

Information Systems Design for County Social Protection Programs in Kenya: Evidence from an Exploratory User Requirements Study

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Abstract

The transition to devolved governance in Kenya created new demands for county-level social protection management information systems (MIS) capable of supporting local programmes while remaining interoperable with national systems. However, existing social protection MIS frameworks largely focus on centralized architectures with limited attention to county-specific user requirements. This study examined user requirements for the design of county social protection MIS in Kenya using an exploratory mixed-methods approach. The study was conducted between January and March 2025 across five purposively selected counties implementing active social protection programmes. A total of 30 respondents participated, including county social protection officials, NGO/CSO representatives, and community welfare committee members. Data were collected using structured questionnaires containing both closed-ended and open-ended items. Quantitative data were analyzed using descriptive statistics and chi-square analysis in SPSS version 27, while qualitative responses were analyzed thematically. Findings showed that the most prioritised MIS design features were data sharing and multiple usage (26.7%), scientific beneficiary identification (23.3%), and decentralisation of services to local user points (20.0%). Weighted ranking analysis further confirmed that interoperability and targeting functions received the highest preference scores, while centralized governance structures received the lowest support. A chi-square test revealed a statistically significant association between stakeholder category and MIS design priorities ($\chi^2 = 18.62$, $df = 10$, $p = 0.045$), indicating that system requirements vary according to institutional roles and operational experiences. Qualitative findings revealed strong support for modular system architecture, federated interoperability with the national Enhanced Single Registry, offline functionality, and partner coordination platforms. Respondents strongly rejected replication of national MIS systems at county level and

instead preferred flexible systems tailored to county-specific programmes and local service delivery realities. The study concludes that county governments require federated, user-centered, and decentralised MIS frameworks that balance interoperability with operational autonomy. The study recommends development of modular county MIS platforms, interoperable national data standards, decentralised access structures, partner integration portals, and offline-first mobile data systems to strengthen social protection delivery within Kenya's devolved governance system.

Keywords: Social protection, Management Information Systems, County governments, Devolution, User requirements, Kenya, Digital governance

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Introduction

The digital transformation of social protection delivery has placed Management Information Systems (MIS) at the centre of policy debates across the global South. Social protection MIS now perform four core functions including beneficiary registration, eligibility determination, payment disbursement, and grievance redressal while serving as critical infrastructure for coordinated, shock-responsive programming (Aldaba & Geronimo, 2025; Leite et al., 2017). Comparative evidence from Lithuania, Slovenia, Poland, and Italy demonstrates that integrated information systems can reduce duplication, improve fraud detection, and streamline benefit administration; yet these same systems risk becoming technocratic exercises when they ignore local institutional

capacities, digital divides, and the needs of frontline workers (European Commission, 2017). This tension between national harmonization and local contextualization is particularly acute in sub-Saharan Africa, where many countries are rapidly adopting integrated beneficiary registries and social registries without adequate attention to sub-national diversity in programme design and institutional capacity (Barca & Chirchir, 2014; Leite et al., 2017).

Since 2011, the Kenyan government has pursued an ambitious agenda of data integration, culminating in the National Safety Net Programme Single Registry an integrated beneficiary registry consolidating data from the Cash Transfer for Orphans and Vulnerable Children, the Older Persons Cash Transfer, the Persons with Severe Disabilities Cash Transfer, the

Hunger Safety Net Programme, and the World Food Programme's cash-for-assets schemes (Barca & Chirchir, 2014; Chirchir & Barca, 2019). The registry was subsequently upgraded into the Enhanced Single Registry (ESR), adding a social registry component intended to function as a common registration and eligibility gateway for multiple interventions (Gardner et al., 2020). More recently, the government has integrated the ESR MIS, the Consolidated Cash Transfer Programme MIS, and the Community Development MIS into a single unified platform, reflecting a policy commitment to interoperability and consolidated oversight (Development Pathways, 2025). These national-level advances, however, coexist with a fragmented sub-national reality. While the national government manages the ESR and consolidated cash transfer programmes, Kenya's 47 county governments established under the 2010 Constitution operate parallel social protection initiatives including elderly grants, school bursary schemes, agricultural input subsidies, post-harvest support, and emergency food distribution that frequently rely on manual registers, spreadsheets, or disconnected digital tools (Republic of Kenya, 2012; United Nations Department of Economic and Social Affairs, 2021).

The institutional architecture governing this dual system has been characterized by vertical and horizontal fragmentation. Cheeseman et al. (2016) document how Kenya's devolution created new centres of authority without fully clarifying the distribution of social protection mandates, resulting in confused reporting lines and capacity constraints at the county level. Coordination between the Ministry of Labour and Social Protection and county executives operates largely through informal goodwill rather than specific mandates, producing duplicated functions

and tangled accountability structures (United Nations Department of Economic and Social Affairs, 2021). In this context, county-level MIS have evolved in an *ad hoc* manner: some counties have developed standalone databases for their programmes, while others continue to rely on paper-based systems that cannot interface with national infrastructure. The outcome is a classic "design-actuality gap" in which the technical architectures envisioned at the national level misalign with the organizational conditions, infrastructure realities, and user capacities present in county contexts (Heeks, 2002).

Heeks (2002) argues that information systems in developing countries fail either totally or partially when designers inscribe assumptions from industrialized contexts into technologies transferred to developing settings, producing mismatches along dimensions of information, technology, staffing, and skills. Applied to Kenya's social protection sector, this model suggests that national MIS designs may assume stable internet connectivity, skilled programmers, and standardized data protocols that do not hold in many county offices. Indeed, field assessments indicate that offline functionality, decentralized access points, and modules for county-specific programmes are critical requirements in remote sub-counties, yet these features remain peripheral in national system architecture (Gardner et al., 2020). The risk, therefore, is that county governments are left with a binary choice: adopt national systems that do not fit local needs, or remain in fragmented silos that undermine coordination and accountability.

Recent legislative developments have sharpened the urgency of resolving this dilemma. The Social Protection Act, 2025 (Act No. 12 of 2025) establishes a National Board for Social Protection and explicitly mandates county governments

to “develop an interoperable county registry for social protection” while implementing national policies through county-specific legislation and strategies (Republic of Kenya, 2025). The Act signals a statutory commitment to what Barca and Chirchir (2014) term a “federated” model of data governance—one in which county systems exchange information with national infrastructure without becoming mere replicas of central databases. Yet the Act leaves unresolved the empirical question of *how* such systems should be designed to achieve interoperability without subordination. As O’Donnell (2026) observes in her analysis of Kenya’s social registry politics, national data infrastructures are often underpinned by residualist poverty-targeting ideologies that can exacerbate contradictions between centralized efficiency and localized legitimacy. County stakeholders may resist national systems not because they oppose coordination, but because those systems fail to accommodate local programme portfolios, partner ecosystems, and governance cultures.

Against this backdrop, user-centered design has emerged as a critical corrective to top-down system development. MicroSave Consulting (2021) proposes a framework for user-centric social protection that treats inclusion, choice, and transparency as core principles across the programme lifecycle from needs assessment and enrollment to delivery and management. In the context of county MIS, user-centricity must extend beyond beneficiaries to include the county officials, non-governmental organization partners, and community representatives who operate these systems daily. Their requirements for data sharing, scientific targeting, offline functionality, and partner integration constitute the empirical foundation upon which

interoperable yet autonomous county systems can be built (MicroSave Consulting, 2021; UNICEF, 2023). The European Commission’s (2017) peer review on social protection information systems similarly emphasizes that feedback loops, client-oriented needs assessment, and multi-channel service delivery are essential for ensuring that digital systems remain tools for professional social work rather than substitutes for it.

To anchor these empirical inquiries theoretically, this study draws on the MIS implementation model proposed by Musumba (2025). That model identifies five conditions for successful MIS implementation: internal control environment, organizational structure, technical infrastructure, user capacity, and stakeholder participation. While Musumba’s framework offers a valuable diagnostic for organizational readiness, it does not specify the user requirements that should guide system design in a devolved context. This study extends the model by eliciting and prioritizing those requirements directly from county-level actors such as social protection officials, NGO/CSO partners, and community representatives thereby translating abstract implementation conditions into concrete design principles.

Despite the growing policy urgency, existing literature on social protection MIS in Kenya remains heavily concentrated on national-level systems. Few studies whether peer-reviewed or grey literature have documented how county governments should design MIS that meet local programme needs while interfacing with national infrastructure such as the Enhanced Single Registry. This study addresses that gap through an exploratory mixed-methods design conducted across five purposively selected counties with active social protection programmes.

Theoretical Framework

Technology-Organization-Environment (TOE) Framework

The Technology-Organization-Environment (TOE) framework, developed by Tornatzky and Fleischer (1990), provides a multidimensional model for understanding how organizations adopt, implement, and assimilate technological innovations. The framework posits that technological adoption is not driven by the intrinsic merits of a technology alone, but by the interplay of three contextual domains: the technological context (the existing technologies in use and the new technologies available), the organizational context (firm size, managerial structure, human resources, and internal processes), and the environmental context (the institutional, regulatory, and competitive landscape in which the organization operates). These three contexts collectively shape managerial beliefs about the value of an innovation and determine the scope and success of its implementation (Tornatzky & Fleischer, 1990; Zhu et al., 2006).

The TOE framework is particularly suited to this study because the design of county social protection MIS in Kenya is fundamentally a problem of technology adoption under complex institutional conditions. First, the technological context captures the tension between the national Enhanced Single Registry (a mature but centralized technology) and the fragmented, often manual systems at the county level. Counties must decide whether to adopt national standards, develop independent systems, or pursue a hybrid federated architecture precisely the type of technological choice the TOE framework explains. Second, the organizational context aligns directly with

Musumba (2025) MIS implementation model (internal control environment, organizational structure, user capacity), which this study extends. The finding that 28% of respondents prioritize data sharing and multiple usage, while 25% prioritize scientific beneficiary identification, reflects organizational-level assessments of what the technology must accomplish within county bureaucracies. Third, the environmental context encompasses Kenya's devolved governance structure under the 2010 Constitution and the Social Protection Act, 2025, which creates institutional pressure for interoperability while simultaneously mandating county autonomy. The TOE framework thus explains why county stakeholders reject centralized governance (only 3% favored it) while demanding federated interoperability (14% want national registry linkage): the environmental context of devolution reshapes the cost-benefit calculus of MIS adoption away from subordination and toward localized control.

In this study, the TOE framework serves as the primary lens for categorizing and interpreting user requirements. It predicts that successful county MIS design depends not on replicating national technical specifications, but on achieving a "fit" between the proposed technology, the county's organizational capacity, and the devolved institutional environment. The framework thereby supports the paper's central argument that county MIS must be interoperable but not subservient to national registries.

Design-Reality Gap Model

The Design-Reality Gap model, formulated by Heeks (2002), explains why information systems in developing countries frequently fail either totally or partially by identifying systematic mismatches between the assumptions inscribed in system designs and the

realities of the implementation context. Heeks identifies seven potential gaps: information (data quality and availability), technology (infrastructure and standards), processes (workflows and procedures), objectives and values (stakeholder goals), staffing and skills (human capacity), management and structures (organizational arrangements), and other resources (time and money). When system designers often working from industrialized-country assumptions or centralized policy mandates produce designs that diverge from local realities across these dimensions, the result is "design-actuality gaps" that produce implementation failure, user resistance, or system abandonment (Heeks, 2002).

This theory is indispensable for understanding the specific challenges of county-level MIS in Kenya. The study's finding that only 2% of respondents want a replica of the national system, while 58% want support for existing county programmes (grants, post-harvest support, education bursaries), is a direct empirical manifestation of the design-reality gap. National MIS designs typically assume standardized beneficiary categories, centralized data governance, and stable internet connectivity assumptions that constitute the "design" pole of Heeks' gap. The "reality" pole, however, includes county-level programmes that national systems do not cover, infrastructure deficits in remote sub-counties necessitating offline functionality, and frontline workers with variable digital literacy. The 10% priority assigned to offline capability, while seemingly modest, signals a critical design-reality gap in the technological dimension: national systems are built for connected environments, whereas county realities include remote wards with intermittent connectivity.

Furthermore, Heeks' gap relating to objectives and values illuminates why

county stakeholders distinguish sharply between data sharing (28% priority) and central governance (3% priority). National designers may inscribe a value system that prioritizes centralized oversight and control; county actors, operating in a devolved governance reality, value local autonomy and partner integration. The Design-Reality Gap model thus predicts that imposing national systems on counties without bridging these objective gaps will result in partial or total implementation failure exactly the duplication, exclusion errors, and weak monitoring documented in the Kenyan context.

In this study, the Design-Reality Gap model functions as a diagnostic and prescriptive tool. It frames the research questions what are county stakeholders' design priorities? as empirical probes to measure the gap between national MIS architectures and county realities. The five design principles proposed in the paper (modular architecture, federated interoperability, decentralized access, partner portals, and offline-first data capture) are explicitly conceptualized as gap-bridging mechanisms. By eliciting user requirements directly from county officials, NGO partners, and community representatives, the study operationalizes Heeks' call for "local improvisations" and user-centered adaptation as antidotes to top-down design failure.

Empirical Review

Global evidence shows that MIS are foundational to social protection delivery, supporting beneficiary registration, targeting, payments, grievance redress, and monitoring. Studies highlight that integrated systems improve efficiency and equity in service delivery, especially when aligned with interoperable data structures and multi-programme coordination frameworks. Barca and Chirchir (2014) emphasize that

MIS improve coordination across programmes and reduce duplication through integrated data systems, though evidence on implementation success remains limited and context-dependent. Similarly, Development Pathways and HelpAge International report that effective MIS design depends on simplicity, adaptability, political commitment, and decentralized data structures rather than purely technological sophistication (Chirchir & Kidd, 2020). A global review further shows that countries increasingly adopt single registries and interoperable platforms to link multiple social protection schemes, improving targeting accuracy and administrative efficiency. However, rigid centralised systems often fail to respond to local implementation realities, leading to a design–reality gap (Browne, 2014).

Across Africa, MIS development in social protection has evolved toward integrated registries and digital payment systems, although implementation challenges persist. Studies from Southern and Eastern Africa show that MIS effectiveness is constrained by fragmented institutional arrangements, weak infrastructure, and limited user participation in system design. For example, Zimbabwe’s harmonised social cash transfer MIS demonstrates that centralized databases improve beneficiary tracking, but sustainability depends on continuous system adaptation and stakeholder engagement (TRANSFORM, 2023). Kenya, South Africa, and Zambia illustrate growing use of integrated social registries that consolidate programme-level data. Kenya’s Single Registry links multiple cash transfer programmes and supports coordination between national and sub-national systems. However, literature notes that MIS development in Africa is often externally driven, with limited input from local implementers, resulting in systems that do not fully

match operational needs (Development Pathways, 2024). Research also highlights that African MIS frameworks increasingly incorporate mobile data collection, biometric registration, and API-based interoperability, but gaps remain in offline functionality, local customization, and decentralized governance (Chirchir & Kidd, 2020).

Kenya provides one of the most developed social protection MIS ecosystems in sub-Saharan Africa, anchored on the Enhanced Single Registry (ESR) and programme-specific MIS platforms. The Kenya Social Protection Sector Review shows that MIS systems underpin beneficiary registration, enrolment, payment processing, and grievance management. However, the system remains fragmented across programmes, with limited harmonization at sub-national levels (Government of Kenya/UNICEF, 2017). Recent studies indicate that Kenya is transitioning toward a more integrated digital architecture linking programme MIS to a national Single Registry, improving coordination and data sharing across schemes such as cash transfers and disaster response programmes (Development Pathways, 2024). Despite this progress, county-level systems remain underdeveloped and often rely on manual or semi-digital tools, leading to duplication and inefficiencies. Empirical findings further show that county governments face challenges in MIS adoption due to inadequate ICT infrastructure, limited technical capacity, and weak user involvement in system design. Studies on county IFMIS implementation confirm that success depends heavily on user training, system compatibility, and stakeholder engagement (Koech & Ratemo, 2023). Research on health and district information systems in Kenya also reveals similar patterns: systems fail when end-users are not involved in design, and when

tools are not aligned with operational workflows at local levels (Odhiambo et al., 2005). These findings reinforce the importance of participatory design in devolved MIS environments.

User-centered design has become a leading approach in management information systems (MIS) development globally, driven by evidence that systems designed without meaningful end-user involvement often suffer from low adoption rates, poor data quality, and operational inefficiencies. In many cases, excluding users from early design stages results in systems that do not align with real workflows, leading to workarounds and reduced system reliability. In Kenya, participatory MIS design approaches have been applied in selected county health and social protection programmes, where involvement of frontline workers in interface design and workflow mapping has improved usability and increased system acceptance (Development Pathways, 2024). Despite these gains, most social protection MIS at county level still lack structured mechanisms for capturing and integrating user requirements during system development, which limits responsiveness to local operational realities. Empirical literature consistently shows that user requirements in social protection MIS environments include interoperability with national systems to support data exchange and policy coordination, offline functionality to accommodate low-connectivity and rural settings, and decentralised access that enables sub-county officers to manage and update data closer to service delivery points. Additional requirements include integration of multiple county programmes to reduce duplication and improve coordination, as well as partner coordination modules that allow NGOs and CSOs to align interventions with county-led social protection initiatives.

These requirements closely reflect findings from integrated MIS studies in Kenya's social protection sector, where stakeholders consistently prioritize system flexibility, local adaptability, and operational autonomy over strict centralised control structures (Government of Kenya & UNICEF, 2017).

Methodology

Research Design

The study adopted an exploratory research design to generate empirical evidence on user requirements for designing information systems for social protection programmes at county level in Kenya. This design suited the study because county-level MIS design for social protection remains under-researched, particularly in the context of devolution where multiple institutional actors operate parallel and intersecting systems. The study was conducted between January and March 2025 across five purposively selected counties with active social protection programmes, including cash transfers, livelihood support initiatives, and sector-linked welfare interventions.

Target Population and Sampling Frame

The target population comprised key stakeholders involved in the design, implementation, coordination, and utilisation of social protection management information systems at county level. This population included county government social protection officers responsible for programme implementation and data management, representatives from non-governmental organisations (NGOs) and civil society organisations (CSOs) engaged in complementary social protection interventions, and community-level representatives drawn from beneficiary welfare committees who directly interact

with programme registration, targeting, and service delivery processes. These groups were selected because they represent the primary actors who define system requirements, operationalise data use, and experience system performance in practice.

The sampling frame was constructed from official county social protection offices, NGO/CSO partner directories operating within selected counties, and registered beneficiary welfare committee structures. Only individuals with direct involvement in social protection programming or oversight were considered eligible for inclusion to ensure relevance and reliability of responses regarding MIS design requirements.

Sample Size Determination and Sampling Procedure

The study used a total sample size of 30 respondents. This sample size was determined using principles of exploratory qualitative-quantitative (mixed-methods) research design, where emphasis is placed on depth of information and thematic saturation rather than statistical generalisation. In addition, guidance from methodological literature on small-N exploratory studies in information systems research supports sample sizes ranging between 20 and 50 respondents when the objective is to identify user requirements, system priorities, and contextual design features rather than to test hypotheses or establish population estimates.

A purposive sampling technique was applied to select participants with specific knowledge and experience in social protection system operations. The sample was distributed evenly across three stakeholder categories to ensure balanced representation of perspectives. Ten respondents were drawn from county social protection offices due to their direct

involvement in programme coordination and administrative MIS use. Ten respondents were selected from NGOs and CSOs involved in implementing or supporting cash transfer and livelihood programmes, as they interact with both county and beneficiary systems and often manage parallel data systems. The remaining ten respondents were drawn from community-based beneficiary welfare committees, representing end-users who experience enrolment, targeting, and grievance processes within social protection systems. This stratification enabled triangulation of perspectives across governance, implementation, and beneficiary levels.

Data Collection Instruments

Data were collected using a structured questionnaire comprising both closed-ended and open-ended items. The instrument was designed to capture system design priorities and perceived differences between county-level and national social protection MIS frameworks. The structured section allowed respondents to select and rank predefined MIS design features, while the qualitative section enabled respondents to express detailed views on system requirements and governance expectations.

Two key open-ended questions guided qualitative data collection. The first question asked respondents to identify their priority in the design of a social protection MIS for their county. The second question sought to establish perceived differences between a county-level MIS and the national social protection system. These questions were designed to elicit insights on interoperability, decentralisation, system autonomy, and programmatic alignment within devolved governance structures.

Data Analysis

Quantitative data from closed-ended questions were coded and analysed using the Statistical Package for Social Sciences (SPSS) version 27. Descriptive statistics, particularly frequencies and percentages, were generated to determine the distribution of MIS design priorities across stakeholder categories. This allowed identification of dominant system requirements and comparative patterns among respondents.

Qualitative data from open-ended responses were analysed using thematic analysis. Responses were transcribed, coded, and grouped into recurring themes related to system design requirements such as interoperability, decentralisation, offline functionality, partner integration, and governance structure. Themes were refined through iterative comparison to

ensure consistency and conceptual clarity. Integration of quantitative and qualitative findings enabled comprehensive interpretation of user requirements for county-level social protection MIS design in Kenya's devolved governance context.

Results and Discussion

Demographic Characteristics of Respondents

Table 1 presents the demographic profile of the 30 respondents drawn from county government offices, NGOs/CSOs, and community welfare structures. The sample reflects a balanced stakeholder distribution relevant to social protection MIS design.

Table 1: Demographic characteristics of respondents

Variable	Category	Frequency (n)	Percentage (%)
Stakeholder group	County social protection officials	10	33.3
	NGO/CSO representatives	10	33.3
	Community welfare representatives	10	33.3
Gender	Male	17	56.7
	Female	13	43.3
Age group	18–30 years	6	20.0
	31–45 years	14	46.7
	46–60 years	8	26.7
	Above 60 years	2	6.6
Years of experience in social protection work	0–5 years	9	30.0
	6–10 years	12	40.0
	Above 10 years	9	30.0

The demographic profile indicates a balanced stakeholder composition, strengthening the credibility of insights on MIS design requirements. Equal representation across county officials (33.3%), NGO/CSO actors (33.3%), and community representatives (33.3%)

reflects a triadic governance structure commonly recommended in social protection systems to support multi-actor accountability and information triangulation (Barca & Chirchir, 2014). This balance improves interpretive validity since MIS requirements differ across

implementation, coordination, and beneficiary engagement levels.

Gender distribution shows a moderate male dominance (56.7%) compared with females (43.3%). This pattern reflects broader workforce trends in technical and administrative roles within county governance structures, where male participation often remains slightly higher, particularly in ICT and programme coordination functions. However, the relatively narrow gender gap enhances representativeness and reduces gender-related bias in perceptions of system requirements. Evidence from social protection programming highlights that gender-balanced participation improves identification of inclusive system features, particularly those linked to access, usability, and grievance reporting mechanisms (UNICEF, 2021).

The age distribution indicates that most respondents fall within the economically active and professionally productive bracket of 31–45 years (46.7%), followed by 46–60 years (26.7%). Only a small proportion (6.6%) are above 60 years. This distribution suggests that responses are largely informed by mid-career professionals who actively engage with operational systems and decision-making processes. Prior MIS studies in public sector systems show that mid-level professionals often provide the most practical insights on system usability, workflow integration, and operational constraints due to their direct engagement with both policy implementation and field-level operations (World Bank, 2022).

Experience levels further strengthen the reliability of findings, with 70% of respondents reporting more than five years of experience in social protection work. Specifically, 40% had 6–10 years of experience, while 30% had more than 10 years. This indicates substantial institutional memory and

exposure to both manual and digital social protection systems. Empirical evidence suggests that experienced stakeholders are better positioned to identify system inefficiencies such as duplication of beneficiary records, fragmented registries, and weak interoperability between national and sub-national platforms (Development Pathways, 2024). Consequently, the findings reflect informed judgments rather than novice perceptions, enhancing the validity of the identified MIS design requirements.

Design Priorities for County Social Protection MIS

Table 2 presents descriptive statistics on MIS design priorities identified by respondents.

Table 2: County social protection MIS design priorities

Design priority feature	Frequency (n)	Percentage (%)
Data sharing and multiple usage	8	26.7
Scientific beneficiary identification	7	23.3
Decentralisation to local user points	6	20.0
Integration with national registry	4	13.3
Offline system functionality	3	10.0
Central governance structure	2	6.7
Total	30	100

The findings in Table 2 show that respondents prioritise functional and interoperability-oriented features over centralised control structures. The most frequently cited requirement is data sharing and multiple usage (26.7%),

followed closely by scientific beneficiary identification (23.3%). These two priorities account for half of all responses, indicating strong demand for systems that improve coordination, reduce duplication, and strengthen targeting accuracy. This pattern aligns with global evidence showing that integrated social protection information systems improve efficiency and reduce exclusion errors when they enable real-time data exchange across programmes (Barca & Chirchir, 2014).

Scientific beneficiary identification reflects persistent targeting challenges within Kenya's devolved social protection environment. Respondents associated this feature with the need to integrate civil registration data, social welfare records, and sectoral databases to improve eligibility accuracy. Similar findings in integrated registry systems across low- and middle-income countries show that data-driven targeting reduces inclusion and exclusion errors when systems use harmonised data standards and cross-programme validation mechanisms (Chirchir & Kidd, 2020). The prominence of this feature in the present study suggests strong stakeholder awareness of inefficiencies in current fragmented registry systems.

Decentralisation to local user points (20.0%) also emerged as a key requirement, reflecting operational realities in county service delivery structures. Respondents emphasised the need for sub-county and ward-level access points to support timely data entry, verification, and beneficiary management. This finding aligns with evidence from devolved governance systems in Africa, where decentralised MIS access improves responsiveness and reduces delays in service delivery, particularly in rural and hard-to-reach areas (Development Pathways, 2024).

Integration with the national registry (13.3%) indicates moderate

support for interoperability with the Enhanced Single Registry. However, the relatively lower proportion compared to local functionality requirements suggests that stakeholders view national integration as supportive rather than central to county MIS design. This supports a federated system model in which counties retain operational autonomy while exchanging structured data with national platforms. Similar models have been recommended in social protection systems where multi-level governance structures exist (World Bank, 2022).

Offline system functionality (10.0%) reflects infrastructure constraints affecting digital service delivery at grassroots levels. Although ranked lower in frequency, qualitative responses indicated that offline capability is essential for ensuring continuity of data capture in areas with limited internet connectivity. This finding is consistent with studies showing that offline-first design significantly improves data completeness and system usability in rural social protection programmes (UNICEF, 2021). Central governance structure received the lowest support (6.7%), indicating strong resistance to centralized control of county MIS systems. Respondents associated central governance with reduced flexibility, slower response times, and limited adaptation to county-specific programme needs. This finding reinforces the broader rejection of top-down system replication observed in devolved governance contexts, where local autonomy is prioritised for effective service delivery.

Qualitative responses provide deeper explanation of the quantitative patterns and reveal how different stakeholder groups interpret MIS design needs in practice. Three dominant themes emerged: interoperability and data coordination, localisation of system

functions, and system usability under infrastructure constraints. Illustrative quotations are included to ground these themes in respondent perspectives.

Respondents consistently emphasised fragmented data systems as a major barrier to efficient social protection delivery. County officials described duplication of beneficiary records across programmes and weak integration with national databases. One county social protection officer stated:

"We still operate with separate lists for bursaries, cash transfers, and emergency support. Without a shared system, we keep paying the same households or missing others completely." (County Official, CO3)

These accounts reflect strong demand for interoperable systems that enable structured data exchange across programmes and institutions. Similar concerns have been documented in integrated social protection systems where fragmentation reduces efficiency and increases exclusion errors (Barca & Chirchir, 2014).

A second dominant theme relates to the need for MIS designs that reflect county-specific programmes and devolved mandates. Respondents consistently rejected rigid national templates that do not accommodate local programme diversity.

A county official observed:

"The national system focuses mainly on cash transfers, but at county level we also manage agriculture subsidies and bursaries. The system must reflect these realities." (County Official, CO7)

Community representatives strongly emphasised system relevance to local needs and accessibility. One beneficiary committee member stated:

"We want a system that understands our programmes here, not something copied from Nairobi. It should serve

what people here actually receive."

(Community Representative, CR4)

NGO respondents similarly highlighted the need for flexibility:

"County systems should not just report upwards; they must manage their own programmes effectively first." (NGO Respondent, NGO2)

These findings indicate that localisation is not only a technical requirement but also a governance expectation linked to devolution principles. This aligns with evidence that devolved systems require adaptable MIS structures aligned with local service delivery mandates (Chirchir & Kidd, 2020).

Respondents also highlighted practical challenges affecting system adoption, particularly related to connectivity, training, and interface complexity. Community representatives and frontline actors emphasised the importance of offline functionality and simple interfaces.

A community welfare committee member explained:

"Sometimes we go for days without internet. If the system only works online, then we cannot update records on time." (Community Representative, CR8)

NGO respondents also noted capacity constraints:

"Training is not enough. Systems must be designed in a way that ordinary field workers can use them without constant support." (NGO Respondent, NGO9)

These views highlight the importance of offline-first design and user-friendly interfaces in improving adoption.

Weighted Priority Index for County Social Protection MIS Features

To establish the relative strength of stakeholder preferences regarding MIS design features, a weighted priority index was computed. Respondents ranked six proposed MIS features, with the highest

priority assigned six points and the lowest priority assigned one point. Composite weighted scores were then calculated to determine the overall importance attached to each feature across all respondent groups.

Table 3: Weighted Priority Index for MIS Features

Feature	Weighted score	Rank
Data sharing and multiple usage	142	1
Scientific beneficiary identification	135	2
Decentralisation of services	118	3
National registry integration	96	4
Offline functionality	88	5
Central governance	52	6

The weighted ranking confirms that respondents strongly prioritise system functionality, interoperability, and operational accessibility over hierarchical governance structures. Data sharing and multiple usage achieved the highest weighted score (142), indicating broad consensus across stakeholders that county social protection MIS should facilitate coordination across departments, programmes, and partner organisations. This finding reinforces earlier descriptive results showing high demand for interoperable systems capable of reducing duplication and improving information exchange.

Scientific beneficiary identification ranked second with a weighted score of 135. Respondents associated this feature with improving targeting accuracy, reducing exclusion errors, and strengthening transparency in beneficiary selection processes. The high ranking reflects concerns regarding fragmented beneficiary records and inconsistent eligibility verification

mechanisms currently experienced across county programmes. Similar studies on social protection MIS implementation show that integrated targeting systems improve efficiency and accountability when supported by harmonised databases and shared data standards (Barca & Chirchir, 2014).

Decentralisation of services ranked third with a weighted score of 118, reflecting strong support for localised access and decision-making. Respondents viewed decentralised systems as essential for improving responsiveness at sub-county and ward levels, where most beneficiary interactions occur. This finding supports evidence from devolved governance systems indicating that decentralised digital platforms improve service delivery speed and accessibility, especially in geographically dispersed populations (World Bank, 2022).

National registry integration ranked fourth with a weighted score of 96. While respondents recognised the importance of linkage with the national Enhanced Single Registry, the lower ranking compared to local functionality suggests that stakeholders prefer supportive interoperability rather than dependency on national systems. This supports the emerging preference for federated MIS architecture where counties maintain autonomous operational systems while exchanging standardised data with national platforms.

Offline functionality scored 88 points and ranked fifth. Although quantitatively lower than other functional features, qualitative responses indicated that this capability remains operationally important in rural and low-connectivity areas. Respondents noted that inability to capture or retrieve data offline disrupts beneficiary registration and programme monitoring processes at field level.

Central governance received the lowest weighted score (52), confirming

widespread resistance to centrally controlled county MIS systems. Stakeholders expressed concern that highly centralised systems reduce flexibility and fail to accommodate county-specific programme structures. This finding reflects broader debates within devolved governance frameworks where local autonomy is viewed as necessary for responsive service delivery and contextual adaptation.

Qualitative responses further explain why respondents assigned higher weights to interoperability and decentralisation features. County officials repeatedly linked data sharing to improved coordination and accountability.

One county social protection officer explained:

“A shared system would help us know who has already received support from another programme. Right now, information is scattered everywhere.” (County Official, CO5)

NGO respondents associated scientific targeting with fairness and transparency in programme implementation.

“If beneficiary identification is not data-driven, political influence and duplication become very difficult to control.” (NGO Respondent, NGO4)

Regarding national integration, respondents generally supported data exchange but resisted direct system control from central government structures.

A county official stated:

“We need connection with the national registry, but counties must still control their own programmes and workflows.” (County Official, CO8)

Offline functionality emerged strongly in qualitative discussions despite its lower weighted ranking.

“Network problems are common in some areas. If the system stops working without internet, service

delivery also stops.” (Community Representative, CR7)

MIS design priorities across stakeholder categories

To examine variation in MIS design priorities across stakeholder categories, a cross-tabulation analysis was conducted comparing county officials, NGO/CSO representatives, and community welfare representatives. The analysis aimed to determine how institutional roles and operational experiences influence system design preferences.

Table 4: Design Priorities by Stakeholder Group (%)

Design feature	Count		
	County officials	NGO/CSO	Community reps
Data sharing	30	25	25
Scientific targeting	20	35	15
Decentralisation	15	10	40
National registry integration	20	15	10
Offline functionality	5	5	25
Central governance	10	10	0

The findings reveal notable differences in priorities across stakeholder groups. County officials placed highest emphasis on data sharing (30%) and national registry integration (20%), reflecting their administrative responsibility for coordination, reporting, and alignment with national systems. This suggests that county administrators value interoperability mechanisms that improve oversight and reduce duplication across programmes.

NGO/CSO representatives strongly prioritised scientific beneficiary targeting (35%), indicating concern with fairness, transparency, and evidence-based allocation of social protection resources. This finding reflects the operational focus of NGOs and CSOs on accountability, monitoring, and efficient targeting of vulnerable populations. Previous studies on social protection systems similarly show that implementing partners often prioritise data quality and targeting precision because of donor reporting and programme accountability requirements (Barca & Chirchir, 2014).

Community representatives displayed the strongest preference for decentralisation (40%) and offline functionality (25%), indicating practical concerns linked to accessibility and infrastructure limitations. Respondents at community level viewed localised service access as essential for reducing travel costs, delays, and exclusion from social protection services. Offline functionality was particularly important in remote areas where internet connectivity remains unreliable.

The complete absence of support for central governance among community representatives further indicates resistance to highly centralised administrative systems. This reflects a preference for county-controlled systems that respond more directly to local needs and operational realities.

Qualitative findings further explain the differences observed across stakeholder categories. County officials frequently associated data sharing with coordination and administrative efficiency.

One NGO programme coordinator stated:

“Targeting should be evidence-based. If the system cannot verify households properly, resources end up going to the wrong people.” (NGO Respondent, NGO3)

Community representatives consistently prioritised decentralisation and ease of access.

A beneficiary committee representative remarked:

“Most people cannot afford transport to county offices. Services should be available closer to the community.”

(Community Representative, CR5)

These findings indicate that stakeholder priorities are shaped strongly by operational roles and direct interaction with beneficiaries. Administrative actors focus on coordination and integration, implementing partners emphasise targeting accuracy and accountability, while community representatives prioritise accessibility and practical usability.

Differences Between County and National MIS

The study further examined stakeholder perceptions regarding differences between county-level and national social protection MIS frameworks. Respondents were asked to identify the defining characteristics of county systems relative to national platforms.

The findings show that the majority of respondents (56.7%) view county MIS primarily as systems designed to support county-specific social protection programmes such as bursaries, agricultural subsidies, post-harvest support, and emergency response interventions. A further 30% indicated that county systems should facilitate coordination between county governments, NGOs, and CSOs. Only 3.3% viewed county MIS as replicas of national systems.

Table 5: Perceived Differences Between County and National MIS

Difference dimension	Frequency (n)	Percentage (%)
Supports county-specific programmes	17	56.7
Facilitates partner coordination	9	30.0
Office-level administrative tool	3	10.0
Replica of national system	1	3.3
Total	30	100

A replication resistance index was computed to assess respondent orientation toward system autonomy:

- Non-replication preference = 96.7%
- Partial replication acceptance = 3.3%

The index demonstrates resistance to duplicating national MIS architecture at county level. Instead, respondents favour systems that maintain local relevance while supporting interoperability with national registries.

Qualitative responses strongly reinforced the quantitative findings regarding county autonomy and localisation.

Community representatives emphasised local relevance and accessibility.

“County programmes are different from one county to another. The system should match what communities actually receive.”

(Community Representative, CR1)

Respondents also expressed concern that replication of national systems would weaken county flexibility.

“If counties simply copy the national system, local programmes will remain invisible.” (NGO Respondent, NGO8)

These findings indicate that stakeholders perceive county MIS not merely as administrative extensions of national platforms, but as autonomous operational systems designed around devolved service delivery structures.

Stakeholder Group and MIS Design Priorities

To determine whether stakeholder category significantly influences preferences for county social protection MIS design features, a Pearson Chi-square test of association was conducted. The analysis examined the relationship between respondent category and preferred system design priorities.

Table 6: Chi-Square Test of Association Between Stakeholder Group and MIS Priorities

Test	Value	df	p-value
Pearson Chi-Square	18.62	10	0.045

The findings indicate a statistically significant association between stakeholder group and preferred MIS design priorities ($\chi^2 = 18.62$, $df = 10$, $p = 0.045$). Since the p-value is below the 0.05 significance threshold, the null hypothesis of no association is rejected. This demonstrates that stakeholder roles significantly influence perceptions regarding preferred MIS features.

The results suggest that MIS requirements are role-dependent and shaped by institutional exposure, operational responsibilities, and interaction with beneficiaries. County officials, NGO/CSO representatives, and community actors prioritize different system attributes because they engage with social protection systems from distinct functional perspectives.

County officials tend to prioritise interoperability, reporting integration, and governance coordination because of their administrative responsibilities. NGO

and CSO actors focus more strongly on scientific targeting and accountability functions associated with programme monitoring and donor compliance. Community representatives prioritise decentralisation and offline functionality because of direct exposure to service delivery barriers such as distance, network limitations, and accessibility challenges.

The statistically significant association supports user-centered system design theory, which argues that digital systems are more effective when designed around the operational realities of distinct user groups rather than assuming uniform user needs. Similar findings have been reported in public sector MIS studies where system adoption and effectiveness vary significantly depending on organisational role and technological exposure (World Bank, 2022).

Design Recommendations for County Social Protection MIS

Based on the quantitative and qualitative findings, the study proposes five core design principles for development of county-level social protection management information systems (MIS) in Kenya. The recommendations are grounded in stakeholder priorities related to interoperability, decentralisation, scientific targeting, and operational flexibility within devolved governance structures. The proposed framework supports a federated and user-centered MIS architecture capable of integrating county programmes while maintaining compatibility with national systems.

Modular System Architecture

The findings strongly support adoption of a modular MIS architecture consisting of a central beneficiary registry linked to county-specific functional modules. Respondents consistently

emphasised that county governments implement diverse programmes beyond national cash transfer schemes, including agricultural subsidies, bursaries, nutrition support, health interventions, and disaster response programmes.

Under this approach, the system should contain a shared core database for beneficiary registration and identity verification, while allowing counties to activate specialised modules relevant to their programme portfolios. Such modularity would improve scalability, simplify system updates, and accommodate county-specific workflows without requiring complete redesign of the system architecture.

Federated Interoperability Framework

The study recommends adoption of a federated interoperability framework that allows county MIS platforms to exchange data with the national Enhanced Single Registry while maintaining county-level operational autonomy. Respondents consistently rejected full replication of national systems but supported structured data sharing mechanisms.

The proposed framework should utilise standards such as SDMX-HD, interoperable APIs, and shared metadata protocols to facilitate secure exchange of beneficiary and programme information. Under this model, counties retain control over local programme administration while national systems access standardised data for coordination and policy planning. This federated approach aligns with emerging digital governance models that prioritise interoperability without centralising operational authority (World Bank, 2022).

Decentralised Access and Role-Based System Use

Findings indicate strong support for decentralised service access at sub-county and ward levels. Community representatives particularly emphasised

the need for systems that reduce travel burdens and improve responsiveness at local service points.

The study therefore recommends implementation of role-based access structures that permit differentiated system use across administrative levels. County officers, ward administrators, community health volunteers, and social protection field officers should each access functions relevant to their responsibilities through secure authentication protocols.

Mobile-enabled interfaces should support field-level registration, verification, grievance handling, and beneficiary monitoring. This would improve responsiveness and reduce delays associated with centralized processing systems.

Integrated Partner Coordination Portal

The findings revealed substantial demand for systems that facilitate coordination between county governments and implementing partners. Thirty percent of respondents specifically identified partner integration as a defining requirement for county MIS systems.

The study therefore recommends development of an integrated partner portal supported through API gateways that allow NGOs, CSOs, and development agencies to register interventions, upload programme data, and coordinate beneficiary support activities with county governments.

The portal should include features for:

- programme mapping
- beneficiary overlap detection
- referral tracking
- service coordination dashboards
- reporting and analytics

Such systems would reduce duplication of interventions, improve accountability, and strengthen integrated social protection planning across actors.

Offline-First Data Capture and Synchronisation

Infrastructure limitations emerged as a recurring concern, particularly among community representatives and frontline officers operating in low-connectivity areas. Respondents indicated that internet instability frequently disrupts data collection and beneficiary management processes.

The study recommends adoption of offline-first system architecture using Android-compatible mobile applications with local SQLite storage and automated synchronization once connectivity becomes available. This approach would allow uninterrupted field operations even in remote areas.

Offline-first systems have been shown to improve data completeness, operational continuity, and user adoption in resource-constrained settings where stable connectivity cannot be guaranteed (World Bank, 2022).

Conclusion

The county governments in Kenya require social protection management information systems that prioritise interoperability, scientific beneficiary targeting, decentralised access, and operational flexibility rather than centralized replication of national systems. Stakeholders across county governments, NGOs/CSOs, and community welfare structures consistently supported a federated MIS model capable of supporting county-specific programmes while maintaining structured integration with the national Enhanced Single Registry. The findings further demonstrate that MIS design priorities differ significantly across stakeholder categories, confirming the importance of participatory and user-centered system development approaches. Overall, effective county

social protection MIS frameworks should combine modular architecture, offline functionality, partner coordination mechanisms, and decentralised service access to improve targeting accuracy, reduce duplication, strengthen accountability, and enhance service delivery within Kenya's devolved governance system.

Recommendations

1. The Ministry of Labour and Social Protection should develop national interoperability standards and API guidelines that allow county MIS platforms to exchange data securely with the Enhanced Single Registry while preserving county operational autonomy.
2. County Governments should invest in modular and decentralised MIS platforms that support county-specific programmes such as bursaries, agricultural subsidies, disaster response, and nutrition support instead of replicating national systems.
3. County ICT Departments and Social Protection Units should implement offline-first mobile data collection systems with synchronization capability to improve service delivery in low-connectivity and remote areas.
4. The Council of Governors (CoG) should coordinate development of a shared county social protection MIS framework that supports standardisation of core functions while allowing counties to customise programme modules according to local priorities.
5. NGOs, CSOs, and Development Partners should integrate programme databases with

county systems through shared partner portals and interoperable APIs to reduce duplication of beneficiary support and improve coordination of interventions.

6. County Public Service Boards and Training Institutions should strengthen digital capacity among frontline social protection officers through continuous training on MIS use, data management, and digital beneficiary targeting systems.
7. The National Treasury and Development Partners should allocate dedicated funding for county-level digital infrastructure, including connectivity support, secure cloud storage, mobile devices, and system maintenance for social protection programmes.
8. Future researchers and policy institutions should pilot and evaluate federated county MIS models to assess their effectiveness in improving targeting efficiency, inclusion accuracy, programme coordination, and service delivery outcomes within devolved governance systems.

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