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Assessment of the Effect of Fleet Management Software on Operational Performance: A of Case of Tanzania Electric Supply Company Limited

Farida Mohamed

Faculty of Logistics and Business Studies, National Institute of Transport, P. O Box 705, Dar es Salaam-Tanzania

faridamohd502@gmail.com

Abstract *— This study examines the impact of Fleet Management Systems (FMS) on operational performance, with emphasis on the Transport Management Information System (FMS) implemented at the Tanzania Electric Supply Company Limited (TANESCO). Guided by the Technology Acceptance Model (TAM) and the Resource-Based View (RBV), the research analyzed perceived usefulness, perceived ease of use, and personnel proficiency as determinants of operational performance. A quantitative approach was applied, using structured questionnaires distributed to 85 fleet personnel, with 78 valid responses analyzed through descriptive statistics and multiple regression in SPSS. Findings revealed that perceived usefulness and perceived ease of use had significant positive effects, with ease of use being the strongest predictor. Personnel proficiency, though positively rated, was not statistically significant when controlling for other variables. The study concludes that FMS effectiveness depends more on usability and institutional integration than individual skill levels. Recommendations emphasize system usability enhancements, enterprise integration, and performance-linked training.*

Keywords *— Operational performance, Perceived usefulness; Perceived ease of use; Personnel proficiency; Fleet management systems.*

I. INTRODUCTION

Fleet Management Software (FMS) has become an essential tool for improving operational performance in governmental organizations across the globe. The adoption of FMS globally has led to increased efficiency, cost savings, and enhanced service delivery (Belachew & Abite 2022). For instance, the use of GPS tracking, telematics, and route optimization has helped reduce vehicle downtime, improve fuel management, and enable real-time vehicle monitoring (Kaluvakuri & Peta, 2024).

In countries such as the United States and those in Europe have widely implemented FMS to streamline fleet operations. In the U.S., for instance, the integration of telematics into fleet management has enabled companies to monitor vehicle performance, optimize routes, and ensure compliance with safety regulations, thereby enhancing overall operational performance (Klinedinst & King, 2016). European nations have leveraged FMS to reduce fuel consumption and emissions, contributing to both economic and environmental benefits (Ojanen & Happonen, 2019).

Regionally, in Africa, fleet management systems have proven instrumental in addressing challenges such as poor route management, fuel inefficiency, and high operational costs. With the growth of technology in the region, many African nations have adopted FMS solutions to optimize fleet performance and reduce environmental impact (Nyoro & Planning, 2016).

In Tanzania, the transportation sector is pivotal to economic development, facilitating the movement of goods and people across the country. The introduction of FMS presents a viable solution to these challenges by offering tools for real-time vehicle tracking, predictive maintenance, and driver behavior monitoring (Wilson & Gashaza, 2004). Government organizations like the TANESCO have increasingly recognized the importance of optimizing fleet management to improve operational performance.

At the TANESCO, fleet operations play a crucial role in supporting transportation services, yet challenges such as high fuel consumption, inefficient vehicle maintenance, and poor driver performance persist. The introduction of FMS presents an opportunity to enhance fleet performance by providing real-time vehicle tracking, fuel monitoring, and predictive maintenance solutions. Therefore, this study aimed to assess the effect of FMS on performance of government vehicles in Tanzania particularly focusing on the perceived usefulness, ease of use, and personnel proficiency.

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Efficient fleet management is crucial for organizations that rely on transportation for service delivery, yet many institutions face challenges in optimizing fleet operations. Inefficiencies in fuel consumption, vehicle maintenance, and driver performance continue to hinder operational effectiveness (Shukri et al., 2013). Despite the adoption of various fleet management strategies, the absence of a comprehensive FMS solution has resulted in increased costs and delays in service provision, ultimately affecting organizational performance and customer satisfaction.

Previous studies on fleet management have focused on general vehicle maintenance and operational efficiency but have not thoroughly examined the role of fleet management software in addressing these challenges (Boesch et al., 2016). Research has largely overlooked how digital fleet management solutions can enhance performance in public institutions like TANESCO. While studies in other sectors highlight the benefits of FMS, such as improved fuel tracking and predictive maintenance.

The inefficiencies in fleet management have broad implications, affecting not only operational costs but also service delivery and overall organizational effectiveness. Poor vehicle maintenance results in frequent breakdowns, delayed response times, and increased expenditure on repairs, while inefficient fuel management leads to financial losses (Young & Regan, 2007).

This study aims to evaluate the effect of fleet management software on operational performance by assessing key performance areas particularly focusing on the perceived usefulness, ease of use, and personnel proficiency. This study provides empirical evidence on how fleet management software can address specific inefficiencies within a public utility company. By doing so, it offers practical recommendations for TANESCO and other organizations looking to optimize fleet operations through digital solutions.

II. LITERATURE REVIEW

This section presents both theoretical and empirical literature review of the study.

II.1 Theoretical Literature Review

The key theories considered in this study are Resource-Based View (RBV) Theory and the Technology Acceptance Model (TAM).

Resource-Based View (RBV) Theory

RBV theory, introduced by Jay Barney in 1991, emphasizes that a firm's internal resources and capabilities are pivotal to gaining and sustaining a competitive advantage. RBV suggests that resources, whether tangible or intangible, that are valuable, rare, inimitable, and non-substitutable, significantly enhance organizational performance. In the context of FMS at TANESCO, this theory highlights how the integration of technology, skilled personnel, and organizational capabilities can drive operational efficiency.

RBV theory highlighted that, personnel are considered a critical resource in RBV, and their capabilities directly influence how technological tools like FMS are implemented and utilized. The proficiency of fleet managers and staff in using FMS determines whether the technology's potential is fully realized. A skilled workforce, trained to leverage the software's capabilities, enables better decision-making, more efficient fleet tracking, and improved maintenance schedules. Thus, RBV helps explain how TANESCO's human resources, when aligned with the right technological tools, can lead to superior operational performance.

By applying RBV, the study investigates how personnel proficiency, as a vital resource, contributes to the effective use of FMS and, consequently, enhances operational performance. The theory provides a structured framework for analyzing the interaction between technological resources (FMS) and human resources (fleet managers' skills), offering insights into how these internal capabilities contribute to better operational outcomes.

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Figure 1: Resource-Based View (RBV) and its Key Points.
Source: Githaiga (2020).

Technology Acceptance Model (TAM)

TAM developed by Davis (1987), provides a framework for understanding how individuals accept and use new technologies. Rooted in the Theory of Reasoned Action (TRA), TAM highlights two critical determinants of technology acceptance: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the extent to which a user believes that the technology will improve their performance, while PEOU focuses on how easy it is for a user to operate the system.

TAM is particularly relevant to this study of FMS at TANESCO. The model helps evaluate how fleet managers and staff perceive FMS in terms of improving operational performance. PU assesses how fleet managers and employees perceive the software's ability to improve operational performance. If users perceive FMS as useful, they are more likely to adopt the technology, which can lead to significant operational improvements. PEOU, on the other hand, measures how easy it is for personnel to learn and navigate the software, which is critical for successful adoption and smooth integration into the daily operations of TANESCO's TMS.

TAM provides a strong theoretical foundation for understanding the role of FMS adoption at TANESCO, it is limited in its focus on individual perceptions, without fully accounting for external influences such as organizational policies, infrastructure, or regulatory challenges. Despite these limitations, TAM offers valuable insights into how FMS can enhance fuel efficiency, optimize vehicle maintenance, and improve driver performance within the public sector organization.

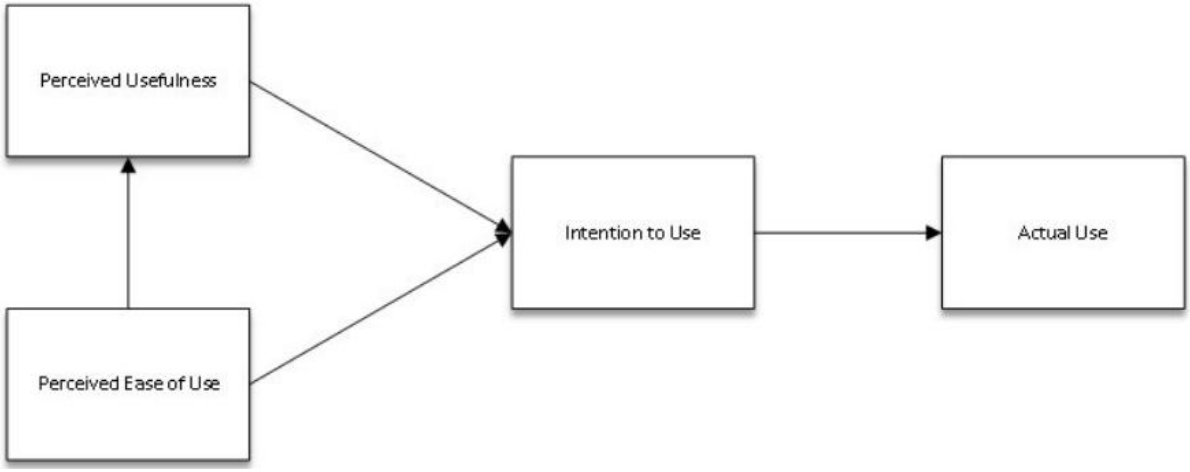

Figure 2: Technology Acceptance Model
Source: (Davis, 1989; Davis, 1993)

II.2 Empirical Literature Review

Perceived Usefulness of FMS

The role of FMS in enhancing operational efficiency has been a subject of increasing research focus, with studies emphasizing its perceived usefulness in improving performance metrics. A study by Aflabo et al. (2020) assessed fleet management practices in Ghana's transport sector and found that FMS enhances decision-making by providing real-time data on vehicle usage, maintenance schedules, and route planning.

Similarly, Romero et al. (2024) explored strategies for improving fleet operations and highlighted that FMS contributes to better resource allocation through predictive maintenance and automated reporting. Their study emphasized that organizations utilizing advanced FMS solutions achieve greater efficiency by minimizing vehicle breakdowns and optimizing fleet deployment. The automation of fleet-related tasks enhances productivity and reduces administrative burdens, further reinforcing the software's perceived usefulness.

FMS automating fleet tracking, scheduling, and maintenance processes. Perrotta (2019) examined the influence of data-driven fleet operations and found that accurate performance monitoring significantly reduces operational risks and enhances service efficiency. Meanwhile, Pašagić et al. (2020) highlighted the benefits of FMS in enhancing fleet productivity through real-time diagnostics and automated compliance tracking.

Perceived Easy to Use of FMS

FMS has been widely recognized for its ease of use, enabling organizations to improve operational performance through user-friendly interfaces, automation, and real-time data accessibility. Liang et al. (2016) demonstrated how intuitive scheduling systems based on integer programming models enhance fleet coordination while minimizing complexities in operation management. Similarly, Bhatti et al. (2021) introduced

Digital Twin Technology for smart electric vehicles, highlighting its ability to facilitate real-time vehicle monitoring and predictive maintenance with minimal user intervention.

Hazrathosseini & Afrapoli (2023) investigated AI-based FMS in open-pit mining, emphasizing that real-time monitoring and automated fleet coordination reduce the complexity of fleet management tasks, making the system more user-friendly. Similarly, Oda & Joe-Wong (2018) introduced MOVI, a model-free fleet management approach utilizing Deep Q-networks (DQN) to optimize dispatching decisions with minimal manual input. Their study highlighted that simplified decision-making through AI-driven systems significantly enhances ease of use for fleet operators, reducing operational burdens. However, Boesch et al. (2016) examined autonomous vehicle fleets and found that AI-enhanced fleet redistribution strategies improve system usability by automating key decision-making processes.

Studies focusing on IoT and AI-driven fleet management further highlight the ease of use provided by real-time data accessibility and automation. Danilecki et al. (2023) demonstrated that life cycle assessment models embedded in FMS simplify vehicle servicing by providing predictive maintenance recommendations through user-friendly dashboards. Likewise, Xu et al. (2022) emphasized that AI-driven edge computing in the Internet of Vehicles (IoV) enhances real-time decision-making with minimal manual input, making fleet operations more efficient.

Proficiency Capability

FMS enhances personnel proficiency by integrating automation, real-time data analysis, and advanced monitoring tools to improve workforce efficiency. (Orlovska et al. (2020) in their studies examined how Automated Driver Assistance Systems (ADAS) adapt to various fleet management tasks, enhancing user proficiency and operational outcomes. Similarly, Afghari et al. (2022) investigated the role of sensor-based monitoring in improving workforce alertness and efficiency, emphasizing that real-time alerts and automated guidance systems significantly enhance operational accuracy.

FMS significantly improves personnel proficiency through telematics, GPS tracking, and automated workflows. The study by Waiyaki & Brits (2015) found that implementing GPS-based FMS at Kenya Power & Lighting Company enhanced workforce coordination, reduced inefficiencies, and optimized fleet utilization. Similarly, Hu et al. (2015) identified key factors for successful FMS adoption in logistics, emphasizing the importance of personnel training and executive support in maximizing software effectiveness.

However, FMS influences personnel proficiency by addressing key factors such as work environment, system automation, and user adaptability. Al-Mekhlafi et al. (2023) demonstrated that workplace conditions play a crucial role in personnel efficiency, with a 63% impact on overall performance. Their study highlighted that FMS optimizes workforce capabilities by integrating user-friendly interfaces, automated support systems, and adaptive training modules.

Operational Performance

Empirical studies on operational performance have demonstrated that various factors, including the use of technology, employee capabilities, and infrastructure, play a critical role in determining an organization's efficiency. According to Raheja (2020), technological innovations, such as (FMS, have been found to streamline operations by providing real-time tracking, predictive maintenance, and improved fuel efficiency. Similarly, Hensley et al. (2021) found that integrating FMS systems allows organizations to make data-driven decisions, further improving efficiency.

In a study by Mohammed et al. (2019), operational performance in fleet management was closely linked to the quality of maintenance and management practices. The research emphasized that proactive maintenance, facilitated by FMS, directly influences fleet uptime and reduces the frequency of breakdowns. Similarly, Patel et al. (2020) found that FMS systems help in early detection of maintenance needs, preventing unplanned downtime. Moreover, a study by Shukri et al. (2013) explored the relationship between operational performance and fuel consumption management in the context of fleet operations. The study found that FMS systems could reduce fuel wastage by offering real-time data that allows for better route planning and fuel tracking.

Conceptual Framework

The conceptual framework outlines the relationship between the independent and dependent variables in this study. The independent variables include perceived usefulness, perceived ease of use, and personnel proficiency capability. Perceived usefulness focuses on fleet efficiency, optimizes vehicle tracking, and improves decision-making. Perceived ease of use focuses on the usability and accessibility of the system, ensuring that employees can effectively interact with the software without technical difficulties. Personnel proficiency capability emphasizes the role of user expertise, training, and adaptability in maximizing FMS benefits.

The dependent variable in this study is operational performance, encompassing efficiency improvements, cost reduction, and service reliability in fleet management at TANESCO. It measured using key performance indicators such as fuel consumption efficiency, vehicle utilization rates, maintenance turnaround time, and fleet

downtime. Cost-effectiveness assessed through reductions in operational expenses and better resource allocation. Service reliability evaluated based on response times, schedule adherence, and user satisfaction.

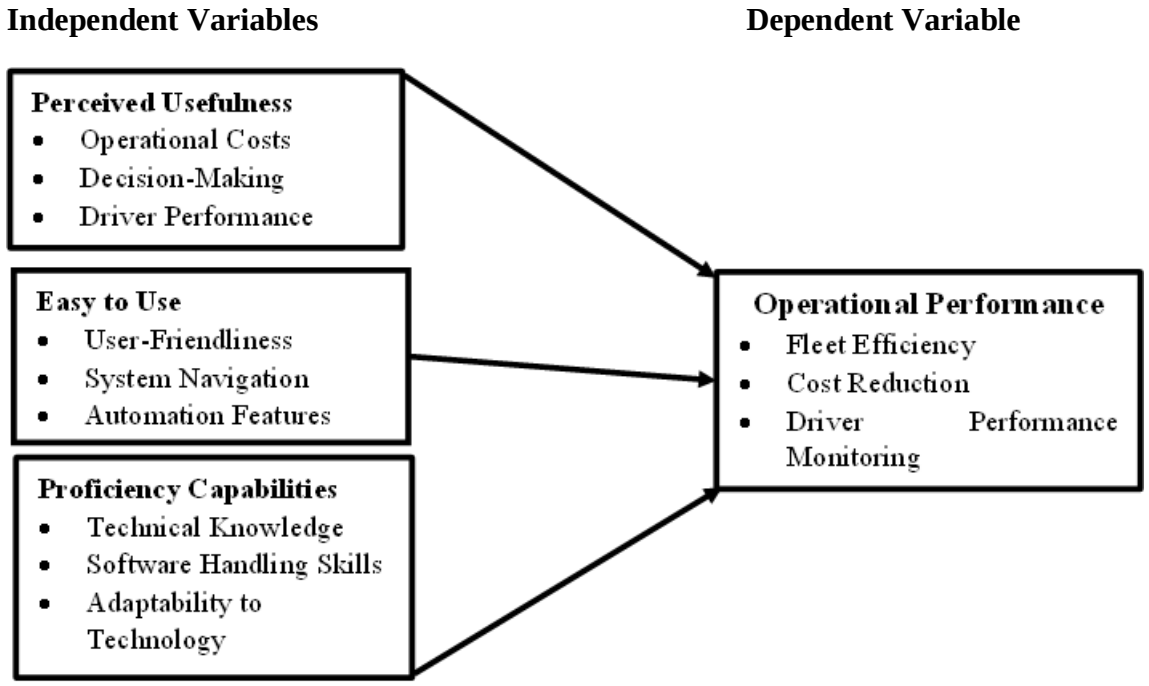

Figure 3: Conceptual framework
Source: Modified from ((Belachew & Abite, 2022) and (Wilson & Gashaza, 2014)

III.METHOD

This study adopted a post-positivist philosophy, emphasizing objective analysis and measurable outcomes through quantitative methods. Structured data sources such as fuel consumption records, vehicle maintenance reports, and driver performance metrics were used, ensuring objectivity and reliability (Yin, 2003; Kothari, 2004). A descriptive research design enabled detailed assessment of the effects of FMS on the performance of government vehicles in Tanzania, focusing on perceived usefulness, ease of use, and personnel proficiency.

The study was conducted at TANESCO, where FMS is used to enhance operational performance. TANESCO's diverse fleet operations provided a suitable setting for evaluating the software's impact. The target population comprised all 85 fleet managers directly involved in FMS use and management (Creswell, 2009). Due to the small population size and ease of access, a census sampling approach was adopted, ensuring comprehensive representation and enhancing data reliability.

Primary data were collected via questionnaires, while secondary data came from documentary reviews. Analysis was conducted using SPSS, with data first cleaned and coded for accuracy. Descriptive statistics (frequencies, means, standard deviations) summarized findings, while inferential techniques (correlation, regression) examined relationships between FMS and key variables. Tables and charts were generated to enhance interpretation.

Validity was ensured through a pilot test to refine the questionnaire, eliminating ambiguities (Kothari, 2004). Reliability was tested using Cronbach's Alpha, with values ≥ 0.7 deemed acceptable (Kumar, 2011). Ethical standards were maintained by ensuring confidentiality, obtaining informed consent, allowing withdrawal at any stage, and securing approval from TANESCO, the National Institute of Transport (NIT), and other authorities prior to data collection.

IV. RESULT AND DISCUSSION

IV. 1 Results

A five-point Likert scale was used. Descriptive statistics, including mean scores and standard deviations, were calculated to summarize respondents' views. A mean score that falls between 1.00 and 1.80 represents

strong disagreement, while a score between 1.81 and 2.60 indicates disagreement. Scores ranging from 2.61 to 3.40 are interpreted as neutral or undecided, whereas scores between 3.41 and 4.20 reflect agreement. Finally, a mean that falls between 4.21 and 5.00 signifies strong agreement.

The Perceived Usefulness of Transport Management Information system

The findings in Table 1 indicate that, TANESCO staff generally hold positive perceptions of FMS's usefulness in enhancing operational performance. The highest-rated aspect was FMS's ability to provide valuable insights for decision-making (mean = 4.05, SD = 0.851), highlighting its role in optimizing fleet usage and resource allocation. FMS was also viewed as contributing to customer satisfaction (mean = 3.99, SD = 1.000) by improving vehicle availability, timely maintenance, and service responsiveness. In terms of cost control, respondents agreed that FMS helps reduce operational expenses (mean = 3.92, SD = 0.818) through better monitoring, reduced fuel and maintenance costs, and efficient scheduling. The system was further recognized for improving fleet efficiency (mean = 3.86, SD = 0.734). The lowest-rated item, enhancing overall fleet productivity (mean = 3.78, SD = 1.071), still reflected moderate agreement. Overall, the results (means 3.78–4.05) suggest FMS is widely perceived as a cost-saving, efficiency-enhancing, and service-improving tool.

Table 1: The Perceived Usefulness of Transport Management Information system

Statement	Mean	Std. Deviation
The use of FMS has significantly improved the efficiency of fleet operations at TANESCO	3.86	0.734
FMS has helped reduce operational costs related to vehicle management at TANESCO	3.92	0.818
The integration of FMS has enhanced the overall performance and productivity of the fleet at TANESCO	3.78	1.071
FMS provides useful insights into fleet operations that assist in better decision-making and resource allocation	4.05	0.851
The use of FMS at TANESCO has contributed positively to customer satisfaction by improving service delivery	3.99	1.000

Source: Field Data (2025)

Perceived Ease of Use of Transport Management Information system

The findings reveal that respondents generally perceive FMS as user-friendly and easy to operate. The highest-rated statement, "I can easily access and retrieve the necessary information from the FMS whenever needed," scored a mean of 4.26 (SD = 0.545), indicating strong agreement that the system enables quick and convenient access to information, essential for efficient fleet operations. Similarly, "The user interface of the FMS is intuitive and requires minimal effort to understand" and "Training on how to use the FMS was sufficient for me to operate it effectively" both achieved means of 4.22 (SD = 0.526 and 0.638), suggesting logical design and adequate training support. "The process of using the FMS is not time-consuming or complicated" scored 4.18 (SD = 0.698), reinforcing perceptions of efficiency. The lowest score, 3.78 (SD = 0.714), for ease of navigation still reflects agreement, though with minor variations in user experiences. Overall, results indicate high ease of use, contributing to FMS acceptance and continued utilization at TANESCO.

Table 2: Perceived Ease of Use of Transport Management Information system

Statement	Mean	Std. Deviation
The FMS used at TANESCO is easy to navigate and operate	3.78	0.714
Training on how to use the FMS was sufficient for me to operate it effectively	4.22	0.638
The user interface of the FMS is intuitive and requires minimal effort to understand	4.22	0.526
I can easily access and retrieve the necessary information from the FMS whenever needed	4.26	0.545
The process of using the FMS at TANESCO is not time-consuming or complicated	4.18	0.698

Source: Field Data (2025)

Personnel Proficiency Capability

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The findings in Table 3 indicate that, TANESCO personnel are generally perceived as skilled and proficient in using FMS for operational tasks. The highest-rated statement, "Personnel proficiency in using the FMS has led to increased efficiency in managing fleet operations," scored 4.22 (SD = 0.832), showing strong agreement on its impact. Similarly, "Personnel demonstrate high levels of expertise in using FMS" scored 4.05 (SD = 0.836), reflecting confidence in staff capability. "Proficiency has contributed to improved operational performance" received 3.95 (SD = 0.881), reinforcing the value of human expertise alongside technology. "Personnel have the necessary skills and knowledge" scored 3.82 (SD = 0.936), suggesting some variability in perceptions. The lowest score, 3.67 (SD = 0.976), for regular updates and training, indicates less consistency in ongoing support.

Table 3: Personnel Proficiency Capability

Statement	Mean	Std. Deviation
The personnel at TANESCO have the necessary skills and knowledge to effectively operate the FMS	3.82	0.936
Personnel proficiency in using the FMS has contributed to improved operational performance at TANESCO	3.95	0.881
The FMS is regularly updated to ensure personnel have the necessary tools and training to maintain proficiency	3.67	0.976
Personnel proficiency in using the FMS has led to increased efficiency in managing fleet operations	4.22	0.832
The personnel at TANESCO demonstrate high levels of expertise in using the FMS for operational tasks	4.05	0.836

Source: Researcher Field Data (2025)

Operational Performance of FMS at TANESCO

The findings show that FMS is generally perceived as having a positive impact on TANESCO's fleet operational efficiency, particularly in maintenance and service reliability. The highest-rated statement, "FMS has enhanced vehicle maintenance tracking, resulting in fewer breakdowns and improved fleet reliability," scored 3.79 (SD = 0.998), reflecting strong agreement and high consensus. "The use of FMS has reduced delays in fleet operations, leading to improved service delivery" followed closely with a mean of 3.76 (SD = 1.022), suggesting benefits in trip scheduling and real-time tracking, though with moderate variability in responses. "The implementation of FMS has improved overall operational efficiency" received 3.67, indicating a generally positive perception but also pointing to potential gaps in utilization or integration. The lowest score, 3.62 (SD = 1.142), was for improved fuel management, implying less consistent impact in this area.

Table 3: Operational Performance of FMS at TANESCO

Statement	Mean	Std. Deviation
The implementation of FMS has improved the overall operational efficiency of fleet management at TANESCO	4.39	0.492
The use of FMS has reduced delays in fleet operations, leading to improved service delivery operations	4.40	0.518
The adoption of FMS has led to better fuel management, reducing operational costs at TANESCO	4.61	0.492
FMS has enhanced vehicle maintenance tracking, resulting in fewer breakdowns and improved fleet reliability	4.41	0.495

Source: Field Data (2025)

Inferential Statistics

The inferential statistical analysis used to examine the relationship between FMS adoption and operational performance at TANESCO. The analysis includes the Model Summary, ANOVA, and Coefficient Table generated through multiple regression analysis. The findings are shown in Tables .5, .6, and 7 respectively.

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Model Summary

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.977[a]	.954	.953	.21394	.954	516.267	3	74	.000

a. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use, and Personnel Proficiency

b. Dependent Variable: Operational Performance

Source: Field data (2025)

The regression model showed a very strong positive relationship between Usefulness, Ease of Use, Personnel Proficiency, and operational performance, with a multiple correlation coefficient (R) of 0.977. The model explains 95.4% of the variance in operational performance ($R^2 = 0.954$), and the adjusted R^2 of 0.953 confirms its robustness. A low standard error of 0.214 indicates accurate predictions. The F-test ($F = 516.267$, $df1 = 3$, $df2 = 74$, $p < 0.001$) confirms the model's statistical significance. These results demonstrate that the three predictors significantly influence FMS operational performance at TANESCO.

ANOVA

Table 5: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.886	3	23.629	516.267	.000[b]
	Residual	3.387	74	.046		
	Total	74.273	77			

a. Dependent Variable: Operational Performance

b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use, and Personnel Proficiency

Source: Field Data (2025)

The ANOVA results confirm that the regression model is statistically significant, with an F-value of 516.267, degrees of freedom 3 (regression) and 74 (residual), and a p-value of 0.000. Since $p < 0.05$, the model strongly supports that the independent variables collectively predict operational performance at TANESCO. The regression sum of squares is 70.886, while the residual sum of squares is 3.387, totaling 74.273. This large explained variance aligns with the R^2 of 0.954, indicating over 95% of performance variation is accounted for by the model. Overall, the ANOVA confirms the significant relationship between FMS factors Usefulness, Ease of Use, Personnel Proficiency and operational performance, validating the model's relevance.

Coefficient

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.738	.444		6.167	.000
	Perceived usefulness	.75	.152	.081	.495	.02
	Perceived easy to use	.119	.130	.128	.913	.04
	Personnel proficiency capability	.450	.149	.484	3.015	.034

a. Dependent Variable: Operational performance

Source: Field Data (2025)

Table 7 shows the regression results for predicting operational performance based on Perceived Usefulness, Perceived Ease of Use, and Personnel Proficiency. The constant term (2.738) is highly significant (p = 0.000), indicating the baseline level of operational performance when predictors are zero. Perceived Usefulness has a positive but small coefficient (B = 0.075) with limited statistical significance (p = 0.02), suggesting a modest positive influence on performance. Perceived Ease of Use also shows a positive coefficient (B = 0.119) with marginal significance (p = 0.04), indicating some positive effect on operational outcomes. Personnel Proficiency has the strongest positive impact (B = 0.450, β = 0.484) and is statistically significant (p = 0.034), implying that higher proficiency notably improves operational performance. Overall, all three variables positively contribute, with Personnel Proficiency having the most substantial and significant effect.

IV.2 Discussions

The study revealed that perceived usefulness of the FMS significantly and positively influences operational performance at TANESCO. Regression analysis showed a positive relationship (β = 0.081, p = 0.02), supported by descriptive results indicating employees recognize FMS as a valuable tool for decision-making and resource allocation. This aligns with the TAM, which emphasizes perceived usefulness as a critical factor for system adoption and effective use. When employees perceive clear benefits in their daily tasks, they are more likely to use the system consistently, leading to improved organizational outcomes. These findings are consistent with prior studies in African utilities and logistics firms, reinforcing the importance of usefulness in technology acceptance. However, the relatively lower beta coefficient compared to other variables suggests that usefulness alone may not fully drive performance improvements unless combined with other factors such as personnel skills and ease of use.

Perceived ease of use also positively influenced operational performance at TANESCO, though to a lesser degree (β = 0.128, p = 0.04). Respondents generally agreed that FMS is user-friendly, with high mean scores on interface design and navigation ease. This supports TAM's view that ease of use facilitates adoption by reducing the effort needed to learn and operate the system. However, the modest effect size and moderate variability in training adequacy suggest that ease of use alone is insufficient for maximizing performance gains. The negative implications from previous research regarding inconsistent training and managerial support may apply here, indicating that organizational backing and continuous capacity building are necessary to fully leverage the system's usability. The RBV also stresses that technological tools must be complemented by intangible resources like staff competence and leadership to generate sustainable value.

Personnel proficiency capability emerged as the strongest individual predictor of operational performance (β = 0.484, p = 0.034), highlighting the critical role of skilled staff in utilizing FMS effectively. Descriptive statistics showed high confidence in personnel expertise, reflecting positive perceptions of their ability to manage fleet operations using the system. This aligns well with RBV's emphasis on human capital as a strategic resource essential for competitive advantage. Despite this, the model's results indicate that proficiency must be paired with supportive structures like continuous training, leadership involvement, and performance-linked policies to translate into measurable gains. High multicollinearity among predictors suggests overlap between proficiency, usefulness, and ease of use, underscoring the integrated nature of these factors. To maximize FMS benefits, TANESCO should invest in ongoing capacity development and strengthen alignment between user skills and organizational performance objectives.

V. Conclusions

The study examined the effect of Fleet Management Systems (FMS) on operational performance at TANESCO and found that perceived usefulness significantly enhanced performance by improving decision-making and resource allocation. While ease of use was positively viewed, its effect was less pronounced, underscoring the importance of training and organizational support. Personnel proficiency played a critical role, but continuous training and leadership support were necessary to fully realize FMS benefits. Overall, FMS contributes positively to fleet efficiency when complemented by user competence and supportive practices. To optimize outcomes, TANESCO should align FMS with key performance indicators, automate reporting for data-driven decisions, and strengthen training, employee engagement, and the integration of underutilized features such as diagnostics, route optimization, and maintenance forecasting. Future research should extend to other institutions and adopt longitudinal approaches to assess performance changes over time and across different operational contexts.

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