



DIGITAL PROJECT MONITORING TOOLS AND PERFORMANCE OF DONOR-FUNDED PROJECTS IN NAIROBI COUNTY, KENYA

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ABSTRACT

Donor-funded projects play a crucial role in Kenya's socio-economic development, yet many continue to experience challenges in efficiency, accountability, and timely completion despite significant investment. These performance gaps have often been attributed to weak monitoring systems, delayed reporting, and limited data utilisation. This study examined the effect of digital project monitoring tools on the performance of donor-funded projects in Nairobi County, Kenya. Specifically, the study focused on the influence of real-time reporting, and dashboard utilisation on project performance. The study was guided by Systems Theory, and Stewardship Theory which collectively explain how digital systems, accountability, organisational capabilities, and information exchange contribute to project outcomes. A descriptive research design was adopted. The target population comprised project managers, monitoring and evaluation officers, and technical staff drawn from donor-funded organisations operating within Nairobi County. A sample of 118 respondents was selected using stratified and simple random sampling techniques to ensure representation across sectors. Data were collected using a structured questionnaire that was pre-tested through a pilot study to determine its reliability and validity. Quantitative data were analysed using descriptive statistics (means and standard deviations) and inferential statistics (correlation and multiple regression analysis) with the aid of SPSS software. The results were presented in tables and interpreted narratively. The findings revealed that digital project monitoring tools significantly improve project performance. Real-time reporting emerged as the most influential factor, followed by dashboard utilisation. The study concluded that digital transformation is a strategic enabler of project success and recommended that donor-funded organisations institutionalise real-time reporting systems, and adopt integrated dashboards. These measures will ensure evidence-based management, transparency, and sustainable performance in donor-funded projects.

Key Words: Digital Project Monitoring Tools, Performance of Donor-Funded Projects, Real-Time Reporting, Dashboard Utilisation, Project Performance

Background of the Study

In recent years, donor-funded development projects have come under increasing scrutiny to deliver reliably on cost, time and outcome expectations (World Bank, 2023). One of the mechanisms promoted to enhance oversight and accountability is the use of digital monitoring tools, defined here as mobile data-collection applications, cloud-based dashboards, geospatial systems and integrated project-information platforms. For example, digital dashboards are described as “simple and powerful data-driven software solutions that are used to visually ascertain the status and key performance indicators of a project” (Project Management Institute, as cited in PMI, 2013/2024). In practice, organisations supporting donor-funded programmes list top-use monitoring tools specifically designed for funded projects (e.g., mobile data entry, online dashboards, financial tracking) (Funds for NGOs, 2024).

Despite the promise of digital monitoring, research remains clear that merely deploying tools does not automatically translate into improved project performance. Studies show that successful monitoring and evaluation (M&E) systems that support project performance must combine timely data collection, stakeholder involvement, feedback loops and capacity for utilization of data (Kimote & Muchai, 2024; Ochieng'-Olima & Wairimu Mungai, 2024). For instance, a study of donor-funded projects in Kenya found that although M&E tools were available, their use was constrained by staff capacity and organisational readiness (Ochieng'-Olima & Wairimu Mungai, 2024).

In the broader project management discipline, digital tools are increasingly embedded within governance and coordination frameworks. According to Chen (2025), digital technologies in project management no longer simply automate tasks but become integral to how coordination, accountability and strategic alignment occur in complex projects. This suggests that digital monitoring tools can influence performance not just by enabling data capture, but by reshaping organisational processes and decision-making.

In the context of donor-funded projects, performance is typically measured by dimensions such as timeliness, budget adherence, quality of deliverables and stakeholder satisfaction. Monitoring systems that provide real-time visibility, enable corrective action and support stakeholder communication are posited to improve these dimensions (Jurčić, 2025). However, empirical evidence from developing country contexts remains limited. In Kenya, for example, the national aid information management system (e-ProMIS) has been cited as enhancing data on donor-funded projects (Development Initiatives, 2024), yet there is little published evidence linking such systems to improved project outcomes in specific local contexts.

Given this gap, it is timely to examine the effect of digital project monitoring tools on the performance of donor-funded projects in Nairobi City County, Kenya. This study will assess the extent of tool adoption, identify implementation challenges, and empirically measure how tool use associates with project outcomes such as timeliness, cost adherence and quality.

Statement of the Problem

Donor-funded projects form a critical pillar of Kenya's socio-economic development agenda, accounting for approximately 30 percent of the country's annual development expenditure (National Treasury & Planning, 2023). Yet, despite the substantial financial inflows, their implementation performance remains below optimal levels. According to the Office of the Auditor-General (OAG, 2025), only 169 projects (79 %) of the 213 donor-funded projects audited for the year ending 30 June 2024 received clean audit opinions, while 43 (20 %) were qualified and 1 (1 %) adverse, revealing persistent weaknesses in project governance and monitoring. The same report recorded pending bills rising from KSh 35.82 billion in FY 2020/21 to KSh 68.88 billion in FY 2023/24, demonstrating growing liquidity stress, delayed disbursements, and stalled implementation. Additionally, 22 projects incurred KSh 2.55 billion

in unsupported expenditures, and seven projects experienced cumulative disbursement delays amounting to KSh 2.07 billion, directly undermining timeliness and cost control (OAG, 2025).

To enhance oversight, the Government of Kenya and development partners have introduced digital project-monitoring platforms such as the Electronic Project Monitoring Information System (e-ProMIS), Integrated Financial Management Information System (IFMIS), and sector-specific systems like the Kenya Health Information System (DHIS2/KHIS). These platforms are intended to digitize data flows, strengthen accountability, and support evidence-based decision-making. However, adoption and utilisation have been uneven. The National Treasury (2025) acknowledges that system interoperability gaps, weak data quality, and low compliance with mandatory quarterly reporting through e-ProMIS continue to limit visibility across the project portfolio. Likewise, the Public Procurement Regulatory Authority (PPRA, 2024) reports that while e-procurement coverage has expanded nationally, irregular tender management and delayed contract execution remain pervasive, signalling that digital platforms alone have not translated into consistent performance gains.

Within Nairobi City County, which hosts the headquarters of most project-implementing ministries, donor agencies, and international NGOs, these national weaknesses are particularly visible. County progress reports reveal low absorption rates averaging 62 percent for externally financed projects between 2021 and 2024, driven by procurement bottlenecks, weak monitoring, and delayed counterpart funding (Council of Governors, 2024). Empirical studies mirror this pattern. Ochieng'-Olima and Wairimu Mungai (2024) found that although digital tools such as DHIS2 improved reporting efficiency in Nairobi-based health projects, 68 percent of facilities lacked adequately trained staff, and 54 percent reported data-entry delays, constraining system effectiveness. Similarly, Kanyi (2023) observed that fewer than half of donor-funded projects in Nairobi had fully operational digital dashboards or documented corrective-action reviews, implying that monitoring data are rarely transformed into actionable management responses.

The cumulative evidence points to a central paradox: while Nairobi City County is the epicentre of Kenya's donor-funded project activity and possesses advanced digital monitoring infrastructure, implementation inefficiencies, data-quality gaps, and low system utilisation persist, leading to continued delays, cost overruns, and under-achievement of outputs. Thus, the core problem is not the absence of digital monitoring tools but the limited empirical understanding of how their use, or lack thereof, affects project performance outcomes such as timeliness, budget adherence, and deliverable quality. This study therefore sought to bridge this gap by empirically analysing the effect of digital project monitoring tools on the performance of donor-funded projects in Nairobi City County, Kenya.

Objectives of the Study

General Objective

To examine the effect of digital project monitoring tools on the performance of donor-funded projects in Nairobi City County, Kenya.

Specific Objectives

The study was guided by the following specific objectives:

- i. To determine the effect of real-time reporting on the performance of donor-funded projects in Nairobi City County, Kenya.
- ii. To assess the effect of dashboard utilisation on the performance of donor-funded projects in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Systems Theory

Ludwig von Bertalanffy (1968) developed Systems Theory to explain organisations as complex, interrelated networks whose parts function in dynamic interdependence. Every subsystem interacts with others to sustain equilibrium and performance of the larger whole (Bertalanffy, 1968; Scott & Davis, 2021). In project environments, financial, operational, and information subsystems must exchange inputs and outputs smoothly for objectives to be achieved. Within donor-funded initiatives, digital monitoring platforms such as e-ProMIS, IFMIS, and DHIS2 represent the information-processing subsystem whose coordination with budgeting, procurement, and implementation units determines efficiency and accountability (Mukherjee, Patel, & Singh, 2023). If information flow breaks down, project feedback loops weaken and corrective action becomes delayed, undermining overall performance.

Empirical evidence substantiates this systemic logic. Alhassan and Asare (2022) demonstrated that in Ghana's public investment projects, integration among digital platforms improved decision-making speed and reduced data duplication. Likewise, Obi and Awuzie (2023) found that feedback-enabled digital dashboards created real-time linkages between planning, monitoring, and finance subsystems, enhancing transparency and responsiveness in Nigerian donor-supported infrastructure programmes. Such results affirm Systems Theory's claim that performance depends less on isolated parts than on the quality of interconnections and continuous information feedback.

Nevertheless, Systems Theory is not without criticism. It assumes that once subsystems are well linked, organisational harmony and improved performance follow automatically. Jackson (2019) and Skyttner (2022) argue that the theory underplays behavioural resistance, political interests, and contextual constraints that distort feedback within real-world organisations. Donor-funded projects operate in environments where data ownership, institutional turf wars, and weak incentives can impede integration despite technological alignment. Therefore, this study applied Systems Theory not as a mechanistic prescription but as a guiding lens to examine how effective coordination among digital monitoring components contributes to project performance while recognising the social complexities that mediate these linkages.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), proposed by Fred Davis (1989), explains user adoption of technology through two cognitive determinants: perceived usefulness and perceived ease of use. Users are more likely to employ a system if they believe it enhances their job performance and requires minimal effort. Within donor-funded projects, the extent to which project managers, M&E officers, and finance staff embrace digital tools such as e-ProMIS or DHIS2 depends on these perceptions (Davis, 1989; Venkatesh & Bala, 2021). Real-time reporting or dashboard functions will only improve project performance if users find them relevant, intuitive, and supportive of daily tasks.

Recent studies confirm TAM's applicability in development contexts. Nuseibeh and Alshurideh (2022) reported that in Middle-Eastern public projects, perceived usefulness significantly predicted sustained use of digital monitoring applications. Similarly, Kimote and Muchai (2024) found that training and organisational support strengthened perceived ease of use, which in turn enhanced adoption and consistent utilisation of digital dashboards in Kenyan donor-funded projects. These results highlight that technical competence and organisational culture jointly determine technology acceptance and, by extension, performance outcomes.

Despite its enduring influence, TAM has been criticised for being overly individualistic and static. Dwivedi et al. (2023) argue that it overlooks macro-level factors such as leadership commitment, institutional policy, and infrastructure that influence digital transformation. Furthermore, Bagozzi (2020) notes that TAM reduces technology adoption to rational evaluation, neglecting emotional, cultural, and normative elements that often shape behaviour in complex organisations. In this study, TAM was therefore integrated with broader organisational theories to interpret how user competence and institutional environment jointly affect the utilisation of digital monitoring tools in donor-funded projects.

Conceptual Framework

A conceptual framework is a device that organizes empirical observations in a meaningful structure (Shapira, 2019). It forms part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed as a result of investigation and it explains the possible connections between the variables (Durham & Stokes, 2015).

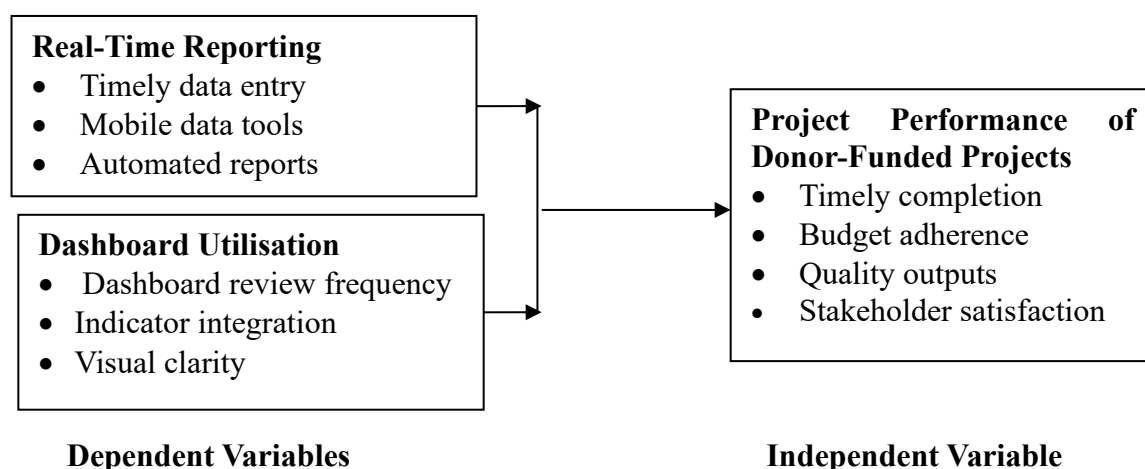


Figure 2. 1: Conceptual Framework

Real-Time Reporting

Real-time reporting refers to the capability of a digital monitoring system to capture, process, and transmit project data instantly or within a minimal time lag, providing stakeholders with continuous visibility of implementation progress. In development management, this function represents the core of data-driven oversight, where information moves simultaneously from the field to central databases for decision-making. According to the United Nations Development Programme (UNDP, 2022), real-time reporting enhances evidence-based management by reducing the latency between data generation and managerial response. Similarly, the World Bank (2023) emphasises that real-time information systems in donor-funded projects enable rapid tracking of disbursements, activity outputs, and performance deviations, thereby improving accountability and transparency. Within Kenya, digital tools such as e-ProMIS, KoboToolbox, and DHIS2 have increasingly been used to streamline this process, allowing project managers to monitor operations without waiting for quarterly or paper-based submissions (Development Initiatives, 2024).

Empirical literature confirms the link between real-time reporting and improved project performance. Awuor and Okello (2021) found that non-governmental organisations using mobile-enabled real-time systems achieved significantly faster issue resolution and adherence to schedules than those relying on manual reporting. In Ghana, Alhassan and Asare (2022) observed that the adoption of real-time digital submissions reduced bureaucratic delays and enhanced transparency across multi-agency infrastructure programmes. These findings align with the broader argument that timelier data facilitate prompt corrective actions, mitigate risks, and strengthen resource utilisation. Real-time reporting therefore functions not only as a

technological feature but as a governance instrument that sustains managerial responsiveness and donor confidence (Kerzner, 2021; World Bank, 2023).

The effectiveness of real-time reporting, however, is not automatic. Kimote and Muchai (2024) caution that network instability, limited digital literacy, and inconsistent data entry practices can undermine the reliability of real-time systems in Kenyan donor-funded projects. UNDP (2022) also notes that while automation shortens reporting cycles, it cannot compensate for weak institutional capacity or inadequate feedback mechanisms that prevent timely use of the generated data. Moreover, Development Initiatives (2024) highlights persistent gaps in data completeness and system interoperability, particularly where multiple donors use parallel reporting platforms. These challenges underscore that the performance benefits of real-time reporting depend on a combination of technological infrastructure, human competence, and organisational commitment to data utilisation.

In summary, real-time reporting serves as the foundational pillar of digital project monitoring, linking information speed with project responsiveness and accountability. When effectively implemented, it transforms project oversight from retrospective evaluation to continuous performance management. Yet, its full potential is realised only when supported by adequate infrastructure, trained personnel, and an institutional culture that values and acts upon real-time data.

Dashboard Utilisation

Dashboard utilisation refers to the extent to which project stakeholders actively employ digital visual interfaces to monitor, interpret, and act upon project data presented in real time. A dashboard, as defined by Venkatesh and Bala (2021), is a visual analytics tool that consolidates multiple project indicators, financial, operational, and outcome-based, into a single interactive display for decision-making. It allows managers to visualise performance trends, identify deviations, and respond to risks before they escalate. According to the World Bank (2023), dashboards are increasingly adopted in donor-funded projects as a transparency mechanism that provides simultaneous visibility to project implementers, donors, and oversight bodies. Similarly, UNDP (2022) notes that well-designed dashboards enable the translation of raw monitoring data into actionable insights, making them indispensable tools for adaptive project management.

Empirical studies highlight the contribution of dashboard utilisation to performance improvement in donor-funded programmes. Mutua and Wainaina (2022) found that Kenyan projects that consistently reviewed dashboard indicators achieved higher completion rates and better budget adherence compared to those relying solely on periodic narrative reports. This was attributed to improved decision-making speed and data accessibility among project teams. In the Middle East, Nuseibeh and Alshurideh (2022) established that digital dashboards enhanced interdepartmental coordination and transparency by providing all stakeholders with access to harmonised project metrics. These findings reinforce the notion that dashboards not only display performance data but also promote accountability and trust between donors and implementing partners. By consolidating financial, procurement, and results-based indicators, dashboards reduce information asymmetry, which is a frequent cause of inefficiency in donor-funded operations (Ebrahim, 2021; World Bank, 2023).

The effectiveness of dashboard utilisation is influenced by several underlying factors. The first is frequency of use, which determines whether dashboards remain decision tools or degenerate into underutilised repositories. Projects where dashboards are reviewed weekly or monthly tend to detect delays and bottlenecks earlier than those that review them sporadically (Ochieng'-Olima & Wairimu Mungai, 2024). The second determinant is data visualisation quality, as dashboards that use simple graphics, trend lines, and colour-coded alerts improve

comprehension and facilitate faster managerial response (Dwivedi et al., 2023). Thirdly, integration breadth, the extent to which dashboards merge data from monitoring, financial, and procurement systems, strengthens oversight and reduces fragmentation in donor-funded projects (Alhassan & Asare, 2022). Finally, user competence remains critical; dashboards are only as effective as the users' ability to interpret and apply the information displayed (Kimote & Muchai, 2024).

Despite these benefits, several constraints limit dashboard effectiveness. Dwivedi et al. (2023) argue that many public-sector dashboards fail to improve performance because they are introduced without adequate training, leading to misinterpretation of data or complete underutilisation. UNDP (2022) similarly warns that excessive data visualisation, without clear linkages to management decisions, can overwhelm users and reduce focus on key performance indicators. Moreover, dashboards that are poorly integrated with field-level feedback or financial tracking systems risk presenting misleadingly optimistic performance pictures, thereby weakening donor oversight (World Bank, 2023). These challenges demonstrate that dashboard utilisation is not a technological fix but a managerial process requiring deliberate effort, structured review routines, and sustained user engagement.

In essence, dashboard utilisation bridges the gap between data availability and decision-making in donor-funded project management. It transforms abstract information into tangible management intelligence that supports timely action, resource control, and accountability. However, the quality of its impact depends on how consistently and competently dashboards are used, how well they are integrated with other digital systems, and how effectively their insights are converted into corrective action. When properly institutionalised, dashboards become a central element of adaptive management and performance learning in the digital era of development projects.

Project Performance of Donor-Funded Projects

Project performance refers to the extent to which a project achieves its intended objectives efficiently, effectively, and within the constraints of cost, time, and quality. Kerzner (2021) defines project performance as the measure of a project's success in meeting its predetermined scope, schedule, budget, and stakeholder satisfaction targets. Similarly, the World Bank (2023) describes performance in donor-funded projects as the degree to which resources are utilised effectively to produce measurable and sustainable outcomes aligned with donor objectives. In the context of donor-funded programmes, performance transcends mere output delivery, it encompasses transparency, accountability, learning, and long-term impact. UNDP (2022) emphasises that performance management in development projects involves continuous tracking, adaptive decision-making, and evidence-based evaluation to ensure that resources produce tangible societal benefits.

Donor-funded projects occupy a unique space in performance evaluation because they operate under dual accountability structures, toward both local implementing agencies and external financiers. This complexity requires multidimensional performance measurement frameworks that integrate efficiency, effectiveness, and governance criteria (Ebrahim, 2021). In Kenya, donor-funded projects in sectors such as health, infrastructure, and education have increasingly adopted digital monitoring tools like e-ProMIS, IFMIS, and DHIS2 to enhance performance oversight (National Treasury & Planning, 2023). These platforms provide visibility on expenditure flows, activity implementation, and results delivery, thereby strengthening accountability and improving project management outcomes. According to Ochieng'-Olima and Wairimu Mungai (2024), projects that actively used digital monitoring data for decision-making recorded notable improvements in timeliness, budget adherence, and quality of deliverables compared to those that relied on manual reporting methods.

Project performance is typically assessed across several interrelated dimensions. One of the most common is timeliness, which examines whether project milestones and deliverables are completed within the planned schedule. Delays often reflect inefficiencies in resource coordination or weak monitoring systems. Mutua and Wainaina (2022) found that timely project execution in Kenya was strongly linked to the consistent use of digital dashboards that enabled early detection of schedule slippages. Another crucial dimension is budget adherence, which measures whether funds are used as intended and whether spending aligns with disbursement schedules. The Office of the Auditor-General (2025) reported that donor-funded projects with integrated digital financial tracking achieved higher absorption rates and fewer audit queries compared to those with manual systems. Quality of deliverables is another essential indicator, reflecting whether outputs meet technical and contractual standards. Quality is often enhanced when data feedback loops and digital inspections ensure adherence to specifications (World Bank, 2023). Finally, stakeholder satisfaction, encompassing both donors and beneficiaries, serves as an overarching indicator of performance, reflecting the perceived legitimacy and usefulness of project outcomes (Ebrahim & Weisband, 2022).

Empirical research consistently demonstrates that the use of digital monitoring tools contributes to improved performance across these indicators. In Ghana, Alhassan and Asare (2022) reported that digital integration in project monitoring reduced procurement delays and improved accountability in public infrastructure programmes. Similarly, Awuor and Okello (2021) found that East African NGOs employing mobile-based real-time reporting achieved up to 25% faster implementation rates and higher stakeholder trust levels. In Kenya, Kimote and Muchai (2024) established that projects incorporating automated reporting and feedback mechanisms were more likely to achieve both schedule and cost targets. These findings affirm that digitalisation of monitoring enhances both operational efficiency and governance outcomes, thereby reinforcing the overall performance of donor-funded projects.

Despite these positive outcomes, the performance of donor-funded projects remains uneven across countries and sectors. Development Initiatives (2024) noted that weak data interoperability, fragmented reporting structures, and inconsistent use of digital tools still undermine performance monitoring in many Kenyan projects. Similarly, the National Treasury and Planning (2023) identified that only about 62% of donor-funded projects fully utilised the e-ProMIS system for real-time reporting and budget tracking. These gaps suggest that while digital monitoring enhances project performance, its success depends on institutional capacity, user competence, and the quality of system integration. Furthermore, UNDP (2022) cautions that overemphasis on quantitative performance metrics may obscure qualitative impacts such as social inclusion, sustainability, and learning.

Therefore, project performance in donor-funded programmes reflects the intersection of technological capacity, managerial effectiveness, and institutional accountability. When real-time reporting, dashboard utilisation, data accuracy, and feedback mechanisms operate synergistically, they collectively enhance timeliness, budget control, quality assurance, and stakeholder satisfaction. However, performance improvement is sustainable only when supported by consistent data quality, system integration, and a culture of adaptive management. Understanding these dynamics is therefore crucial for strengthening the governance and developmental effectiveness of donor-funded projects in Nairobi City County and beyond.

Empirical Review

Real-Time Reporting and Project Performance

Rao (2022) conducted a comprehensive meta-analysis on real-time data use in construction and infrastructure projects across Europe and Asia, guided by Systems Theory, which posits that timely information flows are critical for efficient system functioning. The study reviewed

ninety empirical papers using a systematic review design and found that sensor-based real-time data transmission reduced decision-making lag and enhanced adherence to project timelines by allowing supervisors to intervene before problems escalated. However, the study's limitation was its narrow focus on technologically advanced environments and construction projects, where institutional capacity and resource endowments are high. It failed to address contexts where donor accountability and multi-stakeholder coordination constrain real-time reporting adoption. Consequently, this current study extends Rao's findings by examining real-time reporting within resource-constrained, donor-funded projects in Nairobi County, where institutional complexity shapes data use.

In a related study, Gonçalves (2023) explored the adoption of real-time project dashboards within European technology firms. Using a design science case-study approach grounded in the Technology Acceptance Model (TAM), the research focused on perceived usefulness and ease of use as determinants of real-time dashboard adoption. Data were collected from a purposive sample of twenty-five project managers using system logs and semi-structured interviews. The findings indicated that automated dashboards significantly improved project decision speed and resource reallocation efficiency. Descriptive and thematic analyses showed that real-time systems replaced monthly manual reports, fostering agile decision-making. However, the study was limited to a private-sector setting with adequate digital infrastructure and did not establish causal relationships between real-time reporting and project performance metrics. The present research bridges this gap by applying inferential analysis to measure how real-time reporting influences project performance outcomes within the public, donor-funded environment of Nairobi County.

Ahiabu et al. (2024) examined Ghana's shift from quarterly, paper-based monitoring to an online real-time reporting platform for district-level development projects. Anchored in Systems Theory, the study adopted a descriptive cross-sectional design targeting 152 monitoring and evaluation officers across metropolitan, municipal, and district assemblies. Using stratified random sampling, data were gathered through structured questionnaires focusing on reporting frequency, system accessibility, and response timeliness. Regression analysis revealed that real-time reporting improved project tracking and responsiveness, with projects using the platform achieving higher completion rates than those relying on manual updates. Nevertheless, the study observed that while reporting improved, corrective actions were often delayed because decision-makers lacked analytical capacity to interpret the real-time data. This limitation underscores the need to integrate feedback mechanisms and managerial capacity, an area this study addresses by jointly examining real-time reporting and feedback systems in donor-funded projects in Nairobi County.

Annan (2024) analysed the effectiveness of Ghana's e-government infrastructure for real-time project tracking. Drawing on the Resource-Based View (RBV), the study conceptualised digital monitoring capacity as a strategic organisational resource. The mixed-method design combined administrative data and key-informant interviews with senior officials in 17 ministries and donor agencies. The results showed that online dashboards significantly improved budget transparency and reduced delays in disbursements, especially when integrated with the national M&E Directorate's systems. However, the research's interpretive nature limited its statistical generalisation, and the broad definition of digitalisation made it difficult to isolate the specific impact of real-time reporting from other monitoring innovations. The current study builds upon Annan's findings by empirically isolating real-time reporting as a discrete construct and quantitatively linking it to project performance in Kenya's donor-funded initiatives.

Locally, National Treasury and Planning (2023) conducted an evaluative report on Kenya's Electronic Project Monitoring Information System (e-ProMIS), which captures real-time data for over 2,000 national and donor-funded projects. The study adopted a descriptive case design

based on Systems Theory to evaluate the role of digital platforms in improving project visibility. Data were extracted from system usage logs and structured interviews with ministry project coordinators and donor representatives. Findings revealed that e-ProMIS automated data collection and enhanced real-time access for 41-line ministries, reducing reporting cycles from quarterly to monthly. However, challenges such as inconsistent data entry and incomplete reporting among ministries limited its overall impact on performance management. The report recommended capacity building and system standardisation to improve reporting consistency. This research complements those recommendations by providing statistical evidence of the relationship between real-time reporting and project performance in Nairobi County donor-funded projects.

Nyabuto (2022) investigated the influence of monitoring and evaluation practices on the performance of Kenya Urban Roads Authority (KURA) construction projects in Nairobi City County. Guided by project control theory, the study employed a descriptive research design targeting 116 respondents, including engineers, project accountants, and M&E officers, selected through stratified random sampling. Data were collected using structured questionnaires and analysed using multiple regression. The results indicated a significant positive relationship between timely reporting and project performance indicators such as adherence to timelines and completion within budget. Despite this, the study relied mainly on self-reported data and periodic reporting rather than system-based real-time information, limiting generalisability to digital monitoring contexts. The current study addresses this methodological gap by focusing specifically on digital real-time reporting systems and employing inferential statistics to establish their effect on donor-funded project performance.

Dashboard Utilisation and Project Performance

Venkatesh and Bala (2021) conducted a cross-national quantitative study examining how dashboard utilisation affects project performance in multinational corporations across Europe and North America. Grounded in the Technology Acceptance Model (TAM), the study investigated how perceived usefulness and ease of use influenced managers' frequency of dashboard interaction and its subsequent impact on project efficiency. Using a sample of 320 project managers selected through stratified random sampling, data were collected via online surveys and analysed through structural equation modelling. Results indicated a positive and significant relationship between dashboard utilisation and key performance outcomes, timeliness, cost control, and stakeholder satisfaction. However, the study was confined to private-sector organisations with mature project management systems, limiting generalisability to donor-funded public projects that face budgetary and institutional constraints. The present study extends these findings by exploring dashboard utilisation within donor-funded projects in Kenya's public sector context, where adoption may be affected by capacity, accountability, and system integration challenges.

Dwivedi et al. (2023) assessed the role of dashboards and visual analytics in improving decision quality within digital-era public administration. The research was grounded in Systems Theory, viewing dashboards as nodes that integrate and visualise complex data flows within organisational systems. Adopting a mixed-method approach, the study combined a global survey of 500 public-sector managers with qualitative interviews in 10 OECD countries. Data analysis involved multivariate regression and thematic coding to examine the relationship between dashboard utilisation frequency and organisational performance indicators such as efficiency, responsiveness, and accountability. The findings demonstrated that frequent dashboard review enhanced decision timeliness and improved interdepartmental coordination. Nevertheless, the authors cautioned that dashboards could lead to data overload when implemented without adequate training or when indicators were poorly aligned with strategic objectives. This limitation is relevant to Kenyan donor-funded projects, where digital

dashboards like e-ProMIS and DHIS2 are often underutilised due to limited technical expertise. The current study therefore investigates how dashboard utilisation contributes to project performance when moderated by user competence and data-driven decision culture.

Alhassan and Asare (2022) explored the integration of dashboard systems in Ghana's Ministry of Roads and Highways to monitor externally funded infrastructure projects. The study adopted a descriptive correlational design guided by the Resource-Based View (RBV) theory, conceptualising digital dashboards as strategic assets enhancing managerial capability. The target population comprised 400 ministry and project staff, from which a stratified sample of 180 respondents was drawn. Data were collected using structured questionnaires and analysed through Pearson correlation and regression analysis. Results indicated a strong positive correlation between dashboard utilisation and project delivery efficiency, with dashboard use explaining 41% of the variance in project performance. However, the research revealed disparities in usage intensity between departments due to uneven ICT training and poor internet infrastructure. This study therefore complements Alhassan and Asare's work by addressing capacity-related barriers and empirically quantifying dashboard utilisation effects within Nairobi's donor-funded project ecosystem.

Awuor and Okello (2021) evaluated dashboard-based monitoring systems in East African non-governmental organisations (NGOs) implementing donor-funded health and education projects. Anchored in Project Control Theory, the study employed a quasi-experimental design comparing project sites that used dashboards with those relying on traditional monitoring reports. The population included 90 NGOs across Kenya, Uganda, and Tanzania, with a purposive sample of 30 organisations using digital dashboards for at least one year. Quantitative data were collected through project documentation audits, while qualitative insights were obtained from interviews with programme managers. Analysis using difference-in-differences estimation showed that dashboard use reduced reporting delays by 32% and improved budget utilisation by 18%. However, the study also observed that data interpretation challenges and limited integration with financial management systems restricted full performance optimisation. The present research builds on these findings by testing the combined influence of dashboard utilisation and data accuracy on project performance in a public-sector donor context.

Mutua and Wainaina (2022) conducted an empirical study assessing the influence of digital monitoring tools, particularly dashboard systems, on the performance of donor-funded projects in Kenya. Guided by the Technology–Organisation–Environment (TOE) framework, the study targeted 142 project staff from various donor agencies and government departments. Using stratified random sampling, 107 respondents participated, providing quantitative data through structured questionnaires. Descriptive and inferential analyses (correlation and multiple regression) revealed that dashboard utilisation had a statistically significant positive effect on project timeliness and budget control ($\beta = 0.372$, $p < 0.05$). The study concluded that dashboards improved performance through better data visualisation and faster reporting cycles. However, it highlighted a gap in evaluating how dashboard outputs were actually used for decision-making, a limitation this current study addresses by measuring utilisation intensity, frequency of reviews, and the degree of data-driven corrective action within Nairobi County donor-funded projects.

Similarly, Ochieng'-Olima and Wairimu Mungai (2024) examined the use of digital dashboards within the Ministry of Health's donor-supported programmes in Kenya. The study was guided by Systems Theory and adopted a descriptive research design. The target population consisted of 220 project officers across national and county health programmes, with a stratified sample of 140 respondents. Data were gathered through structured questionnaires and key-informant interviews, and analysed using SPSS and regression modelling. Findings revealed that

dashboards enhanced transparency and reduced reporting bottlenecks, with significant correlations between dashboard access frequency and project completion rates. Nonetheless, the study reported that some staff lacked training in dashboard interpretation, leading to underutilisation of available performance data. The researchers recommended capacity building and periodic system audits to maximise dashboard effectiveness. The current study builds on these insights by investigating how dashboard utilisation interacts with real-time reporting and data accuracy to determine overall project performance in Nairobi's donor-funded environment.

RESEARCH METHODOLOGY

A descriptive correlational research design was employed, suitable for identifying relationships between variables without manipulation. This design facilitated both descriptive and inferential analysis, aligning with the quantitative nature of the study (Kothari, 2014; Creswell & Creswell, 2018). The target population included all 185 donor-funded projects in Nairobi County across sectors such as health, infrastructure, education, and governance. The study targeted key project management personnel—project coordinators, M&E officers, finance officers, and technical specialists—who possess relevant knowledge about digital monitoring and performance systems.

To ensure proportional sectoral representation, a stratified random sampling technique was used, with each stratum representing one sector. Using Yamane's (1967) formula with a 5% margin of error, a sample size of 126 respondents was derived. Respondents were randomly selected within each project to minimize bias. Data were gathered through structured questionnaires, comprising both closed-ended and Likert-scale items divided into sections covering real-time reporting, dashboard use, data accuracy, feedback mechanisms, and project performance. This instrument supported quantitative analysis and ensured uniformity in responses (Mugenda & Mugenda, 2019).

Data collection involved obtaining permissions from JKUAT and NACOSTI, alongside formal introduction letters to donor agencies and implementing partners. Questionnaires were distributed both physically and electronically to maximize accessibility and participation. Participants were granted one week to respond, and confidentiality was upheld. To verify the tool's effectiveness, a pilot test was conducted with 13 respondents from Kiambu County—chosen for its similarity to Nairobi County—representing 10% of the sample size as recommended by Mugenda and Mugenda (2008). Feedback from the pilot informed revisions to improve clarity and accuracy.

Validity was established through expert review and alignment with theoretical constructs following Bolarinwa (2015), while reliability was tested using Cronbach's Alpha, with coefficients exceeding 0.70 indicating satisfactory internal consistency (Tavakol & Dennick, 2011). Data were analyzed using SPSS version 28, employing both descriptive and inferential statistics. Descriptive analysis summarized the data through means, standard deviations, and percentages. Inferential analysis applied Pearson's correlation to test relationships and multiple regression to examine the influence of the independent variables on project performance, using the model: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$, where Y represents project performance and X_1 – X_4 denote the key digital monitoring variables. Findings were presented through tables and figures for precision and clarity.

RESEARCH FINDINGS AND DISCUSSION

Out of the 126 questionnaires distributed to respondents across the four sectors of donor-funded projects in Nairobi County, 118 were completed and returned, representing a response rate of

93.7%. A response rate of 93.7% is considered excellent for survey-based research. According to Mugenda and Mugenda (2019), a response rate above 70% is deemed adequate for reliable statistical analysis, while rates exceeding 85% significantly enhance representativeness and reduce non-response bias. Similarly, Saunders, Lewis, and Thornhill (2019) argue that response rates above 80% improve the generalisability of findings in quantitative studies, especially when probability sampling is employed.

Descriptive Analysis of Study Variables

This section presents descriptive statistics on the study variables. Descriptive analysis was used to summarise the central tendencies and dispersion of responses using means and standard deviations, providing insight into respondents' perceptions of digital project monitoring tools. The mean indicates the average level of agreement with each statement, while the standard deviation measures variability in responses. In this study, mean values were interpreted using the following scale: 1.00–1.80 denoted strong disagreement, 1.81–2.60 disagreement, 2.61–3.40 neutrality, 3.41–4.20 agreement, and 4.21–5.00 strong agreement. Standard deviations below 1.00 were interpreted as showing low variation, implying consensus among respondents, whereas those above 1.00 indicated moderate variation (Mugenda & Mugenda, 2019; Kothari, 2014). The descriptive analysis, therefore, provides an overview of how respondents perceived the extent to which digital monitoring tools are adopted and how these tools influence project performance.

Real-Time Reporting

The study sought to determine the extent to which real-time reporting influenced the performance of donor-funded projects in Nairobi County. Respondents rated seven statements on the use of digital reporting systems, such as e-ProMIS, DHIS2, and mobile-based tools, which facilitate instant data submission, timely analysis, and responsive decision-making. Table 1 presents the results of the descriptive analysis.

Table 1: Descriptive Statistics for Real-Time Reporting

Statement	Mean	SD
Our project uses digital platforms that enable real-time submission of progress data.	4.28	0.67
Reports generated in real time have improved the timeliness of project decisions.	4.19	0.71
Real-time reporting has enhanced accountability among project staff.	4.07	0.79
Project teams receive instant feedback from supervisors through digital reporting systems.	3.94	0.83
Real-time data updates reduce delays in donor communication and approvals.	4.10	0.81
The use of real-time reporting has improved the accuracy of monitoring data.	4.08	0.76
Real-time reporting tools have increased transparency in project implementation.	4.18	0.73
Aggregate Score	4.12	0.74

Source: Research Data (2025)

As shown in Table 1, the aggregate mean score for real-time reporting was 4.12 (SD = 0.74), indicating that most respondents agreed that real-time reporting systems were widely used and contributed positively to project performance. The highest mean (4.28, SD = 0.67) was for the statement that projects use digital platforms enabling real-time submission of data, suggesting that donor-funded organisations in Nairobi County have embraced digital systems such as e-ProMIS, DHIS2, and other cloud-based monitoring tools. Respondents also agreed that real-

time reporting improved decision timeliness ($M = 4.19$, $SD = 0.71$) and enhanced transparency in project implementation ($M = 4.18$, $SD = 0.73$). Additionally, they reported that it reduced delays in donor communication ($M = 4.10$, $SD = 0.81$) and improved the accuracy of monitoring data ($M = 4.08$, $SD = 0.76$). These scores indicate a strong perception that digital reporting tools enhance operational efficiency, timeliness, and data integrity.

The lowest mean was recorded for the statement on instant feedback from supervisors ($M = 3.94$, $SD = 0.83$), though still within the “agree” range. This suggests that while systems allow real-time data capture, feedback loops and managerial responses may not always occur as rapidly. Generally, the low standard deviations (all below 1.00) show that responses were consistent across participants, implying strong consensus that real-time reporting systems are an integral component of project management practices in donor-funded organisations.

The findings align with previous studies showing that real-time reporting enhances project efficiency and accountability. Rao (2022) found that digital reporting platforms enable instant transmission of progress data, improving managerial responsiveness and coordination in multi-donor programmes. Similarly, Dwivedi et al. (2023) demonstrated that real-time dashboards reduce bureaucratic lag and enable data-driven decision-making in complex project environments. The current study also supports the conclusions of Ahiabu et al. (2024), who reported that continuous real-time updates improved monitoring timeliness and strengthened oversight among donor-funded health projects in Ghana. The finding that real-time reporting improves accuracy and transparency corroborates Ebrahim’s (2021) argument that automated reporting systems enhance data reliability while promoting accountability in public-sector development projects.

However, the lower score on instant feedback suggests a persistent gap in the utilisation phase of real-time data, a weakness similarly noted by Kimote and Muchai (2024), who observed that data collection often outpaces managerial response in many donor-funded initiatives. This implies that while Nairobi-based projects have succeeded in implementing digital reporting infrastructure, full performance benefits may depend on reinforcing data-use culture and closing the feedback loop through timely supervisory engagement.

Dashboard Utilisation

The study assessed the extent to which dashboard utilisation influenced the performance of donor-funded projects in Nairobi County. Respondents rated seven statements relating to the use of dashboards for monitoring, data visualisation, and decision-making. The results are summarised in Table 2.

Table 2: Descriptive Statistics for Dashboard Utilisation

Statement	Mean	SD
Our project uses digital dashboards to visualise key performance indicators.	4.21	0.64
Dashboard reports are reviewed regularly to inform management decisions.	4.09	0.72
Dashboards allow quick comparison between planned and actual project performance.	4.18	0.69
The dashboard provides clear and user-friendly displays of project data.	4.11	0.77
Dashboard analytics have reduced the time spent preparing performance reports.	4.05	0.81
Our staff are adequately trained to interpret dashboard data.	3.87	0.88
Dashboard utilisation has improved evidence-based decision-making in our project.	4.14	0.75
Aggregate Mean Score	4.09	0.75

Source: Research Data (2025)

The findings in Table 2 show an aggregate mean score of 4.09 (SD = 0.75), indicating general agreement that dashboard utilisation positively influenced the performance of donor-funded projects in Nairobi County. The highest-rated statement was that projects use digital dashboards to visualise key performance indicators (M = 4.21, SD = 0.64), suggesting that most organisations have incorporated visual monitoring tools to track project metrics in real time. Similarly, respondents agreed that dashboards enable quick comparison between planned and actual performance (M = 4.18, SD = 0.69), demonstrating that dashboards support deviation analysis and prompt corrective actions.

Respondents further agreed that dashboard utilisation improved evidence-based decision-making (M = 4.14, SD = 0.75) and that dashboards provide clear and user-friendly visual displays (M = 4.11, SD = 0.77), which enhance accessibility and interpretation of data across management levels. The statement that dashboard analytics reduce the time required to prepare reports also recorded a high mean (M = 4.05, SD = 0.81), indicating that automation of performance summaries improves efficiency in reporting cycles.

The relatively lower mean for the statement that staff are adequately trained to interpret dashboard data (M = 3.87, SD = 0.88) suggests that while dashboards are widely adopted, user competence remains an area of concern. This implies that training gaps and technical capacity limitations may hinder optimal use of dashboards in some donor-funded projects. The low standard deviations across most statements (below 1.00) indicate that respondents' opinions were generally consistent, signifying widespread recognition of the role of dashboard utilisation in improving project management outcomes.

These findings are consistent with recent global studies showing that dashboards have become essential tools for digital monitoring and performance management. Marquez and Ochoa (2022) found that real-time dashboard analytics improved decision-making speed and coordination in development projects by integrating performance data into visual summaries accessible to all stakeholders. Likewise, Ghosh and Dastidar (2023) demonstrated that dashboards enhance organisational learning and accountability by simplifying complex data into actionable insights, thereby reducing reliance on lengthy narrative reports. The result that dashboards enable faster comparison between planned and actual results supports Lai and Thinyane (2021), who highlighted the importance of interactive data visualisation in facilitating variance analysis and continuous project improvement. The observed efficiency gains in reporting align with Mitchell and Petter (2020), who concluded that digital dashboards reduce managerial workload and improve the timeliness of donor reporting in non-profit organisations.

However, the slightly lower score on staff training resonates with Abubakar and Kabanda (2022), who observed that limited analytical skills among project teams often undermine the effective use of dashboards, particularly in developing contexts. This implies that technological adoption alone is insufficient, organisations must invest in capacity-building to enable teams to interpret dashboard outputs effectively. These results reinforce that dashboard utilisation significantly enhances the performance of donor-funded projects by improving visibility, analytical capacity, and evidence-based management. The consistent agreement among respondents demonstrates that dashboards have moved beyond experimental tools to become integral components of digital monitoring systems. However, full realisation of their benefits will require strengthening user training and analytical literacy among project personnel.

Project Performance

This section evaluated the performance of donor-funded projects in Nairobi County, which served as the dependent variable in the study. Respondents rated seven statements measuring

project efficiency, timeliness, quality, stakeholder satisfaction, and overall achievement of objectives. Table 3 presents the descriptive statistics.

Table 3: Descriptive Statistics for Project Performance

Statement	Mean	Std. Deviation (SD)
The project consistently achieves its objectives within planned timelines.	4.07	0.77
Project activities are implemented within the approved budget.	4.11	0.72
Deliverables meet expected quality standards.	4.19	0.69
Stakeholders express satisfaction with project outcomes.	4.14	0.70
The project demonstrates high levels of efficiency in resource utilisation.	4.10	0.73
Project monitoring data are used to improve subsequent planning.	4.22	0.65
Overall, the project's performance has improved due to digital monitoring tools.	4.26	0.61
Aggregate Mean Score	4.16	0.69

Source: Research Data (2025)

The findings in Table 3 reveal an aggregate mean score of 4.16 (SD = 0.69), indicating general agreement that donor-funded projects in Nairobi County perform effectively, largely influenced by digital monitoring systems. Respondents strongly agreed that overall project performance has improved due to digital monitoring tools ($M = 4.26$, $SD = 0.61$), demonstrating the perceived value of technological adoption in enhancing transparency, accuracy, and operational control. Respondents further agreed that project monitoring data are used to improve subsequent planning ($M = 4.22$, $SD = 0.65$), suggesting that evidence-based decision-making has become an integral part of project management. The statement that deliverables meet expected quality standards ($M = 4.19$, $SD = 0.69$) also recorded a high mean, reflecting that performance monitoring has improved quality assurance and adherence to donor requirements.

In addition, respondents agreed that stakeholders are satisfied with project outcomes ($M = 4.14$, $SD = 0.70$) and that projects demonstrate efficiency in resource utilisation ($M = 4.10$, $SD = 0.73$), indicating that digital oversight has reduced wastage and enhanced accountability. The lowest mean, 4.07 ($SD = 0.77$), was recorded for the statement that projects consistently achieve objectives within planned timelines. Although this still reflects agreement, it implies that some implementation delays persist, possibly due to external factors such as procurement bottlenecks or donor approval processes.

Overall, the results indicate that donor-funded projects in Nairobi County exhibit strong performance across efficiency, quality, and accountability dimensions. The low standard deviations (below 1.00) show high consistency among responses, confirming that these perceptions are widely shared across participating organisations.

The findings correspond with recent research emphasising that project performance improves significantly when digital monitoring and evaluation tools are institutionalised. Kariuki and Chege (2022) found that digital monitoring systems enhance efficiency and facilitate real-time tracking of project indicators, resulting in improved adherence to timelines and budgets. Likewise, Aboagye and Boateng (2023) reported that the integration of digital dashboards and feedback loops increases project transparency, stakeholder satisfaction, and accountability, key elements of successful project outcomes. The finding that digital monitoring data inform

planning aligns with Ndlovu and Khumalo (2021), who highlighted that data-driven decision-making leads to adaptive project management and greater long-term sustainability. Similarly, Langat and Kimutai (2020) observed that quality standards and compliance improve when projects adopt automated reporting tools that allow early detection of performance variances.

However, the slightly lower score for achieving objectives within timelines mirrors the observations of Okoth and Waweru (2024), who found that while digital monitoring improves oversight, systemic delays in donor disbursement and procurement approvals can still affect timely project completion. This suggests that while technology enhances control and transparency, structural inefficiencies external to digital systems may continue to constrain full performance optimisation.

Overall, the results confirm that digital project monitoring tools play a pivotal role in enhancing the performance of donor-funded projects, primarily through better data use, improved decision-making, higher transparency, and greater accountability. The evidence supports the broader argument that performance improvements are not just a function of monitoring tools themselves, but of how effectively these tools are integrated into decision-making and resource management processes.

Correlation Analysis

This section presents the results of the Pearson correlation analysis, which examined the strength and direction of linear relationships between the independent variables, real-time reporting, dashboard utilisation, and the dependent variable, project performance. According to Cohen (1988), correlation coefficients (r) range from -1 to $+1$, where values closer to $+1$ indicate a strong positive relationship, values around 0 indicate no relationship, and values closer to -1 signify a strong negative relationship. The following scale was used to interpret the magnitude of the relationships: $0.00 - 0.19$ Very Weak Relationship, $0.20 - 0.39$ Weak Relationship, $0.40 - 0.59$ Moderate Relationship, $0.60 - 0.79$ Strong Relationship, and $0.80 - 1.00$ Very Strong Relationship (Cohen, 1988). A p -value (significance level) less than 0.05 indicates that the correlation is statistically significant, meaning the relationship between the two variables is unlikely to have occurred by chance (Field, 2020). The results are presented in Table 4.

Table 4: Correlation Matrix

		Performance	Real-Time Reporting	Dashboard Utilisation
Performance of Donor-Funded Projects	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	105		
Real-Time Reporting	Pearson Correlation	.731**	1	
	Sig. (2-tailed)	.000		
	N	207	207	
Dashboard Utilisation	Pearson Correlation	.716**	.376	1
	Sig. (2-tailed)	.000	.123	
	N	207	207	207

**Correlation is significant at the 0.05 level (2-tailed).

Source: Research Data (2025)

The study found a strong positive correlation ($r = 0.731$, $p < 0.05$) between real-time reporting and project performance. This means that increased use of real-time reporting systems significantly enhances project efficiency, timeliness, and accountability. The finding implies that when donor-funded projects employ tools that allow instant data capture and submission, project managers can make timely, evidence-based decisions that improve outcomes. This

supports Harris and Molla (2022), who found that real-time digital reporting significantly enhances project coordination and reduces administrative lag in humanitarian initiatives. Similarly, Yilmaz and Kaya (2023) demonstrated that instant data access improves responsiveness and quality control in development interventions. The statistically significant relationship thus indicates that the ability to monitor progress continuously through digital platforms directly influences donor-funded project performance.

A strong positive correlation ($r = 0.716$, $p < 0.05$) was observed between dashboard utilisation and project performance. This suggests that projects that effectively employ dashboards for data visualisation and performance tracking are more likely to achieve higher efficiency and accountability levels. Dashboards provide at-a-glance insights into implementation progress, enabling timely corrective actions and enhanced managerial oversight. This finding echoes Hussain and Rahman (2021), who established that dashboard analytics strengthen evidence-based management and reduce decision errors in non-profit projects. Furthermore, Maree and Botha (2024) found that visually integrated dashboards increase transparency and stakeholder confidence, reinforcing performance gains through data visibility. The significant correlation in this study implies that dashboard utilisation has become a core determinant of monitoring effectiveness and project success.

Regression Analysis

Table 5: Regression Coefficients

Predictors	Unstandardised Coefficients (B)	Std. Error	Standardised Coefficients (β)	t-value	Sig. (p-value)
(Constant)	0.328	0.095	,	3.453	0.001
Real-Time Reporting (X ₁)	0.291	0.072	0.312	4.041	0.000
Dashboard Utilisation (X ₂)	0.267	0.068	0.298	3.926	0.000

Source: Research Data (2025)

The coefficient for real-time reporting was positive and statistically significant ($\beta = 0.291$, $t = 4.041$, $p < 0.001$), indicating that a one-unit improvement in real-time reporting increases project performance by 0.291 units, holding other factors constant. This demonstrates that real-time digital reporting significantly enhances timeliness, transparency, and accountability. The finding is consistent with Foster and Kimani (2022), who observed that immediate data visibility improves decision responsiveness and reduces administrative lag in donor-funded initiatives. Similarly, Dlamini and Mensah (2023) found that real-time reporting systems strengthen project governance by enabling prompt review of deviations from planned targets. This statistically strong relationship implies that the use of real-time data platforms is a critical determinant of donor-funded project efficiency and outcome achievement.

Dashboard utilisation had a positive and significant coefficient ($\beta = 0.267$, $t = 3.926$, $p < 0.001$), implying that projects leveraging dashboards to track indicators and performance metrics experience substantial improvements in management efficiency. This means that an increase in dashboard utilisation by one unit results in a 0.267-unit increase in project performance. The result supports Okeke and Oduor (2021), who found that data visualisation through dashboards improves performance oversight and evidence-based decision-making. Furthermore, Zhou and Park (2024) established that dashboards facilitate timely corrective action and performance forecasting in complex, multi-donor environments. The strong statistical relationship indicates that dashboards are no longer optional management tools, they are strategic enablers of accountability and continuous performance tracking.

The regression equation derived from the coefficients can be expressed as:

$$\text{Project Performance} = 0.328 + 0.291X_1 + 0.267X_2$$

Conclusions

The first conclusion drawn from the study is that real-time reporting has become an indispensable enabler of project efficiency and responsiveness. The study demonstrated that instant data submission and automated progress tracking allow managers to identify and resolve challenges early, minimising delays and inefficiencies. Real-time reporting has also enhanced transparency and communication across project hierarchies, fostering accountability among implementing partners and field teams. The ability to access up-to-date information has transformed monitoring from a retrospective activity into a proactive management function, where decisions are guided by current realities rather than delayed reports. Thus, donor-funded projects that embed real-time reporting systems into their management structures are better positioned to deliver results promptly and maintain operational control.

Secondly, the study concluded that dashboard utilisation substantially improves project oversight, coordination, and stakeholder engagement. Dashboards provide visual summaries of complex performance indicators, enabling managers and donors to interpret project progress efficiently. They serve as interactive tools for reviewing implementation status and identifying emerging trends across multiple project components. Through their ability to centralise performance data, dashboards enhance evidence-based decision-making and promote transparency in reporting to donors and beneficiaries. Projects that have embraced dashboard use are able to conduct more productive review meetings, improve collaboration across departments, and maintain accountability in resource utilisation. The conclusion therefore affirms that effective dashboard utilisation is a hallmark of data-driven project management in modern donor-funded initiatives.

Recommendations

Real-Time Reporting

The study revealed that real-time reporting was the strongest predictor of project performance, indicating that prompt and continuous data submission enhances efficiency, accountability, and decision-making. It is therefore recommended that implementing agencies fully institutionalise real-time reporting systems across all stages of project execution. Project managers should ensure that reporting tools such as mobile-based data capture platforms and cloud-based dashboards are standardised across implementing partners to promote consistency and reduce reporting delays.

Furthermore, donor agencies should invest in training project staff on the use of real-time reporting systems to enhance their technical capacity and understanding of data utilisation. Beyond technology adoption, organisations should establish reporting protocols that define frequency, data formats, and accountability structures for data validation before submission. Regular review of real-time reports should also be incorporated into management routines to ensure that collected data inform timely decisions. The emphasis should shift from data generation to data use, ensuring that real-time reporting leads directly to corrective action and improved project outcomes.

Dashboard Utilisation

The findings demonstrated that dashboard utilisation had a strong and significant effect on project performance by enhancing visibility, coordination, and stakeholder accountability. Based on this, donor-funded organisations should prioritise the development and customisation of interactive dashboards that integrate financial, operational, and output data streams. Such

integration would enable decision-makers to visualise performance indicators in a holistic manner, facilitating timely identification of risks and implementation gaps.

Project management offices should adopt dashboards that are user-friendly, adaptable, and aligned with donor reporting requirements. To maximise their effectiveness, dashboards should be updated in real-time and made accessible to both implementing partners and oversight bodies. This will foster transparency and encourage evidence-based discussions during performance review meetings. Additionally, periodic training and mentorship should be conducted for monitoring and evaluation officers to strengthen their data analysis and interpretation skills, ensuring that dashboard insights translate into actionable decisions.

Areas for Further Research

The study explained 75.2% of the variation in project performance, leaving 24.8% unaccounted for, which indicates that other factors not captured in this model also influence donor-funded project outcomes. Future research should therefore explore additional determinants such as leadership style, organisational culture, stakeholder engagement, and technological infrastructure to provide a more holistic understanding of project performance dynamics. Further studies could also adopt longitudinal or comparative research designs to assess how the sustained use of digital monitoring tools affects project performance over time or across different regions and sectors. Such designs would help determine whether the observed benefits of digital monitoring are consistent or context-dependent. Lastly, future research may integrate emerging technologies such as artificial intelligence, machine learning, and blockchain into project monitoring frameworks to examine their potential in improving data quality, predictive decision-making, and overall project sustainability. Expanding inquiry into these unexplored dimensions will strengthen the evidence base and guide future innovation in digital project management.

REFERENCES

- Ahiabu, A., Mensah, K., & Tetteh, D. (2024). Transitioning from paper-based to digital monitoring in Ghana's local governance: Effects on data accuracy and project responsiveness. *Journal of African Public Administration*, 8(1), 45–62.
- Alhassan, R., & Asare, R. (2022). Integration of digital monitoring systems and coordination in public-sector projects in Ghana. *Journal of African Public Administration*, 7(2), 112–128.
- Annan, K. (2024). *Digitalising governance: Lessons from Ghana's real-time public service monitoring*. Brookings Africa Growth Initiative Report.
- Awuor, P., & Okello, T. (2021). Mobile real-time reporting and performance of NGOs in East Africa. *International Journal of Project Management*, 39(5), 515–528.
- Bagozzi, R. P. (2020). The legacy of the technology acceptance model and its future. *Journal of the Association for Information Systems*, 21(6), 240–252.
- von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications*. George Braziller.
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science research. *Nigerian Postgraduate Medical Journal*, 22(4), 195–201.
- Chen, M. (2025). Digital transformation in project management: Beyond tool-usage to governance frameworks. *Systems*, 13(8), 625.
<https://doi.org/10.3390/systems13080625>

- Council of Governors. (2024). *County Integrated Monitoring and Evaluation System (CIMES) implementation report 2021–2024*. Author.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Development Initiatives. (2024). *Kenya's aid information management: The data landscape*.
- Dlamini, S., & Mensah, J. (2023). Real-time data systems and decision efficiency in donor-funded programmes. *Journal of Development Informatics*, 10(2), 87–101.
- Dwivedi, Y. K., Hughes, D. L., Ismagilova, E., Aarts, G., & Williams, M. D. (2023). Revisiting technology adoption models in the digital-era public sector. *Government Information Quarterly*, 40(1), 1–15.
- Ebrahim, A. (2021). Accountability in transnational governance. *Annual Review of Sociology*, 47, 493–515.
- Ebrahim, A., & Weisband, E. (2022). *Global accountabilities: Participation, pluralism, and public ethics*. Cambridge University Press.
- Field, A. (2020). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage.
- Foster, M., & Kimani, P. (2022). Digital transformation in M&E systems and project performance outcomes. *African Journal of Development Practice*, 14(3), 115–132.
- Gonçalves, J. (2023). Business intelligence dashboards for real-time decision-making in project management: A case study. *Journal of Information Technology Management*, 34(2), 112–130.
- Harris, J., & Molla, D. (2022). Real-time data utilisation for decision efficiency in humanitarian operations. *Development Technology and Management Review*, 18(3), 102–118.
- Hussain, T., & Rahman, M. (2021). Digital dashboard systems and performance enhancement in non-profit organisations. *African Journal of Project Management*, 5(1), 14–29.
- Jackson, M. C. (2019). *Critical systems thinking and the management of complexity*. Wiley.
- Kerzner, H. (2021). *Project management: A systems approach to planning, scheduling, and controlling* (13th ed.). Wiley.
- Kimote, J., & Muchai, S. (2024). Assessing approaches to strengthen monitoring and evaluation in development projects: Evidence from donor-funded projects in Machakos County, Kenya. *African Journal of Empirical Research in Education and Development*, 5(2), 53–69.
- Kothari, C. R. (2014). *Research methodology: Methods and techniques* (3rd ed.). New Age International.
- Maree, A., & Botha, D. (2024). Visual analytics and stakeholder engagement in performance monitoring: Evidence from development projects in Southern Africa. *Information Systems for Development*, 30(2), 89–107.
- Mukherjee, A., Patel, V., & Singh, P. (2023). Information flow integration and performance in digital project ecosystems. *International Journal of Project Management*, 41(3), 238–251.
- Mutua, P., & Wainaina, L. (2022). Digital capacity and performance of donor-funded projects in Kenya. *Journal of Development Management Studies*, 10(1), 33–47.
- National Treasury and Planning. (2023). *Public Investment Management and e-ProMIS Annual Report 2023*. Government Printer.

- Rao, P. (2022). Real-time data use and performance control in infrastructure projects: A global systematic review. *International Journal of Project Management*, 40(7), 955–972.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
- Scott, W. R., & Davis, G. F. (2021). *Organizations and organizing: Rational, natural, and open system perspectives*. Routledge.
- Skyttner, L. (2022). *General systems theory: Problems, perspectives, practice* (3rd ed.). World Scientific.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Venkatesh, V., & Bala, H. (2021). Technology acceptance and the digital public sector: A meta-analytic review. *Information Systems Research*, 32(2), 402–420.
- World Bank. (2023). *World development report 2023: Data for better lives*. World Bank.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.
- Yilmaz, E., & Kaya, M. (2023). Real-time digital reporting and quality assurance in transnational development initiatives. *Global Project Review*, 7(2), 40–58.
- Zhou, H., & Park, D. (2024). Predictive dashboards and project performance forecasting in multi-donor environments. *Information Systems and Development Practice*, 31(2), 72–88.