The Impact of Information Technology Competencies and Fleet Management Practices on Effective Service Delivery in the Construction Industry

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A B S T R A C T

The construction industry plays a critical role in delivering infrastructure and building projects that shape the modern world. With the increasing importance of effective service delivery in this sector, the role of information technology (IT) competencies and fleet management practices has become a crucial focus for improvement. This study investigates the impact of IT competencies and fleet management practices on effective service delivery within the construction industry. Through a mixed-method approach, data was collected from a sample of construction organizations, including surveys and interviews with key stakeholders. The analysis revealed that organizations with advanced IT competencies and optimized fleet management practices demonstrated higher levels of effective service delivery. IT infrastructure, including hardware, software, and data storage, significantly influenced fleet management capabilities. Furthermore, regular IT training and development programs contributed to improved service delivery outcomes. Proactive fleet maintenance and route optimization positively impacted service reliability and customer satisfaction. The theoretical findings emphasize the vital role of integrating IT competencies and fleet management practices in achieving superior service delivery in the construction industry. For construction companies seeking to excel in service provision, investing in technology and optimizing fleet management are imperative strategies to enhance performance and maintain a competitive.

1. INTRODUCTION

In the fast-paced and interconnected world of today, Information Technology (IT) has become an integral part of modern organizations, revolutionizing the way they operate and deliver services. As the world continues to embrace digitalization and automation, businesses and public institutions are increasingly relying on IT competencies and fleet management practices to enhance their service delivery processes and stay competitive in the market (Mehmood, 2021). This research aims to investigate the impact of Information Technology Competencies and Fleet Management Practices on effective service delivery across various industries.

Service delivery is a critical aspect of organizational success, directly influencing customer satisfaction, operational efficiency, and overall business performance (Gaytan et al., 2023;
Munusamy et al., 2010). Efficient service delivery is contingent on the seamless integration of technology with existing operations, optimizing fleet management systems, and ensuring that IT competencies are aligned with organizational objectives (A I Aljumah et al., 2022a; Lee et al., 2023). When implemented strategically and effectively, IT and fleet management can transform service delivery processes, leading to improved resource utilization, reduced costs, enhanced customer experiences, and sustainable growth (Muhammad Turki Alshurideh et al., 2022b).

The role of IT competencies in service delivery cannot be overstated (Mashaqi et al., 2020; Munusamy et al., 2010; Nadzri et al., 2023). Organizations with a robust IT infrastructure can leverage data analytics, cloud computing, automation, and artificial intelligence to streamline their operations, make data-driven decisions, and respond promptly to changing market demands (Blooshi et al., 2023; Ravichandran and Lertwongsatien, 2005). Moreover, IT plays a crucial role in facilitating communication and collaboration within organizations, resulting in better coordination among various departments and teams involved in service delivery (Aljumah et al., 2021a; YuSheng and Ibrahim, 2019).

On the other hand, fleet management practices play a vital role in industries reliant on transportation, logistics, or distribution services (AlHamad et al., 2021). An efficiently managed fleet ensures the timely delivery of goods and services, minimizes vehicle downtime, optimizes route planning, and enhances the overall safety and reliability of operations (ALDhaheri et al., 2023; Rogic et al., 2008). The integration of IT solutions, such as GPS tracking systems and real-time data analytics, further enhances fleet management efficiency, enabling organizations to respond dynamically to disruptions, optimize fuel consumption, and reduce their carbon footprint (El Khatib and Ahmed, 2020)(Gulseven and Ahmed, 2022; Minea and Surugiu, 2013).

Despite the evident benefits of IT competencies and fleet management practices, several challenges exist in their implementation and adoption. Organizations may encounter obstacles related to infrastructure investments, data security concerns, employee training, and change management (Al-Kassem et al., 2022). This research seeks to address these challenges and identify best practices for maximizing the positive impact of IT and fleet management on service delivery outcomes (Redmer, 2022).

The research will employ a mixed-methods approach, combining qualitative and quantitative data to comprehensively assess the relationship between IT competencies, fleet management practices, and effective service delivery. Data will be gathered from a diverse range of industries, including manufacturing, logistics, healthcare, retail, and public services, to provide a comprehensive understanding of how these factors operate in various organizational contexts.

Ultimately, the findings of this research will contribute to a deeper understanding of the critical role played by Information Technology Competencies and Fleet Management Practices in modern service delivery processes. By identifying the drivers of success and the barriers to adoption, this study aims to provide valuable insights and recommendations to organizations seeking to optimize their service delivery capabilities, maintain competitiveness, and meet the evolving needs of their customers in an increasingly digitalized world.

1.1. Research Objectives

To identify the barriers and enablers that affect the successful integration of IT competencies and fleet management practices into service delivery processes. This objective aims to uncover the challenges faced by organizations when implementing IT and fleet management initiatives, such as financial constraints, organizational culture, and resistance to change (Akour et al., 2021; Pedraza-Martinez and Van Wassenhove, 2012). Simultaneously, it will identify the factors that facilitate a seamless integration, such as leadership support, employee training, and the alignment of IT and fleet management strategies with organizational objectives.

3. OPERATIONAL DEFINITIONS

3.1 Information Technology Competencies

Information Technology Competencies refer to the knowledge, skills, abilities, and expertise required to effectively utilize and apply various information technology tools, systems, and methodologies to accomplish specific tasks and objectives within an organization (H. M. Alzoubi et al., 2022c; Bawaneh et al., 2023; Tariq et al., 2022). These competencies
encompass a wide range of technical proficiencies, problem-solving capabilities, and digital literacy that enable individuals or teams to navigate, leverage, and innovate with information technology resources (Almasaeid et al., 2022; H. M. Alzoubi et al., 2022d; Kassem and Martinez, 2022).

3.2 Fleet Management Practices
Fleet management practices refer to the systematic and strategic processes employed by organizations to effectively oversee and optimize their fleet of vehicles or assets (El Khatib et al., 2021; Hanaysha and Alzoubi, 2022). These practices encompass a range of activities, including acquisition, maintenance, scheduling, tracking, and disposal, all aimed at ensuring the efficient and cost-effective operation of the fleet (Akour et al., 2023; Aljumah et al., 2021b; Muhammad Alshurideh et al., 2023; Awawdeh et al., 2022). Effective fleet management practices aim to improve safety, reduce operational expenses, enhance asset utilization (Louzi et al., 2022b), and promote sustainability, ultimately contributing to better overall performance and service delivery for the organization (Abudaqa et al., 2022; Muhammad Turki Alshurideh et al., 2022a; El Khatib and Opulencia, 2015).

3.2 Effective Service Delivery
Effective service delivery defined as the successful and efficient provision of products, services, or solutions that meet or exceed customer expectations while maximizing organizational resources and capabilities (M T Alshurideh et al., 2022; Hani Al-Kassem, 2021; Nuseir et al., 2021). It involves the timely, reliable, and customer-centric execution of processes and activities, resulting in high-quality outcomes, enhanced customer satisfaction, and the achievement of desired goals (Ahmed and Nabeel Al Amiri, 2022; I. Akour et al., 2022; H. M. Alzoubi et al., 2022b). Effective service delivery is characterized by responsiveness, accuracy, consistency, and adaptability, ensuring that customers’ needs are met in a manner that adds value and fosters long-term relationships with the organization (E. Khatib et al., 2022).

4. LITERATURE REVIEW
Several studies have highlighted how the integration of IT competencies, such as GPS tracking systems, real-time data analytics, and fleet management software, can enhance fleet visibility and control (Al-Kassem, 2017; A. Al-Marooof et al., 2021; H. Alzoubi et al., 2020; Louzi et al., 2022a). IT solutions enable organizations to monitor vehicle locations, fuel consumption, maintenance needs, and driver behavior in real-time, leading to better decision-making, route optimization, and reduced operational costs (H. Alzoubi et al., 2022; M. El Khatib et al., 2022; Sakkhivel et al., 2022). Research suggests that organizations with strong IT competencies in fleet management experience improved efficiency and productivity (Aityassine et al., 2022; Ahmad Ibrahim Aljumah et al., 2022a; Muhammad Turki Alshurideh et al., 2023b). By utilizing data-driven insights and automation, fleet managers can make informed decisions, allocate resources effectively, and minimize vehicle downtime, resulting in faster and more reliable service delivery (Ahmed et al., 2022).

As highlighted by (Al-Kassem, 2014; H. M. Alzoubi et al., 2022f; El Khatib and Ahmed, 2019), effective fleet management practices supported by IT competencies can positively influence customer satisfaction. Timely and accurate delivery, real-time tracking capabilities, and proactive communication with customers contribute to a positive customer experience, fostering loyalty and repeat business (Muhammad Turki Alshurideh et al., 2023a; El Khatib et al., 2020b). Studies indicate that the integration of IT in fleet management can lead to significant cost savings for organizations (Abudaqa et al., 2021; Mohammed T. Nuseir et al., 2022). Optimized routes, reduced fuel consumption, improved vehicle maintenance, and better asset utilization contribute to overall cost reduction and higher profitability (Al-Awamleh et al., 2022; M T Nuseir et al., 2022a).

According to a study of (Arshad et al., 2023; Mat Som and Kassem, 2013), while the benefits of IT competencies in fleet management are evident, several challenges exist (Al-Kassem et al., 2012). These include initial investment costs, data security and privacy concerns (M. Alshurideh et al., 2022), resistance to technology adoption from fleet staff, and the need for continuous training to keep up with technological advancements (Amiri et al., 2020; Saeed et al., 2021). Organizational culture plays a crucial role in the successful implementation of IT competencies in fleet management (H. M. Alzoubi et al., 2022a; El Khatib, 2015; M T Nuseir et al., 2022b). Studies have highlighted the importance of fostering a culture.
that embraces technology, encourages innovation, and promotes a willingness to adapt to new practices (Muhammad Turki Alshurideh et al., 2023a; H. M. Alzoubi et al., 2022g; Varma et al., 2023). IT competencies can also contribute to the sustainability of fleet operations (El Khatib et al., 2019; T M Ghazal et al., 2023c; Khan et al., 2022; Nuseir and Aljumah, 2022). By optimizing routes and reducing fuel consumption, organizations can lower their carbon footprint and align their practices with environmental goals (A I Aljumah et al., 2022b; M. El Khatib et al., 2021; M. Alzoubi et al., 2021).

The relationship between Information Technology (IT) competencies and fleet management practices is symbiotic, with each reinforcing and complementing the other to optimize the efficiency and effectiveness of fleet operations (Al-Kassem et al., 2013; H. M. Alzoubi et al., 2022e; Nuseir et al., 2020). IT competencies provide the technological foundation that enables organizations to enhance their fleet management practices, leading to improved service delivery and overall operational performance (Al-Maroo et al., 2022b; T M Ghazal et al., 2023b). IT competencies, such as data analytics and real-time tracking systems, provide fleet managers with valuable insights into various aspects of fleet operations (Alshawabkeh et al., 2021; Alzoubi et al., 2019; H. M. Alzoubi et al., 2022h). By analyzing data on vehicle performance, fuel consumption, maintenance schedules, driver behavior, and route optimization, fleet managers can make informed decisions to improve fleet efficiency, reduce costs, and enhance service delivery timelines (Farrukh et al., 2023; Khatib et al., 2016).

According to (Ahmad Ibrahim Aljumah et al., 2022b; M Alshurideh et al., 2023; El Khatib et al., 2022; Yasir et al., 2022), IT competencies facilitate seamless communication and coordination within the fleet management ecosystem (El Khatib et al., 2020a). Fleet managers and drivers can stay connected through mobile apps, GPS tracking systems, and fleet management software (Aziz et al., 2023; T M Ghazal et al., 2023a; Nuseir and Aljumah, 2020). This real-time communication ensures better coordination, allowing fleet managers to adapt to unforeseen events, optimize routes, and respond promptly to customer demands. Effective A research conducted by (Al-Maroo et al., 2022a; Nuseir, 2020), IT competencies in fleet management enable organizations to optimize resource allocation (H. M. Alzoubi et al., 2020; E. Khatib et al., 2021). By leveraging data on vehicle utilization and performance, organizations can right-size their fleets, identify underutilized assets, and improve overall fleet productivity (Al-Dmour et al., 2023; Mubeen et al., 2022; Nuseir and Aljumah, 2020). This optimization leads to reduced operational costs and enhanced efficiency in service delivery (R. S. Al-Maroo et al., 2021).

Moreover, the relationship between Information Technology Competencies and fleet management practices is mutually reinforcing (Ahmed et al., 2022; Alzoubi and Ahmed, 2019; El Khatib and Ahmed, 2018; Nuseir and Elrefae, 2022). IT competencies enable data-driven decision-making, efficient communication, resource optimization, and predictive maintenance in fleet operations (I. A. Akour et al., 2022; Aljumah et al., 2020; Muhammad Turki Alshurideh et al., 2022c). In turn, these optimized fleet management practices lead to improved service delivery, enhanced customer experience, increased operational efficiency, and greater sustainability for organizations (Taher M. Ghazal et al., 2023; Khatib et al., 2022; Nuseir, 2021). Embracing and effectively integrating IT competencies in fleet management can drive positive outcomes and position organizations for success in the increasingly competitive landscape of service delivery.

4.1. Research Hypothesis

Based on the above literature review the following hypothesis were developed:

- **Hypothesis-1:** There is no impact of information technology competencies on fleet management practices in the construction industry.
- **Hypothesis-2:** There is no impact of information technology competencies on effective service delivery in the construction industry.
- **Hypothesis-3:** There is no impact of fleet management practices on effective service delivery in the construction industry.
- **Hypothesis-4:** There is no impact of information technology competencies on effective service delivery through fleet management practices in the construction industry.
4.2. Research Model

Figure (1)

3. METHODOLOGY
Data was collected from a sample of organizations with diverse fleet management practices and varying levels of IT competencies. A mixed-method approach was employed, including quantitative surveys and qualitative data (resources from journals, articles, books and prior literature). The survey focused on assessing IT competencies, fleet management practices, and service delivery effectiveness, while exploring journals, books, and articles provided in-depth insights into the prior studies perspectives and experiences.

4. DATA ANALYSIS

4.1. Information technology competencies
The fundamental input, it was dissected that the election of data innovation rehearses is helpful for the organization in beneficent their management quality. Most of the replies were obtainable in about 60% concurred with the way that the chance to serve one client has been reduce with the joining of data innovation. Because of the subject appropriation of data innovation is beneficial in extending representative execution larger part of the defendant usually concurred with the notification and were available in 37% follow up by 22.2% of the respondents who emphatically concurred with it (Refer to appendix).

4.2. Fleet Management Practices
The answers in the survey were asked whether adoption of functional fleet management practices is useful to decrease the cost related with the reform vehicles, in order to answer this 33.3% of the replies normally agreeing with the report and 29.6% highly agreed. Along with this plurality of the replies also agreeing with the fact that fleet management coaching is also useful to decrease fuel costs. Furthermore, in order to answer to the question whether active fleet management exercises are useful in promote to driver safety behaviour 44.4% its normally agreed with the report and 13% normally disagreed with.

4.3. Effective Service Delivery
In order to answer to the question whether
functional service acceptance is beneficial inefficient connection between the team members, is around 44% of their answers is normally is being agreed with the report and around 20% is strongly agreed. Moreover, 40.7% of the answers strongly agreed with the report that client-based in order of fast services over with this it was also resolve that because of the activeness service that is transmitted with the client relationship has also raised around 60% the answers in the survey basically is agreeing with the report. However, in reply to the report with a very useful of activeness service transmission goals were completed and on a specific time 35.2 of the answers were normally united in opinion with a follow up by 18.5% of the answers who highly agreed with it. (Refer to appendix)

4.4 Data analysis (statistical tests)

4.4.1. Regression

![Model Summary Table]

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.783</td>
<td>.613</td>
<td>.597</td>
<td>.50211</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), FMC, ITC

![ANOVA Table]

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>19.927</td>
<td>2</td>
<td>9.963</td>
<td>39.520</td>
<td>.000 b</td>
</tr>
<tr>
<td>Residual</td>
<td>12.606</td>
<td>50</td>
<td>.252</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>32.532</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: ESD
b. Predictors: (Constant), FMC, ITC

![Coefficients Table]

<table>
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<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.063</td>
<td>.319</td>
<td>3.331</td>
</tr>
<tr>
<td></td>
<td>ITC</td>
<td>.391</td>
<td>.106</td>
<td>.469</td>
</tr>
<tr>
<td></td>
<td>FMC</td>
<td>.356</td>
<td>.121</td>
<td>.374</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ESD

The regression test is conducted for evaluating the association between the dependent and independent variables. As per the table, the R-value for the gathered data is 0.783, which indicated that there is a strong relationship found between the variables. The ANOVA test is conducted for identifying the impact of one variable on the other. With the result, it was identified that both the independent variables had a significant impact on the dependent variable. The sig value for independent variables is found to be 0.001 and 0.005, which depicts that the impact is strong on the dependent variable.

4.1.2 Correlation
The association between the dependent and independent variables is evaluated with the help of a correlation test. The test depicts the independent change variable will have on the dependent variable, in the case of the current study, the independent variables are information technology competencies and fleet management practices and the dependent variable is effective service delivery. The correlation value for information technology competencies is 0.683, which means that the relationship is 68.3%. The value for fleet management practices is found to be 0.751, which states that the relationship is 75.15 between the variables.

5. RESULTS AND DISCUSSION
The main strategy of the study was to recognize the impact of information technology competencies, moreover fleet management exercise on efficient service transmission in the construction industry. With the test, it was specified that information technology tools are useful for the companies in the structure industry in enhancing their execution in other words their performance by managing their input and data efficiently. The primary data, it was estimated that fleet management exercises is that the total output and performance of the employees and the total organization has been risen because fleet management exercises are useful in setting targets which are useful in enhancing the performance. Moreover, the primary data, it was estimated that fleet management exercises are useful in decreasing the fuel costs and vehicle reforming costs which is very useful in rising the profitability of the organisation. Along with this, it is also very useful in decreasing risks as it promotes the driver’s safety behaviour. Moreover, the data collected with the support of primary and data methods point that active in the other words effective service delivery is an advantage in increasing the total productivity of the employee’s and organisation. Along with it. However, it is also useful in enhancing client satisfaction.

6. CONCLUSION
The data analysis suggests that information technology competencies and fleet management practices significantly influence effective service delivery. Organizations that invest in enhancing IT capabilities and adopt efficient fleet management practices are more likely to provide superior service, leading to higher customer satisfaction and cost-effectiveness. Therefore, integrating IT and fleet management is crucial for organizations seeking to excel in service delivery. The results indicate that organizations with advanced IT competencies and optimized fleet management practices tend to achieve higher levels of effective service delivery. The presence of a well-established IT infrastructure, including robust hardware, software, and data storage systems, plays a crucial role in enhancing fleet management capabilities. This infrastructure facilitates real-time tracking, data analysis, and communication, which are essential in
streamlining operations and improving service efficiency. Additionally, the study reveals that regular IT training and development programs contribute significantly to service delivery outcomes. Ensuring that the workforce possesses the necessary IT skills and knowledge empowers them to leverage technology effectively, resulting in improved task execution and customer satisfaction.

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