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Developing the KVSB EasyBus Mobile Application

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Abstract: Manual bus booking management at Kolej Vokasional Sungai Buloh (KVSB) has long caused various issues such as schedule confusion, booking overlaps, and loss of information. This study aims to develop and evaluate the effectiveness of the KVSB EasyBus mobile application as a digital alternative to the existing system. The research design employed the SDLC Waterfall model, which includes phases of analysis, design, implementation, and testing. Data were collected through questionnaires involving 45 lecturers and feedback from 15 application testers. The study found that 95.6% of respondents supported the development of the application, and all testers stated that the app was easy to use, had a user-friendly interface, and enabled smooth bus booking processes. The mean score for ease of use of the application was 4.6, while the manual system only recorded a satisfaction mean score of 2.7. This study proves that KVSB EasyBus can overcome the limitations of the manual system and enhance logistical management efficiency in vocational education institutions. The study also recommends improvements, including the integration of an academic calendar and notification features to maximize the long-term usability of the application.

Keywords: Mobile application, bus booking, manual system, user satisfaction, SDLC Waterfall, logistics management.

1. Introduction

The advancement of digital technology has transformed the landscape of logistics management across various sectors, including educational institutions (Parfenov et al., 2021; Hounsell, 2012). The use of manual systems in handling bookings and managing institutional vehicles is not only outdated technologically but also proven to be inefficient in operations that require accuracy, organization, and real-time accessibility of information (Nashimoto et al., 2025; Charbatzadeh et al., 2016). At KVSB, the bus booking management system still relies on the physical filling of forms and direct communication with administrative staff. This method is time-consuming and often leads to overlapping bookings, loss of information, and uncertainty in coordinating travel schedules, ultimately disrupting academic activities and college administration.

A study by Noor et al. (2021) and Sann & Siripipattaworn (2024) found that institutions still using manual systems in logistics management face higher error rates, including data loss, scheduling confusion, and resource wastage such as paper and manpower. In the context of higher education institutions in Malaysia, automated systems for managing institutional vehicles have not been fully implemented, particularly in vocational environments. Furthermore, according to Yusof and Abdullah (2020), mobile applications have great potential to improve administrative efficiency through user-friendly interfaces, real-time access, and the ability to integrate with internal institutional systems.

The KVSB EasyBus project is proposed to address this gap by developing a mobile application capable of automating the entire bus booking process at KVSB. This application is specifically designed to meet the needs of lecturers as the primary users, giving them direct control over travel scheduling without having to go through burdensome manual processes. This approach not only aligns with user-centred design principles but also supports the digital transformation agenda in the education sector as outlined in the Malaysia Education Blueprint (Higher Education) 2015–2025.

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In the current scientific landscape, most previous studies have focused on vehicle booking systems in the commercial and public transportation sectors (for example, e-hailing systems and fleet management). However, there is very limited research focusing on the development of booking systems specifically for technical and vocational education institutions. This indicates a gap in the literature and practice that can be explored through this research. Therefore, the development of KVSB EasyBus not only aims to resolve internal operational issues within the institution but also contributes to the expansion of knowledge in the field of digital applications for vocational education management (Thong et al., 2018; Venkatesh et al., 2015).

Overall, this research proposes a practical and innovative solution to the logistics management challenges at KVSB through the development of a systematic, user-friendly, and responsive mobile application that addresses the real needs of institutional users. It also provides a strong foundation for the development of more sustainable digital management systems that can be adapted to other institutions with similar needs.

2. Methodology

This research adopts a system development design approach based on the Waterfall-type System Development Life Cycle (SDLC) model, chosen for its systematic and structured nature. This model divides the development process into several sequential phases: analysis, design, implementation, testing, and maintenance. This approach allows the project to be carried out systematically from start to finish, ensuring that each phase is completed before moving on to the next.

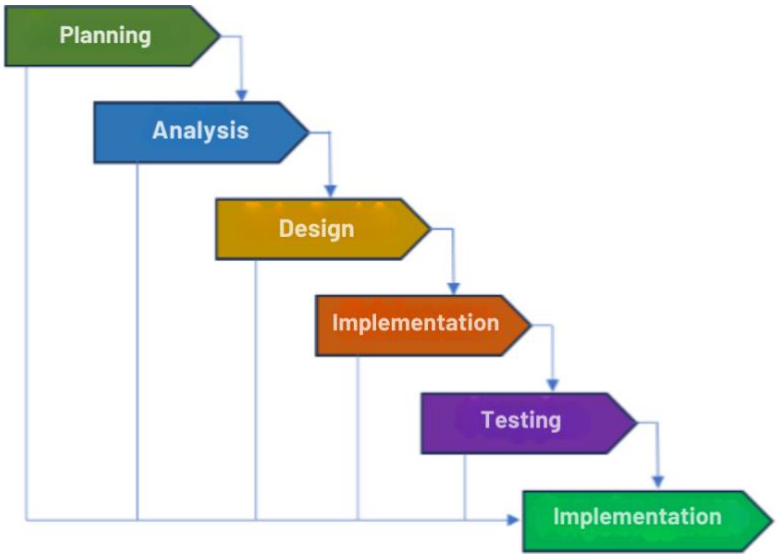

Figure 1. SDLC *Waterfall* Model

In the analysis phase, the researchers identified the system requirements using two main methods: questionnaires and interviews. Online questionnaires were distributed via Google Forms to lecturers and program coordinators who were directly involved in the bus booking process. Additionally, interview sessions were conducted with the bus booking coordinator to gain deeper insights into the existing process, challenges faced, and specific system requirements. The design phase focused on developing the user interface, system navigation structure, and database schema. The application was built using the Flutter framework and supported by Firebase as the real-time database. All components were developed based on the initial analysis to ensure that the system met the actual needs of the target users.

2.1 Product Testing

The testing phase was conducted after the KVSB EasyBus application had been fully developed. The objective was to evaluate the effectiveness of the app's core functions, such as booking, schedule checking, and status updates. The testing was carried out by the main target group, which included program lecturers, general subject lecturers, and administrative personnel frequently involved in bus bookings.

Testers were given access to the application and asked to try all the key features, including making bookings, cancelling bookings, checking the schedule list, and receiving status notifications. The testing was conducted independently under the supervision of the project supervisor. The aspects evaluated included system efficiency, ease of use, accuracy of information, and application performance stability.

2.2 User Feedback

User feedback was collected through an online questionnaire distributed to 45 respondents involved in the study and 15 individuals who participated in the system testing. The questionnaire was designed to assess users' perceptions of the

system's usability, core feature functionality, satisfaction level, and suggestions for improvement. It included closed-ended Likert scale questions as well as open-ended sections for qualitative comments.

The collected data was analyzed using descriptive statistical methods, primarily by calculating the mean score for each item on the scale. According to Azniza, A. & Politeknik Merlimau Melaka, Malaysia (2002), the interpretation of the mean scores follows the reference values shown in Table 1. This method was used to identify general perception trends and areas needing improvement. The analysis also provided crucial guidance for the next iteration in the application's development and maintenance process.

Table 1. Interpretation of Mean Scores

Mean Score	Interpretation (Level)
1.00 to 1.66	Low
1.67 to 3.33	Moderate
3.34 to 5.00	High

3. Findings and Discussion

The study's findings provide a comprehensive, data-driven narrative on the administrative challenges at Kolej Vokasional Sungai Buloh (KVSB) and the successful implementation of a digital solution. The research involved a survey of 45 lecturers and targeted application testing with 15 users represented on figure 2, yielding significant insights into the inadequacies of the existing manual system and the effectiveness of the KVSB EasyBus application.

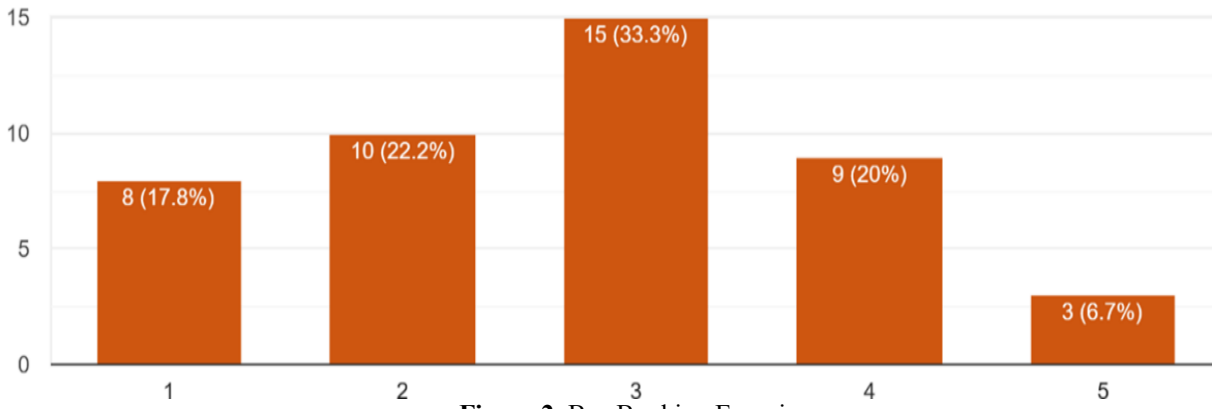

Figure 2. Bus Booking Experience

3.2 Inefficiencies of the Manual Booking System

The investigation into the manual bus booking process revealed a system fraught with inefficiencies and user dissatisfaction. Data indicates that the user experience was mediocre at best, with the mean score for booking experience recorded at 2.8 and the frequency of booking at 2.9. Crucially, the overall satisfaction with the manual system registered a mean score of only 2.7. According to the study's own metric for interpreting mean scores, these values all fall within the "Moderate" level of satisfaction (1.67 to 3.33).

This moderate satisfaction level is not merely a numerical abstraction; it is rooted in tangible problems. The manual process was plagued by issues such as schedule confusion, booking overlaps, and the loss of critical information. This is quantitatively substantiated by the finding that a majority of respondents, 60%, admitted to having personally faced problems during the manual bus booking process. This confluence of moderate satisfaction scores and a high incidence of reported issues paints a clear picture of a legacy system that is no longer fit for purpose, generating uncertainty and disrupting the college's administrative and academic activities (Bermingham & Mahdi, 2007). The institution's reliance on physical forms and direct communication was identified as time-consuming and prone to error

3.3 User Reception and Performance of the KVSB EasyBus Application

In stark contrast to the manual system's performance, the KVSB EasyBus application was met with overwhelmingly positive feedback. The need for a digital alternative was strongly validated, with 95.6% of survey respondents supporting the development of such an application, indicating a high level of institutional readiness for technological change.

The application testing phase, involving 15 users primarily aged between 31 and 40 with prior technology experience (86.7%), confirmed the application's success. The mean score for the application's ease of use was 4.6, which is categorized as a "High" level of satisfaction (3.34 to 5.00). This score represents a significant improvement over the manual system's 2.7 mean score for satisfaction, quantitatively demonstrating the digital system's superiority.

The positive reception was unanimous among the testers. All 15 testers (100%) concurred on several key points:

- The application provided a smooth and simple booking process.
- The user interface was friendly and intuitive.
- The application was effective in simplifying the overall bus booking procedure.
- It presented information that was both accurate and up-to-date.

These results strongly align with research by Engin et al. (2020) and Ojo et al. (2015) which emphasizes that digital booking systems enhance user satisfaction by improving the clarity, transparency, and accessibility of information. The intuitive design and mobile compatibility were particularly praised, fulfilling the core operational requirements of data accuracy and efficient communication

3.3 Future Directions and User-Driven Improvements

The study also gathered valuable feedback for the application's future development. The suggestions provided by users reflect a high degree of engagement and a desire to see the application's functionality expanded. Key recommendations include:

- Integration with the college academic calendar to streamline scheduling.
- Implementation of notification features for timely updates and reminders.
- Addition of various vehicle types to accommodate broader institutional needs.
- Inclusion of a direct support link for lodging complaints or seeking assistance.

These suggestions are not merely criticisms but are indicative of users' willingness to embrace the system more fully and integrate it deeper into their daily workflow (Alrasheedi et al., 2018). This aligns with findings from Ling et al. (2018) who advocate for features like real-time functions to improve vehicle service systems.

In summary, the findings robustly confirm that the KVSB EasyBus application successfully addresses the significant limitations of the manual system. The powerful contrast between the "Moderate" satisfaction with the old system and the "High" satisfaction with the new application, supported by unanimous positive tester feedback, proves that it meets user needs, enhances administrative efficiency, and serves as a strong reference model for digital logistics management in other educational institutions (Candra & Jeselin, 2024; Castro-Benavides et al., 2022; Wang & Liao, 2007).

4. Conclusion

Research findings confirm that the manual bus booking system at KVSB is ineffective and fails to meet users' current needs in terms of convenience, reliability, and management efficiency. Users expressed moderate satisfaction with the existing system, whereas the KVSB EasyBus application demonstrated excellent performance in terms of ease of use, clarity of information, and effectiveness of key functions. All (100%) testers reported that the application was easy to use, featured a user-friendly interface, and enabled a smooth booking process. The mean score of 4.6 for ease of use, compared to 2.7 for the manual system, clearly highlights the advantages of digital transformation introduced by this application.

In addition to addressing technical and operational issues, the development of this application contributes to the knowledge base in digital management within vocational education. It provides an implementation model that can be replicated by other institutions. Furthermore, the positive user response reflects the institution's readiness to adopt a systematic and user-friendly digital system. Based on user suggestions, the application could be further enhanced through integration with the academic calendar, notification features, and the inclusion of various vehicle types to meet broader needs. Overall, the KVSB EasyBus application not only fulfills the main objectives of the study but also offers significant potential to improve the efficiency and transparency of logistics management in technical and vocational education institutions.

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Conflict of Interest

The authors declare no conflicts of interest.

References

Alrasheedi, M., Capretz, L. F., & Raza, A. (2018). Management's perspective on critical success factors affecting mobile learning in Higher Education Institutions – an empirical study. *arXiv*.

Bermingham, C., & Mahdi, A. E. (2007). An innovative web-based approach for study skills development in higher education. *International Journal of Web Information Systems, 3*(3), 212–230. https://doi.org/10.1108/17440080710834256

Candra, S., & Jeselin, F. S. (2024). Students' perspectives on using e-learning applications and technology during the COVID-19 pandemic in Indonesian higher education. *Journal of Science and Technology Policy Management, 15*(2), 226–243.

Castro-Benavides, M., Prasanna, H. S., & Choudhury, S. K. (2022). Digital transformation initiatives in higher education institutions: A multivocal literature review. *Education and Information Technologies*.

Charbatzadeh, F., Chipulu, M., Marshall, A., & Ojiako, U. (2016). Determinants of satisfaction with campus transportation services: Implications for service quality. *Journal of Transport and Supply Chain Management*, *10*(1), 1-14.

Engin, M., Kasap, N., & Sivrikaya, B. T. (2020). User acceptance of shuttle bus decision support system based on smartphone probes. *SAGE Open*, 10(3), 1–13. https://doi.org/10.1177/2158244020919527

Hounsell, N. B., Shrestha, B. P., & Wong, A. (2012). Data management and applications in a world-leading bus fleet. *Transportation Research Part C: Emerging Technologies*, *22*, 76-87.

Ling, T. C., Soomro, B. A., Mon, C. S., Yi, L. C., & Yen, C. L. (2018). A preliminary study: Mobile application for shuttle bus service. In Yacob, N., Mohd Noor, N., Mohd Yunus, N., Lob Yussof, R., & Zakaria, S. Y. (Eds.), *Regional Conference on Science, Technology and Social Sciences (RCSTSS* 2016) (pp. 175–184). Springer. https://doi.org/10.1007/978-981-13-0074-5_16

Nasimoto, M.E., Sarria, D., Tomanek, D., Deschamps, F. (2025). Technological Transformation in Logistics: The Evolution of Logistics 4.0. In: Šormaz, D.N., Bidanda, B., Alhawari, O., Geng, Z. (eds) Intelligent Production and Industry 5.0 with Human Touch, Resilience, and Circular Economy. ICPR-Americas 2024. Lecture Notes in Production Engineering. Springer, Cham. https://doi.org/10.1007/978-3-031-77723-3_38

Ojo, O., Amoako-Sakyi, D., & Agyeman, C. (2015). Students' satisfaction of campus shuttling services: A Quybus approach. *Journal of Transport and Supply Chain Management*, 9, 1–9. https://doi.org/10.4102/jtscm.v9i0.203

Parfenov, A., Shamina, L., Niu, J., & Yadykin, V. (2021). Transformation of Distribution Logistics Management in the Digitalization of the Economy. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 58. https://doi.org/10.3390/joitmc7010058

Sann, R., & Siripipattaworn, S. (2024). University public transportation logistics service quality and student satisfaction: empirical evidence from Thailand. *Cogent Business & Management*, *11*(1), 2331628.

Thong, T. C. L., Soomro, B. A., Mon, C. S., Yi, L. C., & Yen, C. L. (2018). A preliminary study: Mobile application for shuttle bus service. In Yacob, N., et al. (Eds.), *Regional Conference on Science, Technology and Social Sciences (RCSTSS 2016)* (pp. 175–184). Springer. https://doi.org/10.1007/978-981-13-0074-5_16

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157–178. https://doi.org/10.2307/41410412

Wang, E. T. G., & Liao, Y.-W. (2007). The quality and use of mobile applications for transportation service: Influence on satisfaction. *International Journal of Mobile Communications, 5*(3), 383–399. https://doi.org/10.1504/IJMC.2007.014225