

Assessing the adoption and impact of digital transformation in project management: A case study of operation eyesight universal (OEU) in Lusaka District, Zambia

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ABSTRACT

Digital transformation is increasingly central to the ability of non-governmental organizations (NGOs) to manage projects efficiently, use evidence in decision-making, demonstrate accountability, and extend services to underserved populations. However, evidence on how digital technologies shape project management in resource-constrained health NGOs remains limited. This study assessed the adoption and perceived impact of digital transformation on project management at Operation Eyesight Universal (OEU) in Lusaka District, Zambia. It examined the digital tools used in planning, monitoring, and reporting; their influence on project efficiency, coordination, accountability, and service delivery; and the challenges and opportunities associated with implementation. A qualitative single-case study design and an inductive approach were used, with the Unified Theory of Acceptance and Use of Technology providing a sensitizing theoretical lens. Twenty-five staff members with direct experience of digital project operations were purposively selected and recruitment continued until no substantively new themes were identified. Participants included project managers, project and field officers, programme coordinators, monitoring and evaluation personnel, IT/technical staff, and programme support staff. Data were generated through 20–30-minute semi-structured interviews. Interview recordings were transcribed and analyzed thematically through familiarization, coding, theme development, review, definition, and interpretation; participant codes P1–P25 protected anonymity. Credibility was strengthened by comparing accounts across staff roles and by checking recurring claims against documentary evidence. The findings showed that Electronic Medical Records, Kobo Toolbox and other mobile data-collection applications, project-management and reporting platforms, digital dashboards, and teleophthalmology systems were embedded to varying degrees in OEU's project workflows. Participants reported that these tools accelerated data capture and reporting, improved access to real-time information, supported task allocation and cross-departmental coordination, strengthened monitoring and accountability, and enabled faster responses to field conditions. Teleophthalmology and digital patient records were also perceived to improve continuity and reach of eye-care services, particularly for remote communities. EMRs and dashboards improved visibility of targets, schedules, follow-up requirements, and donor-reporting information, while mobile data reduced delays between field activity and management review. Nevertheless, poor network coverage, system downtime, and limited devices, uneven competence in advanced functions, and dependence on technical support constrained consistent use. These findings indicate that performance benefits encouraged adoption, while facilitating conditions, especially connectivity, equipment, training, system integration, and responsive support, determined whether those benefits could be sustained. The study concludes that digital transformation can strengthen project management in a health NGO when technology is treated as an organizational change process rather than a stand-alone technical intervention. It recommends targeted investment in reliable infrastructure and interoperable systems, continuous role-specific training, prompt technical support, clear data-governance procedures, and partnerships that support sustainable financing and implementation. By documenting these relationships in an eye-health NGO, the study provides context-specific evidence from Zambia for organizational leaders and implementation partners.

Keywords: Digital Transformation, NGOs, OEU, Project Management, Service Delivery, Zambia.

I. INTRODUCTION

Digital transformation, defined as the strategic integration of digital technologies into organizational processes, has emerged as a key driver of efficiency, innovation and value creation (Vial, 2021). Historically, many NGOs relied on manual project management practices, paper-based reporting systems and traditional communication methods to coordinate activities across programs and regions. Although these approaches were functional, they were often inefficient, slow, and prone to errors, thereby limiting NGOs' ability to monitor outcomes, report to donors and demonstrate impact (Gagnon et al., 2016). Early studies on digital adoption in the nonprofit sector identified the potential of technology to improve operational efficiency; however, widespread adoption was constrained by limited financial resources, low technical capacity and inadequate digital infrastructure (Kanter & Fine, 2022). Over time,

NGOs began adopting digital tools to streamline operations. Cloud-based collaboration platforms, mobile data collection applications and project management software have enabled teams to coordinate projects in real time, reduce information silos, and enhance transparency (Neeley, 2021). Digital transformation in the nonprofit sector extends beyond the mere adoption of technology; it encompasses process innovation, data-driven decision-making and a shift toward measurable outcomes (Lamarre, Kate, & Rodney, 2023). Organizations that embrace digital systems are more likely to achieve strategic goals, improve operational efficiency and strengthen accountability to donors and beneficiaries (Kanter & Fine, 2022).

Operation Eyesight Universal (OEU) provides relevant organizational context for this study. Founded in 1963 in Calgary, Canada, OEU is an international non-governmental organization committed to the prevention of avoidable blindness and the promotion of sustainable eye health services (Operation Eyesight Universal, 2023). Over the years, the organization has expanded its reach and implemented eye health programmes in more than ten countries across Africa and South Asia (Operation Eyesight Universal, 2023). OEU operates primarily in developing regions where access to quality eye care services is limited. Its presence spans countries such as Zambia, Kenya, Liberia, Ethiopia, and India, among others (Operation Eyesight Universal, 2023). In these regions, the organization collaborates with local governments, health institutions and communities to strengthen health systems and improve access to eye care, particularly in underserved populations (Operation Eyesight Universal, 2023).

Operation Eyesight Universal is guided by a commitment to eliminating avoidable blindness and ensuring equitable access to eye health services. The organization emphasizes sustainability, community participation, and capacity building, focusing on long-term solutions that empower local systems rather than short-term interventions (Operation Eyesight Universal, 2023). To achieve its mission, OEU implements various programmes, including community outreach, eye screening and treatment, cataract surgeries and school eye health initiatives (Operation Eyesight Universal, 2023). It also invests in training healthcare workers and strengthening primary eye care systems within existing health infrastructure (Operation Eyesight Universal, 2023).

Traditionally, project management at OEU involved coordinating partners, tracking activities and reporting outcomes through largely manual processes. These processes were often complicated by geographical distance, limited on-site infrastructure and engagement with diverse stakeholders. Such challenges highlight the need for innovative approaches, including digital transformation, to improve efficiency and effectiveness in project delivery. Public health programmes, such as those implemented by OEU, require robust project management frameworks to ensure systematic, scalable and sustainable interventions. Key project management principles, including detailed planning, clear role delineation, efficient resource allocation, and continuous monitoring and evaluation; provide the foundation for successful project delivery. When these principles are supported by digital tools such as project management software for task tracking or mobile applications for field data collection organizations can manage larger volumes of information and coordinate activities more effectively ((Paul & Tsedal, 2022); (Beth & H., 2022)). Globally, there is growing recognition that combining formal project management approaches with digital innovation improves development outcomes. Data-driven methods enable organizations to detect issues early, adapt to changing conditions, and make evidence-based decisions (Eric et al., 2023).

In recent years, NGOs have increasingly adopted digital tools /to improve project management, communication and service delivery. Surveys indicate that approximately 61% of nonprofits use cloud-based platforms such as Microsoft 365 or Google Workspace to enhance workflow coordination and operational efficiency (Neeley, 2021). These tools enable geographically dispersed teams to collaborate in real time, reduce delays, and improve productivity (Paul & Tsedal, 2022). Additionally, digital dashboards and analytics systems enable NGOs to demonstrate measurable impact, thereby enhancing transparency and accountability (Ward & Bruce, 2022).

1.1 Statement of the Problem

Despite these advancements, digital adoption remains uneven across the nonprofit sector. Many NGOs have limited digital presence and lack comprehensive digital strategies. Only about 15.6% of NGOs have documented digital technology plans, while financial constraints often lead organizations to prioritize immediate programme delivery over long-term investments in information technology (Michael, 2020) and (Kanter & Fine, 2022). These limitations result in fragmented systems, outdated infrastructure, and inconsistent use of digital tools, which can hinder project efficiency and accountability (Ward & Bruce, 2022).

OEU exemplifies both the potential and challenges of digital transformation. The organization has introduced Electronic Medical Records (EMR), mobile data collection tools, teleophthalmology, and digital training platforms to enhance service delivery and project management (Marx & Padmanabhan, 2020). While these innovations demonstrate the benefits of digital transformation, they also highlight the challenges associated with scaling technology across diverse and resource-constrained environments. Therefore, the transition from traditional manual systems to digital approaches presents both opportunities and challenges for NGOs. This context underscores the need for research on the adoption and impact of digital transformation in project management at OEU in Lusaka District.

1.2 Research Objectives

- i. To assess OEU's adoption of digital tools in project management, including planning, monitoring, and reporting.
- ii. To describe the impact of digital transformation on project efficiency, coordination, and service delivery.
- iii. To identify challenges and opportunities in implementing digital transformation in NGO project management.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Updated Unified Theory of Acceptance and Use of Technology

The study was informed by the Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003). UTAUT proposes that technology acceptance and use are shaped by four principal constructs: performance expectancy, effort expectancy, social influence and facilitating conditions. Performance expectancy refers to the belief that a technology will improve work performance; effort expectancy concerns perceived ease of use; social influence reflects the expectations of managers, colleagues and other significant actors; and facilitating conditions refer to the infrastructure, knowledge, equipment and organizational support required for use. Later scholarship has refined the framework. Venkatesh et al. (2016) emphasized the need to examine technology use across individual, technological, organizational and contextual levels. Dwivedi et al. (2019) identified attitude as an important influence on behavioral intention and showed that facilitating conditions may also shape intention. A meta-analysis by Blut et al. (2022) further highlighted technology compatibility, user education, cost, personal innovativeness and contextual differences as relevant to acceptance and sustained use. Together, these developments make the framework more suitable for analyzing organizational digital transformation than a narrow focus on initial user intention.

The updated UTAUT framework was appropriate because OEU's digital transformation involved both individual acceptance and organizational implementation conditions. Performance expectancy helped interpret accounts of faster data collection, improved reporting, stronger coordination and timely decisions. Effort expectancy and attitude informed experiences of usability and perceived value, while social influence directed attention to leadership and peer expectations. Facilitating conditions, compatibility and user education supported analysis of connectivity, device availability, system integration, staff competence, training and technical support. Consistent with the inductive qualitative design, UTAUT constructs were used as sensitizing concepts rather than predetermined coding categories. Themes were first developed from participants' accounts and were then interpreted in relation to the framework. This approach preserved the study's grounding in staff experience while providing a coherent explanation of why perceived benefits encouraged use and why weak implementation conditions constrained sustained adoption.

2.2 Empirical Review

2.2.1 Level of Adoption of Digital Tools

The literature treats digital adoption as a continuum comprising availability, acceptance, frequency of use, functional coverage and integration into routine work. Reviews from African and low-income settings show that electronic health records and other digital-health technologies have expanded, but adoption remains uneven and frequently stalls between pilot introduction and sustained institutional use. Manyazewal et al. (2021) found considerable potential for digital technologies to strengthen Ethiopian health services, yet also identified fragmented implementation and limited scale. Woldemariam and Jimma (2023) reached a similar conclusion across low-income countries: weak infrastructure, management commitment, standards, interoperability, technical support and user experience commonly prevent organizations from progressing to mature EHR use. Read together, these reviews challenge any binary measure of adoption based only on whether a tool has been purchased or installed.

Evidence from Zambia illustrates the distinction between system presence and meaningful utilization. Clarke et al. (2019) evaluated the SmartCare childhood-vaccination module in Lusaka and Southern provinces and reported current use of only 2% in the study area despite the wider availability of SmartCare. Although staff regarded the module as user-friendly and dependable, daily power outages, weak alignment with vaccination and outreach workflows, incomplete or incongruous data and concerns about sustainability restricted routine use. Gumede-Moyo et al. (2019) likewise found that SmartCare had become a multifunctional platform, but a heavy information burden, staffing and funding constraints, inconsistent data-verification practices and limited feedback to facilities weakened engagement and data quality. The two studies therefore converge on a sociotechnical explanation: adoption depends on the fit between the system, the user and the surrounding work rather than on technical availability alone.

More recent African evidence reinforces this interpretation. Mwogosi and Mambile (2024), studying 122 health workers across 31 Tanzanian primary healthcare facilities, identified perceived usefulness, training and support, interoperability, data security, organizational culture and leadership as influences on adoption and use. Wanadi and Ssenyonjo (2025) provide especially relevant NGO evidence from Kampala. Among staff using e-health for

community monitoring of HIV and tuberculosis services, non-interoperable systems were 74% less likely to be adopted and used, while systems perceived not to ensure data accuracy were 96% less likely to be adopted and used. Their qualitative findings also highlighted user-friendly design, workflow customization, training, real-time technical assistance and collegial support. The consistency across public-health and NGO studies indicates that technical credibility and organizational readiness jointly shape adoption. Nevertheless, the evidence remains narrow in its unit of analysis. Most studies assess a single EHR, module or clinical application and rarely distinguish occasional use, parallel paper-and-digital processes and full workflow integration. They also provide limited insight into a portfolio of tools used throughout an NGO project cycle. The present study addresses this gap by examining OEU's use of EMRs, mobile data collection, teleophthalmology, project-management software, dashboards and communication platforms across planning, implementation, monitoring and reporting.

2.2.2 Effects on Project Efficiency, Coordination and Service Delivery

Eye-health studies demonstrate plausible operational benefits, but they also reveal the limitations of transferring clinical findings directly to project management. Das et al. (2022) analyzed more than one million patient records in India, including 63,703 teleophthalmology referrals captured through the eye Smart EMR application. Adherence to referral guidance exceeded 98%, while missed referrals declined from 2.6% to 2.0% after targeted training and reinforcement. This shows how digital records, routine audit and focused training can strengthen operational control. However, the study measured referral behavior rather than project schedules, resource use, reporting efficiency or coordination among organizational functions. Misra et al. (2020) similarly found that, among 5,604 patients attending vision centres in four Indian states, 6.9% were advised to receive teleconsultation; 40.4% of these patients were treated at the vision centre and 59.6% were referred to a higher level of care. The findings suggest that teleophthalmology can improve triage and extend specialist support to rural services. Yet the study covered one week and involved centres with suitable tablets and connectivity, conditions that may overstate feasibility in weaker settings. Together, the Indian studies establish a credible service-delivery pathway in which digital information supports remote review, targeted referral and monitoring, but neither explains how an NGO coordinates staff, partners and project resources to sustain that pathway.

Wider EHR research presents a more mixed picture of efficiency. Tsai et al. (2020), reviewing 142 studies, identified improvements in information accessibility, communication, patient care and some areas of efficiency, alongside increased workload, disrupted workflows and productivity losses. Because 81 studies originated in the United States and study quality was not assessed, direct transfer to OEU is limited. Even so, the review provides an important corrective to technologically deterministic claims: digital systems may shift work rather than remove it, particularly where users maintain parallel systems or compensate for poor design.

African studies show the same conditional relationship. Mwogosi and Mambile (2024) reported perceived improvements in data management, coordination, productivity, efficiency and service delivery, but also identified inadequate infrastructure, power interruptions, duplication of effort and limited data-analytics expertise. Clarke et al. (2019) found that easier access to vaccination data was viewed as a strength, yet incomplete data and low module use prevented many expected benefits from being realized. These findings indicate that information availability improves coordination and decision-making only when data are complete, systems are integrated and staff can use the information effectively. A major empirical limitation is therefore the treatment of outcomes. Previous studies often measure clinical access, referral, data quality or administrative efficiency separately. Few examine project efficiency, coordination and service delivery as connected outcomes within an NGO. The present study addresses this gap by examining whether digital tools alter process timeliness, reporting delays, workload, information flow, cross-team coordination, monitoring, resource decisions and the responsiveness of OEU's eye-health services. It also documents negative and uneven effects rather than presuming that digitalization automatically improves performance.

2.2.3 Challenges and Opportunities in the Use of Digital Tools

The empirical literature consistently locates digital-transformation challenges at interacting technical, organizational and environmental levels. Borges do Nascimento et al. (2023), synthesizing systematic-review evidence on healthcare professionals' use of digital technologies, identified recurring barriers involving infrastructure, system design, workload, digital skills, organizational support, regulation and user trust. Common facilitators included usability, training, technical support, leadership and compatibility with clinical work. Zharima et al. (2023) reached a comparable conclusion in South Africa, where government, private-sector, academic and NGO stakeholders described fragmentation, limited coordination and weak alignment among the actors needed to build a coherent information ecosystem. Their agreement suggests that isolated training or equipment purchases cannot resolve problems produced by interacting systems, institutions and workflows.

Eye-health evidence makes these interactions more concrete. Khan et al. (2024), reviewing 13 studies of teleophthalmology in low-resource settings, identified improved access, reduced travel, more efficient specialist use

and opportunities for low-cost portable innovation. The same review reported high initial and maintenance costs, limited bandwidth, unreliable electricity, inadequate equipment and skills, user resistance, privacy concerns and uncertain long-term financing. Its small and heterogeneous evidence base, English-language restriction and exclusion of grey literature limit generalization. Nevertheless, it demonstrates that an opportunity such as remote access can become an operational risk where connectivity, privacy safeguards or referral capacity are weak.

At system level, Vumbugwa et al. (2024) interviewed 14 e-health leaders from ten African countries and identified weak collaborator buy-in, fragmented vision, donor dependence, non-supportive policies and insufficient workforce skills as barriers to digital-health maturity. Multi-stakeholder engagement, country ownership, stronger capacity for data use and routine maturity assessment were identified as facilitators. This is important for NGOs because donor funding and partner reporting requirements may enable initial investment while also encouraging parallel, programme-specific systems and long-term sustainability risks. Zambia's Digital Health Strategy 2022-2026 emphasizes governance, investment, workforce, interoperability, infrastructure and digital applications (Ministry of Health, Zambia, 2022); however, the implementation evidence shows that national policy direction alone does not ensure consistent operational use.

The central synthesis is that challenges and opportunities are not separate lists; they are alternative outcomes of the same organizational mechanisms. Real-time data can increase transparency, yet poor-quality data can accelerate incorrect decisions. Mobile applications can shorten field reporting, while device shortages and parallel offline processes can increase workload. Teleophthalmology can extend specialist coverage, but weak connectivity and limited follow-up capacity can interrupt continuity of care. Donor support can finance innovation, yet fragmented reporting requirements can undermine interoperability and ownership. The present study therefore examines how these conditions shape the relationship between digital adoption and project outcomes at OEU rather than merely recording whether each barrier or opportunity is present.

2.3 Research Gap

The reviewed literature indicates that digital transformation has become a critical factor in improving organizational performance and project management in nonprofit organizations across the world. Scholars such as Leonardi and Neeley (2022) emphasize that digital technologies improve collaboration, coordination, and efficiency in project management by enabling organizations to share information quickly and manage workflows more effectively. Similarly, Lamarre, Smaje and Zimmel (2023) argue that digital transformation enhances productivity, decision-making, and data-driven management practices in organizations. In addition, Kanter and Fine (2022) highlight that digital platforms enable nonprofit organizations to strengthen transparency, accountability, and stakeholder engagement. Although these studies demonstrate the benefits of digital transformation, they mainly focus on nonprofit organizations operating in high-income countries, particularly in North America and Europe. As a result, the findings may not fully capture the realities of organizations operating in developing countries where digital infrastructure, financial resources, and technological capacity are often limited.

In the health sector, several studies have examined the role of digital technologies in improving service delivery and healthcare management. For example, Marx and Padmanabhan (2020) report that Electronic Medical Records (EMRs) improve patient data management, information accuracy, and coordination among healthcare providers. Likewise, Yogesana et al., (2023) demonstrate that teleophthalmology technologies can expand access to eye care services by enabling remote consultations and digital monitoring of patients. While these studies provide valuable insights into the technological benefits of digital health tools, they mainly focus on clinical outcomes and healthcare service delivery rather than examining how digital technologies influence project management processes such as planning, monitoring, reporting, and evaluation within nonprofit organizations implementing health programs.

Studies conducted in the African context also highlight the growing role of digital technologies in improving organizational effectiveness. However, many African studies primarily focus on general ICT adoption or digitalization in government institutions rather than on digital transformation within nonprofit project management. For example, research conducted in African countries indicates that organizations face challenges such as limited funding, inadequate infrastructure, unreliable internet connectivity, and insufficient technical skills among staff (Woldegiorgis, 2026). Although these studies provide important insights into the barriers to digital adoption, they do not sufficiently examine how digital tools influence project management efficiency, coordination, and service delivery in nonprofit organizations working in specialized sectors such as eye health.

The review of literature highlights a significant gap in understanding how digital transformation impacts project management in nonprofit organizations in Zambia, particularly in the health and eye care sector. While prior studies have examined ICT adoption in public administration, education, and healthcare, they primarily focus on institutional efficiency, knowledge management, or clinical applications rather than project implementation and coordination within NGOs (Bwalya, 2009; Sichone & Ngulube, 2009; Sampa, 2013; Mweemba & Phiri, 2018; Chanda & Chongo, 2020; Tembo & Banda, 2020). Research also overlooks sector-specific cases, such as

organizations like Operation Eyesight Universal (OEU), which use digital tools like Electronic Medical Records, teleophthalmology systems, and mobile data applications to support project planning, monitoring, and reporting. Moreover, existing studies rarely examine how contextual factors such as staff technical capacity, resource availability, and technological infrastructure moderate the effectiveness of digital tools in nonprofit project management. Consequently, there is limited empirical evidence on how digital technologies influence project efficiency, coordination, and service delivery in Zambian NGOs, justifying the need for this study to investigate digital transformation adoption and its impact on project performance at OEU in Lusaka District.

Another critical gap identified in the literature relates to the lack of sector-specific studies focusing on eye health organizations such as Operation Eyesight Universal (OEU). Although Marx and Padmanabhan (2020) and Yogesan et al. (2023) discuss the technological potential of EMRs and teleophthalmology systems, these studies do not specifically examine how such technologies influence project management outcomes in nonprofit organizations implementing eye care programs. Furthermore, scholars such as Leonardi and Neeley (2022) and Lamarre, Smaje and Zimmel (2023) focus largely on the broader concept of digital transformation without analyzing how contextual factors such as resource availability, technical skills, and infrastructure influence the effectiveness of digital tools in developing countries.

Therefore, the major research gap identified from the reviewed literature is that most global and regional studies emphasize the general benefits of digital transformation but provide limited empirical evidence on its practical impact on project management within NGOs operating in resource-constrained environments such as Zambia. In particular, there is insufficient research examining how the adoption of digital tools affects project management efficiency, coordination, and service delivery in organizations like Operation Eyesight Universal. This gap justifies the need for the present study, which aims to investigate the adoption and impact of digital transformation in project management within OEU in Lusaka District. By addressing this gap, the study seeks to generate context-specific, evidence-based recommendations that can support improved digital adoption and strengthen project management outcomes in the Zambian.

III. METHODOLOGY

3.1 Research Design

The study used a qualitative single-case study design and an inductive approach. The design was appropriate because the research sought detailed accounts of how staff experienced and interpreted digital transformation within the real-life context of one organization, rather than statistical estimates for a wider population. Case study inquiry is suitable when a contemporary phenomenon is closely connected to its organizational setting (Yin, 2018), while qualitative inquiry supports examination of meanings, practices, and contextual influences (Creswell & Poth, 2018).

3.2 Study Area

The study was conducted at Operation Eyesight Universal in Lusaka District, Zambia. The site was selected because staff based in Lusaka perform and support project planning, implementation, monitoring and evaluation, data management, partner coordination, technical support, and reporting for eye-health programmes. This setting enabled the study to examine digital tool use across managerial, programme, field, monitoring, and technical functions within a bounded organizational case.

3.3 Target Population

The target population comprised OEU staff in Lusaka District who were directly involved in project management or digital operations and are approximately 100. Eligible participants were required to have experience in project planning, implementation, coordination, monitoring, evaluation, reporting, or technical support and to have used at least one relevant digital tool. Staff without direct involvement in project management or exposure to the organization's digital systems was excluded.

3.4 Sampling and Sample Size

Purposive expert sampling was used to select information-rich participants with first-hand knowledge of digital project work (Patton, 2015). Recruitment continued until additional interviews yielded no substantively new themes, resulting in 25 participants. The sample included five project managers; five field officers; five programme coordinators; four monitoring and evaluation or monitoring staff; three IT/technical staff; two project officers; and one programme support officer. The range of roles provided managerial, operational, monitoring, and technical perspectives. A sample of 25 is also consistent with qualitative research in which thematic saturation may be achieved within a focused and relatively homogeneous participant group (Guest et al., 2006).

3.5 Data Collection Instruments and Procedures

Data for the study were collected using semi-structured interviews, which allowed the researcher to gather rich, detailed, and context-specific information on digital transformation in project management at Operation Eyesight Universal (OEU) in Lusaka District. Semi-structured interviews were chosen as the primary data collection tool because they provided a balance between guided inquiry and flexibility, enabling participants to express their experiences, perceptions, and challenges freely while allowing the researcher to probe further on emerging themes (Kvale & Brinkmann, 2009). This method was particularly suitable for exploring the adoption and impact of digital tools, as it facilitated in-depth discussion on how staff used Electronic Medical Records (EMRs), teleophthalmology systems, mobile data collection applications, and project management software in their daily project activities.

3.6 Data Analysis

Interview recordings were transcribed and analyzed using thematic analysis. Following Braun and Clarke (2006), the researcher became familiar with the transcripts, generated initial codes, grouped related codes, developed candidate themes, reviewed themes against the full dataset, defined and named the final themes, and produced the analytical narrative. Coding focused on digital adoption; workflow efficiency; coordination; monitoring and accountability; service delivery; infrastructure; staff competence and training; technical support; and opportunities for improved data use. Transparency was strengthened by maintaining a clear link between the research questions, codes, themes, and supporting quotations, as recommended for trustworthy thematic analysis (Nowell et al., 2017). Interview and documentary evidence and perspectives from different staff roles were compared to identify convergence and variation.

3.7 Ethical Considerations

Ethical approval was obtained from Cavendish University Zambia ethical committee before data collection. Participants received information about the study's purpose, procedures, anticipated benefits and risks, confidentiality protections, and use of the data for academic purposes. Participation was voluntary, informed consent was obtained, and participants could withdraw without penalty. Names were removed from the dataset and replaced by P1–P25 codes; records and transcripts were stored securely and accessed only for the study. Quotations in the findings were selected to support interpretation while avoiding personally identifying information.

IV. FINDINGS & DISCUSSIONS

4.1 Adoption of Digital Tools in Project Management

4.1.1 Digital Patient and Project-Data Systems

Participants described EMRs as an established source of patient, activity and outcome information. Project managers used these data to monitor services, identify patterns in eye conditions and plan outreach. Adoption was therefore not limited to clinical record keeping; the same information supported project decisions and reporting.

"We primarily use EMRs to track patient data and project outcomes. It helps us plan outreach activities effectively because we can easily see the number of patients served and the types of eye conditions that are common in specific communities." (P1, Project Manager, [26/01/2026])

"I would say adoption is fairly high because almost all projects now use EMRs and mobile tools to track activities. It has become part of our standard workflow." (P3, Project Manager, [26/01/2026])

These accounts indicate routine use and perceived workflow relevance, two stronger signs of adoption than the mere availability of a system. They reflect UTAUT's performance-expectancy construct because staff associated use with better planning and visibility of results. However, the description of adoption as "fairly high" rather than complete suggests variation in integration across projects and roles. This distinction is consistent with Woldemariam and Jimma's (2023) conclusion that mature EHR use depends on more than installation.

4.1.2 Mobile Field Data Collection

Kobo Toolbox and other mobile applications were used to capture community data at the point of activity. Participants contrasted direct electronic entry with the previous sequence of recording information manually, returning from the field and submitting reports later.

"We use mobile data collection tools called Kobo toolbox when conducting Door to Door Survey in the communities. Instead of recording information manually and submitting reports later, we now enter the data directly into the system using mobile devices." (P6, Field Officer, [26/01/2026])

Mobile data collection therefore represented both tool adoption and process redesign. The perceived advantage was the shorter interval between field activity and the availability of information for review. This supports Gagnon et al.'s (2016) finding that usefulness and workflow relevance are central to health professionals' adoption of

mobile technologies. It also illustrates why effort expectancy matters: applications are more likely to be sustained when data can be captured within the existing field task rather than through an additional parallel process.

4.1.3 Coordination, Monitoring and Remote-Care Platforms

Participants also described project-management and communication platforms, dashboards and teleophthalmology as part of the digital portfolio. Shared platforms were used for scheduling, updates, reminders and task tracking; dashboards made indicators visible; and teleophthalmology enabled remote clinical collaboration. Adoption thus covered multiple stages of the project cycle rather than a single information system. The breadth of use addresses a gap in prior studies that typically examine one EHR or application at a time (Clarke et al., 2019; Mwogosi & Mambile, 2024). The findings also show that different roles experienced adoption through different functions, making organizational integration a more appropriate indicator than universal use of every tool.

4.2 Perceived Influence on Project Outcomes and Service Delivery

4.2.1 Efficiency and Timeliness

The most consistent reported benefit was reduced turnaround time for data entry, report preparation, monitoring and operational decisions. Participants attributed this improvement to direct data capture, faster retrieval and reduced dependence on paper forms or delayed periodic reports.

“Since we started using EMRs and project management software, tasks that used to take days can now be completed within hours. Reports are faster, and decision-making is quicker.” (P4, Project Manager, [26/01/2026])

The account reflects performance expectancy: the participant linked continued use to a clear work benefit. It is also consistent with Tsai et al. (2020), who found that EHR implementation can improve information access and selected aspects of efficiency. However, the literature also reports increased workload and workflow disruption. The OEU finding should therefore be interpreted as a perceived benefit that depends on system access, data completeness and the absence of parallel manual processes.

4.2.2 Coordination, Monitoring and Accountability

Shared digital platforms improved the speed of communication and visibility of responsibilities across departments. Dashboards and mobile systems enabled monitoring staff to review indicators soon after activities occurred, helping managers identify delays and take corrective action.

“Digital platforms allow us to schedule meetings, share updates, and communicate quickly with all departments. We can also send reminders, monitor task completion, and address issues as they arise.” (P12, Programme Coordinator, [26/01/2026])

“Using mobile data collection and dashboards, I can see progress indicators almost immediately after activities are carried out... This allows us to identify issues early and take corrective actions before they affect outcomes.” (P10, Monitoring and Evaluation Officer, [26/01/2026])

These accounts show how digital transformation altered information relationships, not simply the medium of record keeping. Faster updates and shared task visibility reduced information gaps between field, programme and monitoring functions and made incomplete or delayed actions more visible. This supports Mergel et al.'s (2019) view that transformation involves changes to organizational processes. It also complements Mwogosi and Mambile (2024) reported improvements in data management and coordination, while retaining the qualification that poor data quality or incomplete use can weaken accountability.

4.2.3 Service Delivery and Reach

Participants connected internal project-management improvements with beneficiary-facing outcomes. EMRs supported patient tracking and follow-up, while teleophthalmology enabled remote interaction with specialist eye-care personnel. This was perceived to reduce geographical barriers and speed access to clinical input.

“Teleophthalmology platforms enable remote consultations, meaning beneficiaries in rural areas can receive eye care without traveling long distances... We can now connect patients with specialists in real time.” (P16, Monitoring and Evaluation Officer, [26/01/2026])

The finding is consistent with the service pathway documented by Misra et al. (2020) and the wider low-resource evidence synthesized by Khan et al. (2024), which shows that teleophthalmology can extend specialist reach and reduce avoidable travel. At OEU, this service benefit was also a project-management benefit because remote consultation affected referral coordination, monitoring and responsiveness. Nevertheless, the study did not independently measure patient outcomes, cost savings or changes in coverage; the result is therefore reported as a staff perception grounded in operational experience.

4.3 Challenges and Opportunities for Sustained Digital Transformation

4.3.1 Connectivity, System Reliability and Device Availability

Participants reported that poor network coverage in rural areas sometimes prevented real-time uploads. System slowdowns or downtime disrupted reporting, and limited device availability reduced consistent access. These constraints could recreate the delays that digital systems were intended to remove.

“Poor network coverage in some rural areas makes it difficult to upload data in real time. We often have to wait until we return to the office, which affects timely decision-making.” (P8, Field Officer, [26/01/2026])

This evidence demonstrates the importance of UTAUT's facilitating conditions. Positive performance expectations could not compensate for unreliable access to networks, devices and functioning systems. The same constraints recur in Zambia's SmartCare experience (Clarke et al., 2019; Gumede-Moyo et al., 2019) and in the teleophthalmology review by Khan et al. (2024), indicating that infrastructure is a continuing determinant of whether digital benefits can be sustained.

4.3.2 Skills, Training and Technical Support

Basic functions were widely understood, but competence was uneven for advanced analytics, customized reports, synchronization problems and troubleshooting. Participants therefore distinguished initial orientation from the continuous learning required as platforms and responsibilities evolved.

“Some staff struggle with advanced features of the digital platforms. While basic functions are okay, more complex tools require additional training.” (P13, IT/Technical Staff, [26/01/2026])

“Our staff generally understands the basics, but complex functions require more training... Continuous capacity-building, mentoring, and targeted workshops are important.” (P11, IT/Technical Staff, [26/01/2026])

The findings align with the updated UTAUT emphasis on user education and facilitating conditions (Blut et al., 2022) and with wider evidence that training and technical support enable adoption (Borges do Nascimento et al., 2023; Gagnon et al., 2016). Importantly, participants called for role-specific mentoring rather than generic training. This suggests that capability building should be linked to the functions staff are expected to perform and supported by timely assistance when problems occur.

4.3.3 Integration, Data Use and Partnership Opportunities

Despite the constraints, participants identified opportunities to use centralized data more strategically, integrate systems across departments, reduce duplicate work and expand remote-care support. The findings indicate that these opportunities require coordinated investment in interoperability, data governance, infrastructure, skills and technical support. This is consistent with Zambia's National Digital Health Strategy 2022–2026 (Ministry of Health, 2022) and the African leadership evidence reported by Vumbugwa et al. (2024). The central implication is that digital transformation should be governed as an organizational programme of change. Partnerships can provide expertise and financing, but OEU requires clear ownership and standards so that external support strengthens rather than fragments its systems.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study found that digital transformation was embedded in several project-management functions at OEU in Lusaka District. Participants described EMRs, mobile data collection, dashboards, project-management and communication platforms, and teleophthalmology as supporting faster information flow, more responsive coordination, stronger monitoring and accountability, and wider access to eye-care expertise. These benefits were not produced by technology alone. Connectivity, equipment, system reliability, interoperability, user competence and timely technical support shaped the quality and consistency of use. The updated UTAUT framework explained this relationship: perceived performance gains encouraged adoption, while weaknesses in facilitating conditions limited sustained use. As a qualitative single-case study, the research provides contextual explanations rather than statistically generalizable or causal estimates, but it offers practical evidence for managing digital transformation in comparable health NGOs.

5.2 Recommendations

OEU should institutionalize digital transformation within organizational planning and prioritize reliable connectivity, adequate devices, system uptime and interoperability because participants linked these conditions directly to timely reporting and decision-making. Continuous, role-specific training, mentoring and responsive

technical support should be provided so that staff can progress beyond basic functions and use analytics, customized reporting and troubleshooting features confidently. The organization should strengthen data-governance procedures, including clear responsibilities for data quality, access, security and system integration, to protect the monitoring and accountability benefits identified in the study. Finally, OEU should develop coordinated partnerships with government, technology providers and development partners to secure sustainable expertise and financing while retaining organizational ownership and avoiding fragmented, stand-alone systems.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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