mdii
multidimensional digital inclusivity index

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SAMPLE REPORT: FICTIONAL TOOL, INVENTED FIGURES

Inclusiveness Evaluation Report for

Sample Advisory Tool

A fictional advisory service for smallholder irrigation, used here to show what an MDII evaluation report contains. Every figure in this document is invented.

Executive Summary

Overall Performance

53%

Approaching Expectations

General Remark

The overall inclusiveness of **Sample Advisory Tool** is **Approaching Expectations** and is on a solid footing, with clear areas to strengthen.

Sample Advisory Tool is currently assessed at the **Approaching Expectations** level of digital inclusiveness, with an overall MDII score of **53%**. The results indicate that the tool supports inclusive and effective use in several areas, while some elements limit consistent benefits across user groups and contexts. **Usage Efficacy** emerges as the strongest area, suggesting relevant approaches in enabling users to achieve practical objectives. In contrast, **Ethical and Responsible Innovation** represents the main opportunity for strengthening, particularly in relation to **Reflexive Innovation**, which may influence sustained adoption and effective use. Overall, targeted improvements linked to **Communication Channels and Messaging** may enhance usability and sustained adoption, while preserving strengths associated with **Algorithmic Fairness** will help maintain the tool's current level of inclusive performance.

Strongest Dimension

Usage Efficacy

74%

Weakest Dimension

Ethical and Responsible Innovation

28%

Do you know which Indicator scored highest among Direct Users?

• Functionality

Do you know which Indicator scored lowest among Direct Users?

• Training Support

Dimension Performance Overview

0% - 24%
Significantly Below Expectations

25% - 49%
Below Expectations

50% - 69%
Approaching Expectations

70% - 89%
Meeting Expectations

90% - 100%
Exceeding Expectations

Subdimension Performance Overview

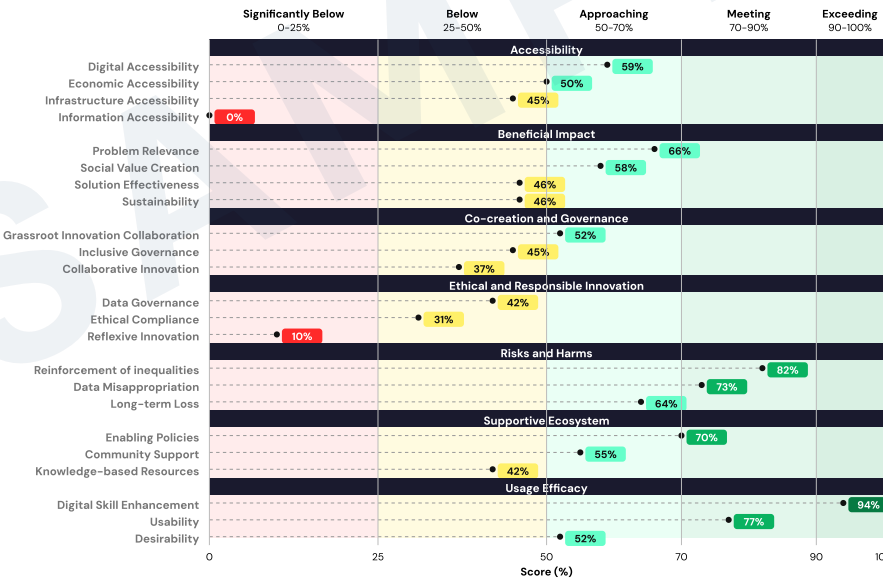

Figure 1: Detailed performance analysis by subdimension

Domain Evaluator Insights

The following responses were provided by Domain Evaluators as part of their open-ended feedback on the tool. In this sample they are invented.

What is the best feature / quality of this tool?

"The advisory messages arrive before the irrigation window, which is when they are useful."

"It is built with the district extension office, so the recommendations match what officers already tell farmers."

"The maps make water use visible at plot level. That is new for most of the users we spoke to."

"Simple interface. A first-time user reached a recommendation in under five minutes during the workshop."

What should the tool improve on?

"Engage women farmers directly. Most of the current users are men who own the phone in the household."

"Explain the cost of data. Users did not know what a week of use would cost them in airtime."

"Offline use is needed. Coverage in the irrigation schemes we visited drops for days at a time."

"Publish who owns the collected data and how it is used. The question came up in every group discussion."

Beneficial Impact

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Solution Effectiveness	Adaptive Capability	38%	38%	N/A	N/A
	Functionality	56%	12%	100%	N/A
	Problem-Solution Fit	44%	44%	N/A	N/A
	Solution Performance	48%	50%	44%	50%
Social Value Creation	Community Impact	38%	38%	N/A	N/A
	Cultural Sensitivity	53%	81%	25%	N/A
	Digital Knowledge	66%	56%	75%	N/A
	Individual Empowerment	50%	50%	N/A	N/A
	Perception of Psychological Belongingness	81%	81%	N/A	N/A
	Social Capital Building	62%	62%	N/A	N/A
	Social Equity	56%	44%	69%	N/A
Sustainability	Economic Sustainability	56%	56%	N/A	N/A
	Long-term Viability	44%	44%	N/A	N/A
	Maintainability	67%	81%	69%	50%
	Scalability	19%	19%	N/A	N/A
Problem Relevance	Engagement in Problem Definition	62%	62%	62%	N/A
	Local Contextual Understanding	66%	50%	N/A	81%
	Problem Identification Accuracy	41%	31%	50%	N/A
	Relevance to Target Group	75%	50%	100%	N/A
	Severity Assessment	88%	88%	N/A	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Social Value Creation | Performance: 58% | Target: 70-89%

→ **Add a short 'Limitations and caveats' box to outputs.** Include a clearly labelled section in reports or dashboards that names data gaps, resolution limits and the contexts where outputs need local validation. This prevents misinterpretation and supports informed decisions.

Priority #2 Subdimension: Social Value Creation | Performance: 58% | Target: 70-89%

→ **Publish an open summary of results for non-registered users.** Develop a plain summary of the main indicators for wider dissemination, so people who never log in still benefit from the tool's insights.

Priority #3 Subdimension: Sustainability | Performance: 46% | Target: 50-69%

→ **Design modular upgrade options.** Allow the tool to update its parameters or integrate new datasets as farming contexts change, so that regions and user groups that differ from the original design assumptions are not left behind.

Priority #4 Subdimension: Solution Effectiveness | Performance: 46% | Target: 50-69%

→ **Set up a light monitoring and evaluation routine.** Track whether the tool's outputs are used and what changed as a result, with a short review every season, and feed the findings into the next release.

Priority #5 Subdimension: Problem Relevance | Performance: 66% | Target: 70-89%

→ **Run a yearly check of the problem statement with users.** Ask a small group of users whether the problem the tool addresses is still the one that matters most to them, and record what changed.

Detailed Performance and Recommendations

Risks and Harms

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Reinforcement of inequalities	Algorithmic Fairness	100%	100%	N/A	N/A
	Content and Design	69%	69%	N/A	N/A
	Data Representation Equity	78%	100%	N/A	56%
	Equality and Empowerment	81%	94%	69%	N/A
Data Misappropriation	Data Leakage	69%	75%	62%	N/A
	Fraudulent activities	72%	44%	100%	N/A
	Inability to Access Collected Data	69%	75%	62%	N/A
	Unauthorized Access	69%	75%	62%	N/A
	Unauthorized Commercialization of Data	88%	75%	100%	N/A
Long-term Loss	Loss of Agency	75%	75%	N/A	N/A
	Loss of Cultural Identity	47%	50%	44%	N/A
	Loss of Skills and knowledge	69%	81%	56%	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Reinforcement of inequalities | Performance: 82% | Target: 90-100%

→ **Warn users where data limits could bias outputs.** Add a non-intrusive tooltip or label where spatial resolution, sampling or coverage gaps could lead to biased results, so users know when to seek local confirmation.

Priority #2 Subdimension: Reinforcement of inequalities | Performance: 82% | Target: 90-100%

→ **Use gender-disaggregated data on purpose.** Collect and show uptake and outcome data by gender, and review it at each release to see who the tool is reaching and who it is not.

Priority #3 Subdimension: Data Misappropriation | Performance: 73% | Target: 90-100%

→ **State who can see what.** Publish a one-page note on which data the tool stores, who has access to processed outputs and how a user can ask for their data to be removed.

Priority #4 Subdimension: Long-term Loss | Performance: 64% | Target: 70-89%

→ **Keep local practice visible in outputs.** Where the tool recommends a practice, show the local alternative it replaces and why, so users keep the choice rather than lose the knowledge.

Priority #5 Subdimension: Reinforcement of inequalities | Performance: 82% | Target: 90-100%

→ **Use inclusive terminology and allow contextual tags.** Replace narrow terms with neutral ones and let users add tags such as mixed cropping or informal tenancy when exporting, so diverse land uses are reflected.

Detailed Performance and Recommendations

Accessibility

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Digital Accessibility	Accessibility Features	62%	62%	62%	N/A
	Adaptation to local context	62%	62%	N/A	N/A
	Ease of Adoption	53%	44%	62%	N/A
Economic Accessibility	Affordability	62%	25%	100%	N/A
	Cost of Access	50%	0%	100%	N/A
	Cost of Transition	44%	44%	N/A	N/A
	Cost Predictability	75%	75%	N/A	N/A
	Cost Transparency	25%	19%	31%	N/A
	Subsidy Availability	44%	44%	N/A	N/A
Information Accessibility	Communication Channels and Messaging	0%	0%	N/A	N/A
Infrastructure Accessibility	Digital Availability	12%	12%	N/A	N/A
	Infrastructure Readiness	59%	56%	62%	N/A
	Integration with Existing Systems	81%	81%	N/A	N/A
	Quality and Functionality	25%	44%	N/A	6%
	Resilience and Security	47%	25%	69%	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Economic Accessibility | Performance: 50% | Target: 70–89%

→ **Clarify short-term implementation costs.** Include clear guidance on expected onboarding, training or integration costs, so managers can plan for adoption and reduce uncertainty.

Priority #2 Subdimension: Economic Accessibility | Performance: 50% | Target: 70–89%

→ **Publish a simple cost sheet.** State what is free, what is paid and what may change, in one page that users can keep.

Priority #3 Subdimension: Digital Accessibility | Performance: 59% | Target: 70–89%

→ **Simplify report formats for low digital and statistical literacy.** Use visual summaries such as traffic-light codes or trend arrows and reduce technical jargon, so outputs are readable without a data background.

Priority #4 Subdimension: Digital Accessibility | Performance: 59% | Target: 70–89%

→ **Make navigation easier for first-time users.** Reduce the number of steps to the main result, add a guided first run and keep the most used functions on the first screen.

Priority #5 Subdimension: Infrastructure Accessibility | Performance: 45% | Target: 50–69%

→ **Offer an offline mode for the most used functions.** Let users store key data on the device and sync when connectivity returns, and allow downloads of outputs in lightweight formats.

Detailed Performance and Recommendations

Usage Efficacy

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Desirability	Appeal and Engagement	100%	100%	N/A	N/A
	Perceived Value	38%	38%	N/A	N/A
	User Satisfaction	19%	19%	N/A	N/A
Usability	Ease of Use	81%	81%	N/A	N/A
	Error Management	81%	81%	N/A	N/A
	Performance Efficiency	69%	81%	56%	N/A
Digital Skill Enhancement	Tool Proefficiency	94%	94%	N/A	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Usability | Performance: 77% | Target: 90–100%

→ **Provide contextual guidance for first-time users.** Embed tooltips, brief definitions and in-app guidance to support onboarding and reduce barriers for users unfamiliar with the tool.

Priority #2 Subdimension: Usability | Performance: 77% | Target: 90–100%

→ **Apply interface simplifications for non-technical users.** Use clear icons, colour coding, readable font sizes and high-contrast schemes, and make touchscreen buttons large enough.

Priority #3 Subdimension: Usability | Performance: 77% | Target: 90–100%

→ **Create a shared folder with a one-page FAQ.** Add best practices and example use cases, so users find answers without waiting for support.

Priority #4 Subdimension: Desirability | Performance: 52% | Target: 70–89%

→ **Show users what the tool did for them.** Add a short summary of results or actions taken since the last visit, so the value of using the tool is visible each time it opens.

Priority #5 Subdimension: Digital Skill Enhancement | Performance: 94% | Target: 90–100%

→ **Add worked examples to training and reports.** Include annotated screenshots that walk through one real decision from input to action, so skills grow with use.

Supportive Ecosystem

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Enabling Policies	Collaboration Platforms	62%	62%	N/A	N/A
	Feedback Mechanisms	53%	19%	88%	N/A
	Inclusive Policies	75%	75%	N/A	N/A
	Resource Availability	88%	94%	81%	N/A
Community Support	Community Activeness	56%	56%	N/A	N/A
	Community Engagement	54%	44%	56%	62%
Knowledge-based Resources	Documentation and Guidance	34%	44%	25%	N/A
	Performance Monitoring and Feedback	53%	88%	19%	N/A
	Training Affordability	50%	38%	62%	N/A
	Training Assessment and Feedback	53%	88%	19%	N/A
	Training Availability	38%	38%	N/A	N/A
	Training Relevance	38%	38%	N/A	N/A
	Training Support	31%	50%	12%	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Knowledge-based Resources | Performance: 42% | Target: 50-69%

→ **Expand personalised training support.** Introduce real-time support options, such as chat-based assistance, to address user challenges during training sessions and daily use.

Priority #2 Subdimension: Enabling Policies | Performance: 70% | Target: 90-100%

→ **Establish clear feedback loops for policy updates.** Formalise how user input on training and usability is collected, through periodic surveys or forums, and how it feeds into updates.

Priority #3 Subdimension: Community Support | Performance: 55% | Target: 70-89%

→ **Name a local focal point per area.** A trained peer or extension officer who can answer first questions keeps users going when the help line is far away.

Priority #4 Subdimension: Knowledge-based Resources | Performance: 42% | Target: 50-69%

→ **Schedule training when users are free, and record it.** Sessions at the times users name, recorded for later viewing, reach the people who cannot attend live.

Priority #5 Subdimension: Enabling Policies | Performance: 70% | Target: 90-100%

→ **Report back on the platform.** After each round of input, publish a short note saying which ideas were taken up and why, so contributions are seen to matter.

Ethical and Responsible Innovation

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Data Governance	Bias Monitoring and Adaptation	12%	12%	N/A	N/A
	Data Accessibility	31%	31%	N/A	N/A
	Data Accuracy	62%	44%	81%	N/A
	Data Portability	47%	50%	44%	N/A
	Data Privacy	47%	50%	44%	N/A
	Transparency of Data Practices	56%	31%	81%	N/A
Reflexive Innovation	Continuous Reflection	0%	0%	N/A	N/A
	Feedback Integration	19%	19%	N/A	N/A
	Transparency and Communication	12%	12%	N/A	N/A
Ethical Compliance	Ethical Oversight	50%	50%	N/A	N/A
	Ethical Standards Adherence	12%	12%	N/A	N/A
	Impact Assessment	31%	31%	N/A	N/A

Top 5 Priority Recommendations

Priority #1 Subdimension: Ethical Compliance | Performance: 31% | Target: 50–69%

→ **Add a contact and feedback line to every output.** A footer or sidebar element that lets users report issues or concerns strengthens transparency and supports iterative ethical oversight.

Priority #2 Subdimension: Ethical Compliance | Performance: 31% | Target: 50–69%

→ **Log stakeholder concerns linked to ethical risks.** Keep a simple internal record of concerns raised by users or partners around fairness, equity or unintended consequences, and review it at each update.

Priority #3 Subdimension: Ethical Compliance | Performance: 31% | Target: 50–69%

→ **Use a brief ethical reflection checklist at each update.** Four questions for the development team: does this change how users act on outputs, could any group be disadvantaged, have user concerns been addressed, are new data sources disclosed?

Priority #4 Subdimension: Data Governance | Performance: 42% | Target: 50-69%

→ **Strengthen data privacy protections.** Publish a short privacy statement explaining what data the tool uses, what it does not collect and who can see processed outputs.

Priority #5 Subdimension: Reflexive Innovation | Performance: 10% | Target: 25-49%

→ **Say what changed because of feedback.** With each release, list the changes that came from user feedback, so reflection is visible and not only internal.

Co-creation and Governance

N/A = Not applicable for some user types

Subdimension	Indicator	Score	Domain Evaluation	Direct Users	Downstream Beneficiaries
Grassroot Innovation Collaboration	Capacity Building	19%	19%	N/A	N/A
	Community-led Solutions	56%	56%	N/A	N/A
	Grassroots Engagement	75%	75%	N/A	N/A
	Impact Assessment	62%	25%	100%	N/A
	Local Knowledge Utilization	47%	44%	N/A	50%
Collaborative Innovation	Co-creation Opportunities	23%	0%	50%	19%
	Collaboration Accessibility	38%	38%	N/A	N/A
	Collaborative Support	38%	38%	N/A	N/A
	Diversity and Representation	50%	50%	N/A	N/A
Inclusive Governance	Inclusive Decision-making	56%	69%	44%	N/A
	Transparency	34%	62%	N/A	6%

Top 5 Priority Recommendations

Priority #1 Subdimension: Grassroot Innovation Collaboration | Performance: 52% | Target: 70–89%

→ **Use field-based observations to annotate outputs.** Embed a simple comment box so users can submit contextual notes, stored and reviewed during periodic updates.

Priority #2 Subdimension: Grassroot Innovation Collaboration | Performance: 52% | Target: 70–89%

→ **Explore low-effort ways to surface traditional knowledge.** Use calibration notes, tooltips or an insights section to reflect practices observed on the ground, such as mixed cropping or informal water rotations.

Priority #3 Subdimension: Collaborative Innovation | Performance: 37% | Target: 50–69%

→ **Run short co-design sessions before each major release.** Invite users from underrepresented groups, and show them afterwards what changed as a result.

Priority #4 Subdimension: Inclusive Governance | Performance: 45% | Target: 50–69%

→ **Keep a public change log with the reasons for decisions.** A short record that traces the rationale for updates, referencing user input, reinforces transparency and shared ownership.

Priority #5 Subdimension: Grassroot Innovation Collaboration | Performance: 52% | Target: 70–89%

→ **Support partners in grassroots engagement.** Provide workshop prompts, field brief templates or orientation materials so partners can guide field-level discussions without developer facilitation.

ACKNOWLEDGEMENTS

This evaluation for Sample Advisory Tool was only made possible due to the contribution of all participants. In this sample, the participants are invented.

The sample for this assessment was:

- Domain Experts: 4
- Direct Users: 16
- Downstream Beneficiaries: 6

Evaluation Coordination: MDII team (sample)

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MDII Methodology Insights

Summary

Description: The MDII (Multidimensional Digital Inclusiveness Index) is a comprehensive scientific tool designed to assess and enhance digital inclusiveness across various digital tools and platforms. It provides a structured approach to identify areas of strength and improvement, ensuring that digital solutions are accessible, equitable, and inclusive for underrepresented communities within agrisystems.

Target Audience: Researchers, evaluators, policymakers, and digital tool developers aiming to enhance inclusiveness.

Goals and Objectives: To promote digital inclusiveness in agrisystems through a structured evaluation framework. Provide actionable insights, support alignment with inclusiveness benchmarks, and drive data-informed improvements.

Focus: Marginalized communities in LMIC settings, including women, youth, rural and indigenous communities, elderly, and individuals with specific needs.

MDII Innovation Value: Delivers a quantifiable measure of digital inclusiveness, enabling CGIAR projects to take more targeted actions. It also offers policy-makers evidence for policy development to support gender- and inclusion-responsive innovations.

Relation to Agrisystems: The MDII is tailored for agrisystems, drawing on scientific insights to identify key inclusiveness factors for marginalized farmers. By addressing specific barriers faced by women and other underrepresented groups, it promotes fair access to digital tools that drive productivity, sustainability, and market integration. This framework recognizes the importance of inclusiveness at every stage, from policymaking to infrastructure and training, ensuring that often-excluded farmers can gain equitable opportunities to enhance their livelihoods and participate in agricultural development.

Index Framework

Mega-groups of Analysis: Innovation Usage, Social Consequence, Stakeholder Relationships.

Dimensions: 7 dimensions (accessibility, usage effectiveness, supportive ecosystem, beneficial impact, risks and harms, ethical and responsible innovation, co-creation and governance).

Subdimensions: 27 subdimensions that provide a more granular focus on specific inclusiveness aspects within each dimension.

Indicators: 90 indicators targeted for evaluation of the inclusiveness level in each subdimension, guiding action points for improvement.

Index Digital Inclusiveness Scoring Tiers

Significantly Below Expectations (0-24%): Major deficiencies in inclusiveness, with critical gaps preventing equitable access and use. Needs a complete redesign.

Below Expectations (25-49%): Partially meets inclusiveness benchmarks but lacks essential elements. Significant improvements needed.

Approaching Expectations (50-69%): Meets the foundational inclusiveness standards, providing basic access and usability for most intended users.

Meeting Expectations (70-89%): Demonstrates strong inclusiveness, addressing diverse user needs effectively, with thoughtful adaptations for marginalized groups.

Exceeding Expectations (90-100%): Models best practices in inclusiveness; fully adaptable and empowering.

Scoring System and Weighting

Scoring Scale: Tiered scoring system to evaluate digital inclusiveness across five levels, from "Significantly Below Expectations" to "Exceeding Expectations." Each level reflects how well digital tools align with inclusiveness benchmarks.

Model Weightings: Equal weighting across dimensions and indicators to maintain simplicity, transparency, and minimize subjectivity. Post-pilot analyses will explore adjusting weightings based on data.

Index Versions

Regular Version: Designed for digital tools in advanced development stages, including Controlled Testing, Early Prototyping, Semi-Controlled Testing, or Proven Innovation phases. Suitable for tools with active users.

Ex-Ante Version: Intended for digital tools in early development stages, such as Idea, Basic Research, Formulation, or Proof of Concept. Used when there are no/low active users.

Data Handling

Data Storage and Security: All collected data is securely stored on a designated platform, ensuring confidentiality and compliance with data protection standards.

Data Processing: Collected data is processed through the MDII evaluation framework, where responses are mapped to corresponding dimensions and indicators for scoring.

Data Verification: A quality check is conducted to ensure the accuracy and reliability of the data.

Data Access and Privacy: Access to raw data is restricted to authorized personnel only.

Evaluation Process

Step 1 **Initiation** - Innovator requests an evaluation of their digital tool's inclusiveness from the MDII Team. Upon request, the Coordinator sends the Innovator an Online Form.

Step 2 **Identification of End-Users and Beneficiaries** - The Coordinator identifies potential end-users and downstream beneficiaries and organizes a workshop to conduct the evaluation.

Step 3 **Fieldwork and Data Collection** - The Interviewer conducts fieldwork, distributes quantitative forms, and interviews a subset of users and downstream beneficiaries.

Step 4 **Domain-Specific Evaluation** - The Coordinator selects Domain-specific Evaluators who assess the Innovator's responses using the Domain-Specific Evaluators Form.

Step 5 **Data Processing and Report Generation** - The MDII Team compiles and analyzes data from End Users, Downstream Beneficiaries, and Domain-Specific Evaluators. This information is used to calculate the MDII Score and to prepare the Inclusiveness Report.

Step 6 **Reporting and Feedback** - The final Inclusiveness Report is shared with the Innovator, providing a comprehensive assessment of the tool's inclusiveness and recommendations for improvement.

APPENDIX

Dimension

Beneficial Impact: Evaluates the positive impacts of digital innovations on users and downstream beneficiaries.

Subdimension

→ **Solution Effectiveness:** Measures the overall performance and impact of digital solutions in achieving their intended outcomes.

Indicators

Adaptive Capability: Evaluates the ability of digital innovation solutions to adapt to changing conditions and feedback, ensuring long-term digital inclusion amidst changing conditions and user feedback.

Functionality: Evaluates the digital innovation solutions in terms of features, capabilities, and reliability (functional capabilities).

Problem-Solution Fit: Assesses how well digital solutions are specifically tailored to address the identified needs and remain aligned with these needs as conditions and feedback evolve.

Solution Performance: Measures the overall performance and impact of digital solutions in achieving their intended outcomes.

Subdimension

→ **Social Value Creation:** Assesses the extent to which digital tools contribute to positive social outcomes, such as inclusion, participation, or a sense of belonging among users and indirectly affected groups. Emphasizes how digital engagement can strengthen social cohesion, equity, and shared value in diverse operational contexts.

Indicators

Community Impact: Evaluates the positive outcomes of digital innovation solutions on the communities they target.

Cultural Sensitivity: Evaluates how the digital tool respects and reflects cultural diversity to ensure inclusiveness and the avoid cultural prejudices.

Digital Knowledge: Evaluates how the digital tool enhances users' skills among marginalized groups, contributing to improved digital literacy.

Individual Empowerment: Assesses how the digital tool helps individuals overcome barriers and achieve personal goals. This allows individuals to actively participate in and benefit from the digital landscape.

Perception of Psychological Belongingness: Evaluates the extent to which users feel included, recognized, and connected through their interaction with a digital tool. This includes users' sense of belonging within a wider digital environment or institutional system, which can influence engagement, confidence, and long-term participation.

Social Capital Building: Assesses how the digital tool contributes to strengthening communal bonds, building trust, fostering collaborative engagement within communities, supporting network creation, resource sharing, and access to digital opportunities.

Social Equity: Assesses how the digital tool contributes to reducing social inequities within the community, both in the short or long term.

Subdimension

→ **Sustainability:** Measures the long-term viability and maintainability of digital innovations.

Indicators

Economic Sustainability: Evaluates how the digital tool is designed for cost-effectiveness and long-term financial sustainability, supported by scalable and sustainable financial models. This ensures the tool maintains its benefits over time.

Long-term Viability: Assesses the potential of digital solutions to remain economically viable, functional, and relevant over time, ensuring sustained digital inclusion.

Maintainability: Evaluates the presence of established procedures and support systems that facilitate the maintenance and updating of digital solutions to ensure ongoing effectiveness and usability.

Scalability: Assesses the ability of digital solutions to scale and remain economically sustainable, accommodating increasing demand and expanding to new user groups to enhance digital inclusion.

Subdimension

→ **Problem Relevance:** Assesses how well digital solutions are designed to address the critical challenges ensuring a focus on high-priority issues.

Indicators

Engagement in Problem Definition: Assesses the extent of stakeholder engagement in defining the problems or needs.

Local Contextual Understanding: Evaluates the depth of understanding and consideration of the local context and conditions in identifying the problems or needs.

Problem Identification Accuracy: Evaluates the precision and clarity in identifying the problems or needs that the digital innovation solutions aim to address.

Relevance to Target Group: Assesses how well the identified problems or needs align directly with the specific priorities and circumstances of the targeted underrepresented communities.

Severity Assessment: Evaluates the severity or urgency of the identified problems or needs.

Dimension

Risks and Harms: Evaluation of the potential negative impacts that digital innovation products might have on users and downstream beneficiaries.

Subdimension

→ **Reinforcement of inequalities:** Assesses how digital tools may inadvertently reinforce existing social inequalities, including gender biases and data inequities, impacting the equitable participation in digital environments.

Indicators

Algorithmic Fairness: Assesses whether the algorithms used in the product are free from bias and provide fair decision-making across diverse user groups, ensuring discrimination is prevented.

Content and Design: Evaluates the inclusivity of digital tools in reflecting diverse roles and contributions within agrisystems (e.g., recognizing the roles of women in farming or water management). Ensures the content does not perpetuate stereotypes and is inclusive of all users involved in agrisystems.

Data Representation Equity: Reviews how data related to food, water, and land use is represented, ensuring that digital tools fairly include underrepresented groups, such as smallholder farmers or indigenous water users, to prevent bias and exclusion.

Equality and Empowerment: Measures the product's impact on promoting equitable access to resources and opportunities.

Subdimension

→ **Data Misappropriation:** Evaluates risks related to the misuse or mishandling of data collected through digital tools, which can undermine trust and equitable access.

Indicators

Data Leakage: Ensures that data is securely managed and protected from accidental leaks. Assesses the safeguards in place, focusing on tools that handle critical resources ensuring trust in data management.

Fraudulent activities: Assesses the risk of harmful activities such as manipulating records or misrepresentation, which could disproportionately affect vulnerable groups.

Inability to Access Collected Data: Evaluates whether users face challenges accessing input or output data from the tool. Improving data accessibility supports transparency and helps users better understand and apply the tool's information in decision-making.

Unauthorized Access: Assesses the risk that individuals or systems without appropriate permissions could access tool data or features. Managing this risk is essential to protect system integrity, maintain user trust, and ensure responsible data governance.

Unauthorized Commercialization of Data: Ensures that data management practices protect individuals from exploitation. Assesses whether the digital tool has mechanisms in place to prevent the unauthorized commercial use of data collected without explicit user consent.

Subdimension

→ **Long-term Loss:** Assesses how digital tools might cause social or cultural harm, such as replacing local knowledge or making users too dependent, which can limit their ability to use digital tools fairly and independently.

Indicators

Loss of Agency: Evaluates the extent to which digital solutions might diminish the decision-making power and autonomy of individuals.

Loss of Cultural Identity: Assesses the risk that digital solutions might undermine broader cultural practices and norms tied to agrisystems, such as land use traditions, crop selection customs, or community rituals, which are central to communal identity.

Loss of Skills and knowledge: Evaluates whether digital solutions may contribute to a decline in practical, traditional skills (such as farming techniques, craftsmanship, or oral storytelling) that are crucial for the economic and social sustainability of underrepresented communities.

Dimension

Accessibility: Measures the readiness and quality of digital resources. Ensures foundational access to digital tools, bridging the digital divide and enabling equitable participation in agricultural innovation and decision-making processes.

Subdimension

→ **Digital Accessibility:** Evaluates how digital tools reduce barriers to use. This includes designing tools that accommodate varying levels of digital literacy and specific user needs, enabling broader and more equitable participation.

Indicators

Accessibility Features: Assesses the presence and effectiveness of specific features designed for

accessibility (e.g. screen readers, contrast settings, or keyboard navigation), ensuring the tool is inclusive and usable for users with varying abilities and needs.

Adaptation to local context: Evaluates how well the digital tool adapts to the language, cultural context, and specific needs. This ensures the tool is locally relevant and accessible, facilitating adoption and use by diverse groups.

Ease of Adoption: Assesses how intuitive and user-friendly the digital tool is for first-time users. This includes evaluating how quickly users can understand and begin using the tool, regardless of their digital literacy levels.

Subdimension

→ **Economic Accessibility:** Evaluates whether digital tools are affordable and if there are financial supports in place. Economic barriers can prevent under-resourced users or institutions from accessing and using digital tools effectively.

Indicators

Affordability: Assesses the cost-effectiveness of accessing digital innovation solutions, including internet connectivity. Lower costs reduce entry barriers, allowing more individuals to benefit from digital tools.

Cost of Access: Assesses whether the costs of accessing the digital tool are affordable for the intended users. Affordability is key to digital inclusion, as economic barriers prevent underrepresented groups from accessing essential digital resources.

Cost of Transition: Evaluates the financial and non-financial costs of switching from traditional systems to digital tools.

Cost Predictability: Assesses the consistency and foreseeability of costs associated with the use of digital tools or services in agrisystems. Predictable costs allow users to plan ahead, allocate resources efficiently, and ensure continued access to technologies that support agricultural and environmental management activities.

Cost Transparency: Evaluates how clearly the cost structures of digital innovation solutions are communicated, including fees for tools, data usage, maintenance, or training. Transparent costs help understand the total financial commitments required, avoiding hidden expenses and supporting effective financial planning for agricultural activities.

Subsidy Availability: Assesses whether financial support or subsidies are available to help under-resourced users access digital tools. Including such support helps ensure that smallholder-focused institutions feel included in digital transformation efforts and benefit from increased digital inclusiveness.

Subdimension

→ **Information Accessibility:** Assesses the availability and clarity of digital outputs and communication materials for users.

Indicators

Communication Channels and Messaging: Evaluates the effectiveness and clarity of communication channels used to share key information with users. Using accessible formats and diverse platforms helps ensure messages reach all relevant users and supports inclusive engagement.

Subdimension

→ **Infrastructure Accessibility:** Measures the readiness and quality of digital infrastructure. Reliable infrastructure is essential for digital engagement; without it, these communities remain disconnected from digital advancements, perpetuating the digital divide.

Indicators

Digital Availability: Assesses whether the digital tool can be accessed and used reliably given the available infrastructure, including internet connectivity, device compatibility, and platform stability. Considers how these factors affect equitable access across different operational settings, particularly in areas with limited or inconsistent digital infrastructure.

Infrastructure Readiness: Assesses the capacity and preparedness of existing digital infrastructure for necessary upgrades and ongoing maintenance to support continuous agricultural innovation. Readiness ensures infrastructure remains functional and evolves with technological advances, maintaining digital inclusiveness.

Integration with Existing Systems: Assesses the ability of digital infrastructure to integrate and interoperate with existing digital systems and platforms, ensuring compatibility.

Quality and Functionality: Evaluates the reliability, responsiveness, and overall performance of the digital tool in supporting its intended tasks. This includes aspects such as platform stability, processing speed, and usability. Ensures that the tool performs consistently and meets operational requirements across different environments and user contexts.

Resilience and Security: Evaluates how resilient and secure the digital infrastructure is when facing risks like extreme weather or connectivity disruptions. Strong infrastructure builds trust and supports long-term digital inclusion.

Dimension

Usage Efficacy: Assesses how well digital tools support users in achieving their goals, focusing on the practical application of these tools in agricultural systems. This effectiveness is crucial for fostering sustainable practices and enhancing user engagement among different groups.

Subdimension

→ **Desirability:** Assesses the appeal and relevance of the digital tool, ensuring it resonate with users enhances engagement and satisfaction.

Indicators

Appeal and Engagement: Evaluates how the design caters to diverse preferences, enhancing user satisfaction and encouraging sustained interaction with the tool.

Perceived Value: Evaluates the value the digital tool can provide. This promotes a human-centered approach, highlighting how understanding diverse views of value can improve the tool's design.

User Satisfaction: Evaluates the extent to which users feel satisfied when interacting with the digital tool.

Subdimension

→ **Usability:** Evaluates how user-friendly and accessible the digital tool is for diverse user groups. This focus on usability ensures that users can easily navigate and utilize the tools, promoting equitable access to essential agricultural information and resources.

Indicators

Ease of Use: Focuses on the clarity of the user interface and the support provided to navigate the tool effectively, promoting a positive user experience. It evaluates how intuitive and user-friendly the digital tool is, accommodating varying levels of digital literacy.

Error Management: Evaluates how effectively error feedback is communicated to users, ensuring clear guidance for problem resolution during their interaction with the digital tool.

Performance Efficiency: Evaluates the effectiveness of the digital tool in executing tasks, emphasizing aspects such as response times, minimal lag, and the number of interactions needed for task completion. This assessment ensures that the user experience is prioritized, enabling smooth, efficient operations that enhance usability and satisfaction.

Subdimension

→ **Digital Skill Enhancement:** Assesses how digital tools enable users to develop essential skills and agency within the tool through ongoing interaction. This enhancement of digital competencies supports users' agency and fosters inclusive development, ultimately improving their ability to navigate agricultural challenges and optimize practices.

Indicators

Tool Proefficiency: Assesses how users enhance their digital skills through ongoing engagement with the digital tool, enabling them to develop competencies in data management, resource allocation, and decision-making.

Dimension

Supportive Ecosystem: Assesses the community engagement, enabling policies and resource availability supporting the adoption and sustained use of digital solutions.

Subdimension

→ **Enabling Policies:** Assesses the extent to which policies promote digital access and participation. Supports digital inclusion by promoting inclusiveness through ecosystem policies.

Indicators

Collaboration Platforms: Evaluates how tools facilitate cooperation between stakeholders, fostering shared learning and digital engagement.

Feedback Mechanisms: Focuses on whether the digital tool includes systems for collecting input from groups, supporting the integration of user feedback into policy and resource decisions.

Inclusive Policies: Assesses whether policies support fair access and participation so that users can engage with and benefit from digital tools.

Resource Availability: Evaluates whether the digital tool is backed up by policies that ensure accessible support services for communities in order to be able to use the digital tool.

Subdimension

→ **Community Support:** Assesses how community networks help users overcome barriers to using digital tools, strengthening digital inclusion.

Indicators

Community Activeness: Assesses how proactively communities take part in digital activities. Such efforts support ongoing participation.

Community Engagement: Evaluates the extent of active involvement in supporting each other's use of digital tools. Active engagement ensures peer support and shared learning, supporting sustainable inclusiveness.

Subdimension

→ **Knowledge-based Resources:** Assesses the availability, relevance, and affordability of training and guidance resources designed to help users effectively engage with digital tools.

Indicators

Documentation and Guidance: Evaluates that clear and accessible guidance materials are provided to help users navigate and effectively use the digital tool.

Performance Monitoring and Feedback: Evaluates the mechanisms in place to monitor user performance and gather feedback on training efficacy.

Training Affordability: Evaluates if training is financially accessible by providing free or subsidized options. Affordability is crucial for broad participation.

Training Assessment and Feedback: Evaluates the mechanisms in place to monitor user performance and gather feedback on training efficacy.

Training Availability: Assesses the availability of training resources provided through multiple channels to ensure users can learn and adapt to digital innovations. Access to training is essential to promote full engagement with digital tools.

Training Relevance: Evaluates if training materials are relevant and tailored to the specific needs and challenges faced by users. By addressing contextual barriers, training becomes a key driver in promoting digital inclusiveness and enabling effective engagement.

Training Support: Assesses whether mechanisms are in place to provide personalized support to users during training. This ensures that users receive the assistance needed to successfully engage with and complete the training.

Dimension

Ethical and Responsible Innovation: Assesses the adherence to ethical standards and responsible practices in digital tools used within agrisystems, ensuring they respect community rights and promote a sense of trust and inclusivity (i.e., creating welcoming digital spaces for underrepresented communities).

Subdimension

→ **Data Governance:** Focuses on the structures, policies, and processes governing the use and management of data within agrisystems to ensure it serves the interests of underrepresented communities.

Indicators

Bias Monitoring and Adaptation: Assesses the capacity of digital tools to detect and adjust for biases in decision-making algorithms.

Data Accessibility: Evaluates whether users have control over their data. This ensures the digital tool allows users to securely manage critical data like water and resource usage, enhancing sustainable agricultural practices.

Data Accuracy: Focuses on ensuring that data managed by the digital tool is reliable and accurate. This item evaluates how the tool maintains data integrity.

Data Portability: Evaluates the digital tool's capacity to securely transfer data across different systems, such as gene banks and digital twins. This ensures that data can be moved seamlessly between platforms, allowing for integration and continuity in decision-making processes.

Data Privacy: Assesses the effectiveness of measures to protect sensitive data related to farming practices, water use, and/or land ownership, ensuring it is not misused or accessed without consent.

Transparency of Data Practices: Evaluates the clarity and openness of data collection, storage, and usage policies, such as how data on crop yields or water consumption is handled and shared with stakeholders. Transparency in data practices enables informed consent and promotes trust.

Subdimension

→ **Reflexive Innovation:** Assesses how effectively digital innovations incorporate continuous reflection and feedback from users and regularly improve in meeting the evolving needs of these communities.

Indicators

Continuous Reflection: Evaluates that continuous reflection from the innovator on the impact and practices of the digital tool is actively promoted, fostering improvement. This ensures that internal assessments drive innovation in response to evolving community needs.

Feedback Integration: Assesses how feedback from users is actively integrated into the tool's development process. This ensures external insights directly inform the continuous adaptation of the digital tool to better serve communities.

Transparency and Communication: Evaluates the transparency in reflection processes and the communication of findings and adaptations to stakeholders.

Subdimension

→ **Ethical Compliance:** Evaluates how well digital tools comply with ethical standards.

Indicators

Ethical Oversight: Evaluates the effectiveness of governance mechanisms. Promotes accountability in data decisions.

Ethical Standards Adherence: Assesses whether data management aligns with ethical standards in agrisystems, like protecting sensitive information on land rights, crop yields, communal water-sharing practices, and indigenous knowledge. Ensures data is handled responsibly, respecting local norms and rights.

Impact Assessment: Assesses whether governance structures review ethical risks and data impacts, with measures to prevent harm and align with local priorities.

Dimension

Co-creation and Governance: Evaluates the extent to which digital initiatives in agrisystems are developed collaboratively with communities and governed inclusively. Encourages collaborative innovation and inclusive governance in digital initiatives for inclusive and collaborative design, ensuring that they are reflective of the diverse needs of these users.

Subdimension

→ **Grassroot Innovation Collaboration:** Evaluates how grassroots innovation efforts include and empower underrepresented communities in agrisystems. Collaboration at the grassroots level leverages local knowledge and strengthens community-driven solutions.

Indicators

Capacity Building: Evaluates the capacity-building programs aimed at enhancing the skills of underrepresented groups, such as training for digital tools or participation in innovation processes, ensuring long-term self-sufficiency and empowerment in grassroots initiatives.

Community-led Solutions: Evaluates whether digital solutions are shaped by grassroots needs and priorities. Emphasizes community-driven decision-making in the design and application of tools.

Grassroots Engagement: Assesses the direct involvement of underrepresented users, such as smallholder farmers or associations, in shaping and applying digital tools to address locally relevant challenges. Focuses

on community-led actions, such as guiding data interpretation, informing tool refinement, or leading dissemination efforts within grassroots contexts.

Impact Assessment: Assesses whether governance structures review ethical risks and data impacts, with measures to prevent harm and align with local priorities.

Local Knowledge Utilization: Assesses whether local knowledge and practices are incorporated into the design of digital tools. Embedding this expertise helps ensure innovations are relevant and context appropriate.

Subdimension

→ **Collaborative Innovation:** Assesses the diversity and accessibility of collaboration among actors involved in tool development. Broadening participation helps ensure the tool reflects different needs and supports more inclusive digital outcomes.

Indicators

Co-creation Opportunities: Evaluates whether users have clear opportunities to contribute to the design and development of digital tools. Inclusive co-creation ensures that diverse needs help shape the final product, not just its accessibility.

Collaboration Accessibility: Assesses how accessible collaboration processes and platforms are to diverse user groups. Focuses on removing logistical, technical, or social barriers that prevent participation, ensuring that collaborative spaces are open and reachable to all.

Collaborative Support: Assesses whether support structures like training, mentorship, or funding are available to help users and downstream beneficiaries engage in co-creation.

Diversity and Representation: Evaluates whether a range of user groups, such as women, youth, or other stakeholders, are meaningfully included in digital innovation processes.

Subdimension

→ **Inclusive Governance:** Examines whether governance structures ensure transparency, accountability, and representation in digital decision-making.

Indicators

Inclusive Decision-making: Evaluates the clarity and openness of decision-making processes related to the tool's design, updates, and data use.

Transparency: Assesses whether users from diverse roles and contexts are meaningfully involved in decisions related to tool development and use.