HELP LOGISTICS
By Kühne Foundation

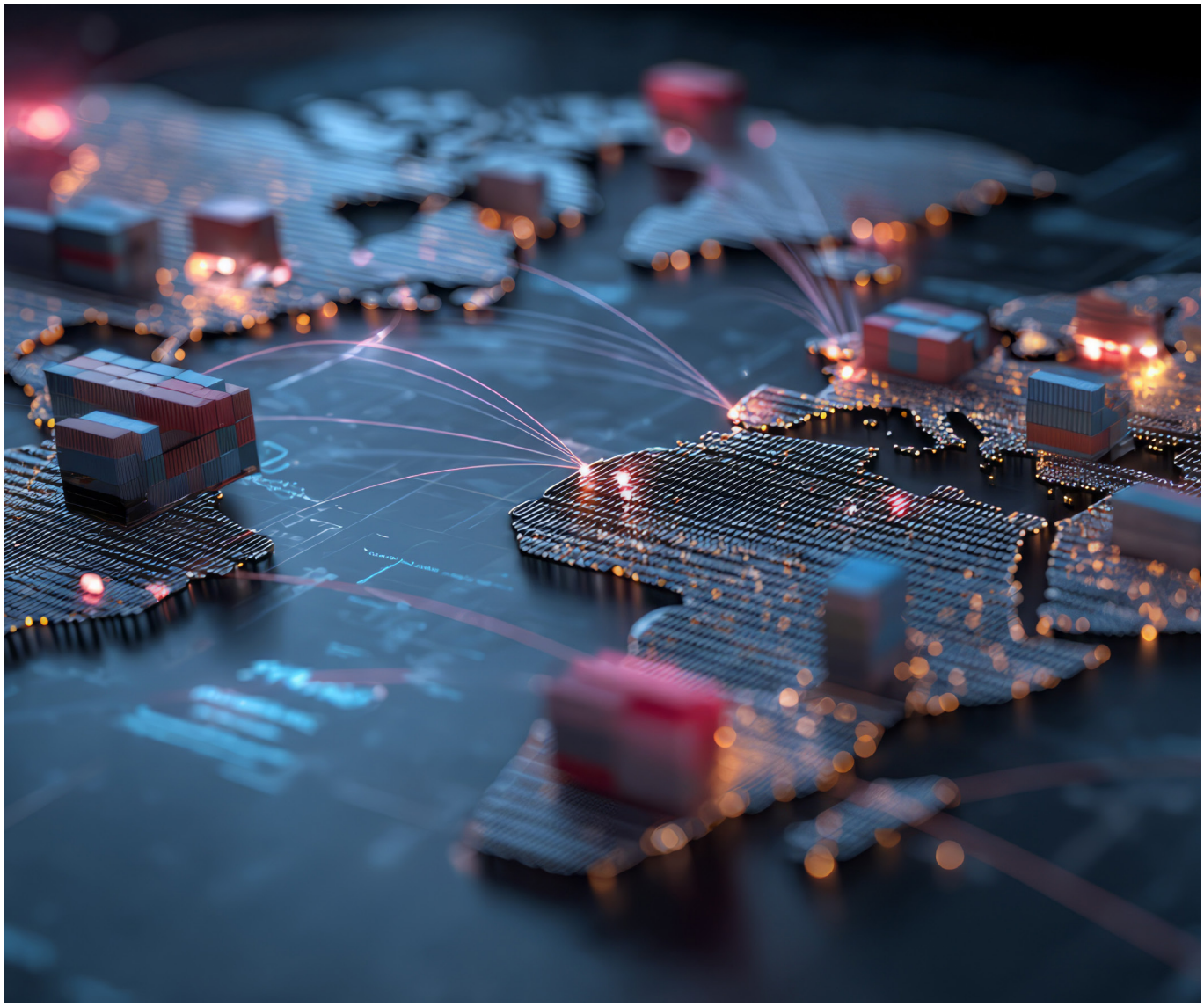
NETHOPE

Research Report | September 2026

Digitalization of Humanitarian Supply Chains

From Digital Activity to Digital Infrastructure

A sector-wide maturity benchmark



About HELP Logistics

As a unique non-profit subsidiary of the Kühne Foundation, HELP Logistics AG has been advancing logistics excellence in the humanitarian and development sectors since 2014. Headquartered in Switzerland, we operate across the Middle East, Africa, Asia-Pacific, and Europe. Our team of over 40 professionals supports governments, international and local NGOs, UN agencies, the IFRC and its national societies, and private-sector partners. Through these partnerships, we strengthen supply chain strategy and operations, advance professional and talent development, and shape policy and innovation through thought leadership. For more information visit www.help-logistics.org.

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About NetHope

NetHope is a catalyst for collective impact that advances humanitarian, conservation, and international development efforts worldwide. For more than 20 years, we've enabled international nongovernmental organizations and leading technology partners to address the world's most pressing challenges and advance global good through collaboration, collective action, and smarter use of digital technology. Over 60 nonprofit Members and 50 technology partners collaborate to leverage digital solutions for exponential impact. Collectively, NetHope Members deliver more than 60% of all annual international, non-governmental aid, serving over 1.67 billion people in 190 countries. For more information: www.nethope.org.

Acknowledgments

The authors would like to thank all survey respondents and interview participants who contributed their time, perspectives, and operational experience to this research. Their willingness to share both successes and failures made this report possible. Particular thanks go to the practitioners, local organizations, coordination bodies, platforms, and donor representatives who participated in the interview program under Chatham House rules and provided candid reflections on the realities of digital transformation in humanitarian supply chains.

AI-assisted tools were used to support editing and improve the clarity and consistency of the report's language and writing style. All findings, analysis, and recommendations are those of the authors.

Contents

List of acronyms

AI	Artificial Intelligence
API	Application Programming Interface
CHORD	Center for Humanitarian Logistics and Regional Development
DG ECHO	European Commission Directorate-General for European Civil Protection and Humanitarian Aid Operations
DNA	Digital Nonprofit Ability (model)
DNS	Digital Nonprofit Skills (model)
ERP	Enterprise Resource Planning (system)
FHL	Frontline Humanitarian Logistics (standard/model referenced in this report)
GS1	Global standards organization for supply chain identification and data exchange
HDX	Humanitarian Data Exchange
HLGSC	Humanitarian Leadership Group on Supply Chain
IBP	Integrated Business Planning
IGO	Intergovernmental Organization
INGO	International Non-Governmental Organization
MENA	Middle East and North Africa
NGO	Non-Governmental Organization
OCR	Optical Character Recognition
ODK	Open Data Kit
SAP	Enterprise resource planning (ERP) software company and platform
SCM	Supply Chain Management
UN	United Nations
UN80	UN80 agenda (as referenced in this report)
UNSPSC	United Nations Standard Products and Services Code
VAN	Visibility and Analytics Network (as in Global Family Planning VAN)

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Executive summary

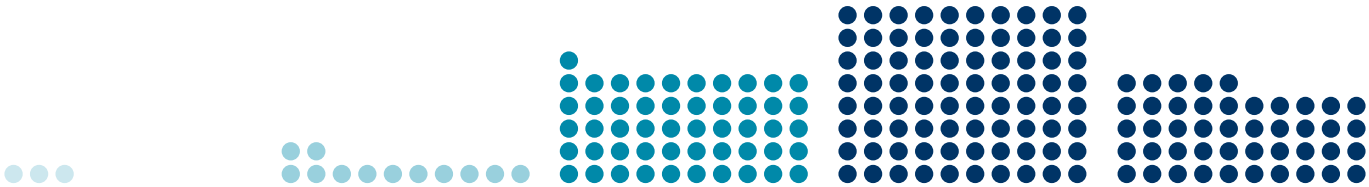
Humanitarian supply chains are becoming the test of reform

Humanitarian supply chains have become a test of whether the sector can reform under pressure. Demand is at record levels, funding has fallen sharply, donors are asking for stronger accountability, and more operational responsibility is moving toward national and local actors. Supply chain performance is no longer a technical matter for logisticians alone, but one of the places where the sector's commitments on efficiency, localization, and accountability become visible, or fail to.

Digitalization is already part of the response. Supply chains account for an estimated 60–80% of humanitarian operational expenditure, and better use of data and systems should reduce duplication, improve preparedness, strengthen procurement, and make coordination across organizations and markets easier. Until now, however, there has been no sector-wide benchmark of where digital supply chain maturity actually stands, what is holding it back, and where the gaps are most acute.

This joint HELP Logistics and NetHope report fills that gap. It draws on 191 survey responses and 12 interviews with humanitarian organizations, local actors, platforms, coordination bodies, and donors, and uses a structured self-assessment across six categories and 18 questions on a five-point scale from *Initial* to *Transformative*. The benchmark places the sector at 3.7 out of 5. That score reflects genuine progress within individual organizations, but it falls short of the levels at which digital capability is consistently managed across institutions, partners, and operating contexts. The capabilities exist in many places; what remains underdeveloped is the connective infrastructure that would allow them to function as a system.

Digital Supply Chain Maturity



1 Initial

Processes are largely manual or paper based. Digital tools, if used, are individual workarounds. Data is fragmented and not consistently used for decisions.

3 respondents (1.5%)

2 Emerging

Basic digital tools are in use in some functions or locations, but adoption is uneven. Processes remain isolated, data quality varies, and manual reconciliation is still common

12 respondents (6.3%)

3 Established

Core processes are digitized and documented across the organization. Governance and data quality practices are emerging, and data is used for internal management.

51 respondents (26.7%)

4 Advanced

Systems, data, funding and governance are integrated as a digital capability. Key Systems exchange data, performance is measured, and investments are guided by standards and evidence.

80 respondents (41.9%)

5 Transformative

Digital capabilities are strategic and sector-facing. Systems are interoperable, inclusive, and adaptive. Data and AI enable responsible, anticipatory decisions and coordination at scale.

45 respondents (23.6%)

n= 191 • each dot = one respondent

Five findings from the benchmark

1. **The sector has digitalized in fragments, not as a system.** Procurement platforms, warehouse systems, dashboards, ERP modules, and AI-enabled tools are now common across humanitarian operations, yet no maturity dimension reaches the level associated with consistently managed, integrated digital capability. The sector average is 3.7, and respondents' own 12-month target rises only to 4.0, suggesting that practitioners themselves expect incremental progress rather than a near-term leap. The central problem is no longer whether organizations use digital tools, but whether those tools operate as part of a coherent digital environment.

2. **The hardest problems are now collective rather than technical.** The strongest maturity category is *Standardization and Data Management* at 3.9, while the weakest is *Interoperability and Systems Integration* at 3.5. Organizations are making headway where they can act alone, including cleaning internal data, defining processes, and building dashboards, and far less progress where it depends on shared standards, common definitions, legal frameworks, and institutional trust. Only 10% of respondents report visibility extending to external partners. Interoperability is primarily a standards problem rather than a platform problem. The sector does not need one shared system, but a shared language that allows many systems to exchange meaningful data, including with the suppliers, carriers, customs authorities, and public infrastructure that already perform much of the work.

3. **Maturity looks different depending on where one stands.** The survey does not support a simple story in which large, well-funded organizations are always more mature and smaller or local ones always behind. Headquarters respondents report significantly lower maturity at 3.3 than field respondents at ~4.0, which almost certainly reflects what each is looking at rather than performance: field respondents judge tools that work reasonably well in a specific operation, while headquarters sees the full estate of legacy platforms, country variations, and partial integrations. National and local NGOs report relatively high maturity, which may reflect simpler digital environments that fit their scale rather than greater absolute capability. The policy response therefore cannot be technology transfer alone, since legacy complexity, resource and influence gaps, and integration burdens require different remedies.

4. **The last mile remains the weakest digital link.** Digitalization is strongest around procurement, warehousing, and finance-adjacent processes, where organizations must document and defend expenditure, and weakest further downstream. Nearly five respondents describe last-mile delivery as fully manual for every one who describes it as fully digital. Interviewees across organization types repeatedly described the last mile as a blind spot, and nearly all described it as sitting outside the ownership of the supply chain function. The result is a system where digital visibility is strongest where accountability to donors is highest, and weakest where operational complexity is greatest.

5. **AI is useful already, but its strategic value depends on unfinished foundations.** Some 43% of respondents report no current AI use, 36% are exploring or planning, and 21% have AI in pilot or use. Where AI is in use, it is mostly drafting, translation, document extraction, and knowledge search – personal productivity tasks that save time and reduce administrative burden. The larger supply chain value of AI depends on reliable data, shared definitions, and trusted integration across systems. Leaders in the survey are more likely to have AI in pilot or production and more likely to report cross-organization visibility, suggesting that AI adoption is associated with stronger foundations rather than a substitute for them. In weaker data environments, AI risks making poor-quality information appear more authoritative.

What follows from this

The next phase of progress will depend less on introducing additional tools than on creating the conditions that let existing capability work across institutions, partners, and operating contexts. For organizations, the work is foundational rather than technological: data ownership, process redesign, standards mapping, field-ready design, and stronger integration between supply chain and IT. The organizations that made the most progress were not those with the most sophisticated technology, but those that treated digital capability as part of the operating model rather than a separate IT initiative. For sector coordination bodies, the priority is to make collaboration worth the effort through practical standards, neutral governance, and reusable legal and technical frameworks. For donors and policymakers, multi-year digital infrastructure, partner connectivity, cybersecurity, interoperability, and user support need to be treated as operational necessities rather than discretionary overhead.

The opportunity is substantial. The cases in this report show that digital supply chain transformation can improve visibility, reduce inventory holdings, shorten lead times, and produce systems that prove reusable beyond a single institution. These gains do not come from software alone. The sector's next digital leap will not be another wave of pilots, but the conversion of scattered digital progress into shared operating infrastructure: supply chains that are interoperable enough to coordinate, connected enough to work with the markets and public systems that execute the chain, inclusive enough to localize, and resilient enough to serve a system under sustained pressure.

1. Why now?

Humanitarian supply chains have become one of the clearest tests of whether the sector can adapt to a harsher operating environment. They account for an estimated 60–80% of total humanitarian expenditure[1] and sit at the meeting point of three constituencies: donors who require accountability, programs that depend on operational performance, and the suppliers, carriers, customs administrations, and partners that execute the chain. How well that chain performs, and how visibly, increasingly determines whether the sector's commitments on efficiency, localization, and accountability hold up in practice.

Three pressures explain why digital capability has moved from a modernization question to a strategic one. Humanitarian demand has reached record levels, with the 2026 Global Humanitarian Overview counting over 250 million people in need and a funding requirement of roughly US$35 billion (as of August 2026). Funding has moved in the opposite direction, with United States contributions against the GHO falling from US$11 billion in 2024 to US$2.5 billion in 2025, the sharpest contraction in a decade.[2] And operational responsibility is shifting toward national and local actors faster than the systems, infrastructure, and long-term funding that would let them carry it sustainably.

These pressures meet a reform agenda that increasingly depends on digital capability to function. The Humanitarian Reset, the UN80 agenda, and the Humanitarian Leadership Group on Supply Chain (HLGSC) all point toward a model that is more coordinated, more accountable, and less fragmented. A parallel HELP Logistics study on inter-agency interoperability among UN agencies reaches a complementary conclusion: that the barriers to collaboration are now largely structural and institutional rather than technical, and that data and information management is the enabler with the highest potential efficiency gains across the system.[3] Procurement reform, preparedness, localization, and sustainability all now depend on the ability to exchange reliable information, operate with shared standards, and maintain visibility across delivery networks that no single organization controls.

This gives the current phase a different character from earlier waves of digital investment. Most large organizations already use digital systems in part of their supply chain operations, and the question is whether those systems can evolve into a coherent operating environment: interoperable across organizations and sectors, sustainable beyond individual grants, usable in low-connectivity contexts, and capable of supporting collaboration rather than reinforcing fragmentation. Donors and boards now expect timely reporting, auditable processes, traceability, and stronger controls. The capabilities that make those expectations possible, including data governance, interoperability, planning, cybersecurity, user support, and long-term maintenance, are still frequently treated as overhead. The result is a widening mismatch between what humanitarian supply chains are expected to deliver and how their digital foundations are funded and governed.

Digital capability in humanitarian supply chains has been a subject of practitioner and academic attention for nearly two decades, with substantial work by the Fritz Institute, the HUMLOG Institute, INSEAD's Humanitarian Research Group, the Logistics Cluster, and others laying important groundwork on standards, coordination, and systems design. This report builds on that body of work by providing a structured sector-wide maturity benchmark and identifying where progress has stalled.

1. European Commission, Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO) Thematic Policy Document: Humanitarian Logistics Policy, 2022.
2. https://humanitarianaction.info/overview/2026
3. Strengthening Interoperability and Collaboration in Humanitarian Supply Chains. Kunz, N. (2026).

2. How we measured maturity

This report is built from two primary sources. The first is the Survey on the Digitalization of Supply Chains in the Humanitarian Context, with 191 usable responses collected (196 responses in total with 5 non-usable) between December 2025 and March 2026, to provide a structured, comparable view of perceived digital maturity across the sector. The second is a set of 12 semi-structured interviews, conducted in March and early April 2026, to interpret the survey patterns and add examples from practitioners, platforms, coordination bodies, and donors.

2.1 The Digital Supply Chain Maturity Framework

The framework used in this report builds on more than a decade of practitioner and academic work on digital maturity in the humanitarian and nonprofit sectors. It draws directly on NetHope's Digital Nonprofit Ability (DNA) and Digital Nonprofit Skills (DNS) models[4] — established sector diagnostics that have been used by hundreds of nonprofit organizations to assess their digital capabilities. Building on these models rather than developing a new vocabulary keeps the benchmark in Chapter 3 comparable with diagnostics organizations have already completed, avoids duplicating tools that already work, and lets respondents reuse familiar concepts rather than learning a parallel system. It also aligns with the digitalization intervention model developed by the Humanitarian Leadership Group on Supply Chain (HLGSC),[5] and with the broader maturity-model tradition used in commercial supply chain assessment. The aim is to extend, not replace, what is already in use.

The framework used throughout this report organizes digital maturity into six categories and five levels.

Figure 1: Maturity model

Standardization & Data Management

Common data standards ensure accurate, comparable and actionable information for all actors.

Interoperability & Systems Integration

Connected platforms enable real-time data exchange and technology adoption across the ecosystem.

Inclusiveness & Scalability

Digital tools are accessible and affordable for all organizations, scaling across diverse contexts and connectivity environments.

Governance & Coordination

Collaborative governance aligns digital initiatives, prevents duplication and guides a shared strategic direction for digital transformation across the sector.

Sustainable financing & Resource Optimization

Funding for digital supply chain systems is predictable, pooled, and optimized to sustain innovation, shared infrastructure and long-term sectoral impact.

Capacity Building & User Engagement

Organizations continuously invest in skills, training, and adoption support to ensure that digital solutions are effectively used and sustainably embedded.

4. The Digital Nonprofit Ability (DNA) and Digital Nonprofit Skills (DNS) models are diagnostic frameworks developed by NetHope to help nonprofit organizations assess and strengthen their digital capabilities. DNA assesses an organization's digital maturity across multiple dimensions, while DNS focuses on the skills and competencies staff need to operate effectively in a digital environment. Both have been used by nonprofit organizations to benchmark progress and guide digital transformation efforts. For more information, see https://nethope.org/what-we-do/accelerating-together/digital-nonprofit-ability-assessment/ and https://nethope.org/what-we-do/accelerating-together/digital-nonprofit-skills-assessment/
5. The HLGSC is a sector platform convened by DG ECHO that brings together humanitarian organizations to develop shared strategy and implementation plans on supply chain priorities, including digitalization. Its digitalization intervention model directly informed the design of the maturity model used in this report. For more information, see https://hlgsc.org/

The table below defines the five maturity levels used across all six framework categories, describing how organizations typically progress from fragmented, manual practices toward integrated, adaptive, and sector-facing digital supply chain capabilities.

Table 1: Maturity levels

1 **Initial**	**Ad Hoc** Supply chain processes are largely manual, paper-based, or Excel-driven. Digital tools, if used, are individual workarounds rather than part of an agreed system. Data is fragmented, difficult to verify, and not consistently used for decisions.
2 **Emerging**	**Developing** Basic digital tools are in use for selected functions, teams, or locations, but adoption is uneven. Processes remain siloed by function, geography, partner, or donor project. Data quality varies, standards are limited, and manual reconciliation is still common.
3 **Established**	**Defined** Core supply chain processes are digitized and documented across the organization. Common roles, data definitions, quality checks, and governance practices are emerging. Data is increasingly comparable and used for internal management, though external exchange and long-term resourcing remain limited.
4 **Advanced**	**Optimized** Systems, data, funding, governance, and user support are managed as part of an integrated digital supply chain capability. Key systems exchange data across functions, performance is measured, users are actively supported, and digital investments are guided by evidence, standards, and lifecycle planning.
5 **Transformative**	**Adaptive** Digital supply chain capabilities are embedded as a strategic, sector-facing capability. Systems are interoperable, inclusive, scalable, and adaptable to field realities, including local partners and low-connectivity contexts. Data and AI-enabled decision support are used responsibly to anticipate needs, optimize resources, and coordinate action across organizations.

2.2 Survey

2.2.1 Survey design and scoring

The survey contained several questions on each of the six maturity categories. Items were scored on a 1–5 Likert scale from Completely Disagree to Completely Agree, then converted to a numeric score where 1 = Initial and 5 = Transformative. Category scores are unweighted averages of the items belonging to that category. Additional questions covered the level of visibility, automated data exchange and use of AI.

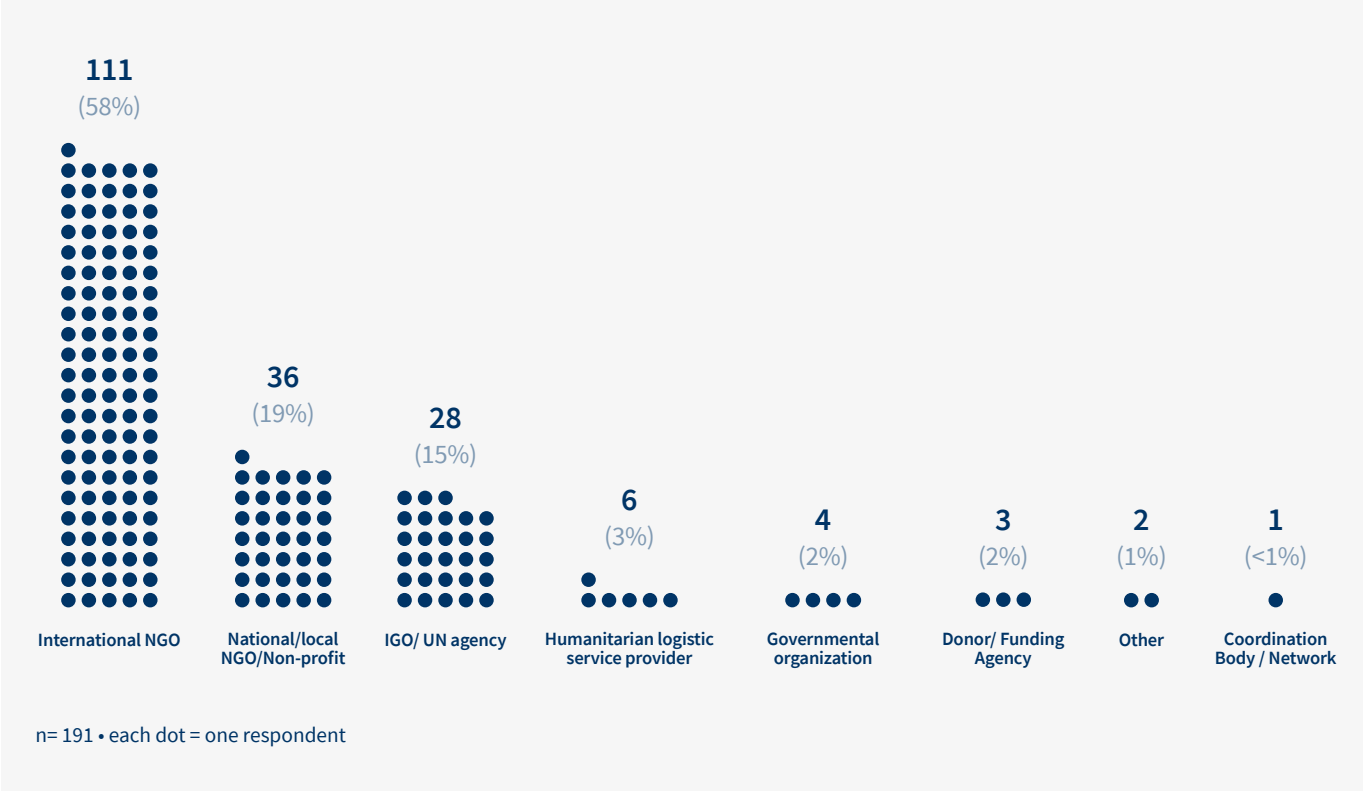
2.2.2 Who responded: sample profile and limitations

The 2026 digitalization survey drew 191 responses from across the humanitarian ecosystem, representing a broad cross-section of organization types, sizes, geographies, seniority levels, and operational contexts. Headline averages should be read with this composition in mind: the findings reflect a genuinely plural set of experiences, not a single organizational archetype.

Organization type. The largest group of respondents came from international NGOs, which accounted for 58% of the sample (n=111). National and local NGOs and nonprofits represented 19% (n=36), a meaningful share that anchors the findings in the perspectives of organizations closer to implementation. IGOs and UN agencies contributed 15% (n=28). Humanitarian logistics service providers, governmental organizations, and donors each contributed 2-3%, alongside a small number of respondents from coordination bodies and cooperatives.

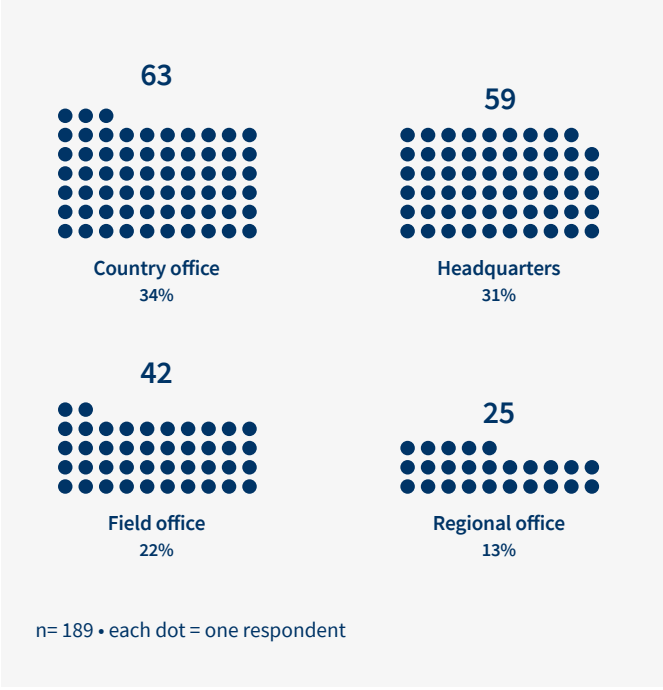
Organizational budget. Budget was broadly distributed across the known tiers, with approximately 11–13% of respondents in each of the <$1M, $1M–$9.9M, $10M–$99.9M, $100M–$499.9M, and $1B+ brackets, and 6% in the $500M–$999.9M range. 32% of respondents — the single largest group — selected "not sure." This almost certainly reflects a mix of field and program staff without line-of-sight to organizational finances, and respondents from smaller organizations where overall budget figures are less formalized.

Figure 2: Respondents by organization type



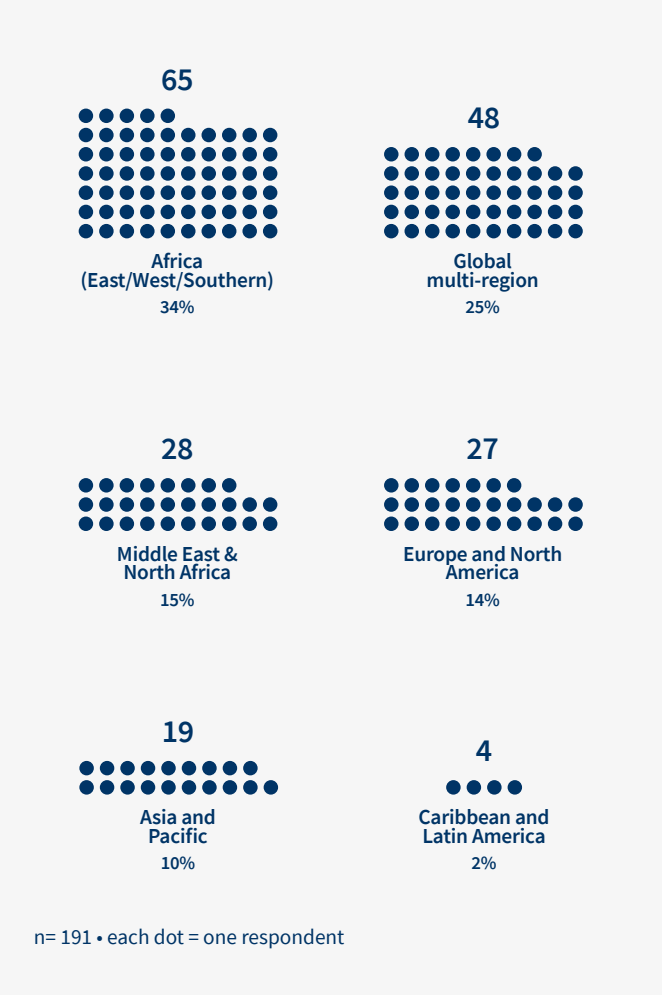
Location within organization. Respondents were closely split between country offices (33%) and headquarters (31%), with field offices at 22% and regional offices at 13%. The high share of country office and field respondents is notable for a digitalization survey, which typically skews toward HQ and IT functions. It means the findings are grounded in day-to-day operational experience, not only in the strategic view from the top.

Figure 3: Respondents by location within their organization



Geographic region. Africa was the most represented continent, accounting for a third of respondents (34%) across East, West, and Southern Africa. Global multi-region respondents, typically senior or HQ staff of international organizations working across multiple geographies, contributed 25%. The Middle East and North Africa and Europe and North America each represented 15% and 14%, respectively, and Asia and the Pacific 10%. Caribbean and Latin America were the least represented at 2%.

Figure 4: Respondents by geographic region



Experience. The sample skews heavily toward seasoned practitioners. More than a third of respondents (37%) have over ten years of humanitarian experience, and a further 16% bring seven to ten years — meaning more than half the sample carries seven or more in the sector. Only 9% have less than a year. The findings therefore reflect the assessments of people who have lived through multiple system implementations, funding cycles, and coordination failures.

2.3 Interview program

Twelve interviews were conducted to contextualize the survey findings. Participants were selected to ensure coverage of international NGOs at different sizes, sector coordination bodies, a donor, and smaller and local organizations. Interviews were 45–60 minutes, semi-structured, and recorded with consent. Transcripts were coded against the six-category framework; quotations appearing in this report are anonymized by org type (e.g. “Large INGO, supply chain lead”).

2.4 How to interpret the results

The findings in this report should be read as an informed sector benchmark rather than a statistically representative survey of the entire humanitarian ecosystem. Respondents were reached through professional networks associated with HELP Logistics and NetHope rather than through random sampling, which means the sample likely skews toward organizations and practitioners already engaged in digitalization efforts. Sector-wide maturity may therefore be somewhat overstated relative to the full population of humanitarian organizations globally. The evidence base is also stronger on humanitarian organizations, donors, platforms, and coordination bodies than on external market actors such as suppliers, freight forwarders, customs brokers, technology vendors, and transport providers.

To reduce the limitations of self-reported survey data, findings were triangulated wherever possible against interview evidence and external reference points. The latest *State of Logistics and Supply Chain in the Humanitarian Context* report by CHORD, based on 226 responses collected in 2025, provided an additional independent benchmark for comparison.[6]

Two interpretation effects are particularly important. First, self-assessment introduces a degree of optimism bias, with some respondents likely rating aspirational rather than current states. Second, maturity perceptions vary systematically by organizational vantage point. Headquarters respondents tend to assess maturity against enterprise-wide fragmentation and integration challenges, while field and country-office respondents are more likely to assess the usability of systems within their immediate operational context. The report treats both perspectives as valid and analytically useful rather than attempting to collapse them into a single “correct” view.

The survey was administered in English only, which likely underrepresents some non-English-speaking practitioner communities and regions, including parts of Francophone Africa, the Arab-speaking humanitarian community, and Spanish-speaking Latin America.

6. Center for Humanitarian Logistics and Regional Development (CHORD) - State of Logistics and Supply Chain in the Humanitarian Context (2026).

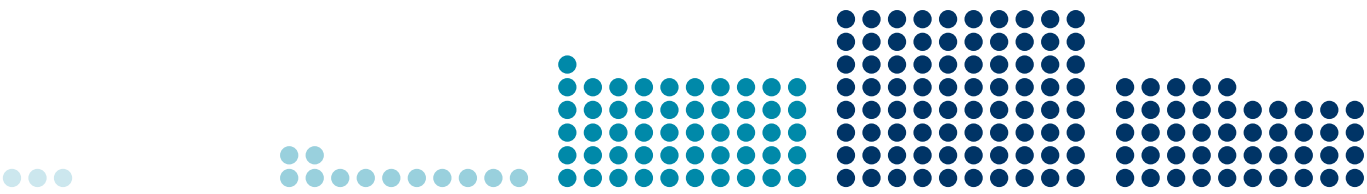
3. Where the sector stands

The humanitarian sector scores 3.7 out of 5 on this report's digital supply chain maturity index. This should not be read as an absolute performance score, a comparison with the private sector, or a claim that 5.0 is the required destination for every organization. The index is a structured benchmark within this research. Its purpose is to show where digital maturity is stronger or weaker across the sector, how organizations compare with peers, and where progress depends on changes beyond any single organization.

A score of 3.7 should be interpreted as early *Advanced* maturity. Respondents are no longer simply digitizing core processes; they are beginning to manage digital capabilities more systematically. However, the score remains at the lower edge of the Advanced band, which means advanced practices are likely uneven: integration across functions, partners, governance structures, and analytics-supported decision-making is emerging, but not yet consistently embedded.

The finding is therefore not that the sector is "low maturity." It is that the sector has reached the difficult middle of digital transformation. Many organizations have made enough progress to see the value of digital supply chain transformation, but not enough to capture its full benefits across the network. The maturity range across respondents is wide, and individual organizations can still move materially within the present system. What they cannot do alone is solve the shared constraints around standards, funding, interoperability, and coordination.

Respondents' self-identified 12-month maturity targets average 4.0, an increment of only +0.30 points. This suggests that practitioners themselves expect incremental rather than transformative short-term progress. A recent report by CHORD independently describes a similar plateau: supply chain performance metrics remain high but have levelled off, suggesting that the next gains will require deeper structural change rather than more effort within the same operating model.[7]



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3 respondents (1.5%)

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Systems, data, funding and governance are integrated as a digital capability. Key Systems exchange data, performance is measured, and investments are guided by standards and evidence.

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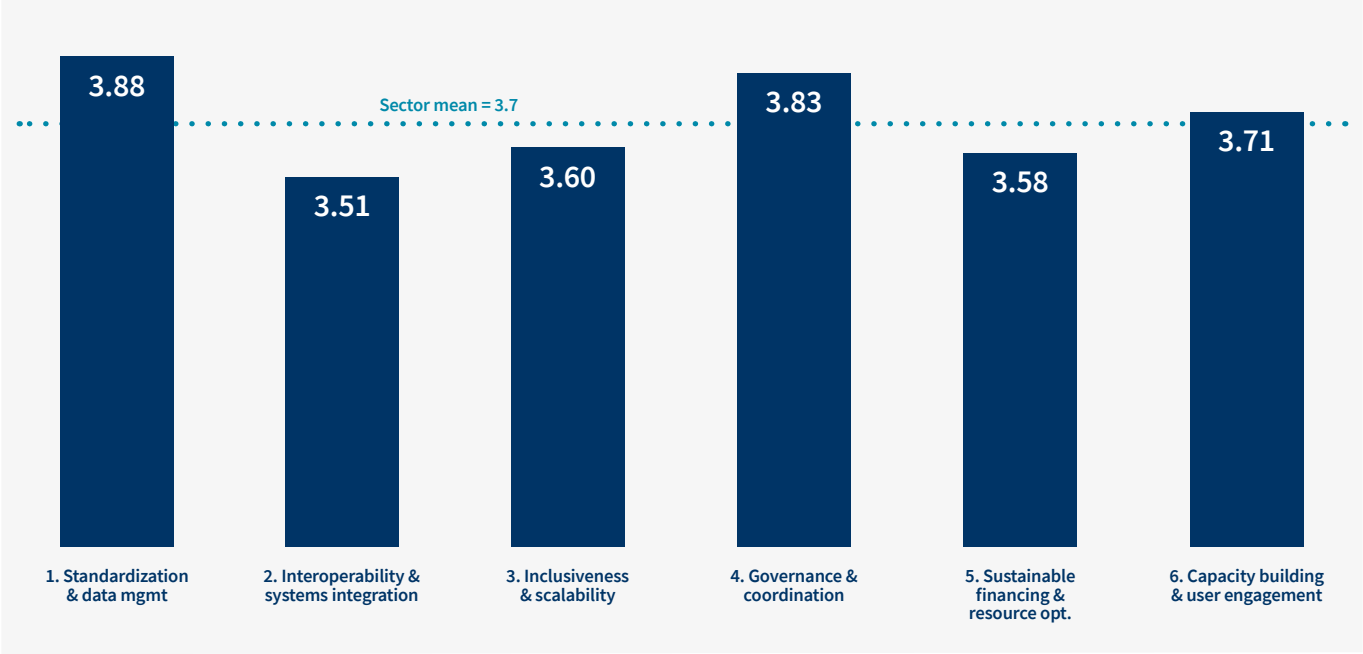
n= 191 • each dot = one respondent
Equal-width score bands; names are indicative and do not map exactly to Table 1 levels

7. Center for Humanitarian Logistics and Regional Development (CHORD) - State of Logistics and Supply Chain in the Humanitarian Context (2026).

Figure 5: Average current maturity by area, score 1–5



3.1 Maturity by area

No dimension reaches Level 4 at the sector average. Level 4 is the point where digital systems stop being mainly internal management tools and start supporting the way supply chains actually work: across functions, partners, suppliers, logistics providers and field locations. Data is governed consistently, systems exchange information more easily, and managers can use analytics as part of routine decision-making rather than as a separate reporting exercise. That no dimension reaches this point is telling. The sector has made real progress in digitizing parts of the chain, but less progress in connecting those parts into something that can support decisions across the chain.

Standardization and Data Management, at 3.9, comes closest; Interoperability and Systems Integration, at 3.5, sits furthest back. The 0.4-point spread between them looks narrow, but it points to an important structural difference. The two highest-scoring dimensions, *Standardization and Governance*, are the ones where individual organizations can make meaningful unilateral progress: cleaning internal master data, naming data owners, building a digital strategy. The two lowest, *Interoperability and Financing*, are the ones where individual action hits a structural ceiling almost immediately. That distinction matters for how the sector prioritizes. Progress on the top two is real but ultimately self-limiting without sector-level coordination. Progress on the bottom two will always be partial without it.

3.1.1 Standardization & Data Management

At 3.9, *Standardization & Data Management* is the highest-scoring dimension. Three out of five respondents (60%) place themselves at *Advanced* or above, and only 11% sit below *Established*. The strongest item is the use of standardized identifiers inside organizations, at 4.0. The weaker item is exportability in open formats, at 3.8. Emerging sector standards (FHL, UNSPSC, the Nonprofit Common Data Model) are available but not widely adopted.

> *"We are still debating whether the same item is a tarp, a tarpaulin or a plastic sheet. That is where the interoperability conversation actually sits."*
> Mid INGO, platform lead

The sector has reached the limits of what unilateral standardization can deliver. The realistic path forward is not for organizations to abandon their existing systems and converge on a single one. It is for them to map their existing data to a shared standard that functions as a translation layer between systems. That work is tractable, but it is not free; it requires funded translation and a critical mass of organizations committing to the same target.

3.1.2 Interoperability & Systems Integration

Interoperability & Systems Integration is the lowest-scoring dimension at 3.5, and the gap between its sub-questions is the widest in the survey. The survey and interviews show that interoperability is not mainly constrained by the absence of technology, but by the conditions needed to use them across organizations, including shared standards, data-sharing rules, secure access models and institutional willingness to exchange data.

Where organizations have made progress, it has come from mapping internal systems to an external standard rather than from merging platforms. The survey data shows that automated data exchange between systems scores 3.4/5, while real-time visibility of orders, shipments and inventory scores higher at 3.7/5 — suggesting that internal monitoring is ahead of cross-system integration. Only 10% of respondents report visibility extending to external partners; the majority remain internal-only.

The Logistics Cluster's 2024 ECHO Stockpile Mapping study illustrates this further: it identified 67 distinct stockpile management systems operating largely in silos across 83 organizations. ERPs were not aligned (Microsoft Dynamics, Unit 4, SAP, in-house builds), legal and data-protection review cycles ran for months, and even pioneering API integrations between large NGOs and shared platforms took close to two years to stand up. A planned resource pooling initiative between two INGOs was blocked because the two organizations run different ERPs; only physical assets could be shared, not digital records. The constraint is not the absence of integration technology, but the absence of shared data definitions and the funding to do the translation work between systems.[8]

> *"Data standards should function as a translation point, a lingua franca, not something organizations adopt directly. Organizations map their existing systems to the agreed standard."*
> Sector coordination body

> *"The issue is not the technology, it is really the environment, the ecosystem. Most of the people working on tools do not have field experience."*
> Large INGO, regional supply chain

Humanitarian supply chains increasingly depend on collaboration across agencies, local partners, logistics providers, procurement platforms, clusters, and shared visibility initiatives. When systems cannot exchange data, every collaboration falls back on manual reconciliation. This problem extends beyond the humanitarian sector. Suppliers, freight forwarders, transporters, customs authorities, and port operators already hold digital information on orders, shipments, documents, milestones, and invoices, but humanitarian organizations often receive it as emails, PDFs, spreadsheets, or manual updates. The result is weaker transparency, slower coordination, and limited use of external market data. The interoperability challenge is therefore not only to connect humanitarian systems to each other, but to connect humanitarian supply chains to the wider infrastructure through which goods move.

3.1.3 Inclusiveness & Scalability

Inclusiveness & Scalability scores 3.6, slightly below the sector average. This dimension captures whether digital systems actually work for the people who use them at the point of operation: field staff, local partners and last-mile workers.

This is where the gap between having a system and operating digitally becomes most visible. The digital divide here runs in two directions: within organizations and between organizations.

Within organizations, centrally designed tools often fail in field conditions: intermittent connectivity, limited devices, local suppliers without digital capacity, and frontline staff already using multiple systems. This helps explain why last-mile delivery is the least digitalized supply chain function in the survey (see 3.3). The issue is not only technical; last-mile delivery often sits with program teams or local partners who lack the same systems, support, and training as central supply chain teams.

8. Logistics Cluster, ECHO Stockpile Mapping Project: Final Report and Strategic Recommendations, ECHO/DRF/BUD/2022/91000 (DG ECHO, 31 August 2024). Project deliverable under the European Humanitarian Response Capacity (EHRC) programme, with ESUPS as a named partner.

Between organizations, the divide is about resources, exposure, and bargaining power. Large international organizations are more likely to have ERP systems, data teams, cybersecurity support, and rollout capacity. Smaller national and local organizations are often asked to use systems designed by others, and a local partner working with more than one international NGO may have to operate inside several at once, without the funding, devices, connectivity, or training needed to participate on equal terms.

If local partners are expected to carry more operational responsibility but remain digitally dependent on systems designed elsewhere, digitalization can reproduce the very imbalance localization is meant to reduce. The question is not only whether local organizations can use international systems. It is whether they can shape, own, and benefit from the digital infrastructure that increasingly governs humanitarian supply chains.

Inclusiveness is therefore not a secondary dimension. If maturity drops sharply when viewed through a field, partner, or last-mile lens, the sector has not yet achieved end-to-end transformation.

3.1.4 Governance & Coordination

Governance & Coordination scores 3.8, second only to *Standardization & Data Management*. That makes it one of the stronger dimensions in the benchmark, but also one of the easiest to misread. A high governance score does not necessarily mean the sector has solved digital governance. Rather, the survey suggests that many organizations have started to put some of the basic governance conditions in place: ownership, decision rights, coordination mechanisms, and strategic direction for digital supply chain work.

Interviewees repeatedly point out that governance is the condition that makes other investments durable. Systems do not improve data quality on their own; dashboards do not create trust by themselves. These investments only work when someone owns the underlying data, quality rules are documented, and there is a clear escalation path when systems disagree.

At organizational level, the strongest governance pattern is concrete ownership. Higher-maturity organizations name data stewards, define approval workflows for master data changes, and create clear decision paths for questions such as: who can add a new item category, who approves a supplier record, who resolves a mismatch between procurement and finance data? In one large-scale data program, interviewees described master data ownership for commodities, vendors, partners, and locations as the prerequisite for analytics. The technology mattered, but only after ownership was clear.

The blocker is therefore less a failed governance model than the absence of operational governance. In many organizations, governance remains strategic rather than operational: digital ambitions exist, but ownership, accountability, and authority often do not reach the level where data fields, dashboards, systems, and workflows are actually managed. But governance should not be confused with central control. Over-centralized governance can produce the opposite failure: standards that look coherent at headquarters but do not fit field conditions, partner realities, local markets, or regulatory constraints. The aim is not to freeze processes from the centre, but to define what must be common and where adaptation is allowed. Core data definitions, roles, quality rules, security requirements, and exchange standards need consistency. Workflows, forms, language, connectivity assumptions, and partner-facing processes often need room to vary. Good governance therefore sets the guardrails within which local teams can adapt, rather than forcing every context into the same operating model.

Leadership determines whether that question gets answered. Where supply chain is treated as a strategic function, digital governance is more likely to receive attention, authority, and resources. Where supply chain remains framed as operational support, governance work is easier to postpone because it looks administrative rather than strategic.

> *"(…) sponsorship of the data agenda was the prerequisite for funding and organizational direction. If the board understands the digital transformation agenda, they understand why money goes into it."*
> Consultant, former UN agency

At sector level, the same pattern repeats. The humanitarian digital supply chain landscape has many tools, platforms, and standards, but no sufficiently authoritative governance mechanism to align adoption. DG ECHO's HLGSC process is

important for precisely this reason: its emerging governance body could give the community a forum to agree standards collectively, and could give donors a clearer basis for encouraging, endorsing, or eventually requiring adoption.

3.1.5 Sustainable Financing & Resource Optimization

Sustainable Financing & Resource Optimization scores 3.6, close to the sector average. On the surface, this makes it look like a middle-ranking dimension. In the interviews, however, financing emerges as one of the most decisive constraints on digital maturity.

The reason is straightforward: digital supply chain capability behaves like infrastructure, but it is often funded like a project activity or overhead cost. Systems require ongoing/permanent investment in configuration, data cleanup, hosting, cybersecurity, user support, integration, training, and continuous improvement. Humanitarian grants, by contrast, are often short-cycle, project-based, and constrained by cost classifications that make digital investment difficult to fund directly.

This creates a structural mismatch. Donors increasingly expect the outputs that digital systems produce: auditable approval trails, real-time reporting, traceability, stock visibility, partner reporting, and stronger controls from procurement to delivery. Yet the digital infrastructure needed to produce those outputs is often treated as discretionary overhead. In practice, organizations are asked to provide digital accountability without a funding model that reliably pays for the digital infrastructure behind it.

> *"Technology is seen as overhead. You do not want to invest in overhead, and because you do not have people in the organization that understand its benefit, it is hard to make the ROI decisions on what makes sense to invest."*
> Local organization, operations lead

Some organizations have found ways around this constraint. One large INGO runs a centrally financed fleet service that recovers around half of its operating costs through donor award chargebacks and has delivered a 50% reduction in supply chain losses and approximately 60% reduction in inventory levels. This suggests that digital and operational infrastructure can pay for itself when it is linked to a credible cost-recovery model. But these examples remain exceptions rather than the norm.

3.1.6 Capacity Building & User Engagement

With a score of 3.7, *Capacity Building & User Engagement* sits above the sector average. Many organizations have some form of training, user support, or change-management practice in place. The question is whether that training helps them do their work differently.

The best entry point for capacity building is therefore not the platform, but the task. A procurement officer does not need another system orientation; they need to raise, approve, and track a purchase request without duplicating work in email or Excel. Training has the most value when it is tied to the work people are already trying to complete.

This is where many rollouts go wrong. Too often, the existing paper or spreadsheet process is reproduced on screen, with the system becoming an additional reporting layer rather than a better way to work. Staff then do what rational users do: they keep the workaround that gets the job done and update the system later, if at all. Poor adoption in these cases is not resistance to technology. It is a response to bad process design.

> *"The biggest hook is solving real problems and saving time. When users see that the system makes their job easier, adoption follows naturally."*
> Mid INGO, supply chain lead

The more successful examples start earlier. Before users are trained on the software, teams clarify the process: who initiates, who approves, who checks, who owns exceptions, and what changes once the system goes live. One large INGO attributed the success of its procurement rollout to bringing program, finance, and supply chain staff together for business-process training before anyone touched the platform. In another organization, a stock report that once took days could be produced in a few clicks. Adoption followed because the benefit was immediate and visible.

"[The organization] paid for massive retreats that had program, finance, supply chain — everyone together, and the first week of training was on business process, before anyone touched the system."
Large INGO, supply chain lead

The harder cases sit beyond formal training. In low-connectivity or conflict-affected environments, users may need sustained support rather than one-off courses. Among local partners and frontline teams, the issues are lack of devices, bandwidth, time, or influence over system design. And in organizations with a long history of difficult system rollouts, scepticism may be rational. Moving from personally managed paper records to shared, audited digital workflows changes not just what people do, but who can see it.

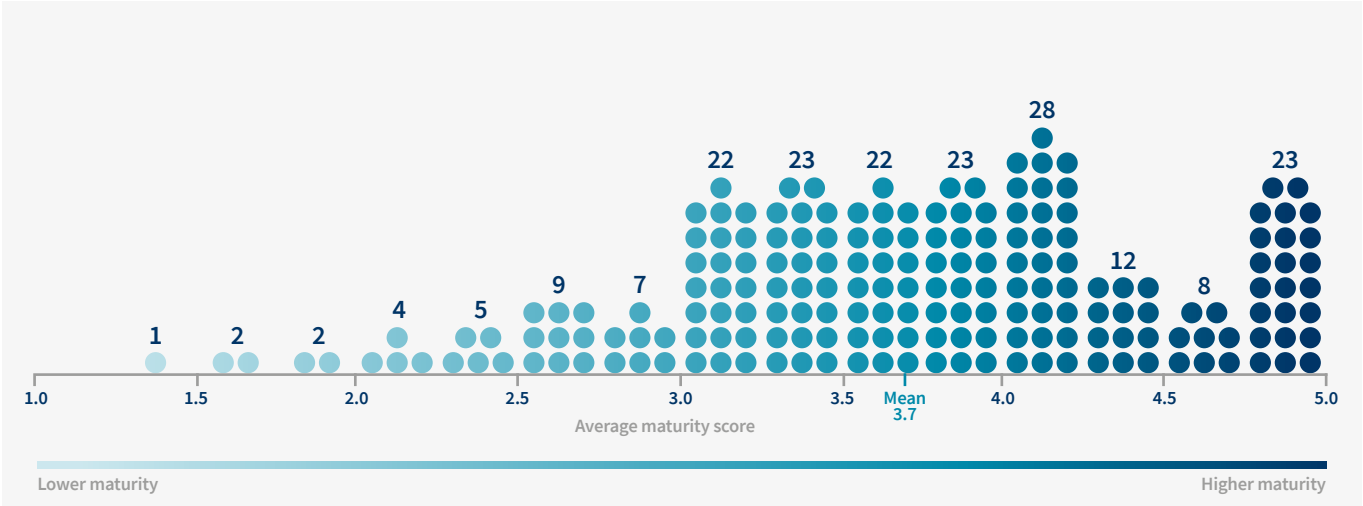
3.2 A sector progressing unevenly

The sector average of 3.7 conceals a distribution that makes the figure almost misleading. 37% of respondents score at or above 4.0. 7% score below 2.5. On a five-point scale, that gap is substantial. In practice, it separates organizations with integrated systems and near real-time stock visibility from organizations that still rely on manual checks, phone calls, and spreadsheet updates to understand what inventory is available.

In this benchmark, the sector does not appear to be split neatly between a small group of digital leaders and a large group of analog laggards. The distribution has one peak, not two, and most organizations cluster within reach of the mean: about 70% sit within 0.8 points of it. The remaining 30% are spread across the tails, with the bottom tail thin enough to suggest that severe digital underdevelopment is no longer the sector's defining problem.[9] It looks like one sector moving at different speeds, with most respondents clustered around the middle and upper-middle of the scale.

That distinction matters: If the sector were divided into two separate worlds, the answer would be relatively simple: help low-maturity organizations adopt the tools and practices of high-maturity ones. But the distribution suggests a more complicated picture. Many organizations have already digitized some functions. Many have strategies, dashboards, governance language, or partial system integration. Fewer have turned those pieces into a managed, durable, end-to-end digital operating model.

Figure 6: Distribution of Respondent-Level Average Maturity



n= 191 • each dot = one respondent, grouped by average maturity score band

9. The right-tail cluster near 5.0 should be interpreted with caution: all 20 of these respondents come from a single training cohort, and several gave identical ceiling ratings across every item, raising the possibility of survey satisficing rather than uniformly exceptional maturity.

The shape of the distribution points less to a simple ambition gap than to common ceilings reached at different speeds. Funding models still treat digital infrastructure as overhead. Grant cycles make multi-year investment difficult. Shared data standards remain limited. Organizations run into these constraints in different ways, but few can avoid them entirely.

Comparing the top and bottom quartiles emphasizes this point: The largest gaps are not in the most "human" dimensions of maturity, such as capacity building or inclusiveness. They are in the dimensions that require systems, funding, and coordination to hold together.

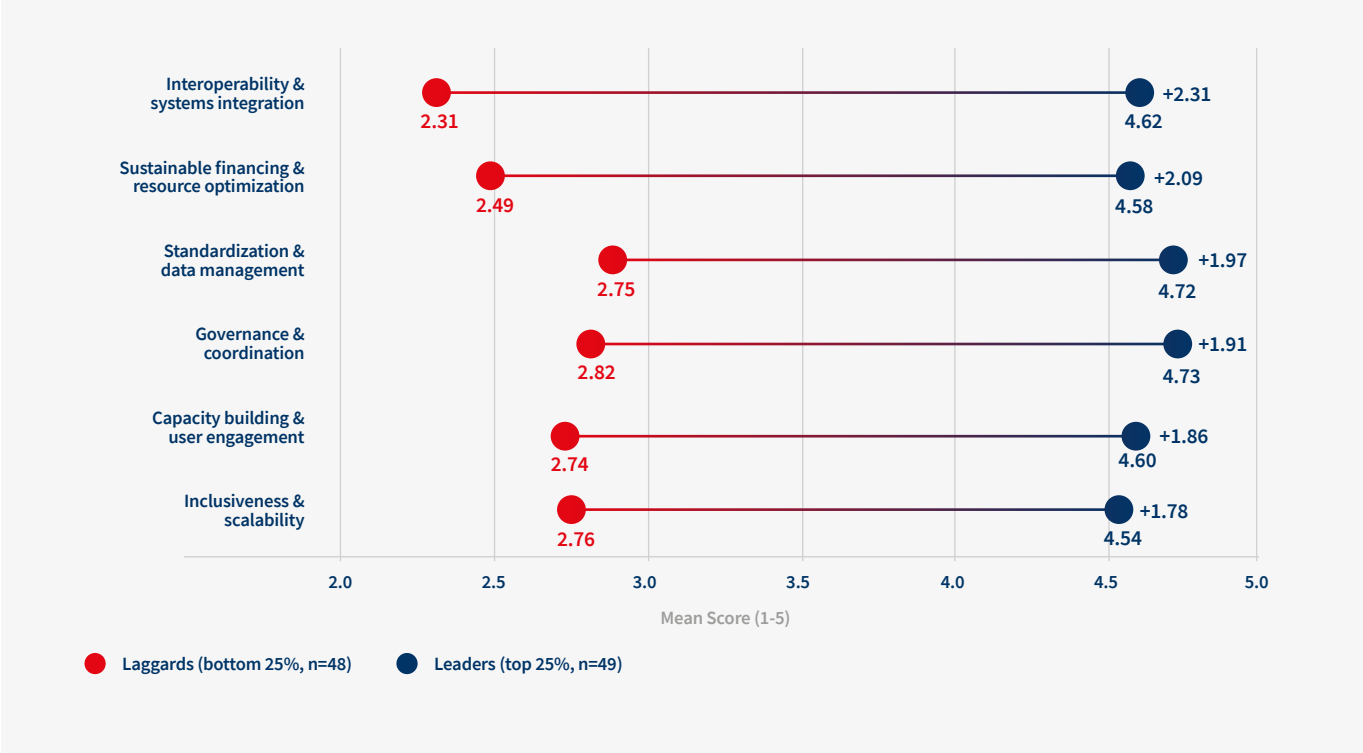
The widest spread is in *Interoperability & Systems Integration*, where higher-maturity respondents score 4.6 and lower-maturity respondents 2.3, a gap of 2.3 points. *Sustainable Financing & Resource Optimization* follows, with a gap of 2 points.

These are the areas where individual effort runs into collective constraints: shared data standards, legal and hosting arrangements, partner connectivity, and funding models that support digital capability beyond a single project cycle.

The narrower gaps appear in *Inclusiveness & Scalability* (1.8) and *Capacity Building & User Engagement* (1.9). These are still large differences, but they are more directly shaped by choices inside organizations: how tools are introduced, how users are supported, and whether field and partner realities are included in design.

Higher-maturity organizations are better at making digital capability travel: across systems, across functions, across partners, and across funding cycles. Lower-maturity organizations are more likely to remain dependent on spreadsheets, email, paper, or disconnected tools for critical supply chain tasks.

Figure 7: Leaders vs. Laggards per Category, sorted by gap



3.3 Digitalization by supply chain function

The maturity index captures the conditions around digital maturity: data, governance, financing, interoperability, capacity building, and inclusiveness. But digital maturity also has to show up in the work itself. A strategy, dashboard, or governance model matters only if it changes how supplies are planned, ordered, procured, stored, moved, delivered, returned, and reported.

The function-level results provide that operational check. They show a more uneven picture than the headline maturity score. Ordering, warehousing, and procurement sit at the top. Orchestration, reverse logistics, and last-mile delivery sit at the bottom.

The ratio on the chart makes the imbalance harder to miss. Ordering and requisition are close to parity: roughly 1 : 1.2, meaning slightly more respondents describe the function as fully digital than fully manual. Warehousing and procurement are still in the same neighbourhood. Further downstream, the ratio deteriorates. Orchestration stands at 3.9 : 1. Reverse logistics stands at 3.7 : 1. Last-mile delivery reaches 4.8 : 1: nearly five respondents describe the function as fully manual for every one that describes it as fully digital.

The most digitalized functions are those closest to procurement, finance, and audit. This is also where humanitarian organizations have the greatest control over the record. Procurement approvals, purchase orders, and warehouse transactions can be digitized largely within an organization's own systems. Further along the chain, that control weakens. Transport, customs clearance, handling, delivery confirmation, returns, and local market engagement depend on suppliers, carriers, customs authorities, port and airport

Figure 8: Average digitalization score by function

operators, local transporters, and implementing partners. At that point, digitalization is no longer mainly an internal systems question. It becomes a question of whether data can move across institutional and market boundaries.

Further downstream, that pull weakens. Last-mile delivery, reverse logistics, and orchestration are more distributed, more partner-dependent, and more exposed to field constraints. They also tend to sit in blurrier ownership territory. Once goods leave the warehouse, responsibility often shifts from supply chain to program teams, local partners, or field staff working with thinner infrastructure and less system support.

The result is a visibility gradient. Digitalization is strongest where organizations control the record and must document decisions. It is weakest where ownership is shared, coordination is harder, and delivery depends on partners and external market actors.

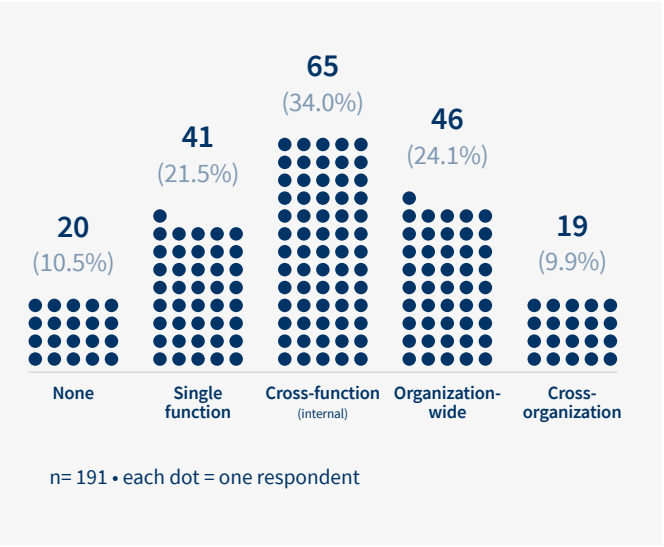
That should give the sector pause. A supply chain can have a digital procurement workflow and still lose visibility once goods leave the warehouse. It can have dashboards and still depend on phone calls to confirm whether items reached the final distribution point. More advanced approaches are emerging: pharmacy and medical-supply systems that reach closer to dispensing points, tools that extract data from paper records, and field applications that capture proof of delivery or partner reporting. But these remain bounded rather than common; for most organizations, visibility weakens precisely where the supply chain meets the people it is meant to serve.

3.4 End-to-end visibility

Most organizations can see parts of their supply chain, but not the full chain. A procurement platform may track requests and approvals. A warehouse system may show stock balances. A fleet tool may monitor vehicles. Each can be useful on its own. But supply chains fail in the spaces between functions: when procurement does not know what is already in stock, when transport plans are made without reliable pipeline data, or when distribution teams cannot confirm what reached partners.

The survey suggests that most organizations are still working inside those boundaries. Cross-functional[10] internal visibility is the most common level, reported by roughly one-third of respondents. Organization-wide visibility is less common. Cross-organization visibility remains rare at 10%.

Figure 9: Level of end-to-end supply chain visibility



Single-function visibility is useful but limited. It tells a procurement team what has been ordered, or a warehouse team what is in stock. Cross-functional visibility is the first step toward supply chain management because it allows one function's decisions to reflect another function's reality. Organization-wide visibility goes further but still remains inside the institution.

The frontier is cross-organization or network visibility. That is where the sector's ambitions around collaboration, localization, shared services, and resource optimization become operational. It is also where progress remains thinnest. Many organizations can now see parts of their own chain. Far fewer can connect that view to the actors outside their own systems: local partners, suppliers, carriers, customs authorities, shared platforms, clusters, and logistics service providers. Yet these are precisely the actors that determine whether goods are available, moving, delayed, cleared, delivered, or stuck.

10. 'Function' here refers to the operational supply chain functions defined in Chapter 3.3 (planning, ordering and requisition, procurement and sourcing, warehousing and inventory, transport and dispatch, last-mile and distribution, reverse logistics, and orchestration).

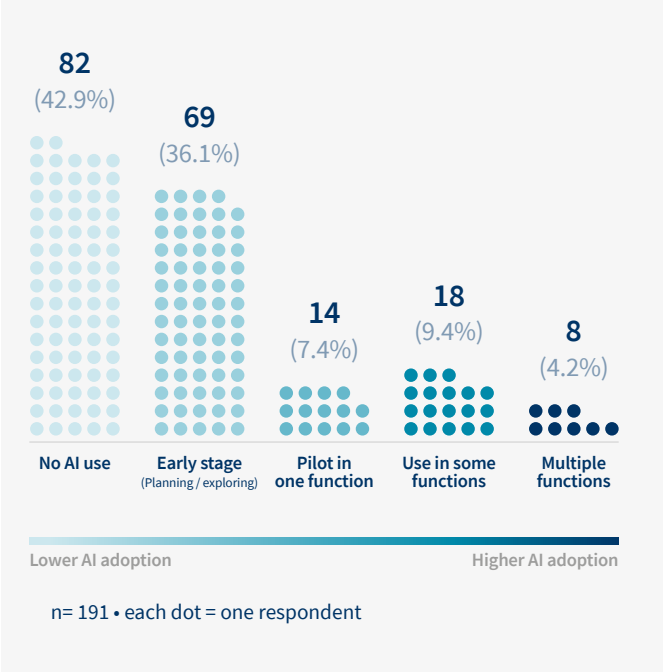
Timeliness adds nuance. Many respondents report real-time or near-real-time information, which is encouraging. But fast information within one function is not the same as a reliable view across the chain. A stock figure may update daily while distribution data is reconstructed manually after the fact. A dashboard may refresh automatically while still missing the handover to partners. Speed matters only once the field of view is wide enough.

Visibility is therefore a practical test of maturity. The question is not how many systems an organization has, but how far its information travels across the network, who can act on it, and whether it arrives in time to change a decision.

3.5 AI is arriving before the foundations are ready

AI is already present in humanitarian supply chains, but mainly as a personal productivity aid rather than an embedded capability in operational workflows. Across all 191 respondents, 43% report no current AI use. Another 36% are either exploring or planning. Only 21% report AI in pilot or use across one or more functions.

Figure 10: Current stage of AI adoption



Where AI is being used, it is mostly doing practical work. The most common tools are generative and interaction AI: chatbots, copilots, and knowledge-search assistants. Document or data extraction and knowledge search are the most common live or pilot use cases.

> *"Stakeholders gravitate toward AI while lacking the foundational data standardization and interoperability required to make AI effective."*
> Donor coordination body

> *"We need to clean the house first on data management before layering AI on top of unreliable foundations."*
> Large INGO, regional supply chain

AI helps people search, draft, translate, summarize, extract data from documents, and query information in more natural ways. Those gains matter in organizations where staff are stretched and analytical capacity is scarce. But they are not yet the same as AI-enabled supply chain management.

Staff attitudes are broadly favourable: among respondents whose organizations engage with AI, 68% describe attitudes toward AI as very positive or generally positive, while only 5% report generally negative views. Productivity effects are more measured: 14% say productivity has significantly increased and 38% say it has somewhat increased, while 17% do not know.

Beneath these aggregate figures, an AI divide is emerging on top of the existing digital divide, and it has the potential to be wider. Where the digital divide is about access to connectivity and devices, the AI divide adds representative training data, compute infrastructure (GPU rather than CPU), and the literacy needed to use AI safely and well. Without deliberate attention these gaps risk codifying existing exclusions into the next generation of tools.[11]

11. Global Digital Inclusion Partnership, "AI for the Global Majority: The Digital Divide No One's Talking About," February 21, 2025, https://globaldigitalinclusion.org/2025/02/21/ai-for-the-global-majority-the-digital-divide-no-ones-talking-about/

Within the humanitarian sector the gap is less North-South than "centre and edge": headquarters and large INGOs are designing AI for field teams and community-based organizations who were never asked what was needed, and local actors are being supplied with minimum-viable devices at exactly the moment when compute access ("CPU is copper, GPU is fibre") is becoming the new infrastructure leap. Without attention to compute access, locally relevant data, and field agency in design, AI adoption could widen the HQ-to-frontline gap documented earlier in this report rather than narrow it.

Leaders are >2× more likely to have AI in pilot or production (29% vs 13%) and >4× more likely to have organization-wide or cross-organization supply chain visibility (47% vs 10%).

But these are consequences of mature foundations, not differentiators in themselves. Building AI on top of manual data and disconnected systems does not work well.

Closing that divide is the precondition for the larger opportunity that sits further ahead: demand sensing, routing, anomaly detection, optimization, and cross-organization analytics. These uses require more than an AI tool. They require a more organization- and sector-wide, strategic approach to AI, and putting in place the prerequisites: clean master data, common definitions, trusted system integration, and enough visibility across the chain for the output to be meaningful.

AI is already useful for everyday productivity tasks: search, drafting, translation, document extraction, and natural-language interfaces. Its larger supply chain value will depend on the foundations discussed throughout this chapter: standards, data quality, integration, governance, and visibility.

3.6 What the baseline tells us

The benchmark describes a sector in the middle of its digital journey. Humanitarian supply chains are no longer predominantly ad hoc or paper-first. Digital tools are part of the operating model, and many organizations have built pockets of real capability.

But the next step is harder. No maturity dimension reaches Level 4. The strongest functions are those closest to procurement, finance, and control; the weakest are those closest to delivery, coordination, and the last mile. Cross-organization visibility remains rare. AI is beginning to appear, but mostly as a productivity layer rather than as a core decision-making capability. The picture is therefore not one of digital immaturity, but one of incomplete transformation.

Several conclusions follow. First, the sector has developed useful digital capacity, but much of it remains local to a function, country, team, or platform.

Second, the remaining constraints are increasingly collective. Organizations can continue improving internal governance, training, and data quality. But the lowest-scoring dimensions, especially interoperability and financing, depend on choices that sit beyond any single institution: shared standards, donor funding rules, legal templates, partner data exchange, and common infrastructure.

Third, the operational gap is downstream. Digitalization is strongest where the sector needs to document and defend decisions. It is weakest where work becomes more distributed, partner-dependent, and exposed to field constraints. The last mile is therefore not just one weak function. It is the stress test for the whole maturity model.

Fourth, technology is moving faster than the foundations beneath it. AI is already useful for personal productivity such as, search, drafting, extraction, translation, and interfaces. But the larger promise of predictive analytics, optimization, and cross-organization insight depends on the same unfinished agenda: clean data, shared definitions, integration, governance, and visibility.

The baseline leaves the sector with a clear question. If digital tools are already present, why has maturity not yet become transformation? Chapter 4 answers that question by looking at four constraints: the funding model, standards adoption, execution architecture, and field readiness.

12. NetHope, “When Every Hour Counts (Part 3): Local,” NetHope Articles, 2026, https://nethope.org/articles/when-every-hour-counts-local/

4. Why maturity has not yet become transformation

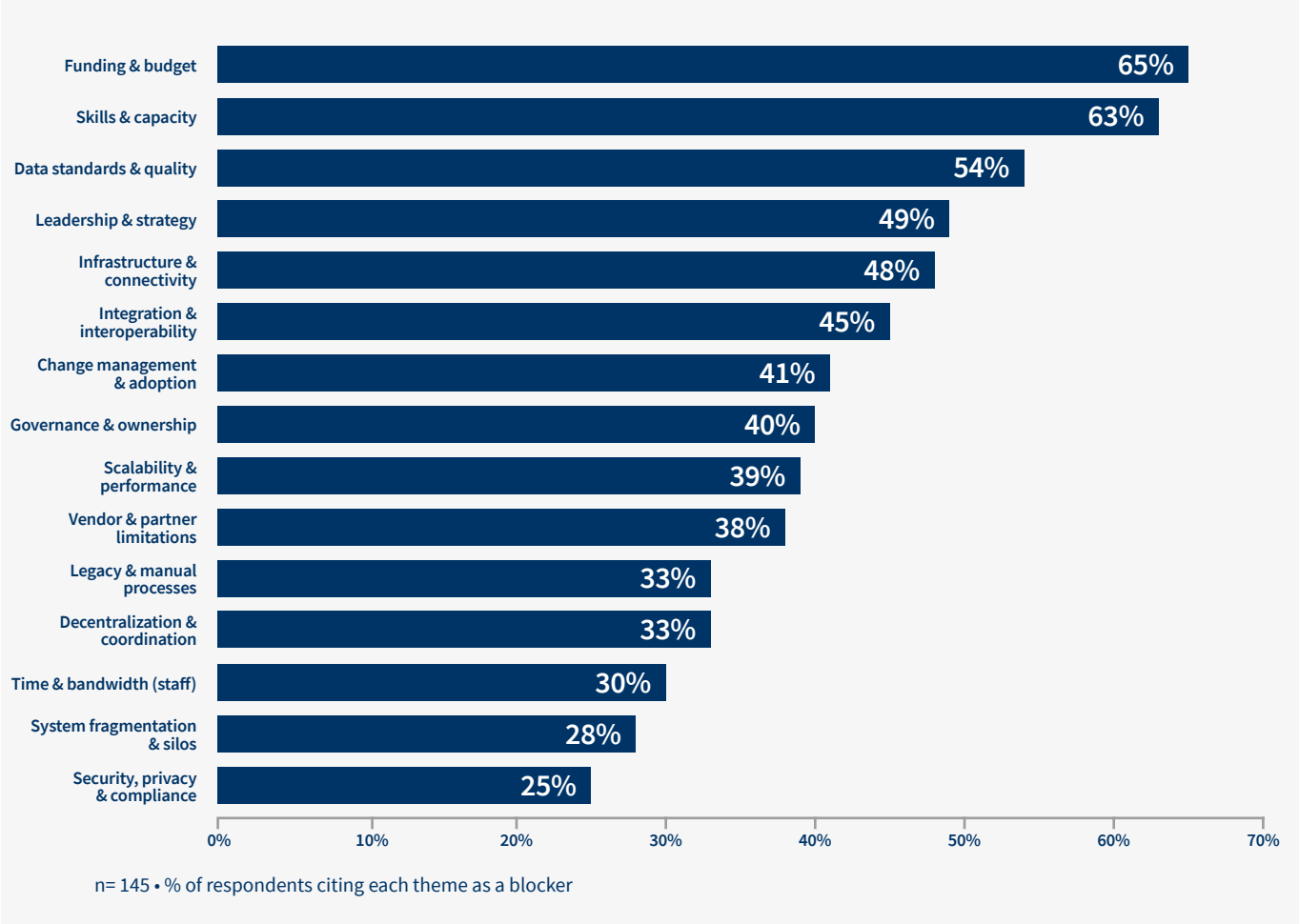
Chapter 3 described the baseline: useful digital capacity exists, but it remains uneven, often internal, and fragile at the edge of the supply chain. The sector sits at 3.7 on the maturity scale, far enough along that digital capability is being managed more systematically, but well short of the point at which it works consistently across functions, partners, and operating contexts. This chapter asks why.

The answer is not that the sector lacks tools. It has plenty of them: procurement platforms, warehouse systems, dashboards, ERP modules, partner portals, stock-mapping tools, spreadsheets that have become unofficial infrastructure, and a growing set of AI-enabled assistants.

The harder problem is that the foundations around those tools remain incomplete. Four constraints explain most of the distance between maturity and transformation: how digital infrastructure is funded (4.1), how far shared standards have been adopted (4.2), how clearly ownership is defined inside organizations (4.3), and how differently maturity is experienced depending on where one sits in the system (4.4).

The barriers cited by respondents point in the same direction. Funding and budget constraints are mentioned most often, followed by skills and capacity, data standards and quality, leadership and strategy, infrastructure and connectivity, and integration & interoperability. These are not mainly software-selection problems, but the conditions that determine whether software becomes infrastructure.

Figure 11: Most-cited blockers to digitalization



n= 145 • % of respondents citing each theme as a blocker

A useful distinction is between barriers that are structural and those that are organizational. Structural barriers are conditions no single organization can resolve alone: grant cycles too short for multi-year transformation, digital infrastructure classified as overhead, standards that exist but are not widely adopted, unclear legal and hosting models for data sharing, and connectivity constraints in field environments. These explain why even committed organizations hit limits.

Organizational barriers sit closer to management control: weak executive sponsorship, fragmented governance, unclear data ownership, shadow IT, rollouts that skip business-process training, and tools designed without enough field input. These explain why organizations with similar resources can end up at different maturity levels.

The distinction matters because it points to different responsibilities. Organizations can improve ownership, governance, rollout design, and data discipline. But they cannot, by themselves, create sector-wide standards adoption, change donor cost classifications, or build shared infrastructure that benefits everyone but belongs to no one. The next maturity step therefore depends on both: better management inside organizations and better coordination across the system.

4.1 Digital infrastructure is funded like a project, but expected to perform like infrastructure

The financing problem is not that the sector has failed to appreciate digital tools. Most organizations understand that better systems can improve visibility, reporting, stock management, procurement control, and coordination. The problem is that digital capability behaves like infrastructure, while much of the funding model still treats it as overhead or short-term project activity. That mismatch is visible across the evidence. Funding and budget constraints are the most frequently cited blockers in the survey.

Sustainable Financing & Resource Optimization scores 3.6, close to the sector average, but the interviews suggest the number understates the issue. Financing is not merely one maturity category among others. It shapes whether every other category can be sustained.

A supply chain system is not a one-off purchase; it needs configuration, hosting, cybersecurity, user support, integration, data cleanup, training, maintenance, and continuous improvement. Humanitarian grants, by contrast, are often short-cycle, project-based, and constrained by cost classifications that make digital investment difficult to fund directly.

The result is a structural mismatch. Donors increasingly expect better reporting, traceability and audit trails, but the systems that produce them are often funded through mechanisms designed for flexibility rather than continuity. A lump sum may reduce budget micromanagement, but it can also obscure whether anyone has actually paid for the recurring costs of hosting, integration, user support, data maintenance and improvement. Digital infrastructure then becomes everyone's dependency and no one's responsibility.

> *"You would not give us a grant if we told you we ran on triplicates. But then you do not consistently pay for the things that get us to that moment of maturity."*
> Large INGO, supply chain lead

This is even more difficult for shared digital infrastructure. Common standards, reference architectures, API templates, legal and hosting frameworks, shared catalogues, and trusted spaces for data exchange all create value beyond one organization. Precisely for that reason, they are hard to fund. They do not belong neatly to one project, one country office, or one donor award. The sector then pays in less visible ways. Organizations repeat market scans, rebuild similar tools, negotiate the same data-sharing questions, and maintain local workarounds because the shared layer is missing. Underfunding infrastructure does not remove the cost. It shifts it into duplication, manual reconciliation, weaker accountability, and slower coordination.

The issue is not simply "more money for technology." It is the classification of digital capability. If a system is necessary for traceability, auditability, reporting, partner coordination, or stock visibility, it is not optional overhead. It is part of the operating model. Until funding rules reflect that, digital maturity will remain vulnerable to the next grant cycle.

4.2 Standards exist, but adoption has not reached critical mass

The survey and interviews point to a standards problem of adoption, not invention. FHL, UNSPSC, GS1, customs and trade classifications, common data models, and platform-specific mappings already cover parts of what humanitarian supply chains need. None has become the default operating language across the sector.

Organizations still rely on their own item masters, supplier records, location codes, shipment definitions, reporting templates, and country-level workarounds. These are embedded in systems, grants, procurement routines, donor requirements, and field practice. Changing them creates immediate costs, while the benefits depend on other actors making the same change.

Each organization gains from common standards only if others adopt them too. Yet each must pay for mapping, data cleaning, training, and changes to workflows. New integration projects therefore return to the same obstacle: systems can connect, but the data does not mean the same thing.

Suppliers, carriers, customs authorities, ports, airports, and logistics providers already work with their own codes, documents, classifications, and transaction flows. Interviews suggest that humanitarian organizations often absorb this information through emails, PDFs, spreadsheets, or manual updates rather than structured exchange. That creates avoidable reconciliation work and keeps market data outside the operational picture.

AI raises the cost of delay. Basic tools can extract text, translate documents, summarize emails, or help staff search for fragmented information. More valuable uses, including demand sensing, anomaly detection, optimization, and cross-organization analytics, require common definitions and trusted exchange. AI can produce an answer from fragmented data, but it cannot make unclear definitions reliable. If organizations do not agree what an item is, where it is, who owns it, or when it moved, the issue is not whether a model can respond. It is whether anyone should act on the response.

4.3 Digital strategies fail when ownership is unclear

Many organizations now have digital strategies, steering groups, dashboards, AI pilots, data roles, and ERP roadmaps. These are useful signals. But they do not, by themselves, answer the questions that make digital systems work in practice: who owns the data, who approves changes, who fixes errors, who supports users after go-live, and who decides what happens when systems disagree?

Many digital efforts lose momentum at this point. Interviewees repeatedly described dashboards without accountable data owners, procurement tools bypassed by email approvals, and warehouse systems shadowed by Excel because staff trusted the workaround more than the system. Tools are procured, configured, and launched, but stewardship is left unresolved. Master data accumulates inconsistencies because no one has the authority to arbitrate. Errors are noticed but not corrected because responsibility sits between teams rather than within one.

A second factor is the relationship between supply chain and IT. Interviewees described cases where the two functions operate in parallel rather than together: tools selected with limited technical input, or systems configured without a working understanding of the operational reality, which hampers adoption.

Leadership decides whether any of this gets fixed. When supply chain is seen as a back-office function, data governance is treated as housekeeping and rarely reaches senior attention. When it is seen as central to cost control, accountability, and response performance, the same work is taken seriously. Most interviewees said their organizations are still closer to the first.

The same logic shows up in rollouts. Where process, approval routes, and exception handling are unresolved before the software is selected, what gets digitized is the existing workaround, and staff keep using the route that works and update the system later, if at all. Training teaches people where to click; it cannot fix a process no one has redesigned or data no one is responsible for.

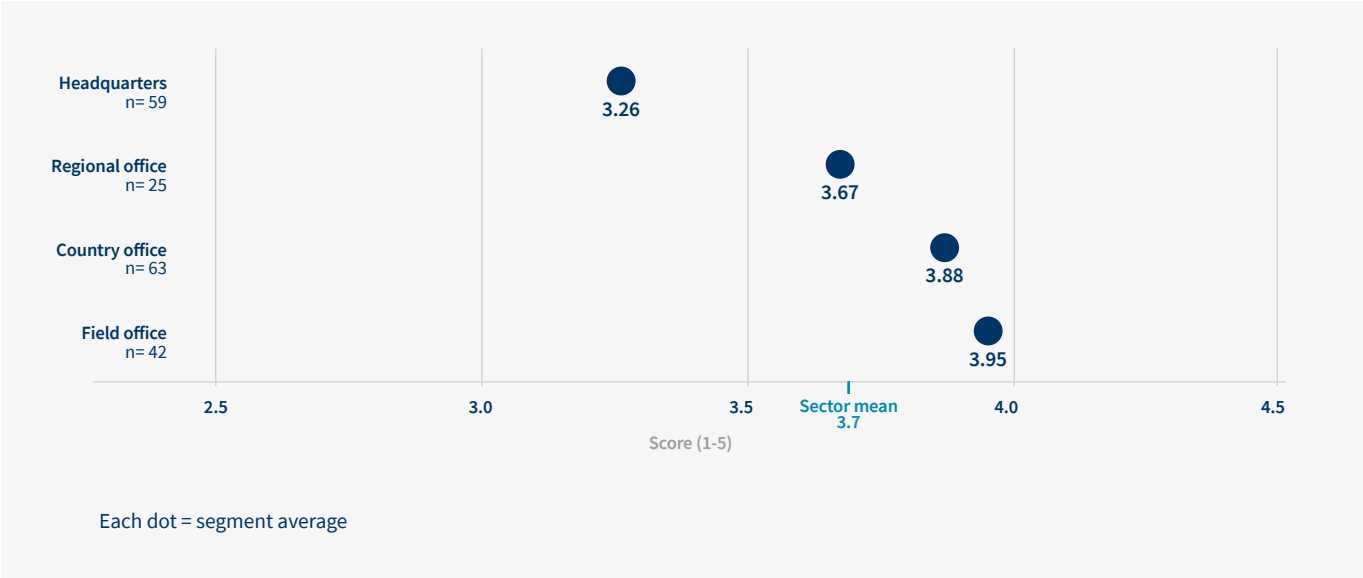
The organizations furthest along shared the same foundations: governance, integration, user support, leadership attention, a model for sustainable financing of digital solutions and a working relationship between supply chain and IT. Without that, even sophisticated systems become another place where unreliable data is stored.

4.4 Maturity looks different depending on where one stands

Some of the most interesting differences in the survey appear when the data is cut by location, region, and organization type. They are also easy to misread. Headquarters respondents report markedly lower maturity than everyone else: 3.3, against 3.7 at regional offices and roughly 3.9 at both country and field level. This looks counterintuitive. Headquarters have more access to strategy, budgets, IT teams, and roadmaps, yet report less maturity.

The interviews suggest the gap is about perspective rather than performance. Field respondents are usually judging a single workflow or country operation that works well enough day to day. Headquarters respondents see the full estate: legacy ERPs, country variations, partial integrations, multiple donor requirements, inconsistent master data, and years of attempted harmonization. One supply chain lead described the dynamic plainly: initiatives are launched from headquarters but become obsolete in the field, while country-level tools never get harmonized globally. The two views look at the same organization and see different things.

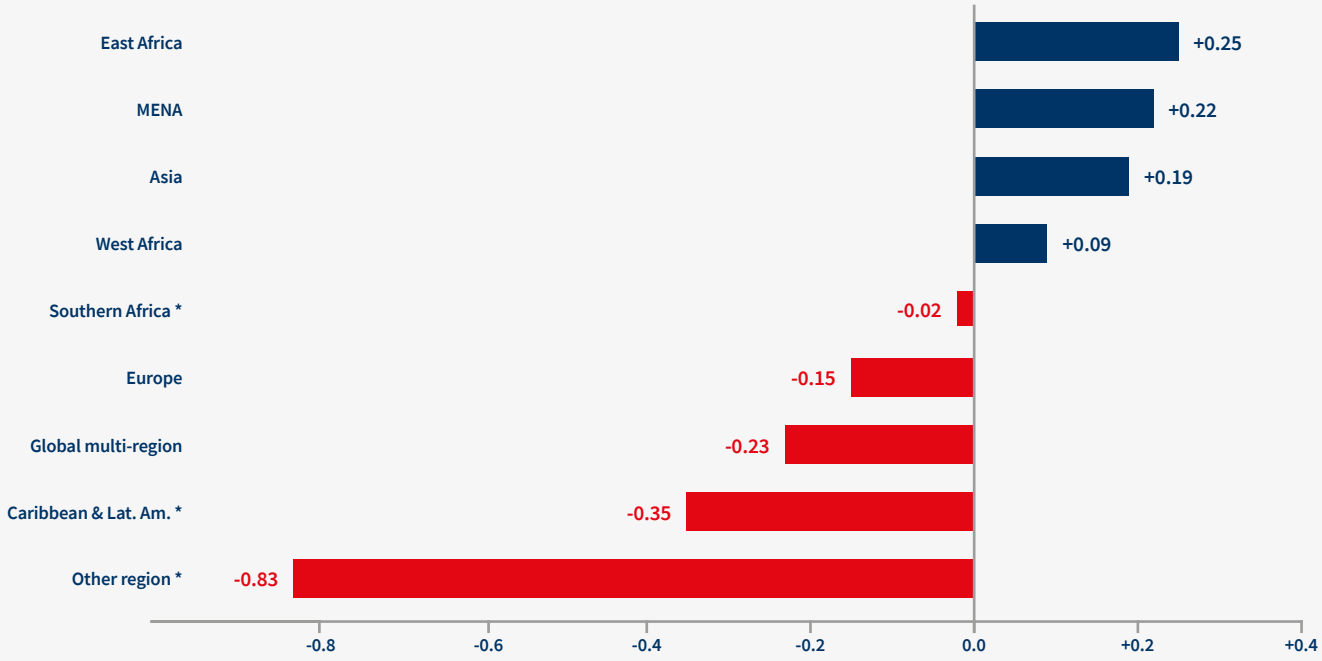
Figure 12: Average current maturity by respondents' organizational location



The regional lens reinforces this point. Africa, MENA, and Asia sit above the sector mean in the raw data; Europe and global multi-region respondents sit below it. That does not necessarily mean one region is ahead and another is behind. NetHope (2024) has noted a similar pattern at the sector level, with Global South organizations reporting faster progress on digital transformation than their Global North counterparts.[13] The chart is better read as a map of respondent context. Many Europe and global multi-region responses come from headquarters or portfolio roles, where the integration problem is visible in full and the bar for what counts as "mature" is set high, closer to fully integrated systems end to end. Country and regional respondents may be assessing a narrower and more coherent operating environment with a more pragmatic standard in mind and calibrating their scores against the partners and counterparts they personally know rather than against a global peer set.

If Europe were simply behind, the answer would be catch-up investment. The interviews suggest a different reading. Headquarters and global respondents based in Europe more often described legacy burden and integration complexity rather than absent capability, for instance multiple regional ERPs without top-down alignment and years of attempted reconciliation across systems that were not designed to talk to each other. If that reading is right, the remedy is different: rationalize inherited systems, reduce country-level variation, strengthen master data governance, and make integration work fundable. The same chart can point to the wrong remedy if read as a ranking.

Figure 13: Average current maturity by region



Each bar = distance above or below the sector average (3.7), aggregated across all maturity areas

* n< 10 • interpret with caution

13. NetHope, "Digital Transformation in 2024: The Global North Lags as the Global South Surges Ahead," NetHope Articles, 2024, https://nethope.org/articles/digital-transformation-in-2024-the-global-north-lags-as-the-global-south-surges-ahead/

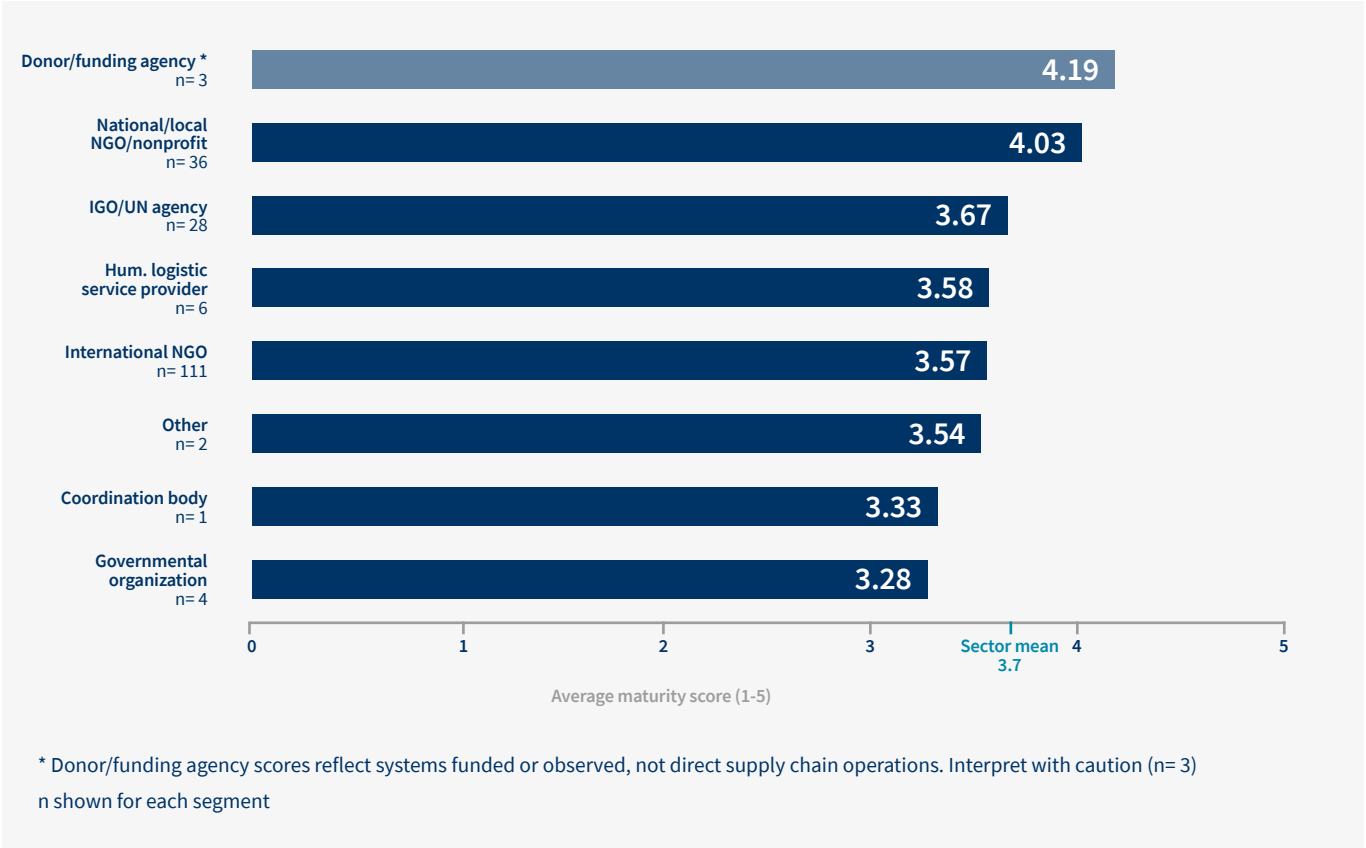
The organization-type results point in the same direction, with one caveat. Donors and funding agencies report the highest maturity, but they do not run humanitarian supply chains. Their scores are best read as a view of the systems they fund or require partners to report through, not as an operational self-assessment. Among organizations that do run supply chains, the more interesting finding is that national and local NGOs report relatively high maturity, while large international organizations, UN agencies, coordination bodies, and logistics service providers cluster lower.

This finding challenges a common assumption: that larger, more international, and better-resourced organizations are automatically more digitally mature. National and local organizations may have fewer tools, smaller IT teams, and less funding, but they may also have simpler digital environments that fit their scale. A national NGO with one coherent system may experience more practical digital maturity than a large INGO with several global platforms, country-level workarounds, and systems that do not speak to each other.

Budget follows the same logic. More money helps, but it does not guarantee maturity. Large organizations can invest in systems, data teams, cybersecurity, and integration; they also inherit older platforms, global templates, multi-country processes, and governance structures that make change slower. Smaller organizations may lack specialist capacity, but they have fewer layers to connect. Budget is a permissive condition, not a guarantee.

Digital maturity therefore cannot be judged from the centre. It has to be tested across the chain: from headquarters to country offices, from procurement to distribution, from international agencies to local partners, from warehouse systems to the last mile. A platform may work well at headquarters and fail in a field office with intermittent connectivity. A procurement system may be efficient for international suppliers and impractical for local vendors without scanners, printers, stable internet, or hardware for digital signatures. A reporting tool may simplify one donor's requirements while adding another application to the workload of a frontline worker already using several.

Figure 14: Average current maturity by organization type



* Donor/funding agency scores reflect systems funded or observed, not direct supply chain operations. Interpret with caution (n= 3)

n shown for each segment

This matters for localization, because digital dependency can shift rather than disappear. As more responsibility moves closer to affected communities, local partners, civil society organizations, suppliers, transporters and service providers are asked to operate inside digital requirements set elsewhere. Where they cannot shape, fund or influence those systems, digitalization can reinforce the same imbalance localization is meant to reduce.

The last mile brings the issue into focus. Chapter 3 showed that last-mile delivery is the least digitalized function. The deeper problem is ownership: Once goods leave the warehouse, responsibility often shifts from supply chain to program teams, local partners or field staff. Data may be collected on paper, reconstructed later, or never linked back to procurement, inventory or reporting systems. In cash and market-based programmes, the boundary looks different, but the problem is similar: data may sit with payment providers, voucher platforms, merchants or programme teams, rather than in the systems used to manage supply chain performance. In practice, the warehouse gate is only one version of the digital boundary; the broader issue is that visibility often weakens at the point where assistance changes hands.

"We now have the vast majority of our supply chain processes digitized, with the exception of last mile. At that point, it goes rogue and into paper-based ether."
Large INGO, supply chain lead

The last mile is not a seventh maturity category; it is where every maturity category gets stress-tested. Standardization fails if item identity breaks at distribution. Interoperability fails if partner handover data cannot be exchanged. Governance fails if no one owns last-mile data. Financing fails if partner devices and connectivity are not funded. Capacity building fails if frontline users are trained last, or not at all. Inclusiveness fails if the tool only works in the centre. The problem is less a missing app than a missing owner and until that changes, the sector will keep producing digital visibility upstream and manual reconstruction downstream.

5. Recommendations

The sector does not need more isolated digital activity. It needs the conditions that allow digital capability to compound. That means better ownership inside organizations, stronger shared infrastructure across the sector, and funding models that recognize digital systems as enabling infrastructure within humanitarian operations, rather than discretionary add-ons.

The recommendations are grouped by the actors best placed to act. Individual organizations can improve ownership, process design, data discipline, field involvement, and AI readiness. Sector coordination bodies can reduce the transaction costs of interoperability. Donors and policymakers can change the incentives that determine whether digital systems survive beyond pilots.[14]

Individual humanitarian organizations
5 recommendations

R1 Data before AI
R2 Map to standards
R3 Fit-for-context tech
R4 Build in change management
R5 Last-mile data ownership

Sector coordination groups
4 recommendations

R6 Sector data standards
R7 Neutral governance
R8 Interoperability blueprints
R9 Coordinate demand

Donors and policymakers
4 recommendations

R10 Multi-year funding
R11 Modernize compliance
R12 Tiered participation
R13 Pathway to scale

5.1 Recommendations for individual humanitarian organizations

These recommendations are addressed to organizational leaders, supply chain heads and the IT and digital teams that support them.

R1 Sequence digital transformation from data foundations to AI

Immediate, within 6 months

Digital transformation often begins with the most visible layer: a platform, dashboard, app, or AI interface. The more durable work starts underneath. Before organizations can scale systems or automate decisions, they need to know how the business process is meant to work, what data it depends on, who owns each part, and what happens when systems or teams disagree.

For a large UN agency, this may mean formal data domains, enterprise governance, master-data workflows, and integration architecture. For a local NGO, it may mean a clean item list, a consistent supplier register, and one accountable owner for supply chain data. For a government agency, it may mean getting procurement, finance, logistics, and program teams to agree the same reference data before digitizing approvals. The scale differs, but the sequence does not: define the data, assign ownership, redesign the process, then scale systems and analytics. This is slow work, especially where several functions, country offices, partners or ministries are involved, but skipping it is one reason digital projects fail to become operating capability.

This sequencing matters most when organizations face pressure to adopt AI. AI can already be useful for search, drafting, translation, document extraction, and can help surface gaps in governance. But forecasting, optimization, fraud detection, and automated decision support require a stronger base. Without reliable data and governance, AI does not solve the maturity gap; it accelerates the consequences of it.

14. The recommendations are drawn from the survey and interview evidence presented in this report and corroborated by the HLGSC Digitalization Workshop Outcome Document (2025).

The result should be a foundation plan for every major digital initiative, covering data ownership, process design, system configuration, adoption support, and the conditions under which analytics or AI will be used.

R2 Map internal data to emerging sector standards

Immediate, within 6 months

Organizations do not need to wait for perfect sector alignment before improving their own interoperability. The sector's data standards stack is still emerging, and the HLGSC digitalization work is expected to help clarify which standards should serve as common reference points. But the direction is clear enough for organizations to avoid building themselves further into isolation.

The practical step is to treat standards as a translation layer rather than as a demand to replace existing systems. ERP modules, warehouse tools, Power Platform applications, open-source systems, and even structured spreadsheets can all remain useful if the data they produce can be exported, mapped, and understood by others. The most important datasets are also the most basic: items, suppliers, locations, units of measure, stock positions, shipments, transactions, and handovers.

For larger organizations, this means investing in APIs, mapping tables, and open export formats. For smaller organizations, it may mean adopting an external taxonomy early rather than creating a bespoke one that will later be expensive to reconcile. The aim is not to wait for a final sector standard, but to avoid designing internal data models that will be hard to connect later.

Organizations should be able to identify which core supply chain datasets can already be exported in open formats, and where mapping to emerging sector standards would require cleanup or redesign.

R3 Choose technology that fits the operating context

Short-term, 6-12 months

The relevant choice for many organizations is not between paper and a full enterprise ERP. Humanitarian actors sit across a wide spectrum of mandate, scale, connectivity, funding, technical capacity, and support. Their digital choices need to reflect that variety.

A large UN agency or INGO may need ERP integration, data lakes, API management, and advanced reporting. A mid-sized organization may get more value from modular tools built on an existing environment. A local NGO or government field office may need offline-capable, multilingual, low-bandwidth tools with simple workflows and limited administration. In some cases, structured Excel, mobile data collection, or a lightweight shared platform may be a legitimate interim step if it is governed and designed to migrate later. The point is not to lower ambition, but to make participation possible across the full maturity spectrum: from structured data collection and simple exports at one end, to API-enabled integration and advanced analytics at the other.

A shiny new tool might look impressive, but only adds value if it supports the operations, can be supported over time, and can export or transfer data in a form others can use. Technology choices should be judged less by how innovative they appear than by the use case they serve, the value they create for the sector, and whether users are willing and able to adopt them. Offline capability, local-language support, low-end device compatibility, simple interfaces, and realistic cybersecurity requirements are not refinements to add after procurement, but conditions for adoption.

Technology choices should leave organizations with tools that field teams can actually use, support teams can sustain, and partners can connect to over time.

R4 Treat change management as part of the system

Immediate, within 6 months

Digital projects often fund software, licences, and configuration, while adoption is left to a training session at the end. That model is expensive, because it produces systems that exist formally but are bypassed in practice.

Change management needs to be funded as part of the system itself. The budget should cover process redesign, user testing, communications, field pilots, training, post-go-live support, and reinforcement. Established change-management guidance treats adoption work as a material share of transformation, especially where workflows and decision rights change.

Successful rollouts began with the business process, not the software. After go-live, users should not merely know how to operate the system; they should have less reason to maintain the workaround. Digital project budgets should therefore include explicit provision for process redesign, user testing, training, communications, post-go-live support, and reinforcement from the start.

R5 Bring field, partner and last-mile data into the digital supply chain

Short-term, 6-12 months

Digital ownership often becomes unclear once goods leave the warehouse. Procurement, logistics, programs, partners, field teams, and local suppliers may all hold part of the process, while no single team owns the digital record end to end.

Organizations should make that ownership explicit. Last-mile delivery, partner handover, supplier participation, and distribution reporting need to sit inside the digital supply chain roadmap, even where program teams remain responsible for final delivery. The aim is not to move all responsibility into supply chain, but to stop visibility from ending at the warehouse gate. This is also where digital transformation and localization meet. Field teams and local suppliers cannot remain outside donor-compliant digital systems while being asked to carry more operational responsibility. They need the tools, access, training, and influence to participate in the digital chain, not merely report into it.

The practical objective is an operating model in which responsibility for last-mile and partner-handover data is explicit, even when operational delivery remains shared across supply chain, programs, and partners.

5.2 For sector coordination groups

These recommendations are addressed to the clusters, cooperatives, working groups and the other bodies that convene the sector.

R6 Align the sector around data standards, not a shared system

Short-term, 6-12 months

Interoperability will not come from persuading every organization to use the same platform. It will come from different systems describing the same things in the same way.

Coordination bodies should help the sector converge around practical standards for core supply chain data: items, suppliers, locations, units of measure, stock positions, shipments, transactions, and handovers. Existing standards and models should be treated as building blocks, not competing camps. This should include making explicit how humanitarian process standards such as FHL and common data models map to commercial, customs, logistics, and product-identification standards already used by external actors. The task is not to invent another standard, but to make the existing ones usable, mapped, and adopted. The guidance has to work across maturity levels. A large INGO mapping SAP or Dynamics should not be the only use case; a national NGO using a lighter tool, or a government department starting from Excel, should also be able to see the path.

The immediate product should be a published mapping guide and a first cohort of organizations mapping core master data to the agreed standards.

R7 Establish neutral governance for standards, interoperability, and data sharing

Medium-term, 12-24 months

Organizations worry about sensitive data, commercial information, operational exposure, legal liability, donor scrutiny, and loss of control. A technical standard will not solve a lack of trust.

The sector needs a neutral governance function that can hold three pieces together: data standards, interoperability blueprints, and rules for safe data sharing. Without such a function, the risk is familiar: standards fragment, pilots remain isolated, and each organization interprets data sharing on its own terms. This governance function should be inclusive by design. UN agencies, INGOs, local and national organizations, logistics providers, donors, technical partners, and academic or neutral convening actors all have different stakes in the system. External market actors should not set the humanitarian digital agenda, but they need a structured place in the conversation because much of the chain runs through their systems, documents, and operating standards. No single agency, donor, or vendor should be seen to own the agenda.

The first proof point should be a governed, multi-organization data-sharing pilot with clear rules for access, ownership, anonymization, hosting, reuse, and decision-making.

R8 Make interoperability easier to reuse than to reinvent

Medium-term, 12-24 months

Too many integration efforts begin from zero. The same questions return each time: what legal agreement is needed, where the data can be hosted, who owns the code, which APIs to use, how cybersecurity is reviewed, and what happens when one organization wants to adapt another's tool.

Coordination bodies can turn those questions into reusable infrastructure. Model data-sharing agreements, hosting options, API reference patterns, cybersecurity templates, open-source and white-label licensing models, and governance checklists would not remove due diligence. They would stop every bilateral integration from becoming a bespoke legal and technical project. The same logic applies to successful tools. A warehouse system, OCR workflow, fleet application, or partner reporting tool that works in one organization should not require years of negotiation before another can adapt it.

The sector should move toward template-based data-sharing and system-sharing, with early deployments proving that integration can be faster than previous bespoke efforts.

R9 Coordinate demand and open clearer routes for external engagement

Medium-term, 12-24 months

The digital tool landscape is fragmented partly because demand is fragmented. Several organizations can explore similar chatbots, data-cleaning tools, fraud-detection approaches, translation workflows, or document-extraction pilots without knowing others are doing the same.

Coordination bodies should move beyond listing tools and begin brokering demand. A useful digital catalogue should show who is using what, where, for which function, with which standards, and with what implementation lessons. The next step is to identify common needs, aggregate demand, and create better entry points for technology partners, logistics providers, standards bodies, and other external actors whose systems the sector needs to connect with. AI is one useful starting point, but not the only one. Many high-value digital use cases sit backstage: data cleaning, document extraction, translation, knowledge search, fraud screening, content checks, supplier-data standardization, and cross-system translation. These use cases have clear returns and lower operational risk than high-profile decision-automation pilots. The knowledge generated from them should be treated as a sector public good.

The practical output should go beyond a catalogue and include a demand-coordination mechanism: mapping what exists, identifying repeated needs, brokering shared solutions, engaging relevant external actors where needed, and publishing implementation lessons so each organization does not have to rediscover the same answers.

5.3 For donors and policymakers

These recommendations are addressed to institutional donors, policy units and the coordination bodies that negotiate funding frameworks. Donors have unique convening power and can accelerate sector-wide change through the conditions they attach to grants.

R10 Align funding practices with digital transformation needs

Medium-term, 12-24 months

Donors increasingly expect traceability, auditability, real-time reporting, partner visibility, and stronger controls. Those expectations depend on digital infrastructure. Treating that infrastructure as discretionary cost to be absorbed wherever budget flexibility happens to allow it is inconsistent with the accountability donors require.

Funding should cover the full lifecycle of digital capability: design, configuration, data cleanup, standards mapping, integration with internal and external systems, cybersecurity, hosting, training, user support, maintenance, and continuous improvement. It should also run long enough to match the reality of adoption. Annual project-cycle funding is poorly suited to ERP upgrades, data platforms, interoperability layers, shared infrastructure, or responsible AI adoption. A three-year horizon is a more credible starting point for digital infrastructure.

This is not a blank cheque for technology. Donors should expect clear operating models, maintenance plans, interoperability commitments, and evidence of demand. But where those conditions are met, digital infrastructure should be recognised as an eligible cost of humanitarian accountability, whether funded through indirect costs, flexible funding, cost recovery, shared services, pooled investment, or direct project budgets where appropriate.

Donors and partners should make explicit how essential digital supply chain costs can be covered when they are required for delivery, reporting, traceability, partner coordination, or compliance.

R11 Modernize compliance requirements for digital operations

Short-term, 6-12 months

Digital transformation will remain half-finished if donors fund digital systems but still require paper records as the default proof of compliance. Several interviewees described printing, signing and physically shipping documents across conflict zones to satisfy audit requirements that predate electronic records. In some cases, these requirements are rooted in public-finance, procurement or archival rules that humanitarian donor units cannot change on their own. In others, they reflect grant templates, audit practice, partner requirements or risk aversion. The disconnect between digital-first expectations for grantees and paper-first audit requirements for donors creates risk exposure for field staff and suppliers alike.

Donors should clarify where electronic approvals, digital signatures, system-generated audit trails, and electronic procurement records are already acceptable, and where paper remains legally required. The first step is a compliance review: identify where grant templates, audit guidance, procurement rules, or partner requirements still privilege paper over digital records, and distinguish legal requirements from practices that can be updated. Where legally possible, donors should accept electronic audit trails and reduce parallel paper processes that add burden without improving control.

R12 Fund tiered digital participation for local actors and the missing middle

Medium-term, 12-24 months

The digital divide is not only between organizations with technology and organizations without it. It is also between enterprise systems designed for large agencies and paper-based processes still used by smaller actors. Many local NGOs, national organizations, government units, and smaller partners sit in the ‘missing middle’: too complex for paper, too constrained for enterprise ERP.

Donors should fund tiered digital solutions for this middle ground. That includes devices, connectivity, secure access, offline-capable tools, local-language support, training, data protection, and lightweight systems that can grow over time. Funding can flow in several complementary ways: small grants that local partners apply for directly, rather than through INGO intermediaries; investment in open-source solutions and shared low-cost platforms that many organizations can adopt together; and sub-grants channelled through sector intermediaries, which can bundle digital skill-building into the package so small NGOs can raise capability in the specific areas they need, whether that is devices, cybersecurity, scanning tools, or training. Local actors should not only receive systems designed elsewhere but help shape the tools they are expected to use. Digital localization means more than reporting into international platforms. It means giving local organizations, field teams, and suppliers the digital infrastructure to operate, coordinate, and meet donor requirements on their own terms.

The aim is tiered participation: enabling local actors to move from paper to structured data, from structured data to lightweight tools, and from lightweight tools to interoperable systems where their role and resources justify it.

R13 Replace pilots with a pathway to scale

Short-term, 6-12 months

The humanitarian sector has a persistent case of 'pilotitis': many proofs of concept, few institutionalized systems. Pilots are not useless, but too many are funded without a credible route to maintenance, integration, adoption and reuse. Donors already ask partners to justify costs, risks, feasibility, sustainability, and value for money. For digital investments, that logic needs to go one step further and inquire not only whether the pilot is worth funding, but what happens if it works.

Digital proposals above a defined threshold should therefore include a proportionate pathway to scale: who will own the tool after the grant, how maintenance will be funded, how it will connect to existing systems, what standards it will use, how users will be supported, and whether the result can be reused by others. A proof of concept without those answers may still be interesting, but it is not yet infrastructure. The sector-appropriate business case should translate digital benefits into terms humanitarian leaders and donor finance teams can assess: lower losses, faster response, reduced inventory, fewer manual reconciliations, stronger auditability, better partner visibility, lower reporting burden, improved local supplier access, and better use of scarce funding.

The aim is not to make digital proposals harder to fund, but to avoid funding pilots that have no realistic route to becoming part of the operating model.

Conclusion

The benchmark places the sector at 3.7 out of 5, which describes incomplete transformation rather than digital immaturity. Digital tools are present across most supply chain functions, and many organizations have built real capability inside their own walls. Shared infrastructure has also begun to emerge, through standards initiatives, coordination bodies, and platforms that connect parts of the system. What remains underdeveloped is the connective layer that would let these capabilities work together at the scale the sector now needs.

The strongest dimensions of maturity are the ones organizations can advance on their own, including standardization, governance, and data inside the institution. The weakest are the ones that require coordination beyond it: interoperability, financing, and shared infrastructure. Maturity is also strongest where audit pressure is highest and weakest where the work meets people, at the last mile, where supplies are handed over to partners, and in the field environments where digital tools have to survive intermittent power, limited devices, and staff already managing several systems.

These weaknesses now sit at the centre of the sector's reform agenda rather than at its edges. Donors, boards, and affected communities now expect the outputs that digital systems produce, including traceability, real-time reporting, partner visibility, and evidence of efficiency, while the systems that produce them remain funded as overhead and built one organization at a time. Localization adds urgency, because as operational responsibility shifts toward national and local actors, the question is whether they receive systems they can shape and own, or systems they are required to report into. AI raises the stakes again, because used carefully it can compound real foundations, but used on weak data it makes unreliable information sound more authoritative.

The next phase of progress will therefore not come from another wave of pilots, but from converting scattered digital capability into shared operating infrastructure: common standards that systems can translate through, governance that makes data sharing safer than withholding it, funding that treats digital capability as part of humanitarian operations rather than discretionary overhead, and field-ready design that survives contact with the conditions in which assistance is actually delivered. Humanitarian supply chains have become one of the practical tests of whether the sector can reform under pressure. The tools, standards, and working cases all exist; what remains is the harder, less visible work of connecting them.

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Annex A: The technology landscape emerging across the sector

Humanitarian supply chains do not operate in a separate technology landscape from commercial supply chains. They operate inside it, often through paper, PDFs, emails, scans, phone calls, and manual re-entry. Goods move through customs systems informed by the WCO Data Model and increasingly cleared through national Single Windows. Air cargo increasingly uses electronic air waybills. Payments move through financial messaging infrastructure that is migrating toward ISO 20022. Ports, airports, and border agencies increasingly rely on digital platforms to manage trade and transport information. The question for the sector is not whether to engage with the wider supply-chain ecosystem. It already does. The question is whether that engagement remains document-based and manual, or becomes structured enough to support visibility, automation, and faster coordination.

Humanitarian supply chains share many functional requirements with commercial supply chains: demand planning, procurement, supplier management, inventory control, transport, visibility, risk management, and performance reporting. They also operate under materially different constraints: short grant cycles, volatile demand, donor compliance, partner-led delivery, low-connectivity field conditions, and limited funding for long-term digital infrastructure. The technology landscape that has emerged across the sector therefore spans both tools already used in humanitarian operations and adjacent commercial capabilities that are relevant but not yet widely adopted. The table below organizes this landscape into ten layers.

Table 2: Technology landscape[15]

Technology layer	Typical examples	Primary role	Current adoption in humanitarian supply chains	Main constraint
Commercial and public data standards	HS codes, GS1 identifiers such as GTIN, GLN and SSCC, UN/LOCODE, WCO Data Model, IATA e-AWB and ONE Record, ISO 20022, Incoterms	Provide identifiers, classifications, and exchange formats used by customs authorities, suppliers, carriers, banks, and shippers	Relevant to humanitarian supply chains but unevenly mapped into humanitarian systems	Low sector awareness, limited standards mapping, uneven supplier readiness, and weak incentives for adoption
Humanitarian data standards and reference models	FHL process and data model / NetHope Common Data Model for humanitarian logistics, Universal Logistics Standards, UNSPSC, cluster-defined item groups	Define humanitarian supply chain processes, data entities, and shared meanings across organizations and systems	Well developed in parts but unevenly adopted; used in some ERP specifications and system designs	Voluntary adoption, limited implementation support, no common compliance mechanism, and incomplete mapping to commercial and public standards
Public trade, customs, and border infrastructure	ASYCUDA, national Single Window systems, port community systems, cargo community systems, electronic customs declaration systems, electronic permit and certificate platforms	Systems through which goods are declared, cleared, inspected, released, and tracked through ports, airports, and borders	Humanitarian engagement is often indirect, document-based, or handled through brokers and freight forwarders	Access rules, national variation, accreditation requirements, integration cost, and limited distinction of humanitarian shipments in public systems

15. The examples are illustrative rather than exhaustive; they combine tools observed in the research with adjacent public and commercial capabilities identified through desk review

Table 2 (cont.): Technology landscape

Technology layer	Typical examples	Primary role	Current adoption in humanitarian supply chains	Main constraint
Enterprise backbones	Microsoft Dynamics 365, SAP, Oracle, Unit4/ Agresso, NetSuite, Odoo	Institutional systems of record for procurement, finance, inventory, HR, grants, and approvals	Widely used by larger organizations and UN agencies; smaller organizations often rely on spreadsheets or lighter tools	Cost, complexity, customization burden, integration with field operations, and long implementation timelines
Commercial supply chain applications	SAP Ariba, Coupa, o9, Kinaxis, SAP IBP, Blue Yonder, project44, FourKites, Everstream Analytics, Altana AI	Specialist tools for sourcing, planning, supplier collaboration, transport visibility, risk intelligence, and control towers	Limited and selective adoption; strongest where organizations have clean data and enterprise systems	Data readiness, licensing cost, implementation capacity, commercial assumptions, and fit with humanitarian operating models
Humanitarian and sector-specific platforms	ESUPS/Stockholm, HULO Link, Helios, TIM, NRC warehouse management system, IMC PIMS, LSS/SUMA, HELM, LogIE, GFP VAN, UNHRD catalogues	Tools designed for humanitarian workflows such as stock mapping, joint procurement workflows, warehousing, pharmacy, logistics coordination, and shared multi-organization views	Growing but fragmented; some tools have strong niche adoption while others remain organization-specific	Sustainability, hosting, maintenance, governance, cybersecurity, user support, and interoperability between platforms
Field, last-mile, and partner tools	KoBoToolbox, ODK, CommCare, SurveyCTO, barcode scanning, GPS tracking, digital waybills, electronic proof of delivery, partner-reporting tools, structured spreadsheets	Capture operational data close to delivery, distribution, partners, field teams, and local suppliers	Widely used but unevenly integrated with upstream supply chain systems	Connectivity, device access, parallel tools, partner burden, data protection, and weak integration into ERP or warehouse systems
Integration and automation tools	Power Automate, UiPath, OCR, APIs, middleware, Boomi, MuleSoft, Azure Data Factory	Connect fragmented systems, move data between them, and automate workflows	Rapidly growing, especially in Microsoft-based environments and larger organizations	Weak process governance, master-data problems, scarce technical skills, cybersecurity, and maintenance cost
Data platforms and analytics	Databricks, Snowflake, Azure Synapse, Power BI, Tableau, Qlik	Unify data across source systems and produce reporting, dashboards, and analytics	Selective adoption at larger agencies; emerging as the layer where interoperability and AI become feasible	Requires master data discipline, expensive to maintain, and dependent on skills that are scarce in the sector
AI and decision-support tools	ChatGPT, Claude, Microsoft Copilot, Gemini, GANNET, AI embedded in ERP and SCM systems, OCR and document extraction, forecasting and optimization models	Support search, drafting, translation, extraction, data cleaning, decision support, forecasting, anomaly detection, and conversational interfaces	Early-stage but accelerating; mostly productivity and extraction today, with more advanced supply chain use cases still emerging	Dependence on data quality, governance, trusted integration, data protection, and risk of making poor data appear authoritative

The table suggests three conclusions. First, digitalization is not a software category but a stack in which standards, border systems, enterprise platforms, field tools, data layers and AI interfaces all depend on one another, so that a weakness low in the stack limits what can be built above it. AI will not compensate for poor item definitions, weak master data or missing shipment events; it may only make bad data sound more confident.

Second, the sector is not waiting for a missing tool. Most of the required capabilities already exist somewhere, whether in commercial supply chain software, public trade infrastructure, humanitarian-built platforms, field tools, integration layers or analytics environments, but they rarely add up to shared digital infrastructure. Commercial systems often assume a level of data, funding and process discipline that humanitarian organizations do not have; humanitarian-specific tools often fit the work better but struggle to survive beyond the grants that funded them; and field tools reach operational reality at the cost of creating yet another silo.

Third, the strategic question is shifting from tool selection to interoperability. The future is unlikely to be one shared platform, nor a closed humanitarian technology stack; the more plausible path is a mixed landscape connected through common standards, mapping layers, reusable APIs, data-sharing agreements and neutral governance. The test is whether commercial, public, humanitarian and locally adapted systems can work together well enough for the sector to act less like a collection of projects and more like a system.

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