

RESEARCH ARTICLE

Strengthening business ethics and governance through digital expense management: A case study of RV Engineering Sdn. Bhd.

Muhammad Abdul Adib Abd Aziz^{1*}, Nurakmal Asmira Zaiful Zaman¹, Muhammad Farhan Hj Azmir¹, Mohd Ruzaimi Mohd Ariffin¹, and Yudi Fernando^{1,2}

¹Faculty of Industrial Management, Universiti Malaysia Pahang Al-Sultan Abdullah, Lebu Persiaran Tun Khalil Yaakob, 26300 Kuantan, Pahang, Malaysia

²Graduate Engineering & Technological Business School (GET-BS), Universiti Malaysia Pahang Al-Sultan Abdullah, Lebu Persiaran Tun Khalil Yaakob, 26300 Kuantan, Pahang, Malaysia

Abstract - This paper focuses on the ethical and governance concerns of logistics expense management in an engineering-based small and medium-sized enterprise (SME). Many engineering firms rely on manual systems to log vehicle trips, often leading to inaccurate documentation, inadequate monitoring, and the misuse of corporate resources. This study examines RV Engineering Sdn. Bhd., a Malaysian engineering firm specialising in sewerage infrastructure projects, where logistics expenses are currently tracked using physical logbooks. Using a qualitative case study approach, the study collected data through online interviews with key staff responsible for vehicle utilisation and fuel expenditure. The findings reveal critical vulnerabilities, including delayed and improper trip recording, fuel card misuse, and weak internal governance controls. To mitigate these issues, this paper proposes a digital vehicle trip and expense tracking system built on a low-code platform. The proposed system integrates structured digital reporting, automated verification processes, and administrative controls to strengthen accountability, transparency, and ethical compliance. The results indicate that implementing this digital solution significantly reduces ethical risks, reinforces governance, and improves operational efficiency. Ultimately, this research offers practical insights into how low-code digital systems can serve as effective governance tools to foster ethical behaviour and optimise resource management in engineering SMEs.

Article History

Received : 30 March 2026

Revised : 10 April 2026

Accepted : 13 June 2026

Published : 30 June 2026

Keywords

Logistics management

Business ethics

SMEs

Governance

Digital expense

1. Introduction

The engineering and construction sector contributes significantly to national infrastructure development through utility installation, wastewater and sewerage systems, and related construction projects (Lopes & Banaitiene, 2024). Delivering these projects efficiently and within budget demands the rigorous coordination of manpower, equipment, transportation, and operational support. As engineering projects become increasingly complex and geographically distributed, managing operations and logistics has become a critical factor in organisational performance and long-term viability (Umar et al., 2024). Logistics and operational support functions facilitate the movement of materials, personnel, and equipment across project sites. Effective management of logistics expenses controls operational costs, enhances inter-site coordination, and informs managerial decision-making (Tiye & Gudeta, 2018). In recent years, organisations have prioritised logistics efficiency as a key strategy to mitigate rising operational expenses and improve project performance, particularly in engineering endeavours that rely heavily on transport networks (Szczesniak & Gorzelanczyk, 2024). At the same time, advances in digital technologies offer organisations new ways to refine operational management. Digital systems improve data accuracy, transparency, and real-time information flow, enabling better monitoring and control of operational activities (Ikumapayi et al., 2024). Adopting system-based solutions in logistics and expense management has consistently been linked to greater accountability, fewer administrative errors, and stronger governance oversight (Dhawan et al., 2022). Despite these recognised advantages, many organisations struggle to manage logistics costs effectively. Opaque cost visibility, fragmented coordination across multiple project sites, inadequate process tracking, and weak governance structures remain widespread, especially among small and medium-sized enterprises (SMEs) (Taware, 2023). Deficiencies in internal control and monitoring mechanisms expose these organisations to ethical vulnerabilities and the potential misappropriation of corporate resources (Eton et al., 2022; Muslim, 2025).

Despite growing interest in logistics efficiency and digitalisation, three distinct gaps persist in the literature. First, existing research primarily emphasises transport performance, cost reduction, and large-scale technological implementations, paying limited attention to the ethical governance of routine logistics expenses. Second, few studies examine how manual trip logs, fuel-card utilisation, and trust-based verification create accountability and transparency risks within project-based engineering SMEs. Third, empirical literature offers insufficient practice-based evidence on how accessible, low-code systems can translate governance principles into everyday operational controls. This study addresses these gaps through an organisational case study evaluating logistics expense management within a Malaysian engineering SME. Accordingly, this study delivers three primary contributions. Empirically, it provides context-specific evidence detailing how manual trip recording and fuel-card workflows generate ethical and governance risks in an engineering SME. Conceptually, it reframes digital expense management as a governance mechanism that bridges operational data capture with accountability, traceability, verification, and resource stewardship. Practically, it proposes

a low-code control framework that operationalises these governance principles through structured reporting, supporting evidence mandates, role separation, administrative reviews, and auditable record-keeping. Collectively, these contributions extend the discourse on logistics digitalisation beyond basic cost efficiency by demonstrating how system design can reinforce ethical conduct and organisational transparency.

1.1 Research Problem

RV Engineering Sdn. Bhd. currently relies on manual logbooks and trust-based verification to monitor vehicle trips and fuel expenses. This creates governance weaknesses because records are incomplete, verification is delayed, and management has limited visibility over the use of company resources. The research problem is the absence of a structured control mechanism to support accountability, transparency, and integrity in logistics expense management within an engineering-based SME.

1.2 Research Questions

- i) What weaknesses exist in the current logistics expense management practices of RV Engineering Sdn. Bhd.?
- ii) How do manual trip records and fuel card practices create risks to accountability, transparency, and integrity?
- iii) How can a digital monitoring system strengthen governance control and ethical compliance in logistics expense management?

1.3 Research Objectives

- i) To examine the existing logistics expense management practices at RV Engineering Sdn. Bhd.
- ii) To identify ethical and governance weaknesses related to manual trip recording, fuel card usage, and verification procedures.
- iii) To propose a digital monitoring system that improves accountability, transparency, data integrity, and internal control in logistics expense management.

1.4 Research Significance

This study is significant because it demonstrates how digital expense monitoring can function as a practical governance tool for SMEs. By linking trip records, fuel expenses, verification procedures, and driver accountability, the proposed system supports responsible resource management and reduces opportunities for unethical practices. At the same time, standardised records, time-stamped submissions, centralised histories, and management review improve transparency by making resource use visible, traceable, and auditable. The study therefore offers engineering-based SMEs a practical model for embedding ethical responsibility and transparent decision-making into routine logistics operations despite limited financial and technical resources.

2. Literature Review

2.1 Industry Background

The engineering and construction sector has been a backbone of economic and infrastructure growth in Malaysia, supporting the provision of critical infrastructure, including civil works, utility installations, transport systems, and wastewater and sewerage infrastructure (Ali et al., 2024). As the Malaysian government continues to pursue urban expansion and sustainable development, engineering companies are instrumental in delivering infrastructure projects efficiently, safely, and in compliance with regulatory and environmental requirements (Azmi & Ibrahim, 2025). These projects are often time-sensitive, geographically dispersed, and project-based, which makes their operations more complex and demanding to coordinate (Umar et al., 2024). A major characteristic of the engineering industry is its heavy dependence on logistics and operational support functions. Engineering projects are not usually located in one fixed point; instead, they are scattered across different urban and rural locations. This geographical spread creates a need for effective logistics management to organise the flow of manpower, equipment, materials, and vehicles across project sites (Haglund & Janné, 2023). Consequently, it is part of daily engineering work and directly affects project performance and cost efficiency.

2.1.1 The characteristics of engineering logistics in Malaysia

The engineering industry involves more than transporting goods and materials. It involves a wide scope of work, including the mobilisation of skilled labour, delivery of heavy equipment, transportation of construction materials, and maintenance support across project sites (Dharmapalan et al., 2021). Engineering companies work in what may be termed mobile workplaces, where each project location is a temporary work centre that requires constant logistical coordination. This is a transport-intensive environment where companies likely own vehicles to sustain daily site operations. Operating costs will therefore be a significant share of fuel consumption, vehicle maintenance, and travel costs. Manufacturing or office-based industries do not need to handle logistics activities as dynamically as engineering firms because project requirements and site conditions change (Rajesh, 2020). Breakdowns or inefficiencies in logistics coordination can lead to project delays, cost increases, and contractual compensation such as liquidated and ascertained damages (LAD), which ultimately affects organisational performance (Radman et al., 2022).

2.1.2 Challenges facing small and medium enterprises

Small and medium-sized enterprises (SMEs) in Malaysia face different operational limitations, although large multinational construction companies usually have the financial resources to invest in advanced enterprise systems and formalised control structures. These are companies that have small budgets, small administrative units, and rely heavily on project execution personnel to meet strict deadlines (Ismail et al., 2022). Consequently, the SMEs would tend to focus on short-term project implementation rather than long-term administrative and system development (Dauda et al., 2023). To achieve flexibility and responsiveness, most engineering SMEs use informal, pragmatic ways to manage logistics activities. Reporting structures can be streamlined, and monitoring practices can be based on high levels of cooperation and trust among employees. Although these methods enable quick decision-making and operational continuity, they also create problems with consistency, accountability, and cost visibility. Reliance on trust-based practices may create blind spots for management (Ardi et al., 2024). Without formal monitoring systems, differences in logistics costs may go unnoticed until financial records are reviewed. Once inefficiencies or irregularities are detected, it may be too late, and management may not be able to take corrective action.

2.1.3 Infrastructure operations governance and ethical compliance

The engineering and construction sector faces mounting pressure to demonstrate transparency, accountability, and good governance behaviours (Ruiz et al., 2023). Infrastructure projects are usually financial in nature and involve regulatory requirements, media attention, and contractual responsibilities. However, the decentralised nature of engineering operations makes it difficult to enforce governance, especially when activities span multiple sites. Ethical risks are greater in weak internal control environments, especially when operations are decentralised. Unethical actions, such as misuse of organisational resources like vehicles and fuel, are usually linked to poor monitoring systems rather than intentional behaviour (Kabeyi, 2018). When operational activities lack transparent reporting standards or reliable audit trails, employees may feel the chances of being caught are low, which weakens ethical discipline and erodes a responsible culture of resource management (Eton et al., 2022; Muslim, 2025). Governance-wise, the lack of organised logistics monitoring systems limits management's ability to monitor expenses, ensure accountability, and maintain organisational compliance with policies. These issues show the need to incorporate governance into operational and logistics management practices within the engineering industry.

2.1.4 Digital transformation as a governance tool

To address these business and management issues, the engineering sector is increasingly using digital transformation to enhance logistics management and internal control. Digital monitoring solutions, mobile reporting, and data-driven solutions help organisations obtain real-time data on operational activities, improving data accuracy and reducing reliance on slow or manual reporting services (Ikumapayi et al., 2024). For engineering SMEs, digital low-code platforms have become a viable substitute for an elaborate enterprise system. These systems enable formal data input, automatic time-stamping, and centralised records without extensive technical skills or implementation overhead. By implementing such systems, organisations can improve transparency, enhance logistics activity traceability, and strengthen audit trails (Dhawan et al., 2022). Digital transformation in logistics management contributes to the shift from reactive to proactive management. Instead of detecting problems only after financial discrepancies are revealed, system-based monitoring allows early detection of irregularities and supports ethical behaviour by improving accountability. With rising cost pressures and governance demands, digital solutions are increasingly seen as instrumental in improving logistics expense management in the engineering sector.

2.2 Company Background

RV Engineering Sdn. Bhd. is a Malaysia-based engineering firm that designs, constructs, installs, and maintains sewerage and wastewater infrastructure systems. The company also undertakes various infrastructure projects that support general utilities and environmental management, such as sewer pipelines, pumping stations, wastewater treatment plants, and associated underground works. In its operations, the company helps build and maintain the infrastructure that supports urban and industrial regions. The company works in accordance with engineering demands and the regulatory requirements of relevant authorities, such as local government authorities and industry regulators. RV Engineering focuses on technical excellence, project efficiency, workplace safety, and adherence to environmental and operational laws. It has engineers, technicians, drivers, and administrative staff who support project implementation across various locations. In its day-to-day business operations, RV Engineering Sdn. Bhd. depends on a fleet of company-owned lorries to support logistics operations such as transporting materials, site mobilisation, maintenance work, and project support services. These vehicles are also used regularly at various project locations, depending on the nature of operations. The company issues fuel cards to control vehicle fuel usage and manually records trip and fuel consumption in paper-based logbooks.

Administrative personnel manage the company's logistics and administrative functions and are responsible for overseeing vehicle use, verifying fuel costs, and maintaining operational records. After completing the daily work, drivers are responsible for recording trip details, mileage, and fuel consumption in the logbooks. Management uses these records to monitor logistics costs and support operations in vehicle deployment and fuel use. RV Engineering Sdn. Bhd. Has an organisational structure that is based on functions, and the management is in charge of the engineering operations, the logistics coordination and the administrative support. To ensure logistics work is organised according to project schedules and operational requirements, communication between drivers, administrative workers, and management is necessary.

However, logistics monitoring currently relies too heavily on self-reported data and paper-based records. The knowledge of the operational structure and logistics environment of RV Engineering Sdn. Bhd. Gives valuable background to the analysis of the logistics-related issues to be presented in the following section. This background provides context on the organisation's current management of vehicle use and fuel costs. It sets the stage for analysing the case issues and the governance problems the company must address.

2.3 Cases Issues

According to interviews carried out with the administrative staff of RV Engineering Sdn. Bhd., several major problems were identified in the company's logistics and fuel cost management practices. These problems stem from manual trip recording and reliance on trust to monitor lorries and fuel consumption for company-owned lorries. These problems affect operational efficiency, ethical compliance, and governance control in the organisation. In general, three primary concerns were identified: incomplete and inaccurate trip recording, abuse of company fuel cards, and ineffective monitoring and control systems. These problems are interconnected and lead to financial losses, lack of accountability, and weaknesses in governance in the company's logistics business.

2.3.1 Incomplete and inaccurate trip documentation

RV Engineering Sdn. currently records vehicle trip details, mileage, and fuel consumption using manual logbooks. Drivers are responsible for updating these logbooks at the end of their daily travels. Nevertheless, interview results show that trip recordings are often incomplete, incorrect, or revised with considerable delay. Some records lack vital information about the purpose of the trip or even the number of miles covered or fuel used. Manual documentation increases the risk of human error and inconsistent record-keeping. In peak season, drivers may focus on physical duties at the expense of updating logbooks and may therefore make late or no entries. The data recorded therefore does not necessarily reflect actual vehicle usage, and it is not easy to ensure that administrative staff verify expenses. Incomplete and incorrect trip documentation will limit management's ability to monitor vehicle use and fuel consumption. Without credible records, discrepancies between reported and actual usage may go unnoticed, undermining transparency and accountability in logistics activities.

2.3.2 Misuse of company fuel cards

The misuse of company-issued fuel cards is another important problem that has been identified during the interviews. Fuel cards should be used only when travelling on business in company cars. Nonetheless, administrative staff noted cases where fuel cards were used outside of office work, such as for personal travel. The ethical duty and misappropriation of organisational resources are violated when fuel cards are abused. Because there is no formal verification system, management cannot easily distinguish legitimate fuel expenditures from illegal use. Fuel receipts are not consistently or promptly submitted, making verification even harder. This problem has led to unnecessary fuel costs and wasted company money. Also, the lack of consequences or detection methods can encourage repeat misuse, further weakening ethical discipline and justice in the company.

2.3.3 Weak monitoring and control mechanisms

The logistics expense management system in RV Engineering Sdn. Bhd. relies heavily on trust-based practices and manual controls. Administrative staff must review logbooks and fuel receipts by hand, often after expenses have been incurred. This reactive approach does not allow timely detection of irregularities. The lack of real-time monitoring, a standard reporting format, and audit trails undermines internal control over logistics expenses. Management lacks a real-time view of vehicle movement or fuel consumption, which limits its ability to ensure accountability and take corrective measures when problems occur. Moreover, the segregation between data submission and verification functions is lacking, which increases governance risk. Drivers provide their records, and administrative staff authenticate them with incomplete information. This structure makes it hard to maintain transparency, traceability, and good governance in logistics operations.

3. Methodology

This part evaluates the logistics expenses management challenges encountered by RV Engineering Sdn. Bhd. through the current practice, determining the ethical and governance gaps in the company, and assessing the applicability of a digital solution to overcome these issues. The analysis is based on interview results, an examination of current operational processes, and a comparison of the current manual system with a proposed digital monitoring system.

3.1 Method of Analysis

A qualitative case study approach was adopted to analyse the logistics expense management practices at RV Engineering Sdn. Bhd. This approach is appropriate as it enables an in-depth understanding of operational procedures, ethical concerns, and governance weaknesses within a real organisational setting. Initial contact with the company was made through email to request permission for data collection and to arrange an interview session. Data was then collected through an interview conducted with the administrative personnel responsible for monitoring vehicle usage and fuel expenses. Due to practical constraints, the interview was conducted online using Google Meet. With the interviewee's consent, the session was recorded to ensure the accuracy and completeness of the information obtained. The recording allowed the scholars to review the responses carefully and minimise misinterpretation during analysis. In addition to the interview, the researcher

reviewed the existing logistics expense management workflow to understand how trip records and fuel expenses are currently documented and verified. The collected data was analysed by comparing the existing manual system (As-Is) with a proposed digital monitoring system (To-Be) using practical evaluation criteria, including accountability, transparency, data integrity, governance control, and operational practicality.

3.2 Analysis of The Existing System

Under the existing system, drivers are required to record trip details, mileage, and fuel usage manually in paper-based logbooks. Drivers make fuel purchases using company-issued fuel cards, but submit fuel receipts inconsistently to administrative personnel. Staff verify these records manually, usually after expenses have already been incurred. From an operational perspective, this manual process is inefficient and prone to human error. Trip records are often incomplete, inaccurate, or updated after delays, particularly during busy operational periods. As a result, the recorded data does not always reflect actual vehicle usage or fuel consumption. From a governance perspective, the As-Is system lacks key internal control elements such as standardised reporting formats, real-time monitoring, and reliable audit trails. Management has limited visibility over daily vehicle movements and fuel usage, reducing their ability to detect irregularities or enforce accountability. The reliance on trust-based reporting without verification mechanisms exposes the organisation to ethical risks and financial losses.

3.3 Ethical and Governance Evaluation

The issues identified in the existing logistics expense management system reflect broader ethical and governance weaknesses rather than isolated individual behaviour. Incomplete trip records and misuse of company fuel cards indicate weak accountability and inadequate stewardship of organisational resources. From an ethical perspective, the lack of structured monitoring mechanisms creates opportunities for unethical practices to occur undetected. When oversight is weak, employees may misuse company resources because they believe such actions will not be identified or penalised. This undermines integrity and fairness within the organisation, particularly among employees who comply with company policies. From a governance perspective, the lack of transparency and reliable audit trails weakens internal control. Manual documentation does not support effective verification or traceability, making it difficult for management to review expenses or investigate discrepancies. The absence of segregation between data submission and verification further increases governance risk and reduces accountability.

3.4 Evaluation Criteria for The Proposed Solution

To address the identified issues, the proposed solution must ensure accountability by clearly linking each trip and fuel expense to individual drivers. Transparency, records must be visible, traceable, and verifiable by management. Data integrity, the system must reduce errors and prevent manipulation. Governance control, the management must have oversight and approval authority. Lastly, operational practicality. The system must be easy to use and suitable for SME operations. These criteria are used to evaluate whether the proposed solution can effectively improve logistics expense management while strengthening ethical compliance and governance.

4. Result and Discussion

4.1 Analysis of The Proposed Digital Monitoring System

The proposed solution is a vehicle trip and expense monitoring system created with the help of AppSheet. AppSheet is a low-code application platform that allows the creation of mobile-based reporting systems without sophisticated programming; thus, it is suitable for small and medium-sized enterprises with limited technical resources. In the proposed system, drivers will provide trip information digitally via a mobile interface. The system captures the trip purpose, time, odometer, and fuel costs in structured fields. The automatic timestamping system ensures records are submitted on time, eliminating delays and memory-based reporting. To enhance data integrity and ethical responsibility, the system needs to support evidence in the form of photographic uploads of odometer readings and fuel receipts. Such checks and balances minimise the chances of fuel card abuse and improve visibility of expense reporting. The system links submissions to individual drivers, enhancing accountability and traceability. The system also includes an administrative review mechanism that enables authorised persons to check entered records, approve expenditure, or flag abnormal entries. This separates data entry from validation, strengthening internal and governance controls. A centralised record history also supports auditability and transparency. Operationally, the mobile-based system will minimise paperwork, simplify reporting, and improve efficiency. Meanwhile, it improves transparency in managing vehicle use and fuel costs. Overall, the proposed system is both an operational improvement and a governance tool that encourages ethical conduct and accountability.

4.2 Summary of Analysis

As the analysis indicates, the logistics expenses management problems within RVEngineering Sdn. Bhd. can be attributed to weaknesses in the system, including manual processes and monitoring that relies on trust. The current system lacks accountability, transparency, and effective governance controls, which puts the organisation at risk of ethical issues and financial losses. The proposed digital vehicle trip and expense monitoring system meets the identified evaluation criteria because it strengthens internal controls, improves data integrity, and increases transparency. The proposed solution offers a systematic and realistic way to improve logistics expense management by addressing operational inefficiencies and governance weaknesses. This discussion forms the basis for the discussion and recommendations in the following section.

4.3 Discussion

The section explains the solution to the problem of managing logistics expenses in RV Engineering Sdn. Bhd. and offers practical recommendations regarding the results of the case study. The discussion examines how the proposed digital monitoring system can address the identified issues, the potential disadvantages of the recommendation, and the practical steps required for implementation. The proposed digital vehicle trip and expense monitoring system directly addresses the weaknesses of the current manual logistics management process. The solution improves data accuracy, timeliness, and transparency by replacing paper-based logbooks with a structured digital reporting system. Submitting trip and fuel expense information in real time minimises delays and eliminates memory-based reporting. From an ethical perspective, the proposed system strengthens responsible stewardship by making employees answerable for the accuracy and legitimacy of each recorded trip and fuel expense. Linking submissions to individual drivers, requiring supporting evidence, and subjecting claims to administrative verification establishes consistent expectations for all users. The system is therefore not presented as a substitute for ethical judgement or organisational culture; rather, it reduces ambiguity, increases the likelihood that irregularities will be detected, and supports fair enforcement of company policies. In this way, it encourages ethical behaviour through clear responsibility and verifiable procedures rather than relying solely on trust or retrospective punishment. From a governance perspective, administrative review, verification, and role separation strengthen internal control by distinguishing responsibility for data submission from authority for approval. Standardised digital records give management more timely visibility of vehicle use and fuel expenditure, while supporting documents and record histories enable discrepancies to be traced and investigated. Transparency is therefore operationalised through accessible, consistent, and auditable information rather than through visibility alone. These features can support earlier corrective action, more consistent policy enforcement, and decisions justified by documented evidence.

5. Conclusion

5.1 Summary of Findings

This paper analysed logistics expense management in RV Engineering Sdn. Bhd. specifically on the ethical and governance challenges associated with the application of manual trip recording and fuel expense management systems. The results indicated that paper-based logbooks and trust-based reporting have contributed to incomplete documentation, misuse of company fuel cards, and weak monitoring and internal controls. This has led to losses in the organisation and a lack of accountability and governance. This study used a qualitative case study method to examine the current logistics expense management system and assess its weaknesses operationally, ethically, and in terms of governance. The analysis showed that the current system lacks transparency, has poor data integrity, and is not managed effectively to support responsible resource management in a dynamic engineering project environment. To address these issues, this paper introduced a digital vehicle trip and expense monitoring system built on a low-code platform suitable for small and medium-sized companies. The suggested system provides formalised digital reporting, verification systems, and administrative review capabilities that enhance accountability, transparency and internal control. The system gives management better visibility into logistics activities, and by associating expenses with individual drivers, it is not only an operational improvement but also a governance tool that encourages ethical behaviour.

Although constraints such as user compliance, connectivity, and platform scalability exist, they can be managed through appropriate training, gradual implementation, and ongoing system monitoring. The guidelines in this paper offer a practical guide to applying the proposed solution in an actual organisational environment. Finally, this paper contributes to research on ethical business and transparency by showing that digital expense management can convert abstract governance principles into routine operational controls in an engineering-based SME. Its empirical contribution is identifying how incomplete trip records, fuel-card misuse, delayed verification, and weak role separation create linked ethical and governance risks. Its conceptual contribution frames digital expense management as an accountability and transparency mechanism, not only a cost-control technology. Its practical contribution is a feasible low-code model that combines attributable submissions, documentary evidence, administrative verification, and auditable records. Although the findings arise from a single organisational case and the proposed system has not been evaluated through a full-scale longitudinal implementation, the study provides an analytically transferable control framework that similar project-based SMEs can assess and adapt to their operational contexts.

5.2 Recommended Actions and Implementation Plan

To ensure the successful implementation of the proposed system, several key recommendations are outlined. First, deploy the system in stages, starting with a pilot phase. During this initial phase, a small group of drivers and vehicles will be involved. This will allow management to assess the system's functionality, identify operational issues, and address them before proceeding with a full-scale implementation. Additionally, staff training is essential for the smooth adoption of the system. Both drivers and administrative staff need training on system use, including the data entry process and the importance of verifying data accuracy. Emphasis should be placed on the ethical responsibility of reporting accurate information and the implications of failing to do so. Another crucial recommendation is the appointment of a system administrator. This individual will oversee user access, ensure proper use of the system, and maintain data integrity. The role is key to implementing governance protocols, providing checks and balances, and handling any system-related issues that arise. Moreover, policy alignment is critical for the system's success. Review and update existing logistics and fuel-usage policies to align with the new system. Employees should receive clear guidelines on how to use the fuel cards, reporting requirements, and the consequences of non-compliance with the updated procedures. Finally, once the pilot

phase has been successfully completed, the system can be fully implemented across all vehicles and personnel. This will ensure a uniform approach to managing logistics expenses and help streamline operations across the organisation.

5.3 Limitations and Recommendation

Although the proposed solution has advantages, it also has several limitations. First, the system's efficiency requires consistent user compliance. Drivers who resist change or provide incorrect data can reduce the system's effectiveness. Second, the system relies on mobile devices and an internet connection, which may not be available in some project areas. Third, AppSheet may be limited in advanced customisation and scalability compared with fully customised enterprise systems, since it is a low-code platform. Change management should highlight the system's benefits and engage employees early to reduce resistance. Continuous training and communication can help overcome acceptance and resistance. Data submission processes can also enable temporary offline data entry, which can be synchronised once connectivity is reestablished to address connectivity issues. The system's limitations can be addressed by regularly reviewing its performance and gradually enhancing it as operational needs change.

5.4 Industrial Relevant Best Practices

The development of the suggested system must proceed in a realistic, structured order to ensure smooth integration. First, it is essential to secure management acceptance and assign clear responsibility for overseeing the entire process. Once this foundation is established, the next step is to install the system in a way that aligns with the company's specific needs and meets all technical requirements. Following the installation, pilot testing should be conducted with a selected group of users. This creates a controlled environment where the system's performance can be evaluated, and potential issues can be identified early. After pilot testing, the next step is to train drivers and administrative staff to use the system properly. This ensures all employees have the knowledge needed to operate the system effectively. Once training is complete, gather user feedback and use it to improve the system's features. This iterative process ensures that any issues identified during testing or early usage can be addressed before full-scale implementation. After refining the system, the next step is to implement it across all operations, ensuring that every relevant aspect of the company is integrated into the system. Finally, once the system is operational, it is crucial to track its usage and enforce the rules to ensure compliance and maximise the system's effectiveness. The gradual implementation of this methodology will help minimise disruptions to ongoing operations and facilitate a smoother adoption process for all employees involved.

Acknowledgements

The authors gratefully acknowledge Universiti Malaysia Pahang Al-Sultan Abdullah for providing the necessary resources and facilities for this research. The authors gratefully acknowledge the support and cooperation of the respondents and retail personnel who contributed their insights to this study. Their participation provided valuable operational perspectives on inventory monitoring, expiry control, and governance practices in the retail context.

Funding

This study was not supported by any grants from funding bodies in the public, private, or non-profit sectors.

Declaration of Competing Interests

The authors declare no conflict of interest related to the conduct, analysis, or publication of this study.

CRediT Author Contribution Statement

M. A. A. Abd Aziz: Conceptualisation; Supervision; Writing – original draft; Writing - review & revise

N. A. Zaiful Zaman: Methodology, Analysis; Writing – original draft

M. F. Hj Azmir: Analysis; Writing - review & revise

M. R. Mohd Ariffin: Methodology; Writing - review & revise

F. Yudi: Validation; Methodology; Writing - review & revise

Availability of Data and Materials

The data supporting this study are available from the corresponding author upon reasonable request, subject to confidentiality and ethical considerations.

Ethics Statement

Not applicable.

Generative Artificial Intelligence Disclosure

No generative artificial intelligence tools were used in the preparation of this manuscript. All intellectual content is original and solely attributable to the authors. We used AI-based tools solely for language editing and grammar refinement. No AI content generation or data interpretation was performed. All intellectual contributions are original and solely attributable to the authors.

References

- Ali, Lee, Y. S., Alias, A. R., & Rahman, R. A. (2024). Integration of circular economy into design and construction of infrastructure projects in Malaysia: Barriers and countermeasures. *Planning Malaysia*, 22(3), 118-135. <https://doi.org/10.21837/pm.v22i32.1497>
- Ardi, A., Cahyadi, H., Meilani, Y. F. C. P., & Pramono, R. (2024). Talent attraction through flexible work anytime from anywhere. *Journal of Infrastructure, Policy and Development*, 8(3), 2998. <https://doi.org/10.24294/jipd.v8i3.2998>
- Azmi, E. A., & Che Ibrahim, C. K. I. (2025). Catalysing growth of civil engineers through capacity building in Malaysia's construction industry. *Jurnal Kejuruteraan*, 37(4), 1967–1984. [https://doi.org/10.17576/jkukm-2025-37\(4\)-35](https://doi.org/10.17576/jkukm-2025-37(4)-35)
- Dauda, J. A., Ajayi, S., Omotayo, T., Oladiran, O. O., & Ilori, O. M. (2023). Implementation of lean for small- and medium-sized construction organisational improvement. *Smart and Sustainable Built Environment*, 13(3), 496-511. <https://doi.org/10.1108/SASBE-10-2022-0233>
- Dharmapalan, V., O'Brien, W. J., & Morrice, D. J. (2021). Defining supply chain visibility for industrial construction projects. *Frontiers in Built Environment*, 7, 651294. <https://doi.org/10.3389/fbuil.2021.651294>
- Dhawan, K., Tookey, J. E., GhaffarianHoseini, A., & GhaffarianHoseini, A. (2022). Greening construction transport as a sustainability enabler for New Zealand: A research framework. *Frontiers in Built Environment*, 8, 871958. <https://doi.org/10.3389/fbuil.2022.871958>
- Eton, M., Mwosi, F., & Ogwel, B. P. (2022). Are internal controls important in financial accountability? (Evidence from Lira District Local Government, Uganda) *International Journal of Financial, Accounting, and Management*, 3(4), 359–372. <https://doi.org/10.35912/ijfam.v3i4.810>
- Haglund, P., & Janné, M. (2023). Organising construction logistics outsourcing: A logistics strategy perspective. *Construction Innovation*, 24(7), 223-238. <https://doi.org/10.1108/CI-01-2023-0017>
- Ikumapayi, O. M., Laseinde, O. T., Elewa, R. R., Ogedengbe, T. S., & Akinlabi, E. T. (2024). Smart sensors for real-time monitoring in a sustainable logistics. *E3S Web of Conferences*, 552, 01079. <https://doi.org/10.1051/e3sconf/202455201079>
- Ismail, N. A. A., Aswad Zulkifli, M. Z., Azrin Baharuddin, H. E., Wan Ismail, W. N., & Mustapha, A. A. (2022). Challenges of adopting building information modelling (BIM) technology amongst SMEs contractors in Malaysia. *IOP Conference Series: Earth and Environmental Science*, 1067(1), 012047. <https://doi.org/10.1088/1755-1315/1067/1/012047>
- Kabeyi, M. J. (2018). Ethical and unethical leadership issues, cases, and dilemmas with case studies. *International Journal of Applied Research*, 4(7), 373–379. <https://doi.org/10.22271/allresearch.2018.v4.i7f.5153>
- Lopes, J., & Banaitienė, N. (2024). A model for construction sector development in middle-income sub-Saharan African countries. *Technological and Economic Development of Economy*, 30(5), 1229–1255. <https://doi.org/10.3846/tede.2024.21453>
- Muslim, M. (2025). The failure of governance and internal controls in preventing fraud in the company. *Advances in Managerial Auditing Research*, 3(1), 15–29. <https://doi.org/10.60079/amar.v3i1.418>
- Radman, K., Jelodar, M. B., Lovreglio, R., Ghazizadeh, E., & Wilkinson, S. (2022). Digital technologies and data-driven delay management process for construction projects. *Frontiers in Built Environment*, 8, 1029586. <https://doi.org/10.3389/fbuil.2022.1029586>
- Rajesh, M. (2020). Improving construction logistics: A case study of residential and commercial building project. *International Journal for Research in Applied Science and Engineering Technology*, 8(5), 1628–1631. <https://doi.org/10.22214/ijraset.2020.5265>
- Rathod, G., More, S., Patil, A., & Ahir, S. (2022). Logistics & supply chain management using the power of blockchain. *ITM Web of Conferences*, 44, 03048. <https://doi.org/10.1051/itmconf/20224403048>
- Rivadeneira, R. (2023). *OECD infrastructure governance indicators* (OECD Working Papers on Public Governance No. 59). OECD Publishing. <https://doi.org/10.1787/95c2cef2-en>
- Szcześniak, J., & Gorzelańczyk, P. (2024). Analysis of the use of logistics-telematics systems for cost reduction in a transport company. *Journal of Sustainable Development of Transport and Logistics*, 9(1), 6–18. <https://doi.org/10.14254/jsdtl.2024.9-1.1>
- Taware, P. B. (2023). Vehicle tracking and fuel monitoring system. *International Journal for Research in Applied Science and Engineering Technology*, 11(5), 5998–6001. <https://doi.org/10.22214/ijraset.2023.52794>
- Tiye, K., & Gudeta, T. (2018). Logistics management information system performance for program drugs in public health facilities of East Wollega Zone, Oromia regional state, Ethiopia. *BMC Medical Informatics and Decision Making*, 18(1), 133. <https://doi.org/10.1186/s12911-018-0720-9>
- Umar, M. O., Okwandu, A. C., & Akande, D. O. (2024). Innovations in project monitoring tools for large-scale infrastructure projects. *International Journal of Management & Entrepreneurship Research*, 6(7), 2275–2291. <https://doi.org/10.51594/ijmer.v6i7.1294>