

[7]   "Optimization of Web-Based Learning Media in SMK PGRI 3 Walikukun," no. 1, 2007.

[8]   J. R. Lewis and D. Beach, *CHAPTER 38 USABILITY AND USER EXPERIENCE : DESIGN AND EVALUATION*, no. September. 2023.

[9]   C. Overview, "Chapter 8 – Designing the User Interface," pp. 1–14, 2016.

[10]   F. Irianto and S. Wibowo, "ISO 9001 and IWA-2 Quality Management System in Education," *J. Educ. Innov. Curric. Dev.*, vol. 01, no. 02, pp. 44–49, 2023.

[11]   J. Govea, E. O. Edye, S. Revelo-tapia, and W. Villegas-ch, "Optimization and Scalability of Educational Platforms : Integration of Artificial Intelligence and Cloud Computing," *MDPI*, 2023.

[12]   I. C. Igbokwe, "Application of Artificial Intelligence (AI) in Educational Management," *Int. J. Sci. Res. Publ.*, no. March, 2023, doi: 10.29322/IJSRP.13.03.2023.p13536.

[13]   U. Madako, "Digital Media and its Implication in Promoting Students ' Autonomous Learning," *J. Pemikir. Ilm. dan Pendidik. Adm. Perkantoran*, vol. 7, no. 2, pp. 319–332, 2021.

[14]   P. D. Renshaw, "Teachers using classroom data well : Identifying key features of effective practices Final report," no. December, pp. 0–194, 2013, doi: 10.13140/2.1.1654.5600.

[15]   A. Kumar, E. Studies, R. Krishnamurthi, S. Bhatia, K. Kaushik, and E. Studies, "Blended Learning Tools and Practices : A Comprehensive Analysis," *IEEE Access*, no. June, 2021, doi: 10.1109/ACCESS.2021.3085844.

[16]   A. B. Perkasa, "Teachers ' Attitudes towards Webinars in Professional Development : A Case Study at Secondary School in Indonesia Teachers ' Attitudes towards Webinars in Professional Development : A Case Study at Secondary School in Indonesia," *J. Innov. Educ. Cultiral Res.*, vol. 4, no. 2, pp. 200–208, 2023, doi: 10.46843/jiecr.v4i2.559.

[17]   A. T. C. Pratama, M A T, "Effect of User Interface and User Experience on Application Sales Effect of User Interface and User Experience on Application," *IOP*, 2020, doi: 10.1088/1757-899X/879/1/012133.

[18]   W. Swasty and A. R. Adriyanto, "Does Color Matter on Web User Interface," *Commun. Inf. Technol.*, vol. 11, no. 1, pp. 17–24, 2017.

[19]   T. Acceptance, "Technology Acceptance and Adoption in Education ´," *Fac. Sci. Univ. Split. Split. Croat.*, pp. 183–197, 2023, doi: 10.1007/978-981-19-2080-6.

[20]   P. Rita, T. Oliveira, and A. Farisa, "Heliyon The impact of e-service quality and customer satisfaction on customer behaviour in online shopping," *Heliyon*, vol. 5, no. August, p. e02690, 2019, doi: 10.1016/j.heliyon.2019.e02690.

[21]   A. Schmid, M. Bierschneider, J. Hoffmann, and R. Wimmer, *Effects of Text Input Latency on Performance and Task Load*, vol. 1, no. 1. Association for Computing Machinery, 2023.

[22]   N. Rane, A. Achari, and S. P. Choudhary, "Enhancing customer loyalty through quality of service : Effective strategies to improve customer satisfaction, experience, relationship, and engagement ENHANCING CUSTOMER LOYALTY THROUGH QUALITY OF SERVICE : EFFECTIVE STRATEGIES to CUSTOMER SAT," *IRJETS*, no. May, pp. 427–452, 2023, doi: 10.56726/IRJMETS38104.

[23]   S. A. Sibagariang, F. Pohan, and M. J. Lubis, "Information and Communication Technology in the World of Education : A Theoretical and Empirical Overview – A Literature Review," *EHDJ*, vol. 8, no. November, pp. 12–24, 2023.

[24]   N. R. Wiwesa, "Jurnal Sosial Humaniora Terapan USER INTERFACE DAN USER EXPERIENCE UNTUK MENGELOLA," *J. Sos. Humanipra Terap.*, vol. 3, no. 2, pp. 17–31, 2021.

[25]   D. Dike and L. Parida, "The micro leadership strategy of the principal to implementing character education in elementary school," *J. Prima Edukasi*, vol. 8, no. 1, pp. 51–66, 2020.

[26]   H. Pratiwi, Y. Wahyuningsih, and Y. C. Oktaviani, "Jurnal Penelitian Pos dan Informatika Design and Development Archipelago Architecture Learning Media Using Qr Code Technology," *J. Penelit. Pos dan Inform.*, vol. 11, no. 2, pp. 191–200, 2021, doi: 10.17933/jppi.v11i2.339.

[27]   S. G. Jnanathapaswi, "Thematic Analysis & Coding : An Overview of the Qualitative Paradigm Thematic Analysis & Coding : An Overview of the Qualitative Paradigm," *APH Publ. Corp.*, no. December 2021, doi: 10.6084/m9.figshare.17159249.

[28]   R. Habibi, A. Glory, R. Manurung, S. Vokasi, S. Terapan, and T. Informatika, "JOURNAL OF APPLIED COMPUTER SCIENCE AND TECHNOLOGY (JACOST) Systematic Literature Review : Metode Penilaian Kinerja Karyawan Menggunakan Human Performance Technology," *JACOST*, vol. 4, no. 2, pp. 100–107, 2023.